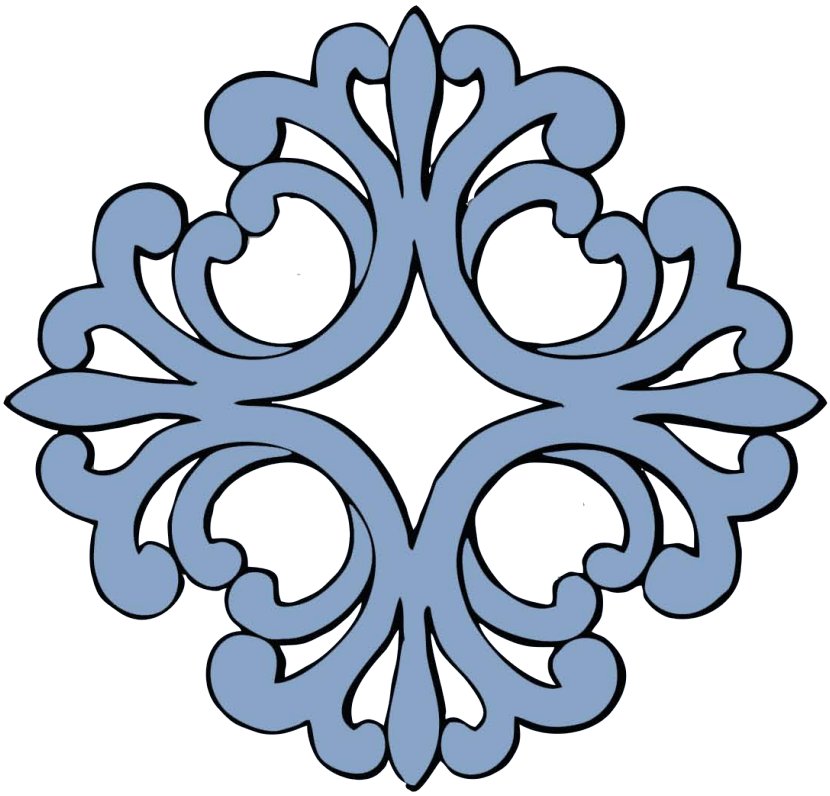
ORNAMENTAL DRAWING

AND

ARCHITECTURAL DESIGN

with

Notes, Historical and Practical



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ROBERT SCOTT BURN

ORNAMENTAL DRAWING,

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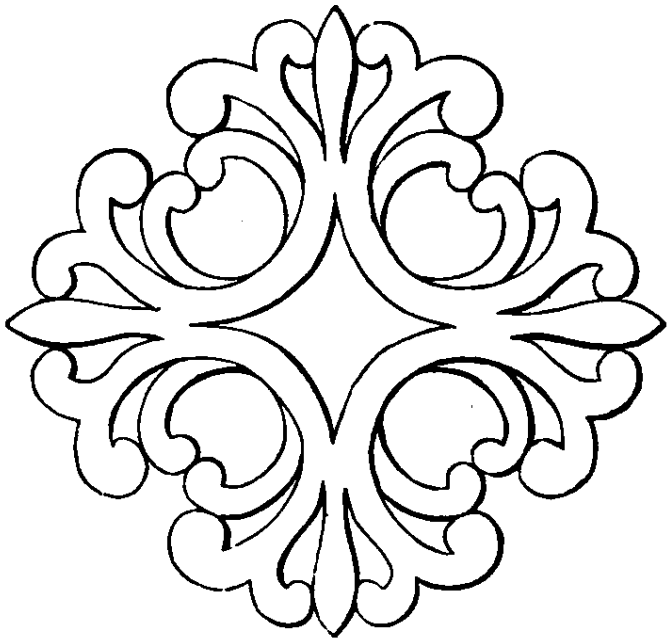
WITH

Notes, Historical and Practical.

UPWARDS OF 200 ILLUSTRATIONS.



EDITED BY

ROBERT SCOTT BURN,

EDITOR OF "THE ILLUSTRATED DRAWING-BOOK," "MECHANICS AND MECHANISM," "THE STEAM-ENGINE," "ARCHITECTURAL, ENGINEERING, AND MECHANICAL DRAWING-BOOK," "PRACTICAL GEOMETRY," ETC. ETC.

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Ornamental Drawing,

AND

ARCHITECTURAL DESIGN.

INTRODUCTION.

THE following are designed as companion Lessons to those given in the works in this Series, entitled *The Illustrated Drawing-Book*, *The Architectural, Engineering, and Mechanical Drawing-Book*, and in the last section of *Practical Geometry*. They are constructed and arranged on the same principle adopted in those works, of beginning at the simplest and leading the pupil gradually up to the most complicated arrangement of lines and curves; and, like them, are to be considered as merely introductory to the departments of which they are illustrations. We lay no claim for the work to be considered as an exhaustive treatise, or to any originality in its arrangement and matter. We consider it as simply an attempt to embody a series of lessons, and of historical and practical notes, culled from various authorities, which may serve as the groundwork for more complete and elaborate practice, and form an incentive to the systematic study of the principles and practice of decorative and constructive art.

So far, however, as the nature and limits of the work admit, we have endeavoured to make the departments as complete as possible; and, by the insertion of brief historical notes, to render the descriptions of the various architectural styles treated of, interesting to the general reader. We venture to hope, therefore, that, although mainly designed as an introductory treatise, it will be found complete enough for those who wish to acquire a general knowledge of the history, and of the peculiar characteristics of the different styles.

To the student desirous of further extending his knowledge on these

points, we would recommend, as eminently fitted to convey both theoretical and practical information, the following works:—*The Illustrated Handbook of Architecture*, by James Fergusson, M.R.I.B.A. 2 vols. Murray. This is the most complete and satisfactory of all the works, treating on the various styles of architecture, we have yet met with. The descriptions are ably written; and the illustrations, both for beauty and utility, remarkable, as examples of architectural drawings. The subject is philosophically treated; and the work abounds in æsthetic and practical disquisitions. *Rudimentary Architecture.—Orders.* By W. H. Leeds, Esq. Weale. *Rudimentary Treatise on the Principles of Design in Architecture*, by G. Garbett, Architect. Weale. These two works present a large amount of information, practical and æsthetical. The former takes up the subject of the classical architecture and its orders; the latter considers the subject of design applied to Gothic as well as to Classical architecture. Both are lucidly written; and are eminently calculated to make the reader think for himself, and to urge him to examine the principles on which the most celebrated styles of the art have been designed.

As complete treatises on Ornamental Drawing and Design, we would recommend to the notice of the reader the following works:—*The Grammar of Ornament*, by Owen Jones, in 25 parts. Day and Son. *Examples of Ornament in every Style*, selected by J. Cundall. Bell and Daldy. The Guides to the various departments of the Crystal Palace Company, published under their immediate authority, contain also many notes and illustrations suggestive to the reader. Indeed, we conceive that a *résumé* of the principal contents of the Guides to the different Architectural Courts, would be of considerable value to the art-student. If the student can have access to Durrand's *Parallel of Architecture*, published at Berlin, he will find in its fine series of plates numerous illustrations, drawn to scale, of the most celebrated examples of the various styles.

The following is the arrangement we have adopted in the work:—The First Division comprehends four sections. The *first* of these sections takes up the examples of ornament in which straight lines are chiefly met with; the *second section*, those in which circles with curved lines are used, drawn mechanically; the *third section* gives examples of ornamentation of the same class, to be drawn without the use of mechanical aids; the *fourth section* gives illustrations of ornament as applied to the decora-

tion of textile fabrics chiefly. These are, in the majority of instances, taken from the actual designs; and, studied in conjunction with the remarks on "design," as applied to *decorative art*, at the end of the section, may convey some notion of its "true" and "false" principles; how the former are to be adhered to, and the latter avoided, in practice. They are given chiefly as examples for practice in drawing, and of textile ornamentation as generally adopted—not as perfect designs embodying correct principles. The reader is expected to use them by the principles indicated by authorities, a brief digest of which we have given.

Division Second comprises historical and æsthetical notices of the following styles of architecture: *Assyrian*, *Egyptian*, *Indian*, *Chinese*, *Grecian*, *Roman*, *Romanesque*, *Byzantine*, and *Lombardic; Gothic*, or *Pointed; Renaissance*, and *Arabian*. These notices are illustrated as amply as the limits of the work will admit of, the illustrations being specially designed to convey as much practical information as possible.

The Third and last Division embraces a variety of examples of architectural plans and details, which may convey some information to the young practitioner.

Ornamental Drawing,

AND

ARCHITECTURAL DESIGN.

FIRST DIVISION.

SECTION I.

LEAVING to a succeeding part of our work the consideration of the principles from which are deduced the rules or canons of "taste in design," we shall proceed at once to give examples of ornamentation in which straight lines are chiefly used; noting previously that the "ornaments" adapted for those combinations, many of which may be considered as mere framework or outlines, will be described in Section II.

EXAMPLE 1, fig. 1, shows an arrangement of squares which may be filled in with curved ornamentation, or colours, forming a pavement or

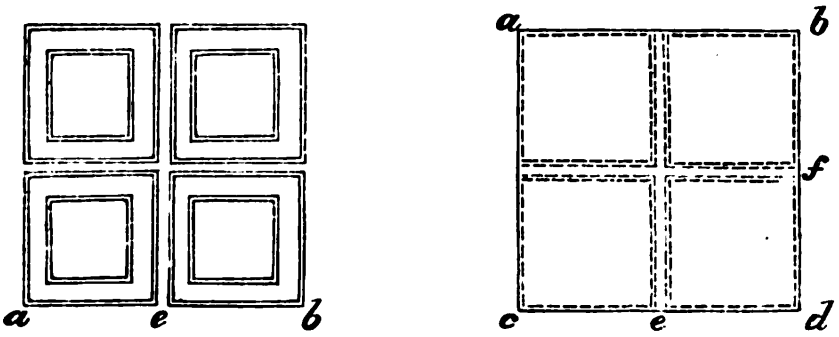


fig. 1.

tile design. The diagram to the left shows the manner of drawing this: a series of squares are formed in lines distant from each other, as at *e* or *f*, the side of each square being *d f*.

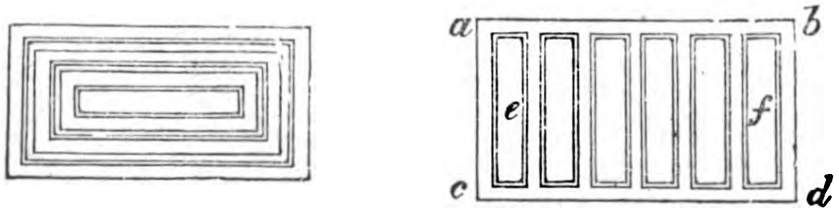


fig. 2.

EXAMPLE 2, fig. 2, shows an arrangement of parallelograms, forming a series of panels, which may be decorated or coloured as required.

EXAMPLE 3, fig. 3, shows a square placed diagonally. Join *a b c d* by lines crossing in *e*; draw lines corresponding to these as *e h*, *f g*, fig. 4;

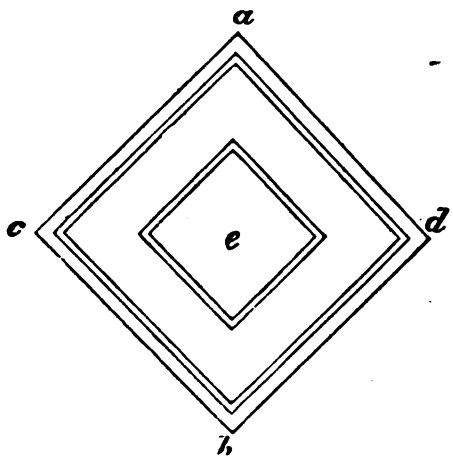


fig. 3.

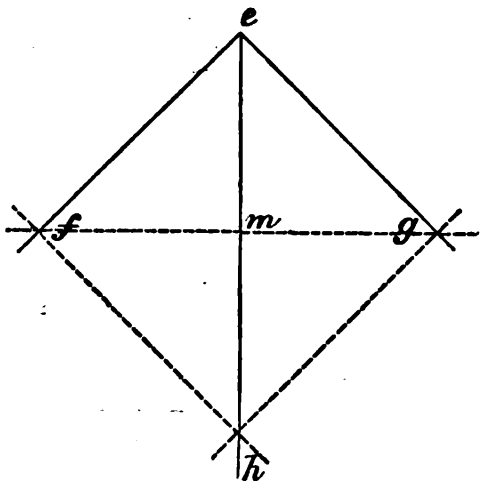


fig. 4.

take half of *c d*, fig. 3, as *c e*, and set it off from *m*, fig. 4, to *e*, *h*, *g*, *f*; join these, and parallel to them draw the internal squares.

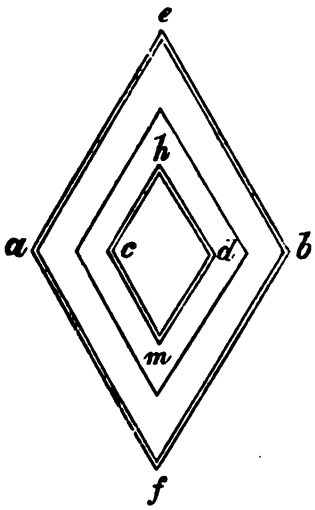


fig. 5.

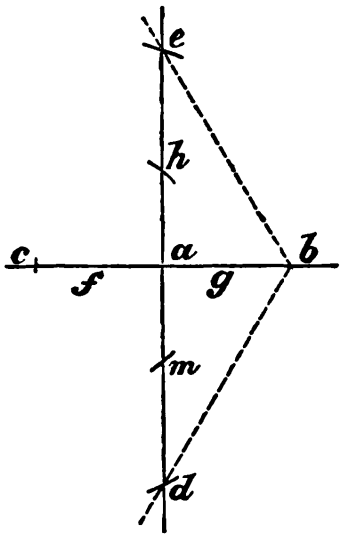


fig. 6.

EXAMPLE 4, fig. 5, is the "lozenge" or diamond shape. Fig. 6 shows the manner in which it is drawn: two lines, *c b*, *e d* intersect, at *a*; *a c*,

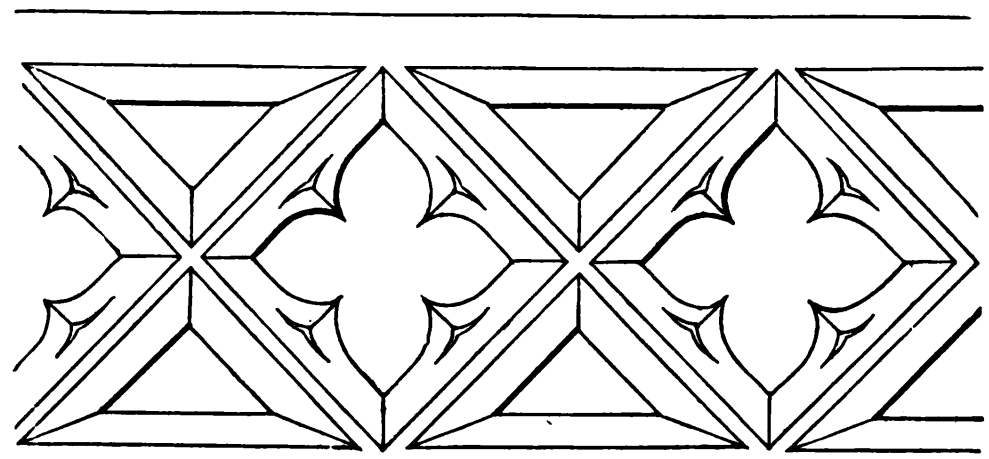


fig. 7.

a b, *a e*, *a d*, are each equal to half of *a b*, *e f*, fig. 5; and *a h*, *a m*, *a g*, *a f*, fig. 6, to half of *h m*, *c d*, fig. 5.

EXAMPLE 5, fig. 7, is an open balustrade or perforated parapet in the Gothic style, in which the principal feature is the arrangement of squares, as in fig. 3.

EXAMPLE 6, fig. 8, is another example, showing the method of filling up the face of a pilaster or panel with squares, as in fig. 3.

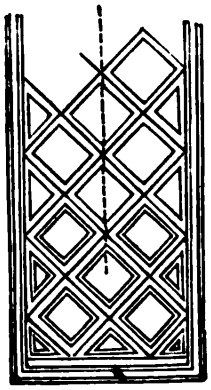


fig. 8.

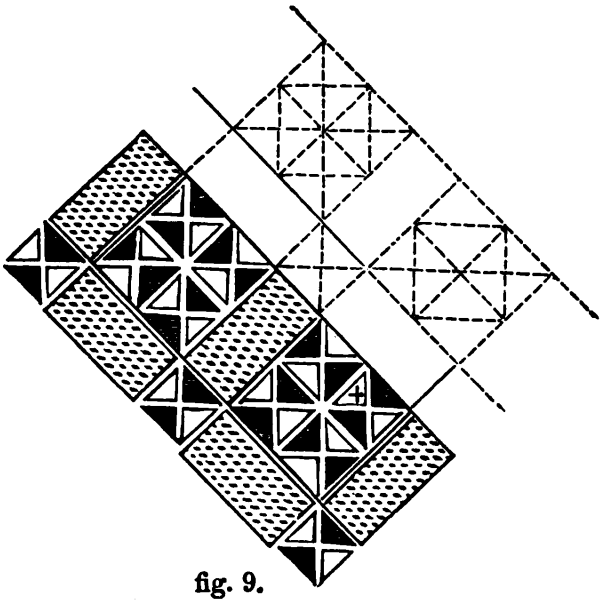


fig. 9.

EXAMPLE 7, fig. 9, is an illustration of the use of squares and oblongs, arranged as a tile (this specimen is copied from one of Minton's encaustic tiles). The dotted lines show the construction of the pattern. In the

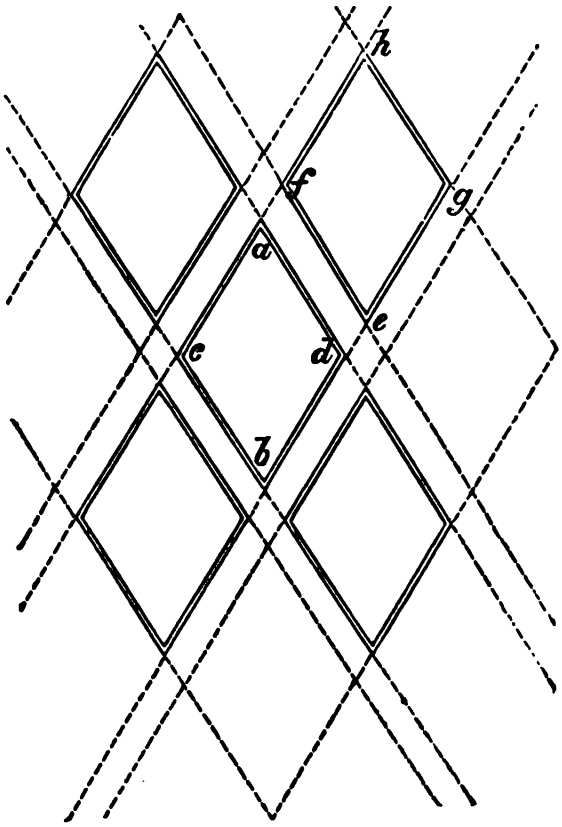


fig. 10.

original design the *colours* are filled in as follows:—The dotted parts in the figure are red, those marked with a + are yellow, the parts black in the figure being also black in the pattern.

EXAMPLE 8, fig. 10, shows an arrangement of lozenges or diamonds as in fig. 5: the dotted lines show the construction, the distance between the diamonds, as *e f g h*, *a b c d*, being equal to the distance *a f*, or *d e*.

EXAMPLE 9, fig. 11, is an illustration of the use of this form in one of Minton's encaustic tiles, from which it is copied. The parts marked + are black, those dotted red, and those filled in with parallel lines

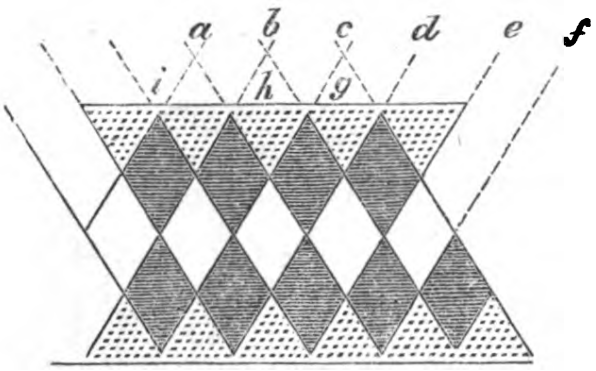


fig. 11.

yellow. Lines, as *i h g*, *a b c d e f*, are drawn at the angle shown, parallel to each other, the distance between each line being equal to *a b* or *b c*.

EXAMPLE 10, fig. 12, and

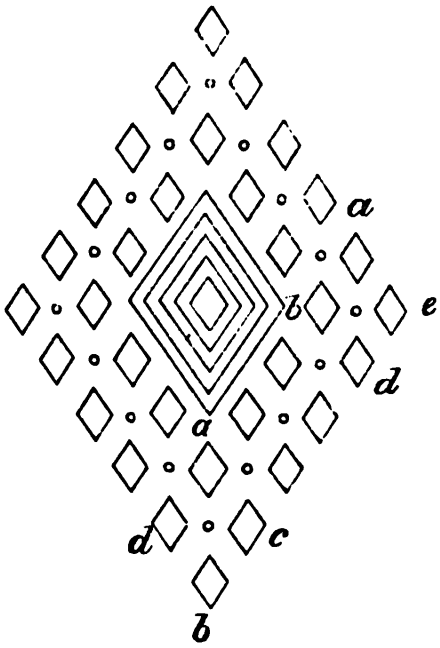


fig. 12.

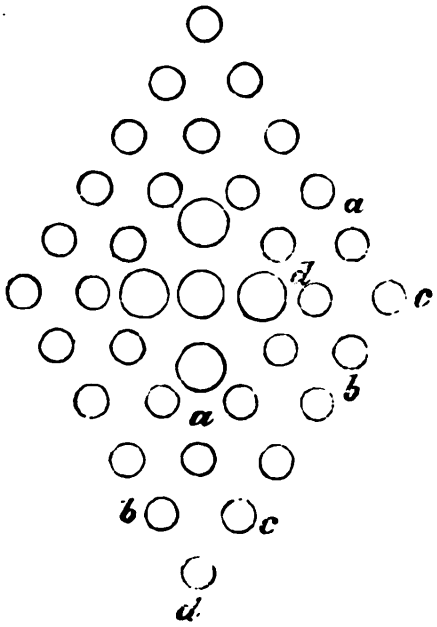


fig. 13.

EXAMPLE 11, fig. 13, are illustrative of a "diaper" pattern, the different parts of the pattern forming a series of diamonds, as *a*, *b*, *c*, *d*. The method of drawing

EXAMPLE 12, fig. 14, is shown in fig. 15. The application of this to the delineation of a Gothic perforated parapet is shown in

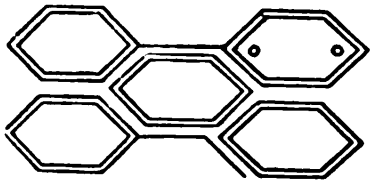


fig. 14.

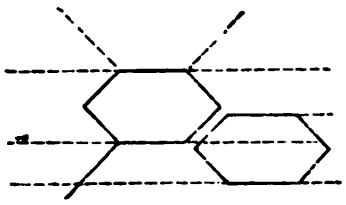


fig. 15.

EXAMPLE 13, fig. 16.

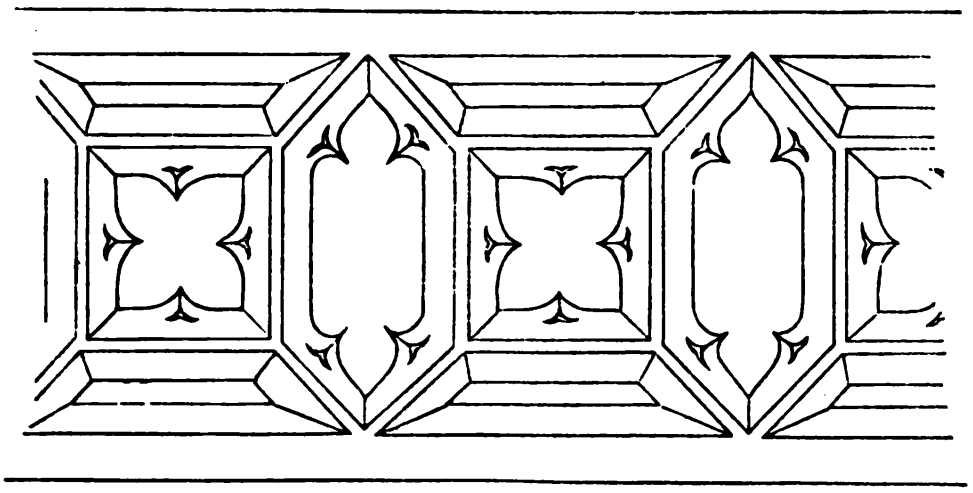


fig. 16.

EXAMPLE 14, fig. 17 (A), is composed of two equilateral triangles, constructed as shown in the diagram to the right. The two lines *a b*, *c d*, are drawn at a distance equal to that between the bases of the triangles in A; with the distance *a b*, from *a*, *b*, *c*, *d*, describe arcs cutting in *e f*; join *d f*, *c f*—*a e*, *b e*.

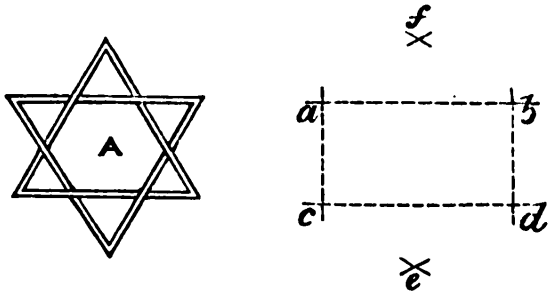


fig. 17.

EXAMPLE 15, fig. 18, displays an arrangement of lines, giving a combination of *hexagons*. First describe the hexagon *a b c d e f* (for method see work in this Series, *Practical Geometry*). Bisect four sides, as *a b*, *c d*, *a f*, *e d*, and through the points draw lines intersecting in *g*; continue these to the points where they intersect each other, as 1, 2, 3, 4, 5, and 6. Each one of the sides of the internal, or central hexagon, as *a b*, forms one of the sides of a series of six external hexagons; these being formed very speedily, by means of the lines 5 3, 4 2, 2 6, 1 5, 3 1, 4 6, each of which forms the centre line of each of the external hexagons. Then from

h, with half of *f e*, as *g e*, set off to *i m*; and from *h* to *n*, with *g o*. Join *a i*, *b m*, and parallel to *i m*, through *n*, draw *n′ n″*, cutting the lines

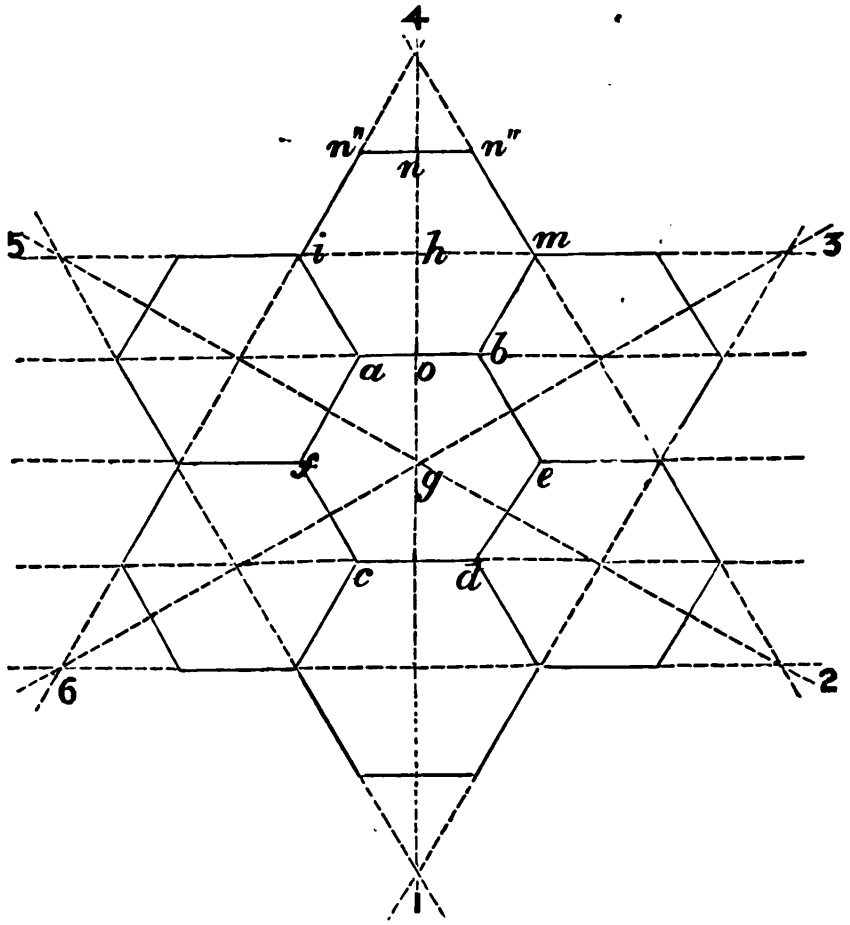


fig. 18.

6 4, 4 2. In like manner the whole series may be drawn. The starting points being once obtained, a repetition of the pattern to any desired extent is easily effected.

Example 16, fig. 19, is a specimen of ornamentation taken from one of Minton's encaustic tiles, in which the hexagon, lozenge, and equilateral triangle are displayed. The lines *i*, *a*, *b*, *c*, *d*, *e*, and *h*, *g*, *f*, give the

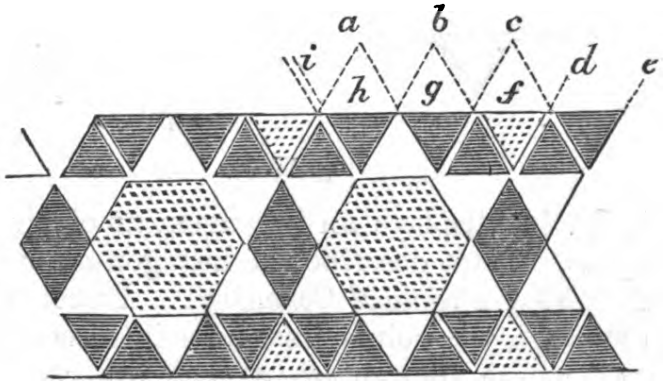


fig. 19.

direction of the triangles and the lozenges. The hexagons should be drawn first, the sides of these giving the desired angle of the lines *a b*, *c d*, &c. The method of drawing the ornament in A,

EXAMPLE 17, fig. 20, is shown in the diagram to the right, at B. The square *a b c d* is first drawn; the sides of this, *a b*, *b d*, being bisected, and lines drawn through the points, as *e h*, *f g*. The second square, *e f g h*, is then formed, thereafter the internal octagon B; the corners of this, as *i*, *l*, *p*, *n*, *j*, *k*, *o*, and *m*, being joined to the square *a b c d*. The pattern thus formed and repeated, as shown, forms one of Minton's encaustic tiles, from which we have copied it. Another pattern of Minton's tiles, in which the octagon is a distinguishing feature, is shown in

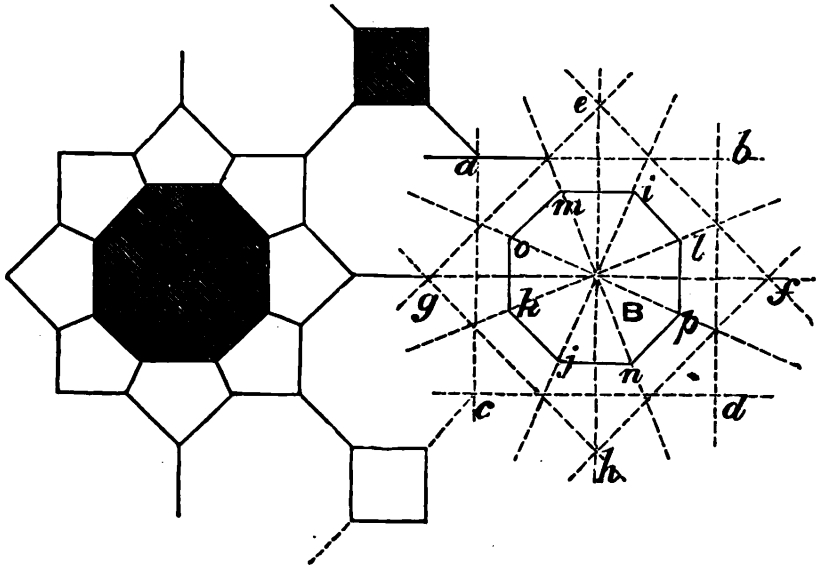


fig. 20.

EXAMPLE 18, fig. 21, the various lines of which are formed by a series of octagons, the diagonal corners of which, as *a e*, *b h*, *f c*, *g d*, are joined by lines, which give the basis of the lines of the points A, B. The method of drawing the combination of squares, *a*, with rhomboids, *b*, in

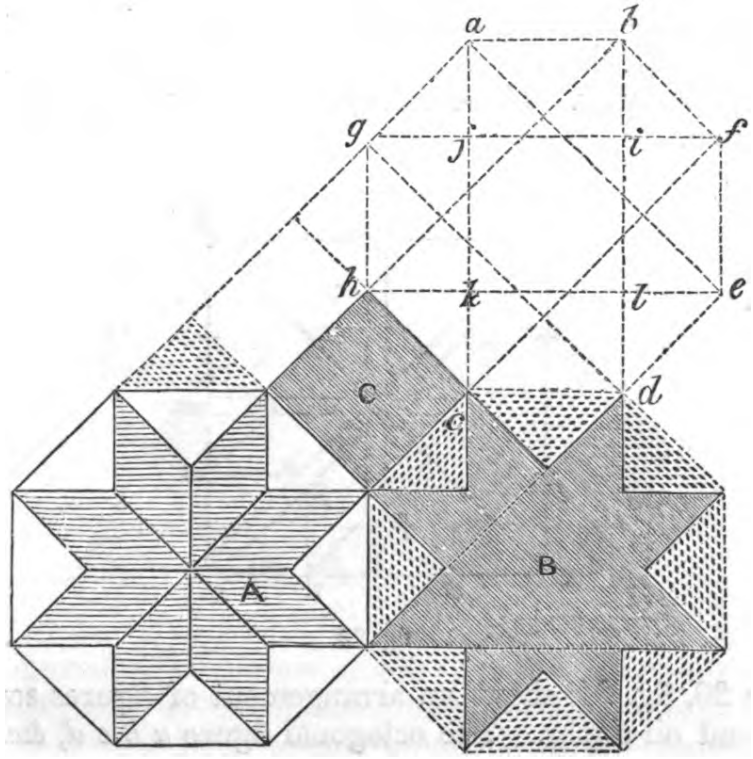


fig. 21.

EXAMPLE 19, fig. 22, is shown in fig. 23. If the points 1 2, 2 3, 3 4, 4 5, 5 6, 6 7, 7 8, are joined, an octagon will be formed, and a square by joining 9 10, 12 11. The octagon forms the basis of the combination, and is the first thing to be drawn, which may be done as in fig. 23 by forming a square, and thereafter an octagon (see *Practical Geometry*) the side of which is equal *f e*, *f g*. Draw lines, *i i m*, distant from each other equal to the distance between the rhomboids in fig. 22. Parallel

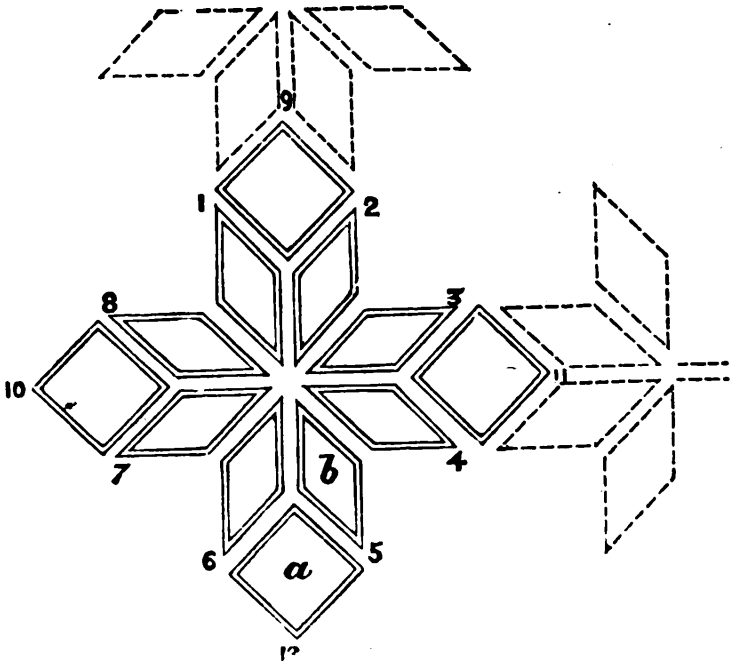


fig. 22.

to the diagonal lines *c b*, *a d*, draw lines equal to *i i*. From *e*, one end of the octagon side, draw a line perpendicular to *c d*, joining the diagonal *a d* in *h*. From *n*, the end of another side of the octagon, draw parallel to *c d* a line cutting the diagonal *d a* in *o*, parallel to *e h*, *k t*; draw lines *p t*, *n s*; two of the rhomboids will thus be formed; the remainder are drawn in a similar way. These being obtained, the squares, as in fig. 22, are easily drawn.

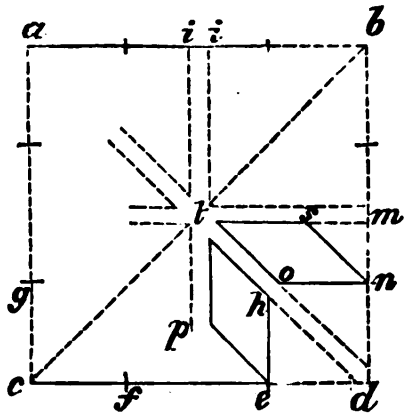


fig. 23.

EXAMPLE 20, fig. 24, shows an arrangement of figures sometimes used for carpets and oil-cloths. The octagonal figure *a b c d*, &c., is the basis

of the arrangement, which is drawn first, and gives the lines of the other figures, as C D, *f j*, *g i*, *i l*, *l m*, *k n*, *k j*, are all equal to the side *e f* of

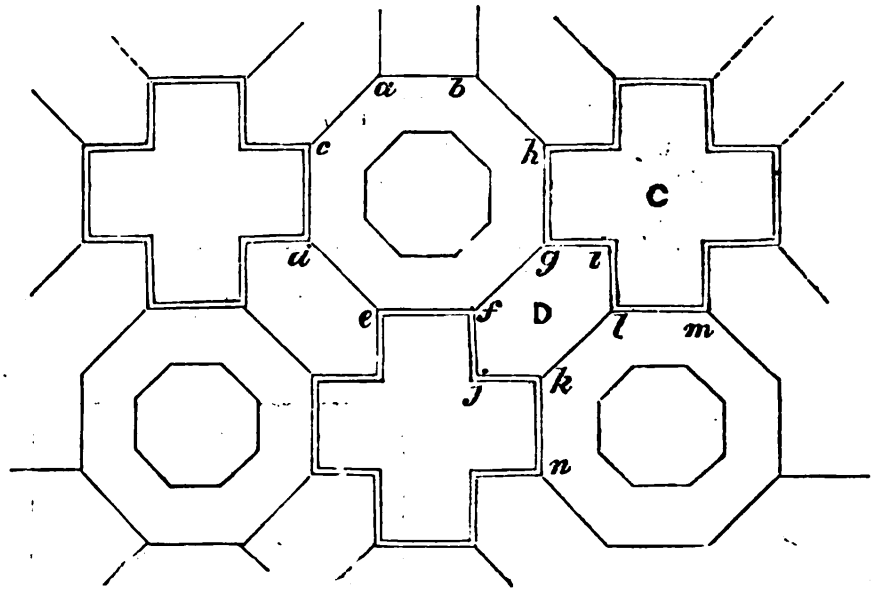


fig. 24.

the octagon; the sides *l m*, *k n*, form starting-points for the other octagons, which may be repeated as often as required.

SECTION II.

We now proceed to give examples of figures in which circular and curved lines are met with.

Example 21, fig. 25. The fig. *a b c d* is formed by arcs of circles, the centres of which are found at the corners of a square, as *a′ b′ c′ d′*,

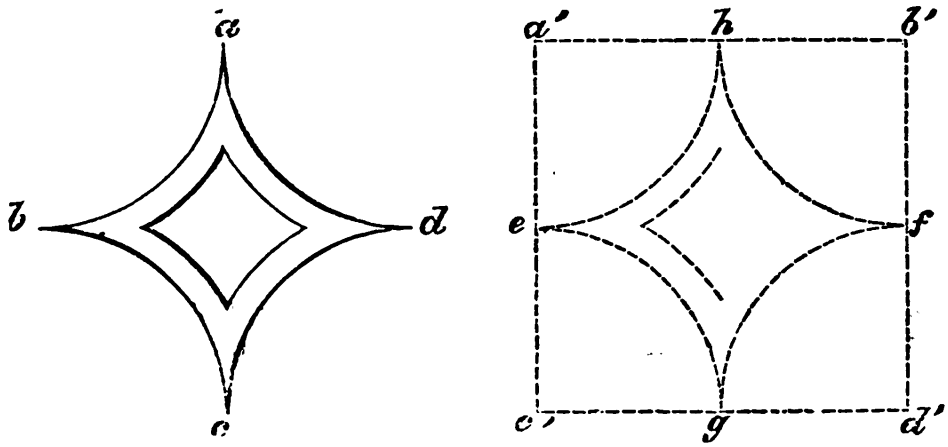


fig. 25.

the side of which is equal to the distance between the extreme points, as *a c* or *b d*. The radius of the larger arcs is equal to half the side, as *a′ h*, *c′ g*, &c. The ornament known as the quatre-foil, and which forms

Example 22, fig. 26, is drawn in the manner shown by the diagram to the left. A diagonal square, *c d f g*, is first drawn, one side of which is equal to the distance between the centres of the circles, as *a*, *b*, *c*, *d*.

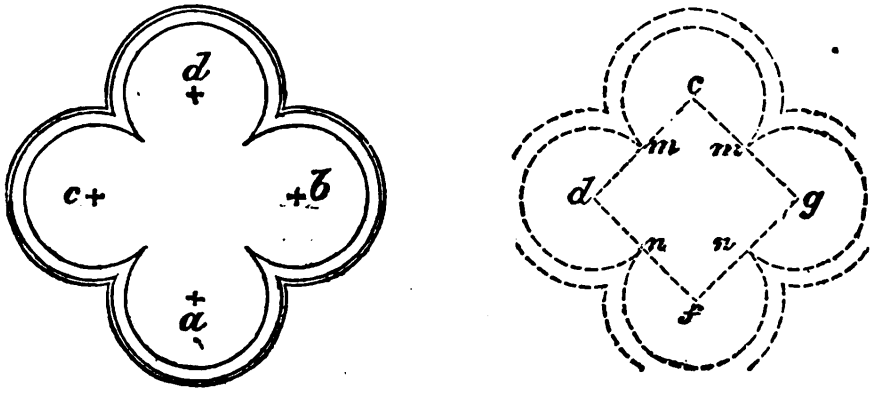


fig. 26.

The radii of the circles described from the points *d c g f* is equal to half the side, as *d m*, *f n*, &c. An exemplification of this is shown in the gothic perforated parapet which forms

EXAMPLE 23, fig. 27; and its adaptation to encaustic tiles in

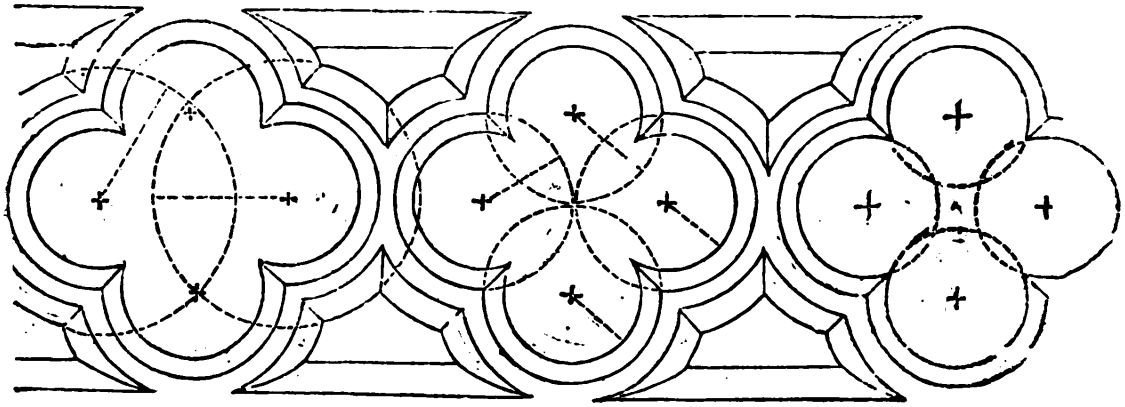


fig. 27.

EXAMPLE 24, fig. 28, which is taken from one of Minton's beautiful specimens of the art. The simple ornament which forms

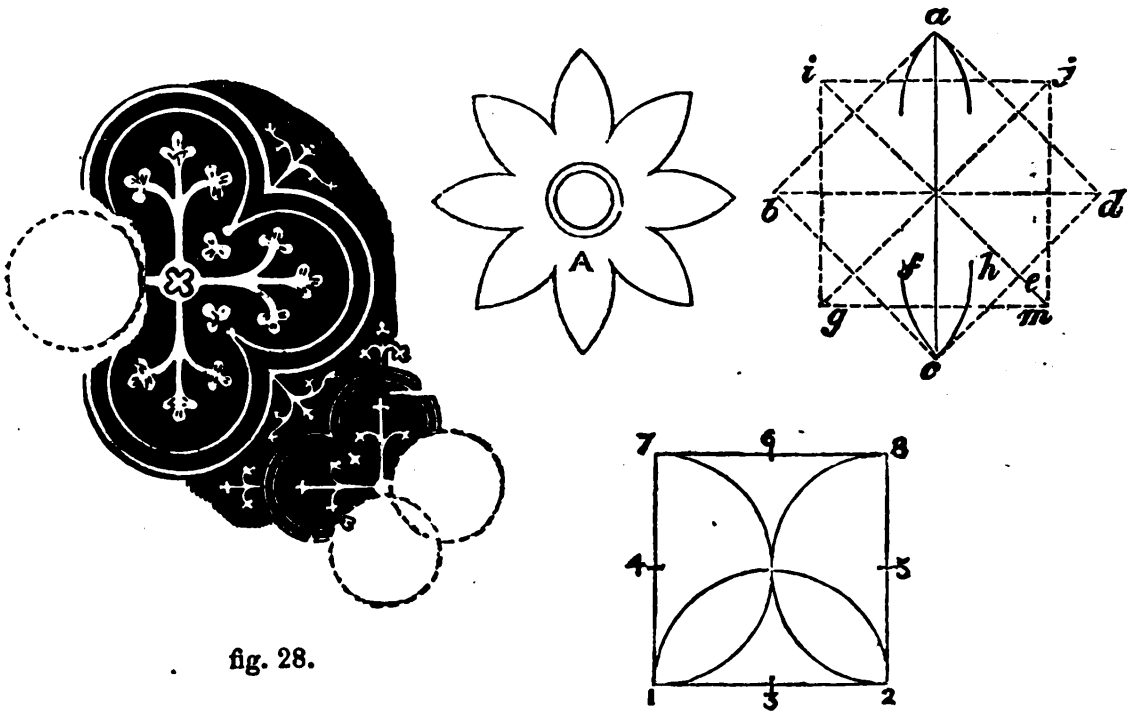


fig. 28.

fig. 29.

EXAMPLE 25, fig. 29, is drawn in the manner shown in the accompanying diagrams. Describe the square 1, 2, 7, 8; divide the sides in the points 4, 5, 6, 3; and from these, with radius 3, 2, describe arcs, as 1 2, 2 8, &c. Next describe a diagonal square, as *a b c d* (*i j*, *g m* corresponding to 7 8, 2 1), and from the points where the diagonals of *i j g m*, as *i m*, *g j*, cut the sides as at *e* in the side *c d*, describe arcs with radius equal to *e c*, *e d*; from *c* to *f*, and from *g* in the side *b c*, from *c* to *h*. Do this at all the sides, and the figure is complete. The manner of describing the intersecting ornament in

EXAMPLE 26, fig. 30, is shown in fig. 31. The curves terminating in the points 1, 2, 3, 4 are found by describing a square, *a b c d*, fig. 31, and

from these points, with radius equal to *c d*, describing arcs cutting in the points *e f*, *h g*. The curves terminating in the points 5 6, 7 8, fig. 30,

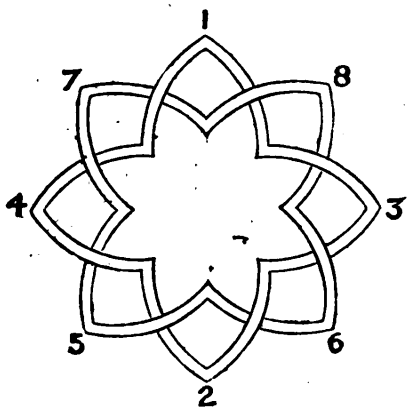


fig. 30.

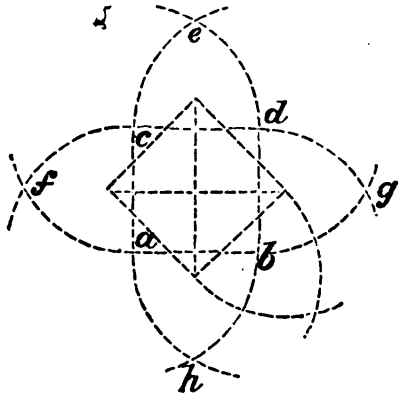


fig. 31.

are formed in like manner, the centres of the arcs being found in a square drawn diagonally in the first, as shown in fig. 31. The ornaments

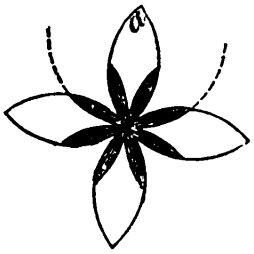


fig. 32.

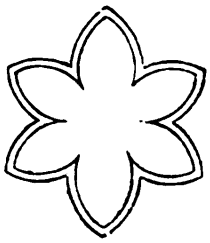


fig. 33.

in figs. 32 and 33 are described in the same way. The gothic parapet forming

EXAMPLE 27, fig. 34, is drawn by describing a series of circles from various points.

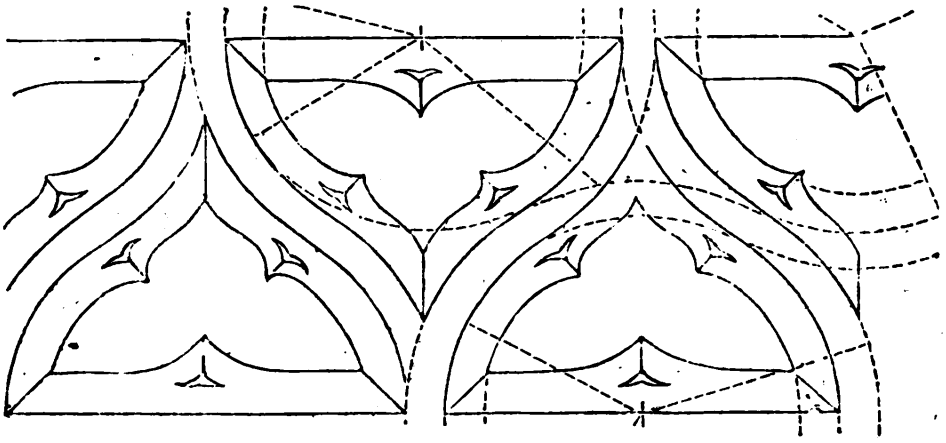


fig. 34.

By means of arcs of different radii, from points in different figures, as squares, diamonds, triangles, &c., a vast variety of figures can be obtained, in which the distinguishing feature is a combination of circular lines. The pupil is recommended to construct a variety of these by altering the arrangement of the figures already given.

EXAMPLE 28, fig. 35, is a combination of lines and circles met with in the arrangement of a "ceiling." The centres *a*, *b*, *c*, *d* are placed at the corners of a square, the side of which is equal to the distance *a b*; those of the smaller circles, as *f g*, *h i*, are formed at the corners of a

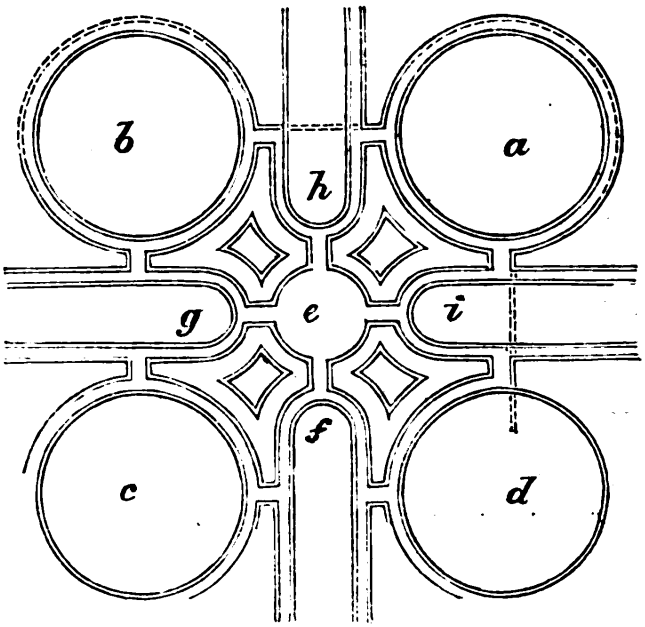


fig. 35.

diagonal square, the side of which is equal to *g h*; the centre *e* is at the intersection of the two diagonals of the larger square, as *a c*, *b d*. These points being obtained, the remainder of the figure, and its repetition to any extent desired may be easily drawn.

We now present a variety of examples of ornamentation formed by the combination of straight and circular lines.

EXAMPLE 29, fig. 36, is formed by a series of equilateral triangles, the

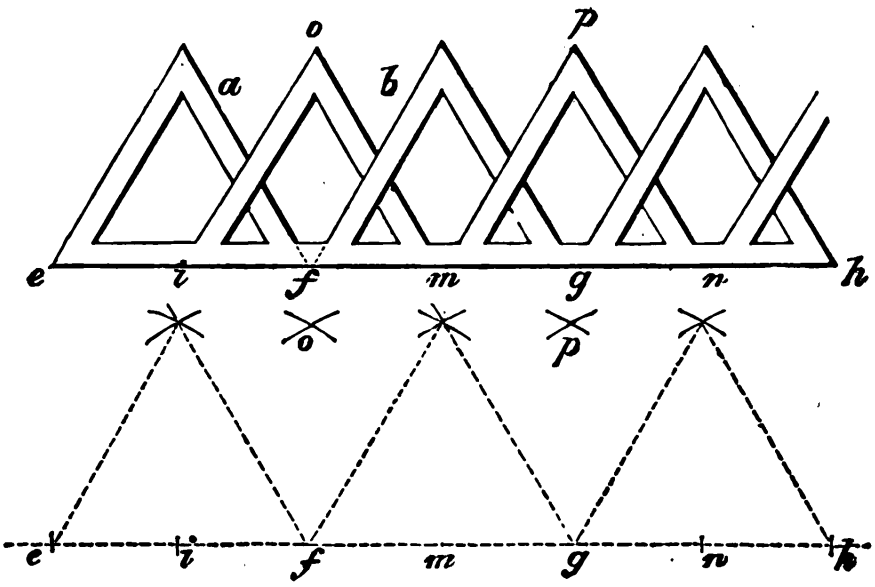


fig. 36.

construction of which is explained in the attached diagram. A series of intersecting squares with lozenges is given in

EXAMPLE 30, fig. 37, the method of constructing which is also shown. A series of squares and oblongs is shown in

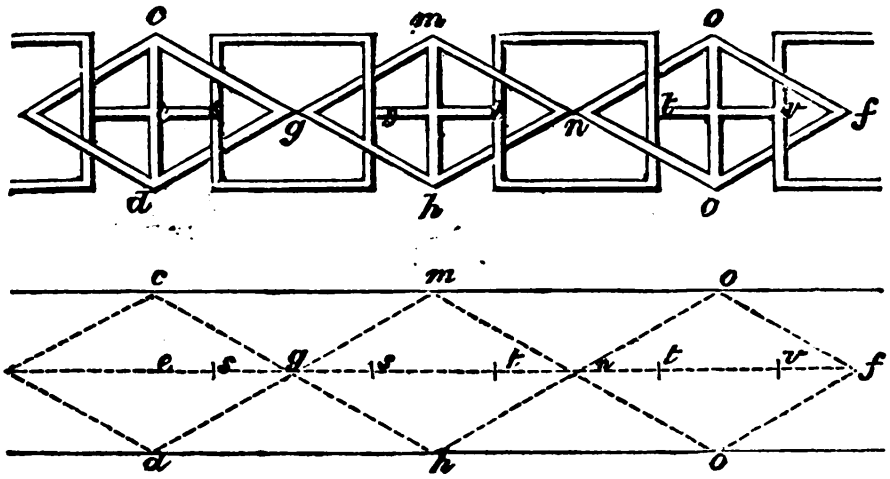


fig. 37.

EXAMPLE 31, fig. 38. The figure forming

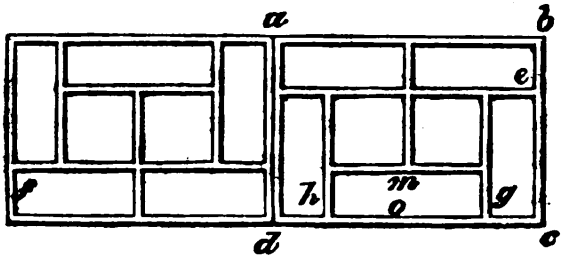


fig. 38.

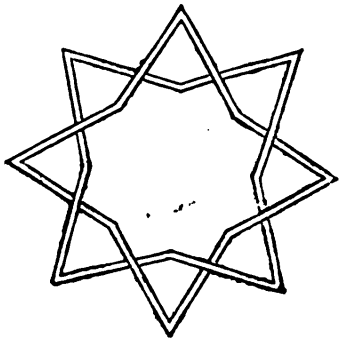


fig. 39.

EXAMPLE 32, fig. 39, is described by somewhat the same method as figs. 30, 31, the points, as *e*, being joined by straight lines in place of arcs of circles. The method of drawing the ornament in

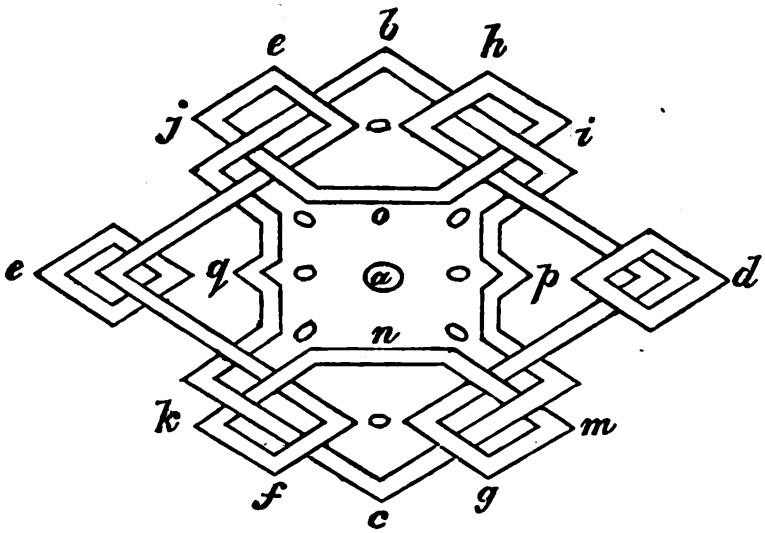


fig. 40.

EXAMPLE 33, fig. 40, is shown in fig. 41. The corresponding letters show how the points are obtained. The diagram to the left of

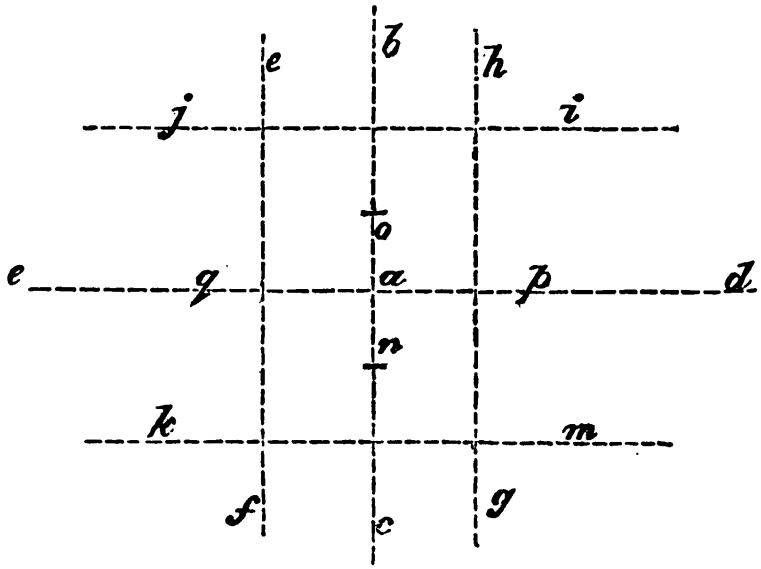


fig. 41.

EXAMPLE 34, fig. 42, will show how the ornament may be sketched. A combination of straight and circular lines is shown in

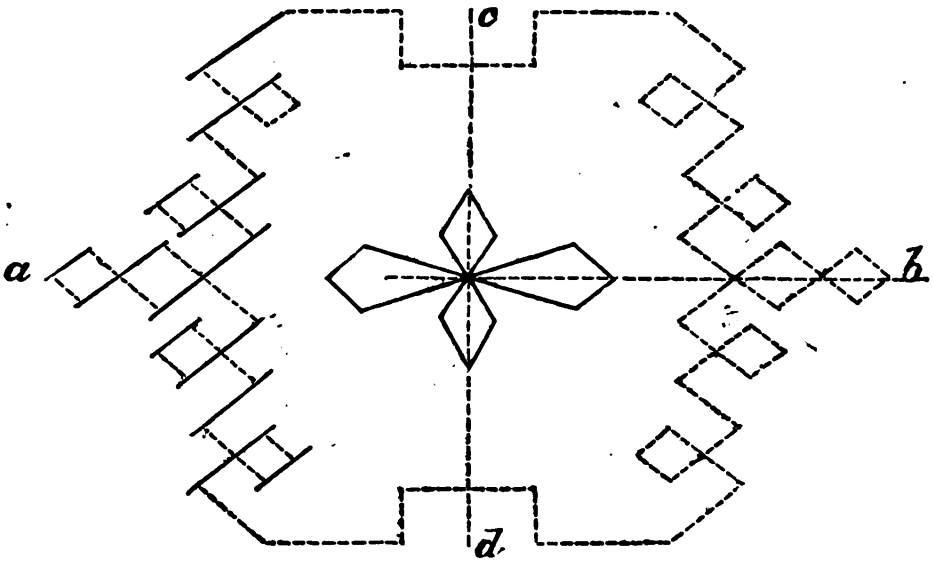


fig. 42.

EXAMPLE 35, figs. 43, 44. A series of "frets" and ornaments is given in

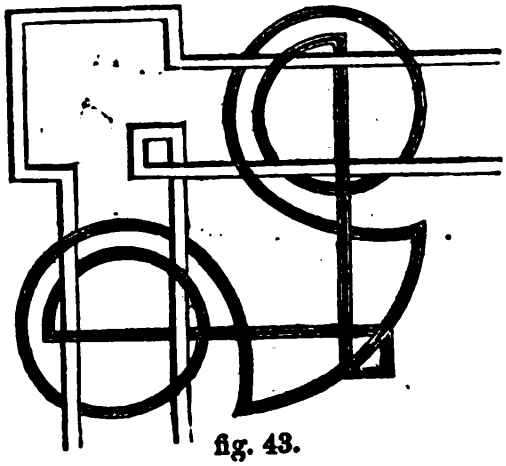


fig. 43.

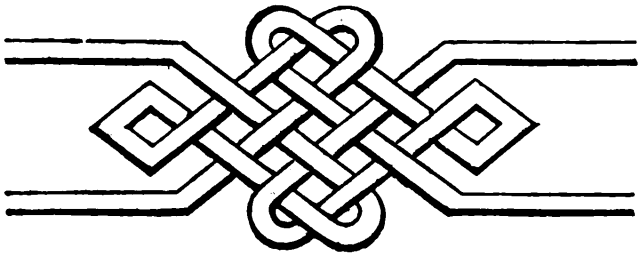


fig. 44.

EXAMPLES 36 to 43, figs. 45 to 52 *b* inclusive.

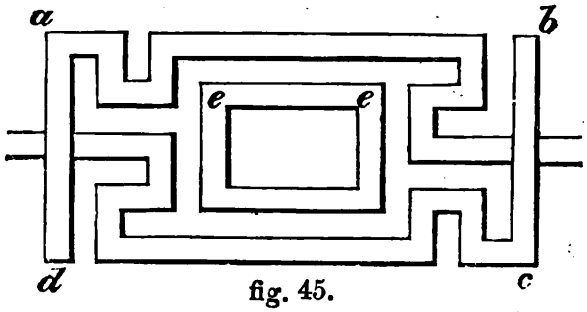


fig. 45.

fig. 46.

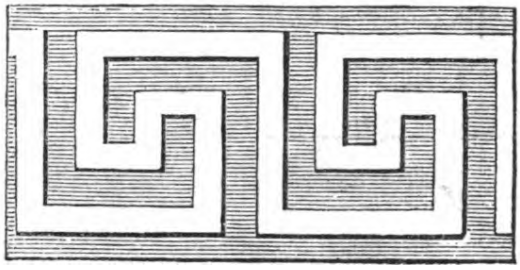


fig. 47.

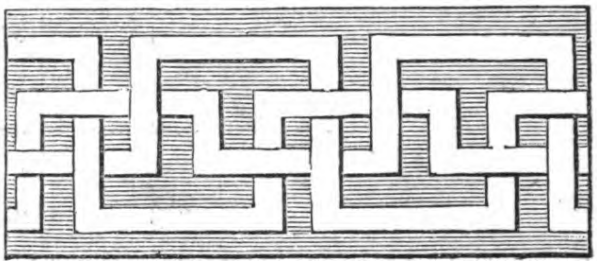


fig. 48.

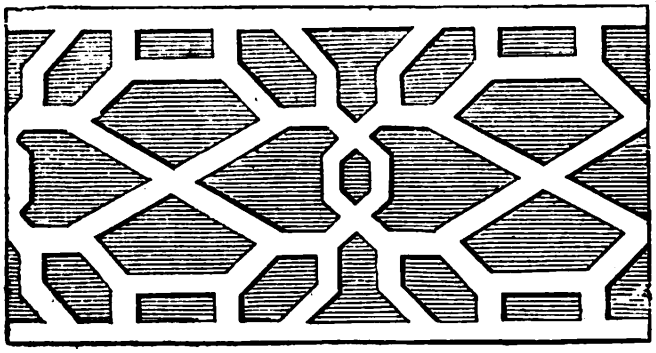


fig. 49.

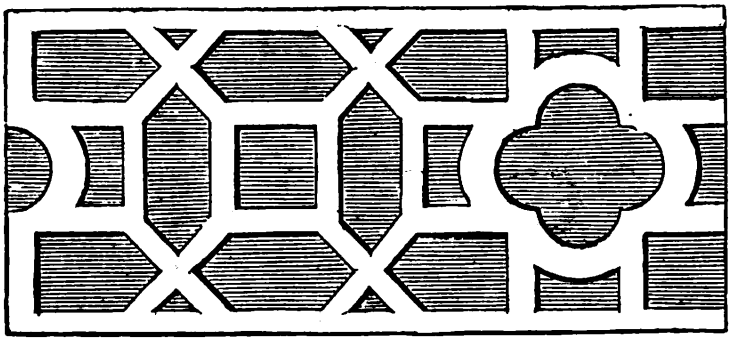


fig. 50.

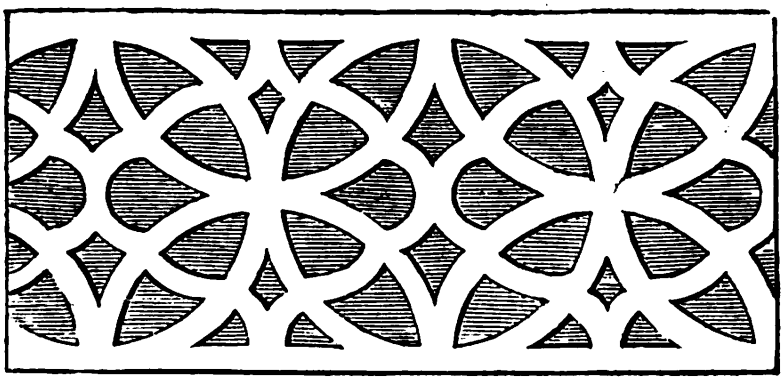


fig. 51.

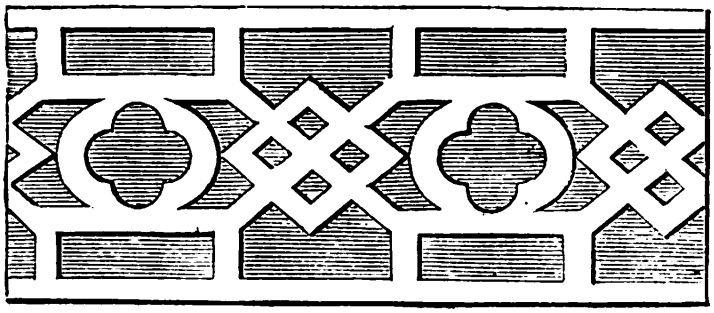


fig. 52.

fig. 52 *a*.

fig. 52 *b*.

The foregoing examples in the present Section have principally been drawn by means of the ruler and the compasses, *i.e.*, "mechanically." We now proceed to give examples of ornamentation in which combinations of these lines, with others drawn by the aid of the eye and hand alone, are met with. These will be given under Section III., Division I.

SECTION III.

BEFORE attempting to delineate the finished examples which we propose to give towards the end of this division, the pupil must acquire a ready facility in drawing curved lines in every variety of position, doing this, unaided by instruments, with the eye and hand alone. By consulting Section II. of our "Drawing-Book,"* he will find instruction how to proceed; we confine ourselves here to giving a variety of examples of curved lines, the most of which will be found in the succeeding examples. To these the pupil may with advantage add a variety of examples taken from some one of the numerous sketches we give in succeeding Sections of this treatise. In copying the following examples (figs. 53 to 71 inclusive), care should be taken to draw each curve in a different position. By referring to fig. 7 of the "Drawing-Book," he will find instruction on this point, of importance to be attended to.

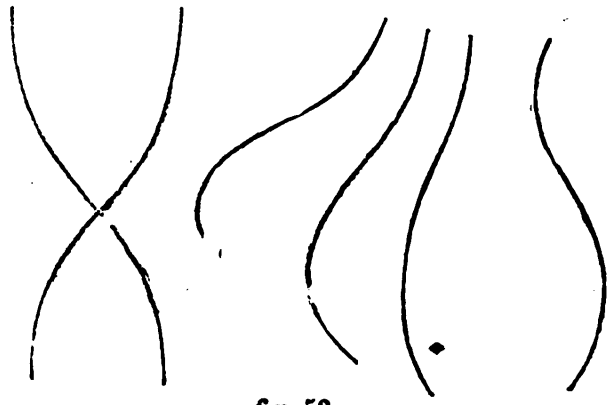


fig. 53.

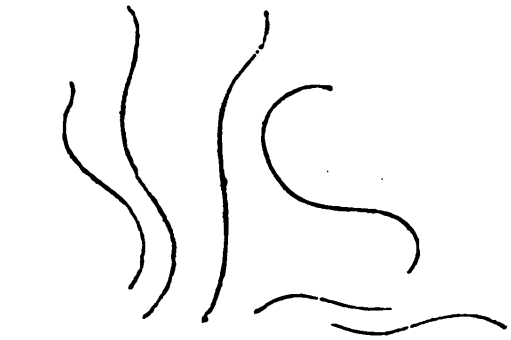


fig. 54.

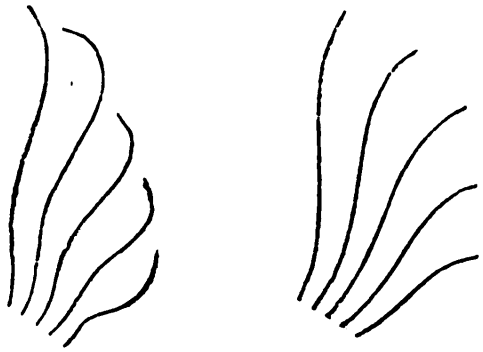


fig. 55.

fig. 56.

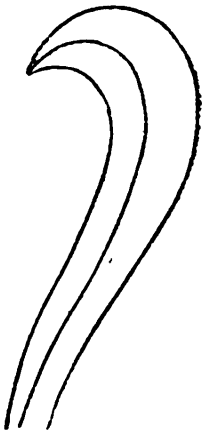


fig. 57.

* "The Illustrated Drawing-Book." 2s. Ward and Lock, 158, Fleet-street, London.

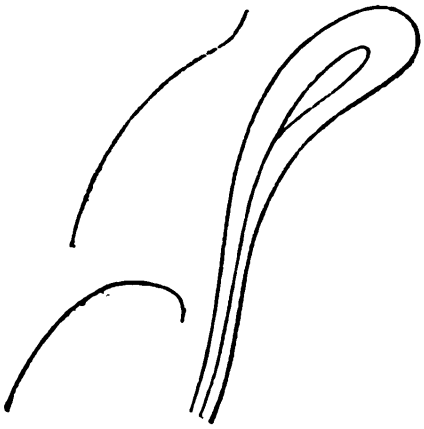


fig. 58.

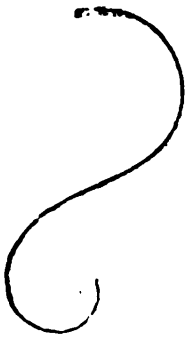


fig. 59.

fig. 60.

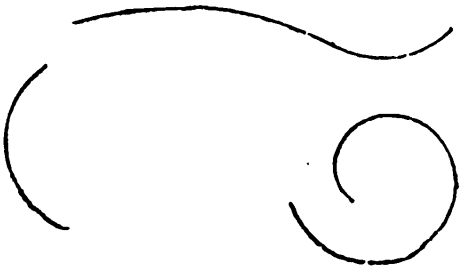


fig. 61.

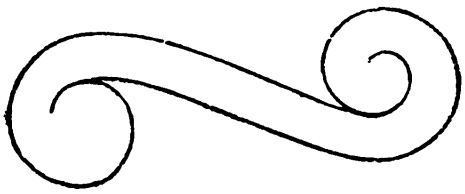


fig. 62.

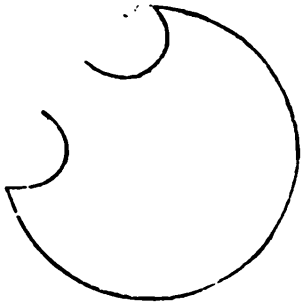


fig. 63.

fig. 64.

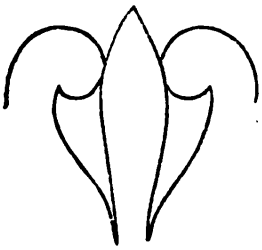


fig. 65.

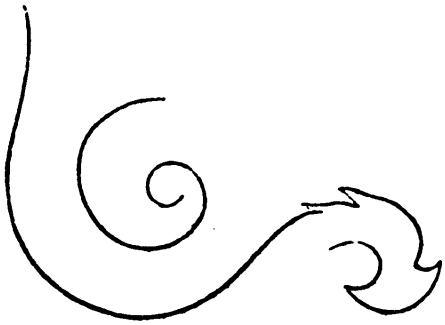


fig. 66.

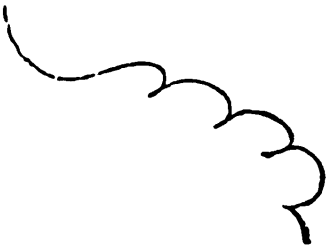


fig. 67.

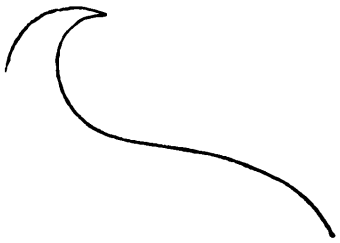


fig. 68.

fig. 69.

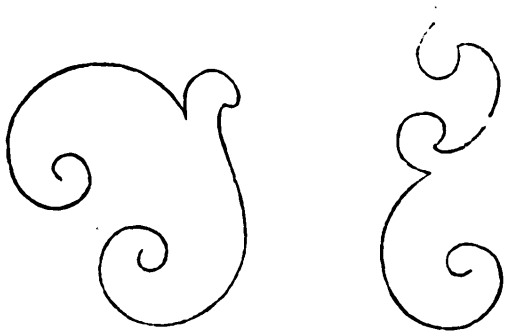


fig. 70.

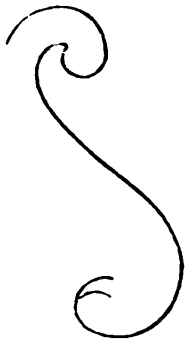


fig. 71.

Having mastered those various curves, the pupil is now prepared to attempt the delineation of finished examples. To aid him, however, in

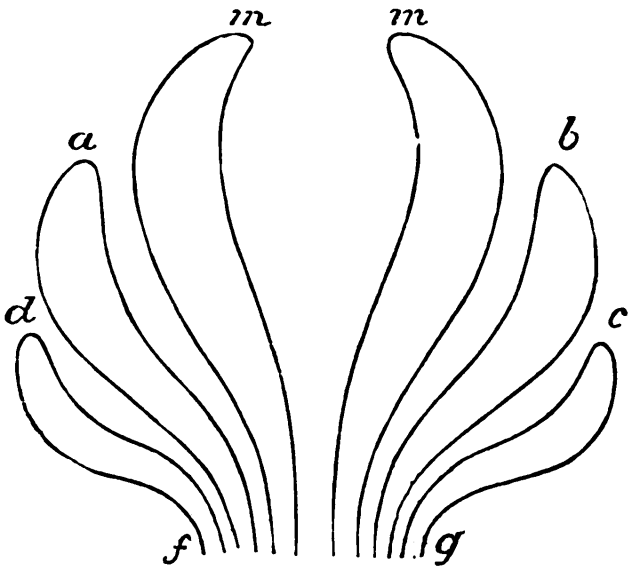


fig. 72.

this, we shall now and then add what we may call "analytical diagrams," by which the method of laying out the figures will be explained.

We give a sketch of the Grecian "honeysuckle ornament" in

EXAMPLE 44, fig. 72; the curved lines in fig. 53 will be found to be taken from this. The method of copying this will be seen by inspection of

EXAMPLE 45, fig. 73.

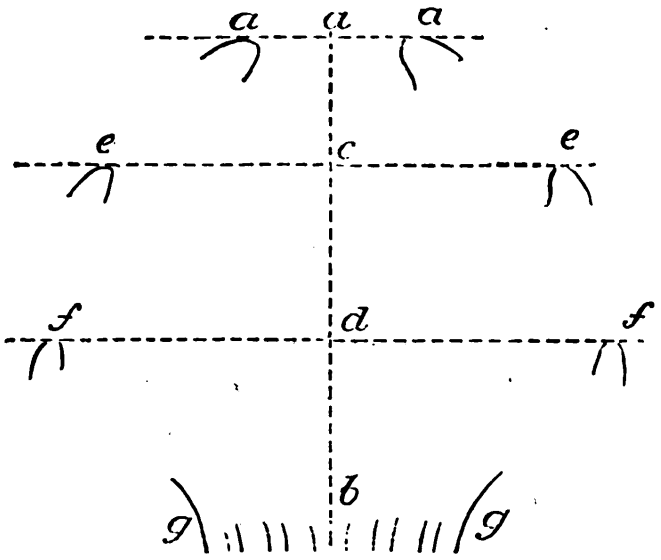


fig. 73.

The lines forming the lesson given in fig. 54 will be found to constitute part of

EXAMPLE 46, fig. 74.

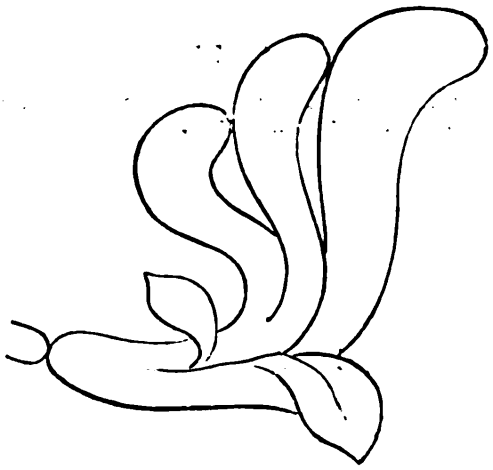


fig. 74.

The method of laying out

EXAMPLE 47, fig. 75, will be found in fig. 76.

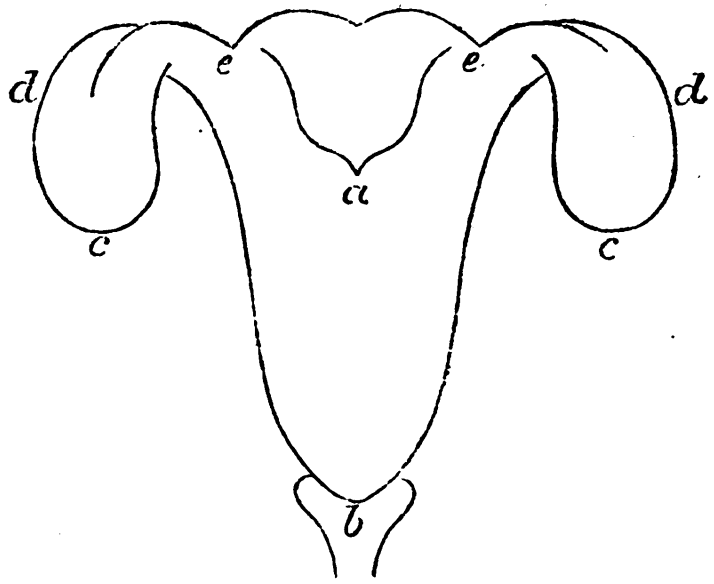


fig. 75.

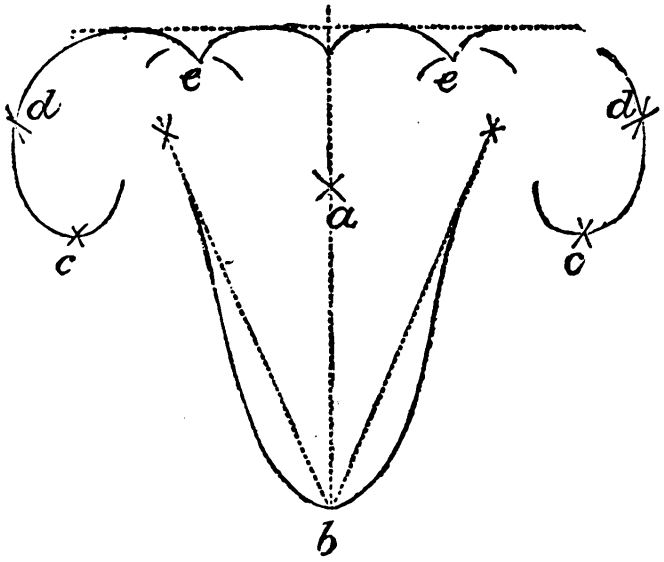


fig. 76.

EXAMPLE 48, fig. 77, may be copied by adopting the method explained in the diagram, fig. 78.

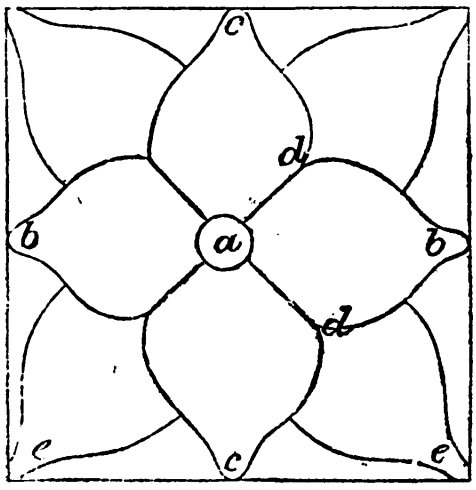


fig. 77

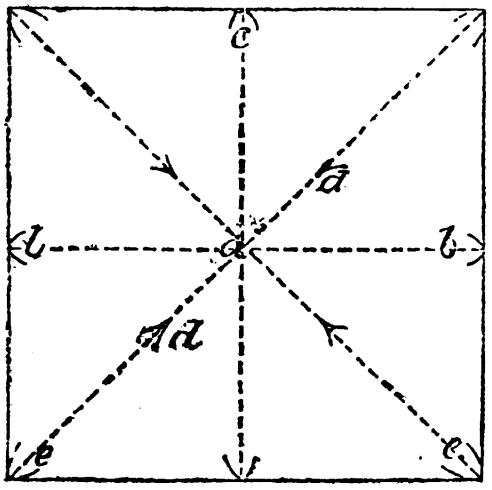


fig. 78.

EXAMPLE 49, fig. 79, may be copied by describing the circle, and thereafter drawing the two oblongs, as shown by the dotted lines.

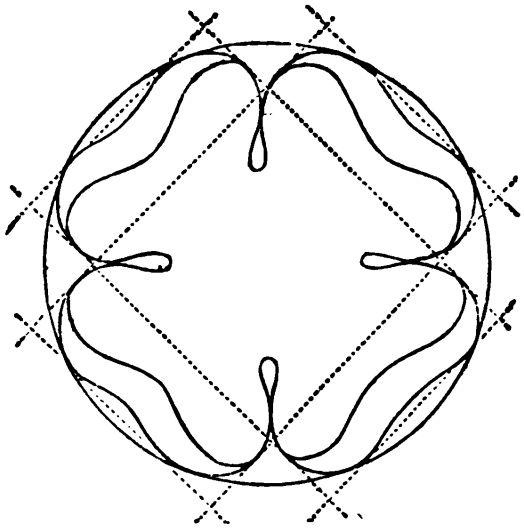


fig. 79.

EXAMPLE 50, fig. 80, is part of a "fluted scroll," being part of the ornamentation on the capital of the Ionic Pilaster, from Priene, in Asia.

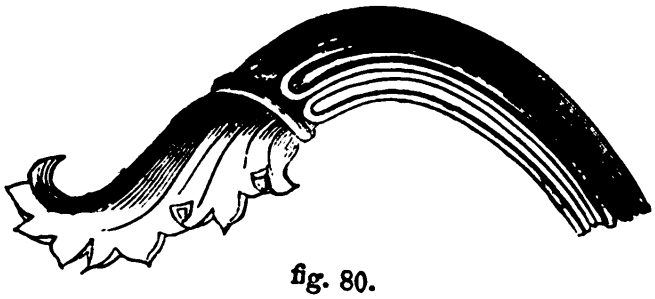


fig. 80.

The elementary lesson in fig. 60 will be found applicable to the delineation of this example.

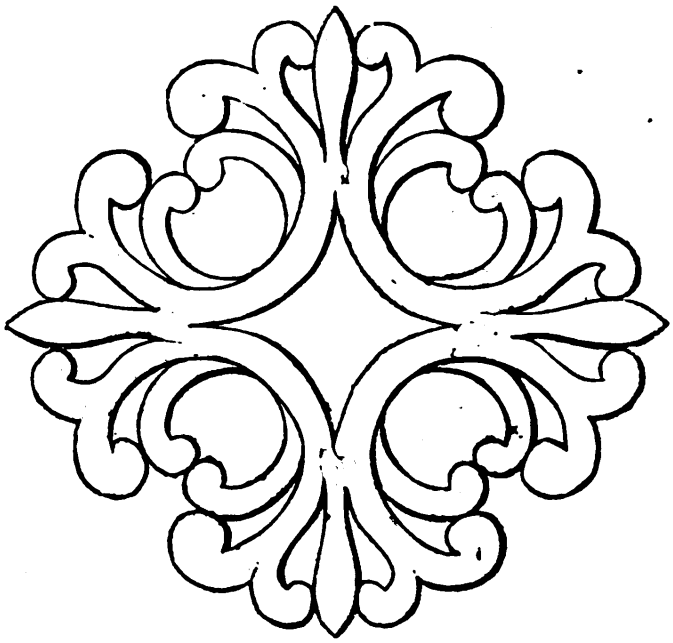


fig. 81.

EXAMPLE 51, fig. 81, is a drawing of a Gothic cross, in the "decorated style." The elementary lessons in figs. 63, 64, and 65 will be found to form part of this example. The elementary lessons in figs. 59 and 66 form part of the outline of the "scrolls" in

EXAMPLES 52, 53, figs. 82, 83. In like manner the lessons in figs. 67, 68, and 69 are applicable to the delineation of the scrolls in

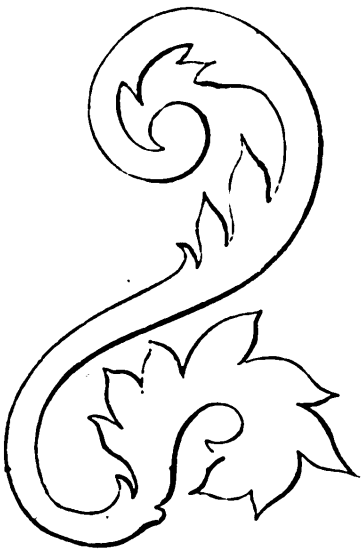


fig. 82.

fig. 83.

EXAMPLES 54, 55, figs. 84, 85; and those in figs. 70, 71, to the

fig. 84.

fig. 85.

EXAMPLES 56, 57, and 58, figs. 86, 87, and 88.

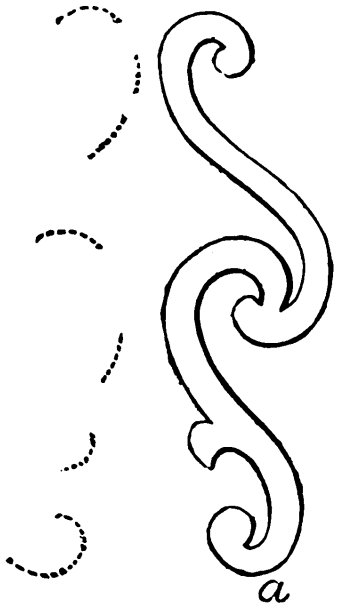


fig. 86.

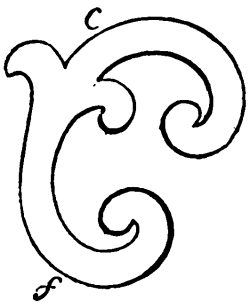


fig. 87.

fig. 88.

EXAMPLE 59, fig. 89. One half of an elegant scroll, well adapted for a wall-paper pattern, may be constructed as follows :—To the part *a*, fig.

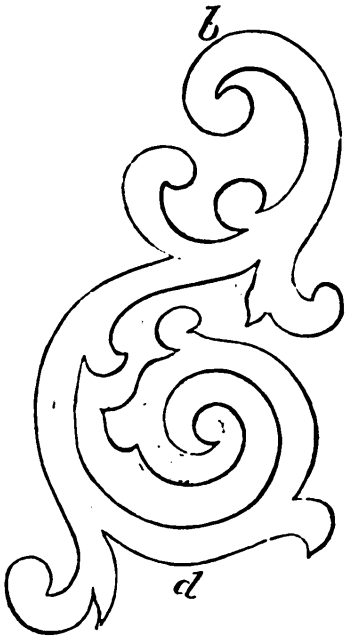


fig. 89.

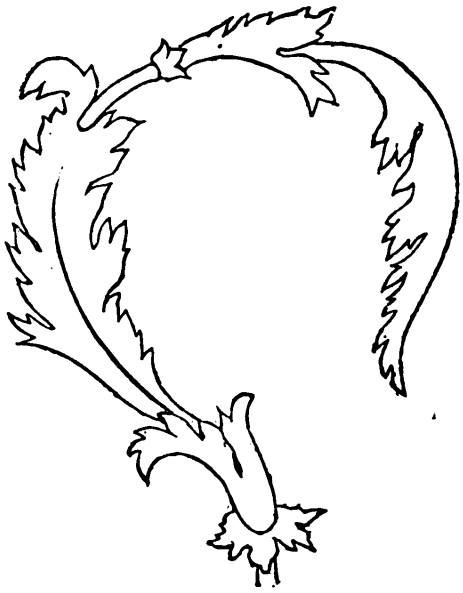


fig. 90.

86, join the part *b*, fig. 89 ; and to the part *d* of this figure join the part *c* of fig. 87 ; finish by joining the part *g*, fig. 88, with *f*, fig. 87.

EXAMPLE 60, fig. 90.

EXAMPLE 61, fig. 91. Fig. 92 shows one method of copying this.

EXAMPLE 62, fig. 93. Figs. 94, 95, show two methods of copying this.

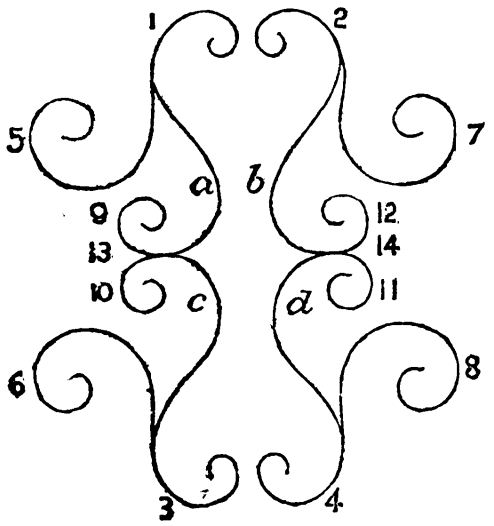


fig. 91.

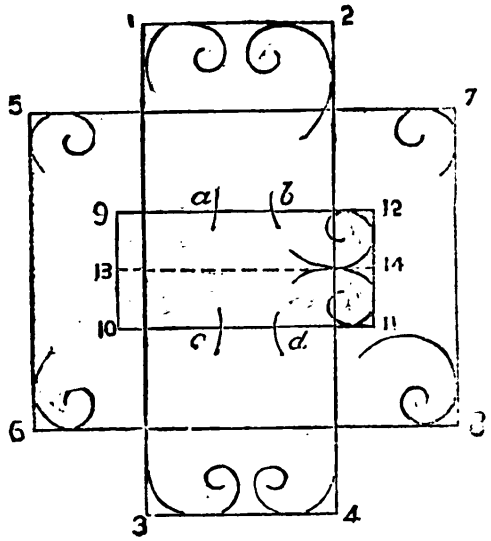


fig. 92.

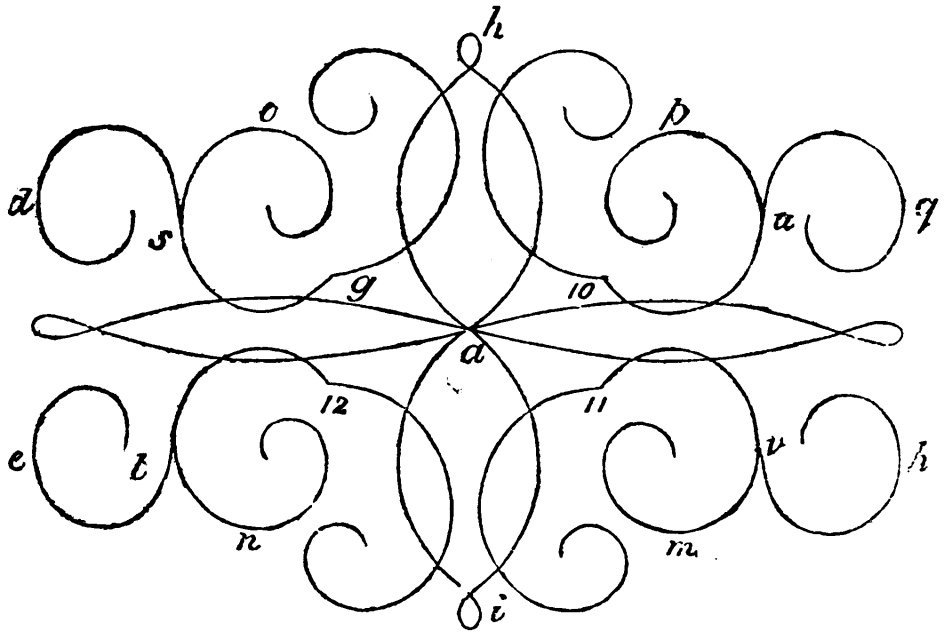


fig. 93.

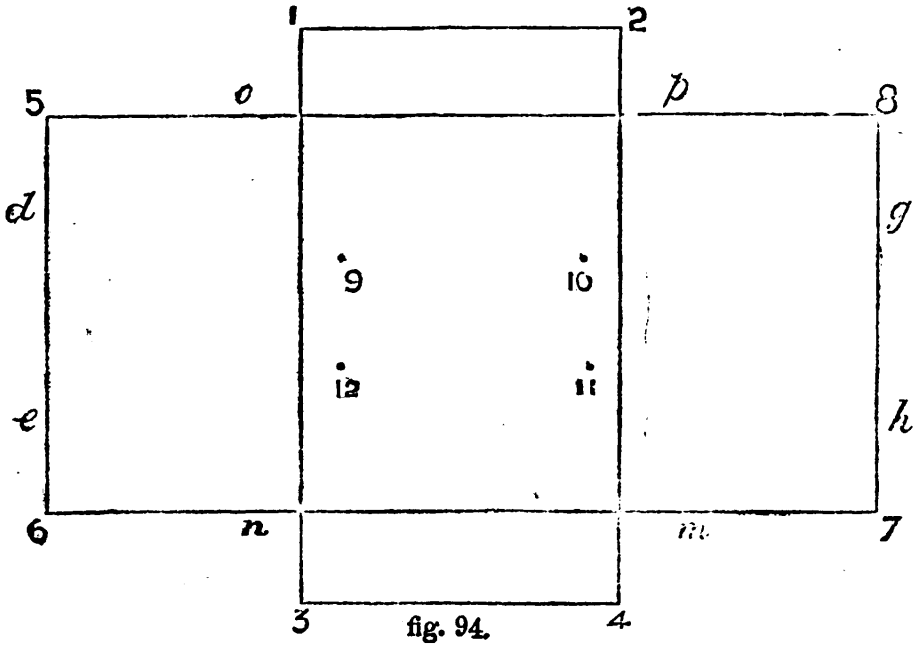


fig. 94.

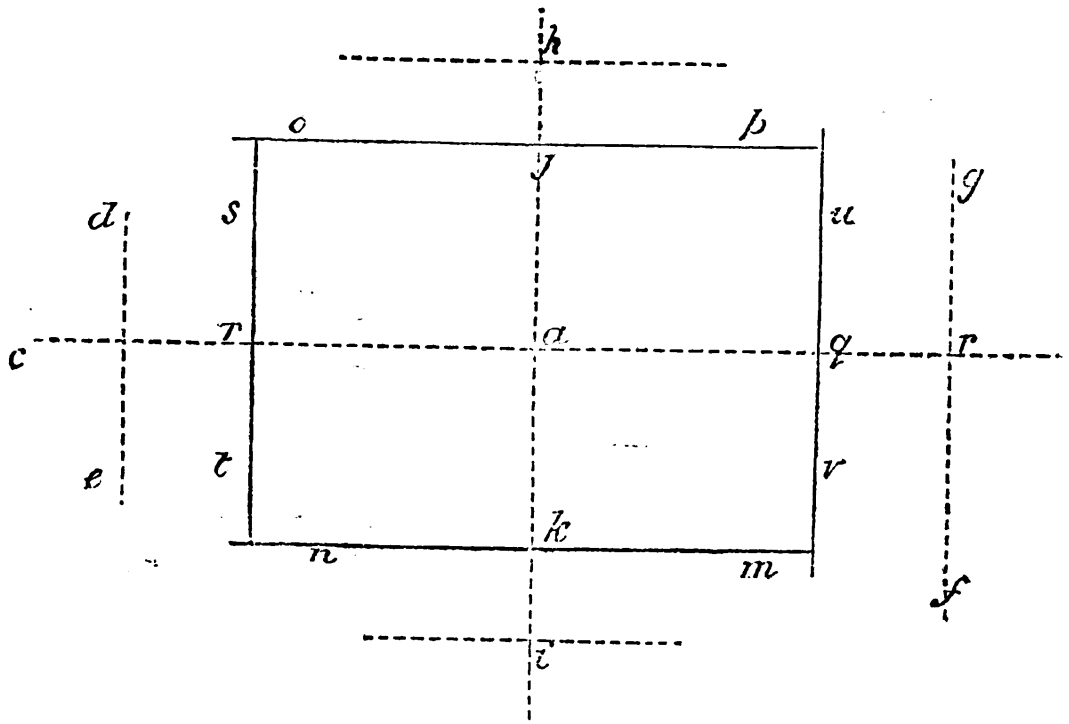


fig. 95.

EXAMPLE 63, figs. 96, 97, and 98, a portion of three scroll patterns, which the pupil should draw completely. In

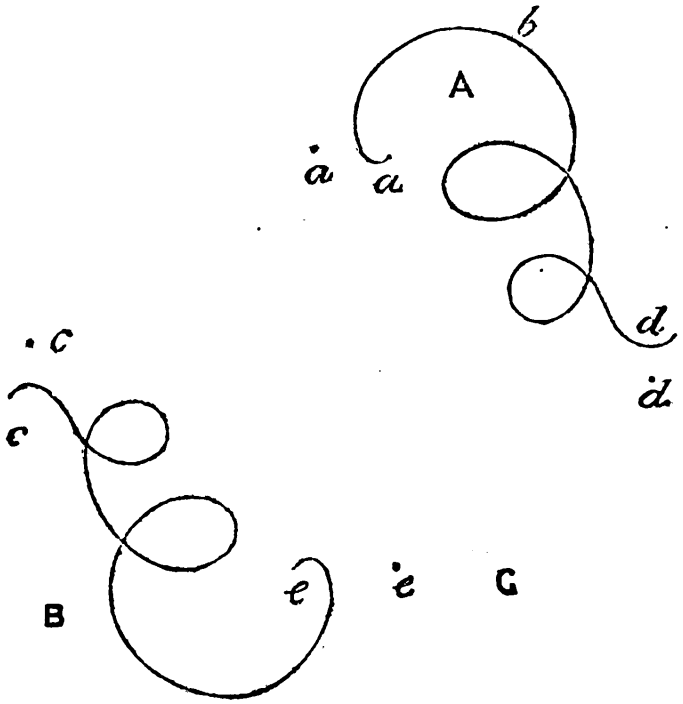


fig. 96.

EXAMPLES 64 to 68, figs. 99 to 103 inclusive, we give examples of ornamentation for filling up spaces, as squares, triangles, such as we give in Section I. In fig. 99, *a* is an ornament calculated to fill up a square

or circle; *b* for a square, and *c d* diamond or lozenge. In fig. 100 *a* and *b* are adapted for squares. In fig. 101, *a*, *b* for circles or hexagons. In

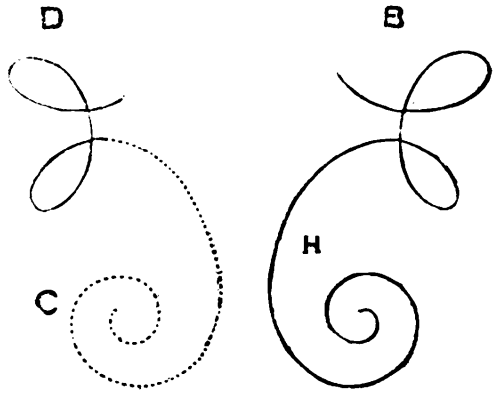


fig. 97.

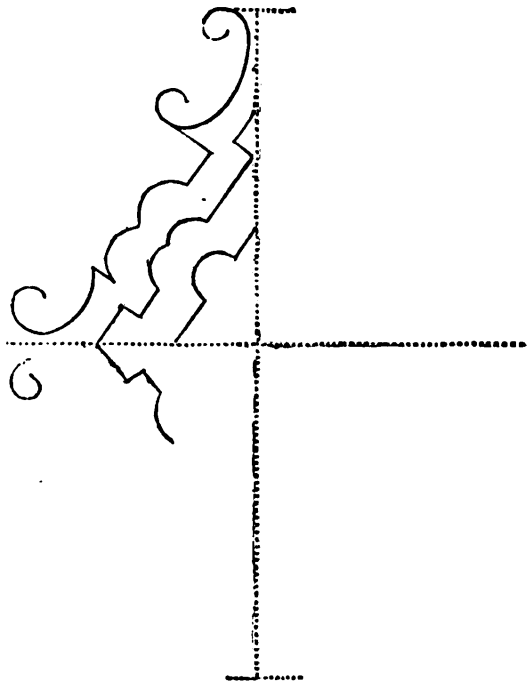


fig. 98.

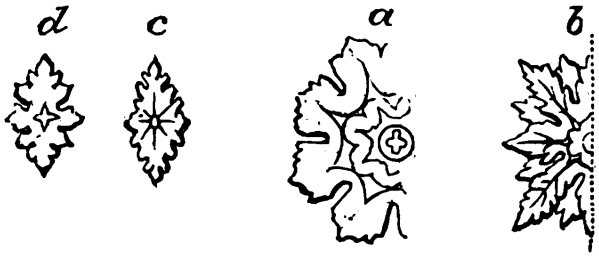


fig. 99.

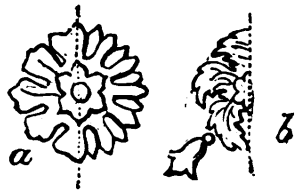


fig. 101.

fig. 102.

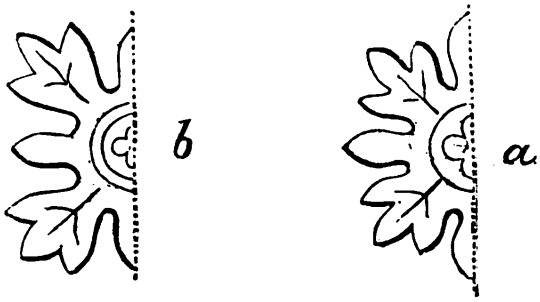


fig. 100.

fig. 103.

fig. 102 *a* is a corner-piece, *b* a triangle. In fig. 103 the ornament is adapted for an oblong, or rhomboid.

In designing combinations of lines, the pupil will do well to bear in mind the following remark by Mr. Owen Jones: "Harmony of form appears to consist in the proper balancing and contrast of the straight, the inclined, and the curved. * * * As in colour, there can be no perfect composition in which either of the three primary colours is wanting; so in form, whether structural or decorative, there can be no perfect composition in which either of the three primary figures is wanting, and the varieties and harmony in composition and design depend on the various predominance and subordination of the three."—*Guide to the Alhambra Court*, p. 36.

SECTION IV.

EXAMPLES OF ORNAMENTATION AS APPLIED TO TEXTILE FABRICS.

FIGS. 104 to 120 inclusive are examples of ornamentation applied to the decoration of printed fabrics, as calicoes, furniture-prints, dresses, &c., &c.

Figs. 121 to 129 inclusive are examples of ornamentation as applicable to "ribbon" decoration.

Figs. 130 to 133 to silk handkerchief decoration.

In figs. 134 to 137 inclusive we give examples of "book-cover" decoration; and in figs. 138 to 147 inclusive examples of "paper-hangings," of which figs. 139, 141, and 147 are known as "diaper" pattern, the design being repeated, and forming a series of diagonal squares.

Decorators or ornamentists are divided into two great classes, one of which advocates the strict following of "nature," in the adaptation of her own graceful and varying forms, to the purposes of decoration; while the other repudiates this strict adherence, and advocates the necessity of *conventionalising* them before applying them to decoration. Thus, Mr. Owen Jones, whom we may here name as an able exponent of the latter school, lays down the following canon:—"Flowers or other natural objects should not be used as ornament, but conventional representations founded upon them, sufficiently suggestive to convey the intended image to the mind, without destroying the unity of the object they are employed to decorate." At a meeting of the Society of Arts, in lecturing on Decorative Arts, Mr. Jones brought forward historical proof to show that as civilisation progressed conventional representations were always used; and as art declined, a nearer approach to nature was attempted, and, as he conceived, "with very bad results." In passing in review the works of the wall decorator, the paper stainer, the calico printer, the weaver, and the potter, "he dwelt forcibly on the impropriety of the present fashion of covering carpets, paper-hangings, furniture-prints, &c., with representations of natural flowers, which were always placed in false positions, appearing in relief where flatness was most essential," deducing from his remarks the inference that "all this was having a most degrading influence on the taste of the present day." On the other hand, the "natural school" does not want as able and eloquent advocates as that of the "conventional;" of these we propose to quote Mr. Ruskin, the well-known and able writer on architecture and the fine arts. At a recent meeting of the Society of Arts a paper was read by Mr. George Wallis, head master of the Birmingham School of Art, on "Recent Progress in Design as applied to Manufactures." In the course of this paper Mr. Wallis took the "conventional" idea with relation to the employment of natural forms for the decoration of carpets, &c. He thus remarked:—"Some progress has been made even in carpet designs, which, a few years ago, appeared to be hopelessly abandoned to one inces-

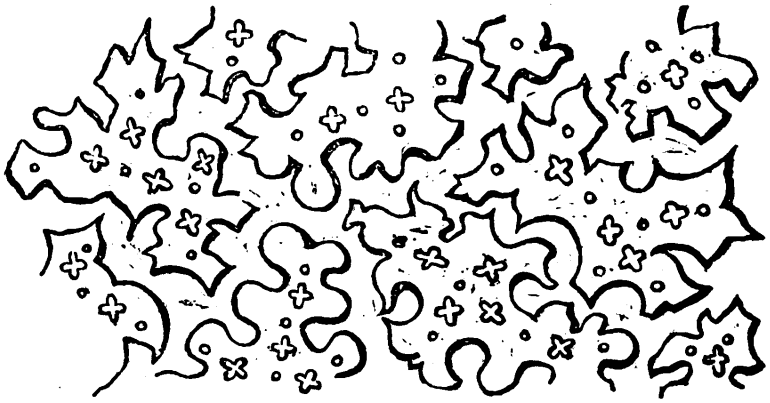


fig. 104.

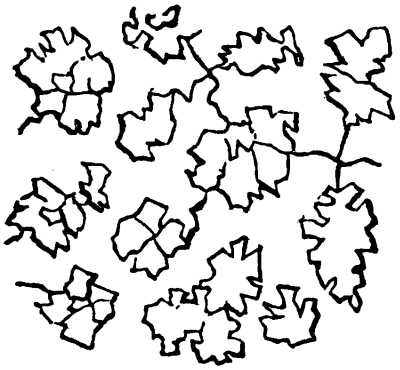


fig. 105.

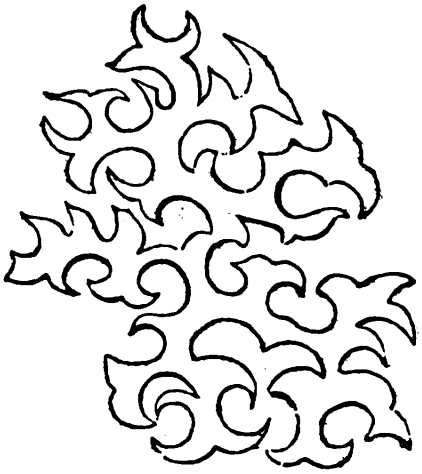


fig. 106.

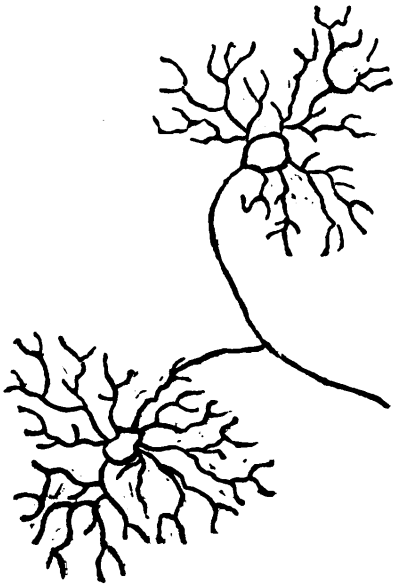


fig. 107.

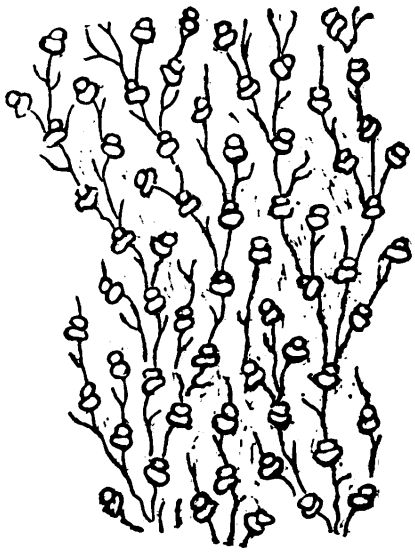


fig. 108.

sant ringing of the changes upon artistic pitfalls, man-traps, and floral stumbling-blocks, in velvet pile and fabrics in wool. A manufacturer, as also a few dealers, seem to have arrived at that point, inasmuch as a carpet is a covering for a floor, it ought to look like a floor—that is, a surface to walk upon; that a carpet is not the only article in the room; that its lines and colours ought rather to be subordinate to the more prominent pieces of furniture, than to challenge attention by the brilliancy of its hues in masses, or the tortuosity of its lines in the boundary of its forms. A conviction, too, has arisen that forms in projection are inconsistent with the position of the surface upon which they are represented; and that even granting that flowers tastefully arranged and judiciously treated are not unsuitable objects for the decoration of a carpet, yet there is no reason why the flower-basket should be represented too. The statement that floral designs in carpets are still preferred by the customers, and that the ladies themselves, in spite of the best garniture designs, insist upon roses done in wool, is a fair argument enough in its commercial application, but in an artistic sense only proves that the people lack a knowledge of principles by which to test these things." Mr. Ruskin, in the discussion which followed upon the reading of the paper, stated that he could not, as Mr. Wallis did, blame the ladies "for promoting a base manufacture of carpets, admitting the complete imitation of flowers," chiefly, as he remarked, "because he knew a most respectable and long-established firm engaged in carpet manufacture on an extensive scale, which conducted its business on the principle Mr. Wallis opposed. He referred to the firms whose head partners, the months of April and May, supplied a large part of the world with green carpets, in which floral design was largely introduced, and he believed generally to the satisfaction of the public. Nor could he see, since the first thing we usually did to make the ground fit to be walked upon by any festive procession, was always to strew flowers upon it, why we should refuse to have flowers on our carpets, lest we should stumble over them, any more than we should refuse to have pictures on our walls, lest we should knock our heads through them." * * * * * * While accepting of Mr. Wallis's principles that "the *material* and the *use* of the object to be produced should be first consulted," and holding, also, that "no art production was right unless first of all serviceable for its proper purpose," Mr. Ruskin pleaded, "beyond this, for the direction of the mind of the workman straight to nature, whenever he had to introduce ornament at all. All the true nobleness of art had come from people loving nature, in some way or another expressing their sentiments about nature; and exactly in proportion as the reference to nature became more direct, the art became nobler."

The following remarks by Mr. Redgrave, R.A., will afford some suggestive hints in connection with the peculiarities of the two schools of ornamentation we have already, under other names, referred to:—

"Ornamentists may fairly be divided into two classes: the traditional, who superstitiously reverence the remains of past ages, and are wedded in practice to existing styles; and those who despise the past, and feel themselves at liberty to adopt from the abundant sources of nature a mode and manner for themselves, without regard to the works of their

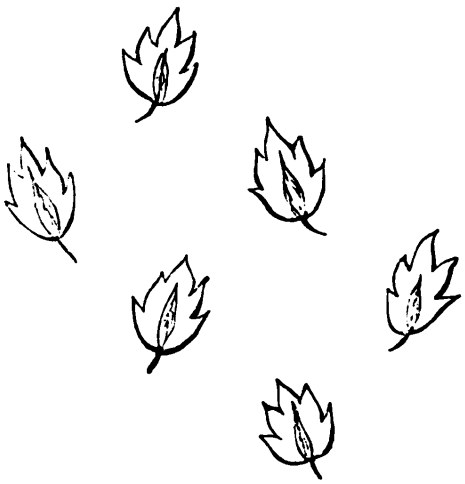


fig. 109.

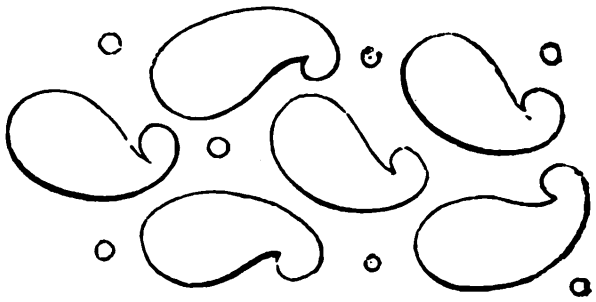


fig. 110.

fig. 111.

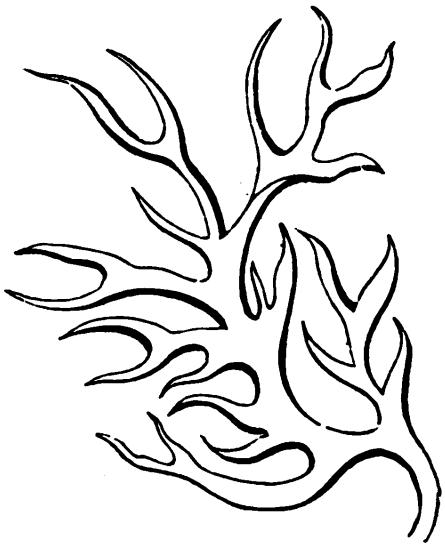


fig. 112.

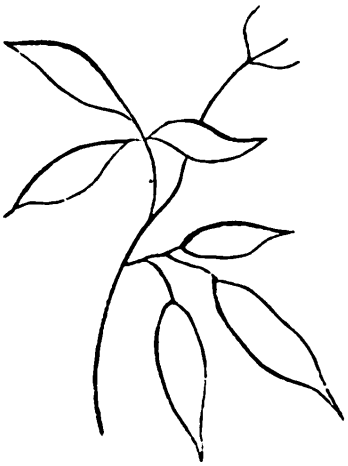


fig. 113.

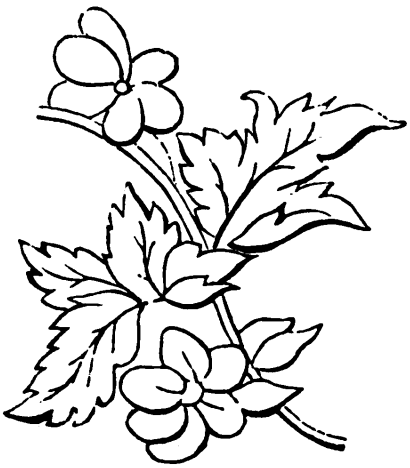


fig. 114.

predecessors. The first class simply seek to follow where precedent leads them, and to be able to claim the sanction of authority for their works. These, even when taste duly regulates their choice, are men of limited

fig. 115.

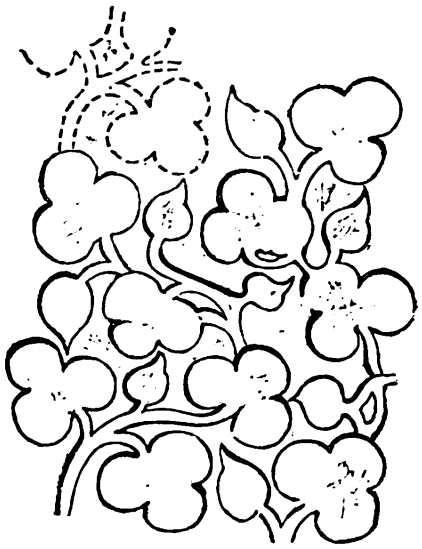


fig. 116.

ideas and small progress. Those of the second class, who pay no deference to authority—who think that ornament is governed by no laws, and who see no principles by which they are to be guided, are little

fig. 117.

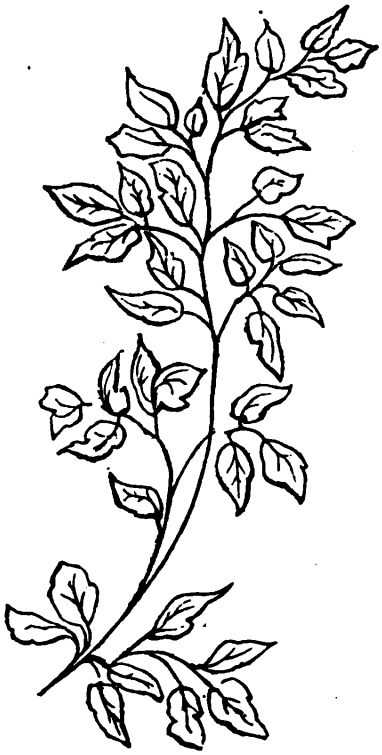


fig. 118.

likely to raise the art to the level of past times, and, still less, to advance its aim and widen its scope. The true ornamentist would seem to be one who seeks out the *principles* on which the bygone artists worked, and

the rules by which they arrived at excellence; and, discarding mere imitation and reproduction of details, endeavours, by the application of new ideas and new matter, on *principles* which he believes to be sound, or which time and the assent of other minds has approved to be fundamental, to attain originality through fitness and truth. The antiquarian ornamentist, however, will always have a certain reputation, and justly, if he has the taste to select what is best from the great masters of past times. In any case the critic must be bold who speaks against the authority of the fathers of the art; and praise is safe when great names are on the side of the critic. From this class of ornamentists we may at least demand purity of style, that marked eras should be kept distinct, and that the adopted ornament should be fitly applied to fabrics or manufactures of the like nature, and, as far as possible, for the like uses, as those for which the ornament was first designed.

"From the labours of the second class of ornamentists, united to that constant search after novelty, at any sacrifice of true taste, for which manufacturers are so constantly urgent, there has arisen a new species of ornament of the most objectionable kind, which it is desirable at once to deprecate, on account of its complete departure from just taste and true principles. This may be called the *natural* or merely imitative style, and it is seen in its worst development in some of the articles of form. Thus, we have metal *imitations* of plants and flowers, with an attempt to make them a strict resemblance, forgetting that natural objects are rendered into ornament by subordinating the details to the general idea, and that the endeavour ought to be to seize the simplest expression of a thing rather than to imitate it. This is the case with fine art also: in its highest effort mere imitation is an error and an impertinence, and true ornamental art is even more opposed to the merely imitative treatment now so largely adopted. Let any one examine floral or foliated ornament produced in metal by electrotyping the natural object, whereby every venation and striation of the plant is reproduced, and compare it with a well and simply modelled treatment, where only the general features of the form are given, and all the minutest details purposely omitted; and if this latter has been done with a true sense of the characteristics of the plant, the meanness and littleness of the one mode will be perfectly evident, compared with the larger manner of the other. But this imitative style is carried much further: ormolu stems and leaves bear porcelain flowers painted to imitate nature, and candles are made to rise out of tulips and China-asters, while gas jets gush forth from opal arums. Stems, bearing flowers for various uses, arise from groups of metal leaves, standing tiptoe on their points, and every constructive truth, and just adaptation to use, is disregarded for a senseless imitative naturalism. In the same way, and doubtless supported by great authority, past and present, enormous wreaths of flowers, fish, game, fruits, &c., imitated *à merveille*, dangle round sideboards, beds, and picture-frames. Glass is tortured out of its true quality to make it into the cup of a lily or an anemone; not that we may be supposed to drink nectar from the flower, but that novelty may catch those for whom good taste is not piquant enough, and chaste forms not sufficiently showy. In fabrics where flatness would seem most essential, this imitative treatment is

fig. 119.

fig. 119 *a*.

fig. 120.

often carried to the greatest excess; and carpets are ornamented with water-lilies floating on their natural bed, with fruits and flowers poured forth in overwhelming abundance in all the glory of their shades and hues; or we are startled by a lion at our hearth, or a leopard on our rug, his spotted coat imitated even to its relief as well as to its colour; while palm trees and landscapes are used as the ornaments of muslin curtains. Though far from saying that imitative ornament is not sometimes allowable, still it will at once be felt that the manner wants a determined regulation to exclude it in most of the above-mentioned cases from all works aspiring to be considered in just taste, and to leave it to be adopted by those only who think novelty better than chaste design, and show preferable to truth."—*Jury Report of the Great Exhibition*, p. 710. *Supplementary Report on Design, by Richard Redgrave, R.A.*

In reviewing the various opinions as to what constitutes propriety in decorative art—a few only out of the many being given here—one cannot but regret that such diversity of opinion should exist in such an import-

fig. 121.

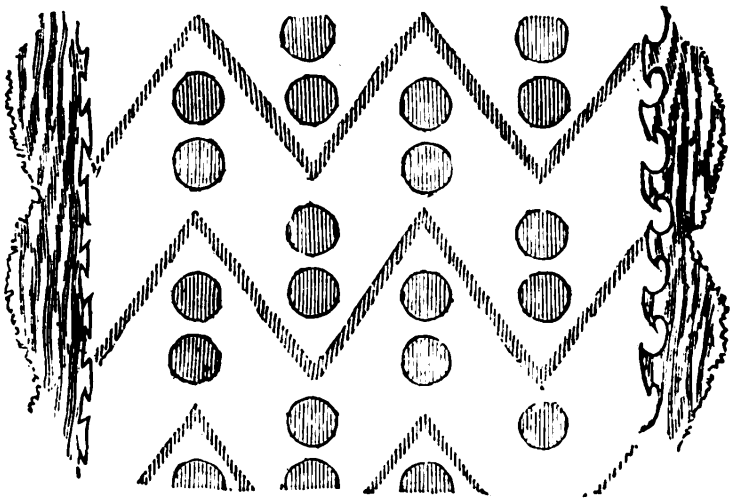


fig. 122.

ant matter, and that some definite canons or rules could not be laid down for the guidance of parties interested. Such an unsettled state of matters cannot but exercise a most prejudicial influence on the mind of the young artist. In endeavouring to obtain a knowledge of the principles of "design," he consults various authorities, and the more he reads the more is he perplexed to find that there are no settled principles to guide him, but that each theorist and practitioner inculcates his own peculiar views; some of them—fortunately of this class there are few examples—dealing in vague assertion and unmeaning illustration, more anxious to prove their own views right than to aid the progress of art. In view of the importance of the subject, and the commercial interests involved, the time seems approaching when it will be necessary to endeavour to get, in the words of Mr. Ruskin, "all men of dignity and standing in the arts to meet and settle a few principles, and make them the goals of art in all schools of design." Such a proceeding would be of "incalculable advantage." Artists "had to fulfil," says the same authority, "the

duty of imparting a true taste in design, not only to the producer but also to the consumer; but this duty could never be properly performed until all were agreed upon some principles which should form a basis." On this point the remarks of Mr. Redgrave are worthy of all attention. "We ought," he says, "to be very modest in selecting what are principles; our only way was to try and collect from the choice works of the best periods and masters, and the writings of those who had deeply studied them, a code of laws or principles as a standard to which we could refer. Mr. Wallis had asserted that there was an improvement in the general taste of art applied to manufacture, this, of course, was only the assertion of one individual, *but if there were any code of laws and rules* by which to judge of this improvement, it became no longer a mere assertion; and *we should soon be able to decide whether there was really an advance or not until some such standard was established.* They had arrived at one or two tests this evening, in which all seemed agreed—the test, namely, that *utility was the first object to be considered;* they then went on to the *proper use of materials*, and they thus obtained another true principle which could go towards arriving at some code of rules, or some standard, by which they could tell whether any advance in art, as applied to manufactures, had been made or not; and, *thirdly*, they had determined that there was a *degree of subordination in the various objects ornamented, by which we were to give to one more prominent decoration than to another.* As those rules became established in men's minds, at least some criterion as to advance or retrogression would be arrived at, and he hoped this was advanced by the discussion that had taken place." —*Journal of the Society of Arts*, March 14th, 1856, p. 300.

As to this fitness or adaptability of ornament to various purposes, Mr. Dyce has the following very suggestive remarks—(See *Journal of Design*, No. 3, p. 91):—

"The question is not simply whether such and such specimens of ornament are in themselves beautiful, but whether, being so, they are adapted to particular purposes. I do not mean whether they can be executed by some particular process of manufacture, for that is another question to which I shall afterwards refer; but whether, supposing they could be executed, they are, as ornaments, suited to particular *uses, situations*, or *fabrics.* We can hardly, indeed, over-estimate the importance and necessity of study of this kind. I myself am thoroughly persuaded that if we take a candid and unprejudiced view of the sort of decoration which is appropriate in every case—that is to say, if, unbiassed by custom, by precedent, or by the authority of great names, we were rigidly to determine what kind of ornament best fulfilled the conditions which ought to be had regard to in every instance, we should never fall into any great mistake.

"Let me illustrate this by an example or two. A landscape with figures is in itself an agreeable object, and may, as we know, be employed ornamentally with considerable effect. But would it form an appropriate decoration for a floor or pavement, if executed, say, in mosaic? Obviously not. It is plain that in the case of a floor or pavement (and the same rule applies to carpets, floorcloths, and other coverings of floors), the primary idea to be conveyed is that of uniform flat-

ness and solidity. If this idea is not preserved, it seems to me to matter little what the decorations are; whatever their excellence in point of art, however elevated in sentiment, they are out of place, the effect they produce must be unnatural and disagreeable. In such a case as this, then, we have to consider what sort of design is best fitted to comply

fig. 123.

fig. 124.

fig. 125.

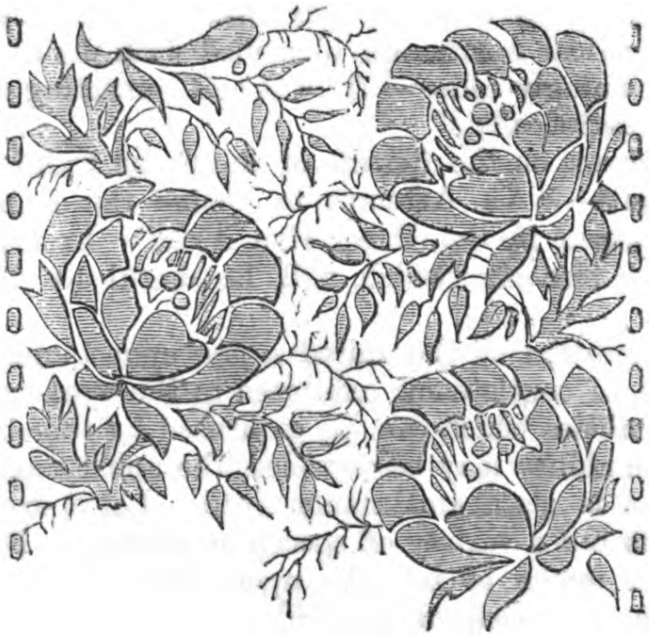


fig. 126.

with the necessary conditions. If we find that the notion of flatness cannot be preserved without a regular repetition of ornamental forms at certain intervals, such repetition becomes a rule or framework by which the pattern or design is to be confined. * * * * *

"Or to take the instance of the walls of a room. If it be necessary

to preserve throughout the idea of uniform flatness and solidity, the same treatment must be had recourse to as in the case of a floor or pavement. But, as in architectural structures, a wall *may be* pierced by as many openings as are consistent with its stability, so, in planning the decorations of a wall, we are at liberty to *suppose* as many openings in it as are consistent with the sentiment of stability. * * * *

"In taking this practical view of the matter, you will perceive that I at once dismiss the crude and hazy notion that, as a general rule, flowers and all other objects must undergo a *conventionalising* process before they can be employed as a matter of ornament. I at once get rid of any attempt to define generally the extent to which truth of resemblance to natural objects is admissible in ornament. There is no general rule. Each case must be considered by itself. Show me the instance in which the ornament is to be applied, tell me the process by which it is to be executed, and I will then say whether and how far it is consistent with common sense to employ the resources of artistic imitation. In practice the only safe rule I know of is, that the means be strictly adapted to the end. If it be necessary in any case to preserve the idea of flatness and surface, it is certain that the very worst way of doing this would be to cover the surface with a kind of imitative art which implied the absence of surface altogether. Or, again, if we had to decorate the surface of some fabric which, when used, would always be hung in folds, it is obvious that those forms of ornament would be most appropriate which suffer least when bent or twisted by the folding of the cloth. Or, again, if our object were to impart a certain gauze-like or semi-transparent effect to fabrics such as those used for ladies' dresses, does not the usual expedient suggest itself of having, as it were, two levels for the ornaments, one consisting of geometrical forms and identified with the surface of the cloth, the other seemingly relieved from it and consisting of objects—say flowers—imitated artistically?"

One of the "Course of Lectures on the Results of the Great Exhibition" was—by Mr. Digby Wyatt—"An Attempt to Define the Principles which should determine Form in the Decorative Arts." In this Mr. Wyatt gave the following remarks, which will be useful to the young decorator:—

"When we turn to a consideration of the united action upon human design of the general principles of consistency, exhibited in the works of Nature, we find that of all qualities which can be expressed by the objects upon which our executive ability may be occupied, the noblest and most universally to be aimed at is plain and manly truth. Let it ever be borne in mind that design is but a variety of speech or writing. By means of design we inscribe or ought to inscribe, upon every object of which we determine the form, all essential particulars concerning its material, its method of construction, and its uses; by varying ornaments and by peculiar styles of conventional treatment, we know that we shall excite certain trains of thought and certain associations of ideas. The highest property of design is that it speaks the universal language of nature, which all can read. If, therefore, men be found to systematically deceive—by too direct an imitation of nature, pretending to be nature—by using one material in the peculiar style of conventionality universally

fig. 127.

fig. 128.

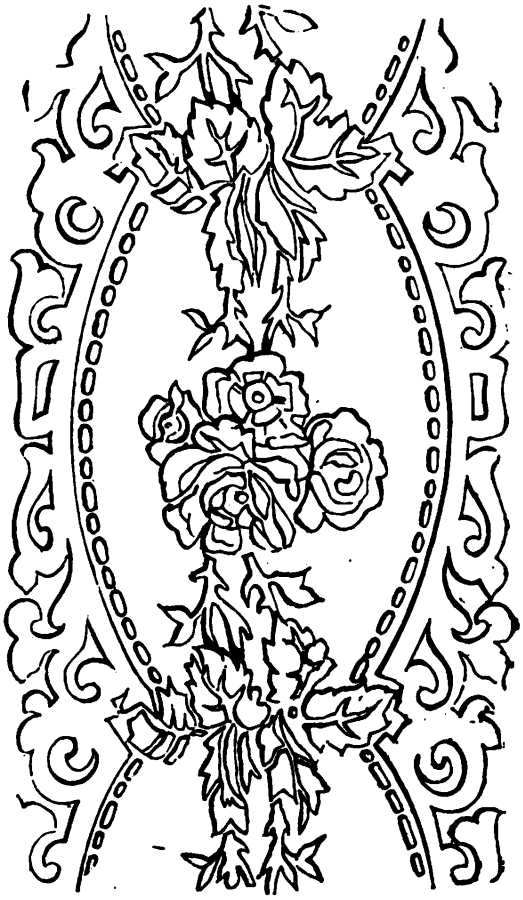


fig. 129.

fig. 130.

fig. 132.

fig. 131.

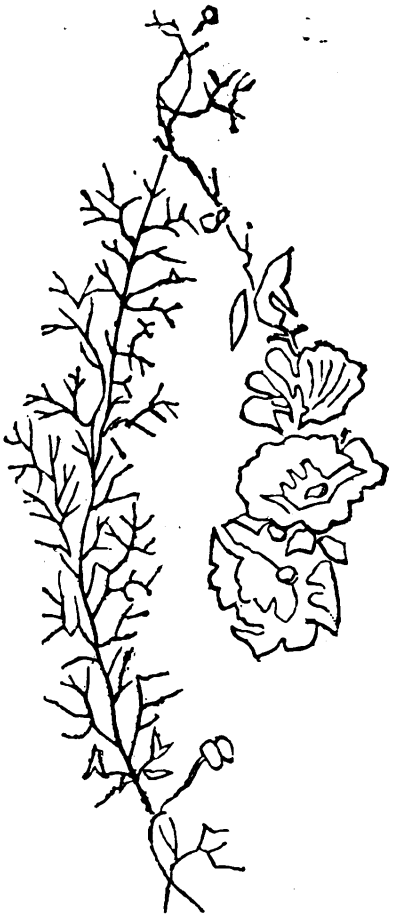


fig. 133.

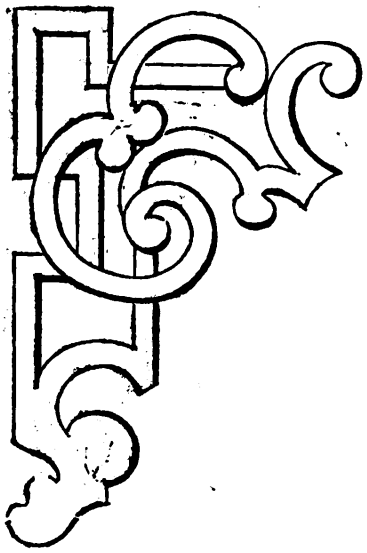


fig. 134.

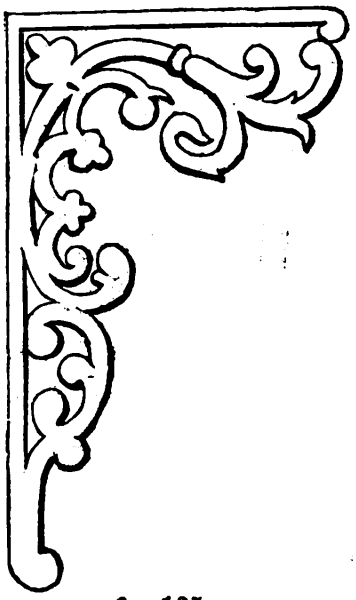


fig. 135.

recognised as incident to another—by borrowing ornaments expressive of lofty associations, and applying them to mean objects—by hiding the

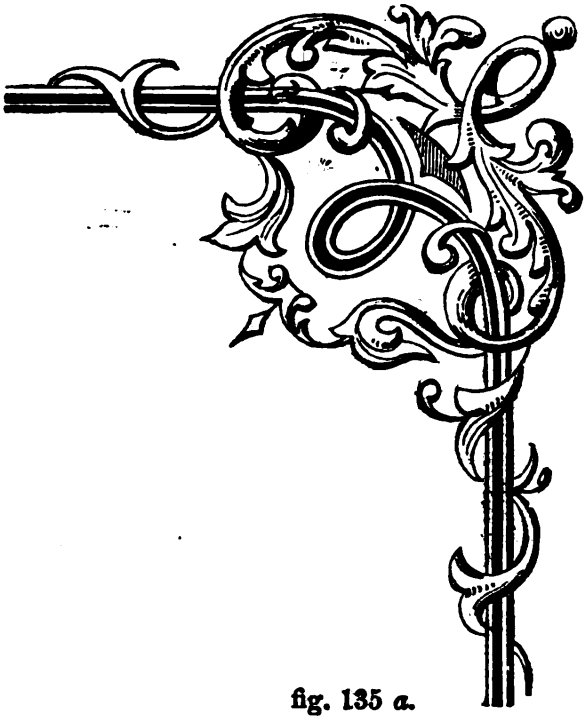


fig. 135 *a*.

fig. 136.

structural purpose of the article, and sanctioning, by a borrowed form, the presumption that it may have been made for a totally different

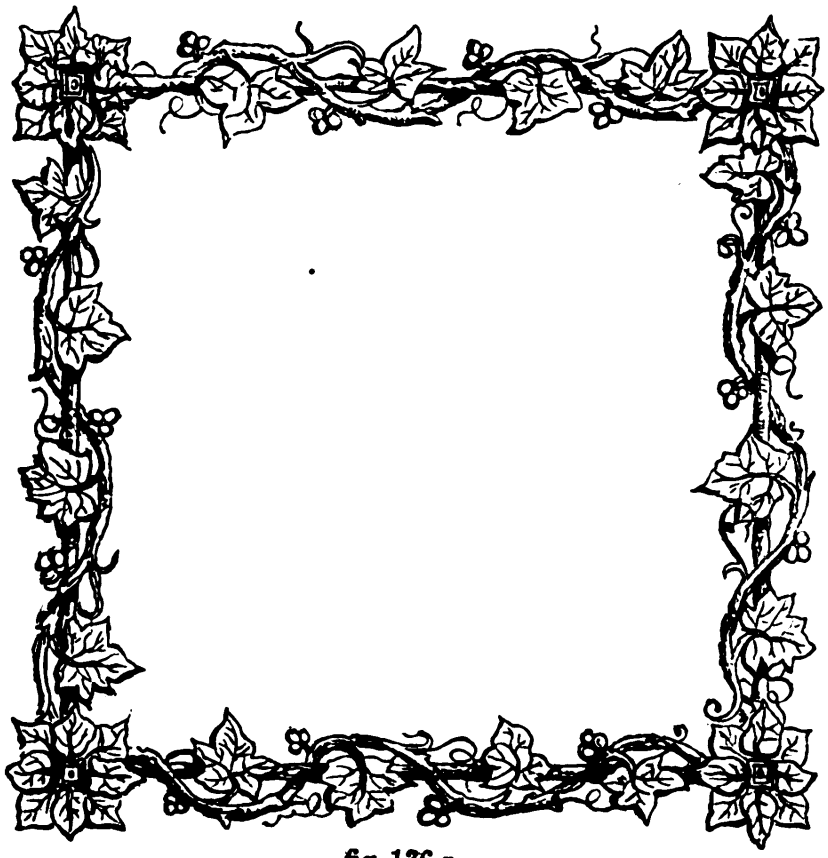


fig. 136 *a*.

object, or in a perfectly different way,—such men cannot clear themselves from the charge of degrading art by systematic misrepresentation, as they

would lower human nature by writing or speaking a falsehood. Unfortunately, temptations to such perversions of truth surround the growing designer. The debilitating effects of nearly a century's incessant copying, without discrimination, appropriating without compunction, and falsifying without blushing, still bind our powers in a vicious circle, from which we have hardly yet strength to burst the spell. Some extraordinary stimu-

fig. 137.

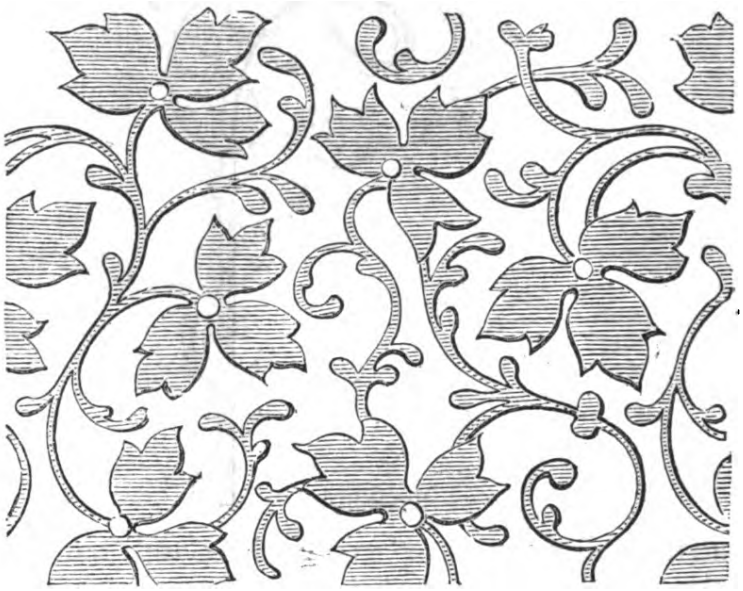


fig. 138.

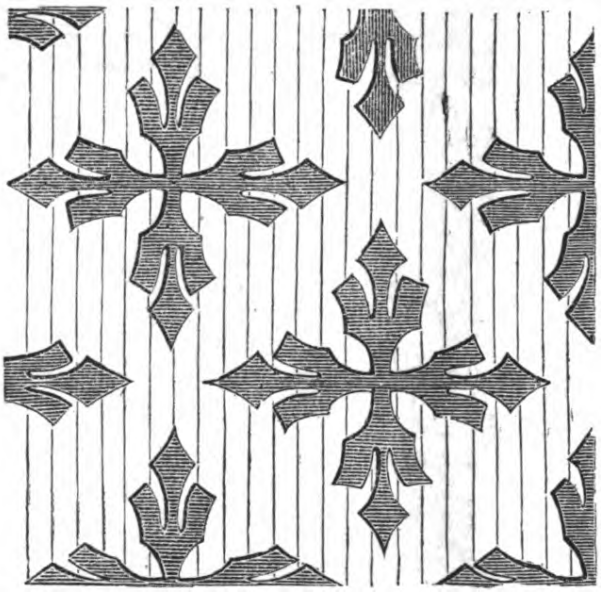


fig. 139.

lant could alone awaken all our energies, and that stimulant came—it may not, perhaps, be impious to esteem providentially—in the form of the Great and glorious Exhibition. It was but natural that we should be startled when we found that in consistency of design in industrial art, those we had been too apt to regard as almost savages, were infinitely our superiors. Men's minds are now earnestly directed to the subject of

restoring to symmetry all that had sunk to disorder. The conventionalities of form peculiar to every class of object, to every kind of material,

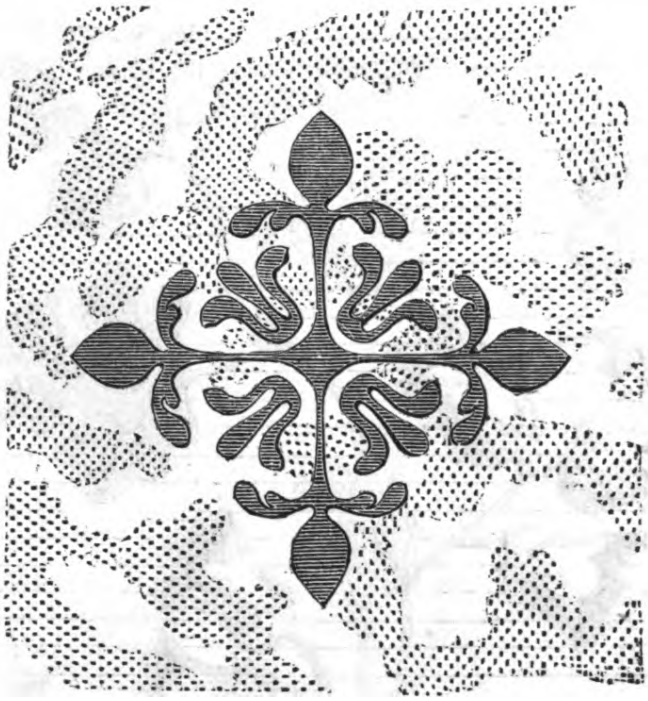


fig. 140.

to every process of manufacture, are now beginning to be ardently studied; and instead of that vague system of instruction by which pupils

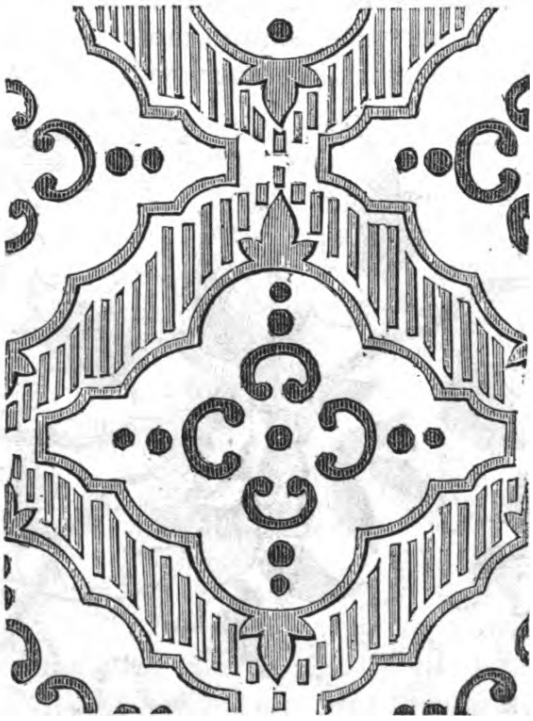


fig. 141.

were taught, that anything that was pretty in one shape was equally pretty in another, a more correct recognition of the claims of the

various branches of special design, and the necessity of a far closer identification of the artist with the manufacturer, in point of technical know-

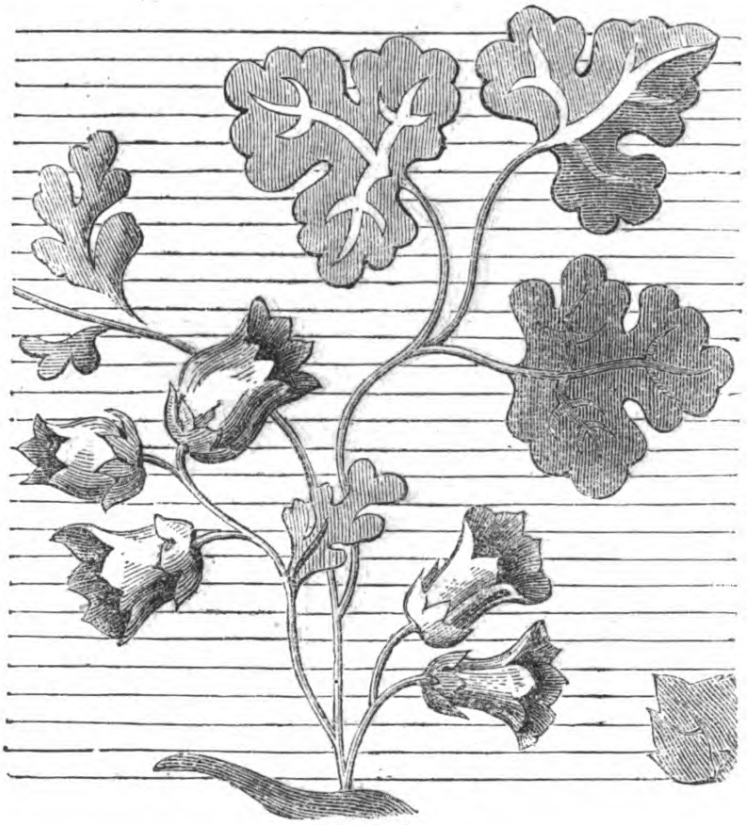


fig. 142.

ledge, have been gradually stealing upwards in public estimation. Let us hope that success will crown exertion, and that in time the system of design universally adopted in this country will offer a happy coincidence

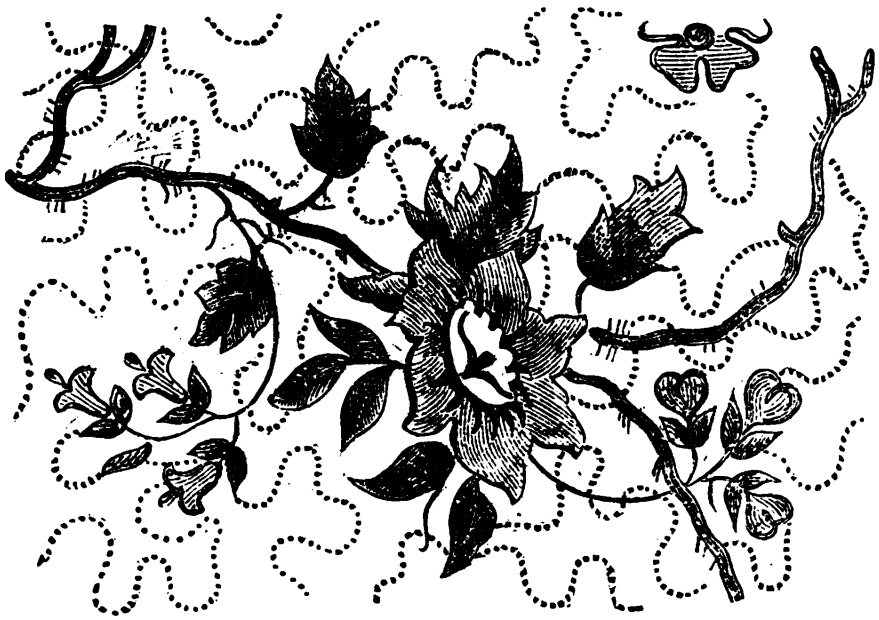


fig. 143.

with those lofty principles by means of which the seals of truth and beauty are stamped on every emanation from the creative skill of Divinity."

As a series of admirably practical hints, in connection with the

various branches of decorative design as applied to manufactures, we take the liberty to append to this section a few extracts from the "Supplementary Report on Design," by Richard Redgrave, R.A., given in the *Jury Report*—a paper or essay which, from its practical and interesting nature, we should like to see reprinted in a cheap and easily accessible form. We shall give our extracts under the heading of the article of manufacture to which they refer.

fig. 144.

GARMENT FABRICS.

"The great sources of error in designing for garment fabrics, are over ornamentation, and attracting undue attention to the ornament, which may arise from many causes; thus from the violence of contrast either of light and dark, from over charging the colour, or from the ornament being too large for the fabric. * * * Generally speaking, however, ornament for such fabrics should consist of small, rather than of large forms; should be heated flatly, and without light and shade, and inclined to subdued con-

trasts of colour and of light and dark. A geometrical, rather than a dispersed (by dispersed is meant the attempt to distribute the pattern over the ground, without any apparent arrangement) arrangement of the forms, however, would be found the most agreeable to the eye, and the most consistent with sound principles; some of the best patterns being formed by *diapering* sprigs, leaves, flowers, or even simple geometrical forms regularly over the ground."—p. 742. * * * * *

"In designing for garment fabrics, it will generally be found that the simplest patterns are in the best taste. * * * It has before been said,

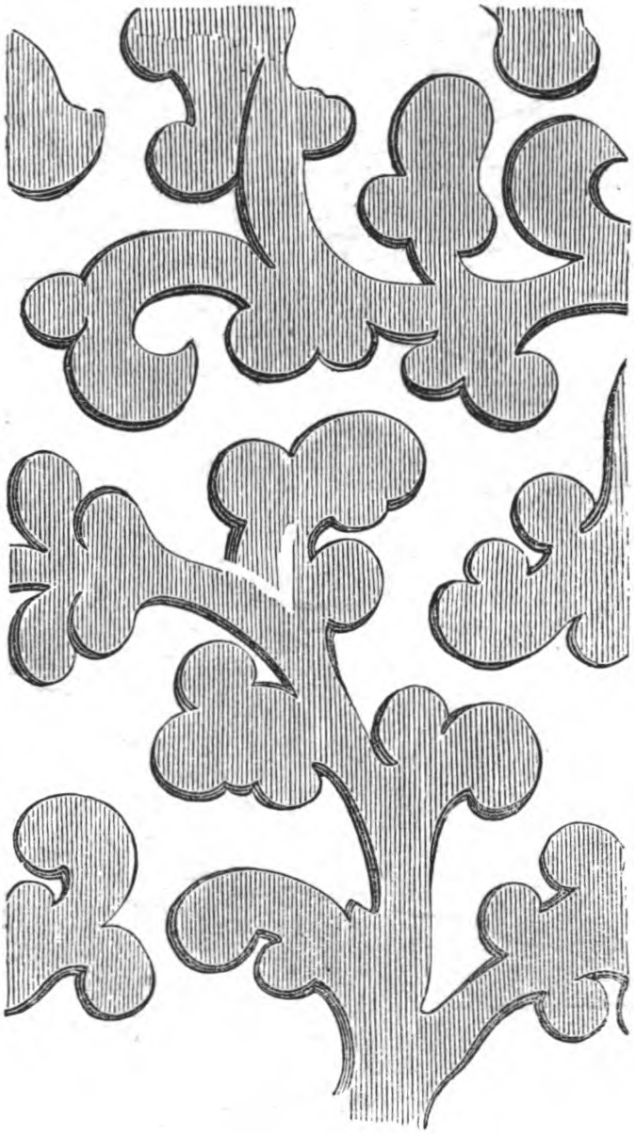


fig. 145.

that calling undue attention to the ornament is a great error in designing for garment fabrics: there needs in the larger masses of the dress a sense of what a painter calls *breadth* or repose, which is only attainable by great simplicity, by flat or diapered treatment of small forms, by uncontrasted light and dark, and delicate tints of colour. Those difficult patterns of many parts are too apt to offend against the above requirements, and to cause the figure to stare upon the ground, and attract attention to itself, to the destruction of the true decoration of such fabrics."—p. 743.

PAPER AND OTHER HANGINGS.

"If the use of such materials is borne in mind, the proper decoration for them will at once be evident, since this ought to bear the same relation to the objects in the room that a background does to a picture. In art, a background, if well designed, has its own distinctive features; yet these are to be so far suppressed and subdued as not to invite special attention, while, as a whole, it ought to be entirely subservient to supporting and enhancing the principal figures—the subject of the picture. * * *

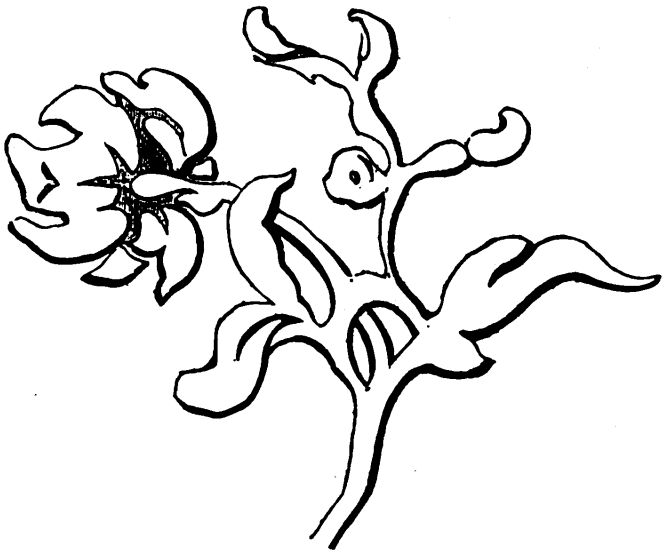


fig. 146.

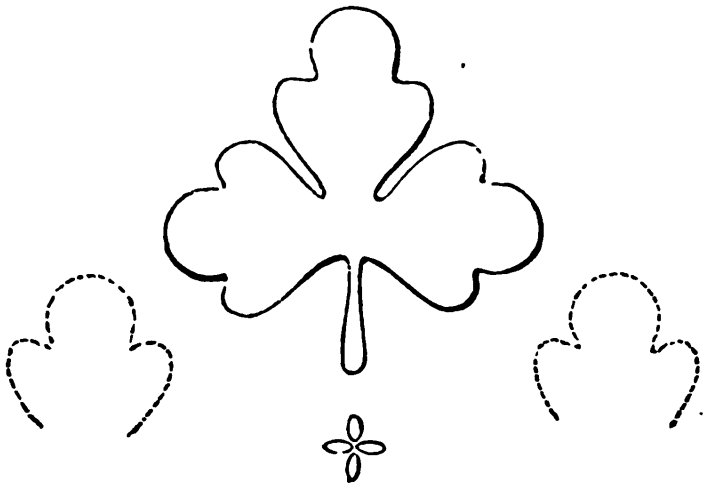


fig. 147.

Imitative treatments are objectionable on principle, both as intruding on the sense of flatness, and as being too *attractive* in their details and colour to be sufficiently retiring and unobtrusive. Some of the best examples, as well of paper as of silk, velvet, and other hangings, are treatments of *texture* in a self-colour; as of flock on plain or satined ground in paper, of tabby and satin in silk hangings, of stamped forms or cutting in velvet, or the same contrast of pattern with the ground in various mixed stuffs.

"The same laws which ought to govern design for paper-hangings would, therefore, appear proper to regulate hangings of other fabrics, tapestries, &c. Although far from looking at ornament in that exclusive spirit which would reject what is beautiful when it does not square with the requisitions of a theory, it must be obvious that pictorial and picturesque treatments for such fabrics are wrong whenever they intrude on the domain of another art. Thus figures, landscapes, fruits, and flowers, when rendered as they would be in works of fine art, are almost of necessity inferior to the pictures they imitate, even when they are as skilfully and wonderfully wrought as in the works exhibited by the national establishment of the Gobelins, where every effort of skill and science has been most successfully used for their manufacture and embellishment. Indeed, it is a matter of doubt whether custom, and the authority of great names and of past times, are not the causes of the continued admiration of such decorations, which perhaps we rather persuade ourselves we like than are fully satisfied with."—p. 717.

CARPETS.

"The use of these fabrics suggests the true principle of design for their ornamentation, which is governed by the laws before given for flat surfaces, where the object is rather to treat the whole as a background than to call particular attention to the ornamentation. Flatness should be one of the principles for decorating a surface continually under the feet; therefore, all architectural relief ornaments, and all *imitations* of fruit, shells, and other solid or hard substances, or even of flowers, strictly speaking, are the more improper the more imitatively they are rendered. As a field or ground for other objects, the attention should hardly be called to carpets by strongly-marked forms or compartments, or by violent contrasts of light and dark, or colour; but graduated shades of the same colour, or a distribution of colours nearly equal in scale of light and dark, should be adopted; secondaries, and tertiaries, or neutralised primaries, being used rather than pure tints and lights introduced merely to give expression to the forms. Under such regulations as to flatness and contrast, either geometrical forms, or scrolls clothed with foliation in any style, leaves, flowers, or other ornament, may be used, which, with borders and compartment arrangements, and the use of diaper treatment, leave ample room for variety and for the inventive skill of the designer."

The "canons" of design, issued by the Department of Science and Art, entitled "Principles of Decorative Art," published by Chapman and Hall, may be consulted with advantage by the pupil.

SECOND DIVISION.

ARCHITECTURE—THE HISTORY AND ILLUSTRATION OF ITS STYLES.

To judge from the definitions met with in the works on architecture, there seems to be great difficulty in exactly explaining what the term conveys. Some authors define it to be merely the "art of building," taking thus a view of it as if it were simply a constructive art, not one which is dependent upon the exercise of a correct taste. Others, again, go to the opposite extreme, and, considering it in a somewhat metaphysical point of view, claim for it a position which has little reference to its value as a useful art. Thus, while one defines architecture as entirely a *constructive*, the other considers it to be chiefly a *fine* art, having little in common with the materials with which it deals. There are others who give more just views of architecture, however, and to these we now refer. Thus, Mr. Leeds defines architecture as building with "something more than a view to mere utility and convenience: it is building in such a manner as to delight the eye by beauty of forms, to captivate the imagination, and to satisfy that faculty of the mind which we denominate taste"—(p. 3, *Rudimentary Architecture for Beginners.* W. H. Leeds. Weale. London.) Mr. Fergusson defines it very simply to be "nothing more or less than the art of 'ornamental and ornamented construction.'" We have already alluded to those who look upon architecture as altogether a fine art, to be judged of by the same rules which are applicable to what many term the "sister arts" of painting and of sculpture. More difficulty, according to Mr. Fergusson, has arisen from this attempt to refine the definition than from that which views it merely as a constructive one; at all events, it has led to much confusion. On this he very pointedly remarks, "Neither painting nor sculpture were very useful arts, except in the most barbarous times, and by the most remote analogy. Their object is to tell a story, to reproduce an emotion, or to portray a scene or object of nature; and they effect this by a direct imitation, more or less correct and literal, of what actually exists, either in nature or in art. Architecture, on the other hand, was one of the useful arts, invented to provide for one of the three great wants of man—food, clothing, and shelter. The wigwam grew into a hut, the hut into a house, the house into a palace, and the palace into a temple, by well defined and easily traced gradations; but it never lost the original idea of a shelter, and in its most magnificent form it is a mere amplification of the original hut, but grown so solid that it seems designed to last for ever, and so well proportioned and so exqui-

sitely ornamented, that, instead of being one of the most commonplace, it ranks with one of the most beautiful productions of man's hands. In none of its stages is imitation an element of composition; no true building ever was designed to look like anything in either the animal, the vegetable, or the mineral kingdoms. In all instances it is essentially a creation of man's mind, and designed to subserve some practical purpose which he has in view. A building can tell no story, and it is only by inference that it can be made to express an emotion. It is true that painting and sculpture may be added to any extent, and a really perfect building is never without these adjuncts; but they are not, or at least never should be, essentials, and the building should always be complete without them. * * * The fact is that architecture is in its origin as essentially a useful art as weaving or shipbuilding; but, almost alone of all her sister arts, it is the one that has, from various concurrent circumstances, been refined into a fine art." (*Illustrated Handbook of Architecture.* By James Fergusson. Murray. London: vol. i, p. 20, Introduction.)

Mr. Garbett defines architecture as "the art of well building: in other words, of giving to a building all the perfections of which it is capable."

Architecture has been termed the "stony records of nations;" in the same spirit it is that Coleridge says, "a Gothic cathedral is a petrified religion." Each country and each age writes "its name in stone."

On the influence of climate upon the architecture of a country, Mr. Ruskin has peculiarly fine and exhaustive remarks. He supposes us to sweep through the cloud region with the untiring wings of the stork or of the swallow, and to imagine the Mediterranean beneath us, with its promontories sleeping in the sun; here an angry thunder-spot; there a gray storm-stain, moving athwart the burning fields; now a heaving ash-girded volcano; but, chief o'er all, a "great peacefulness of light:" Syria, Greece, Spain, and Italy, like golden pavement in a sea of blue, with an atmosphere redolent of perfume, and gay and glistening with gorgeous flowers, and burning marble rocks, and porphyry, shaded by the "gray green shadows" of the laurel, the orange, and of the "plumy palm." Then sweeping with untiring wing, away from the orient colours of those lands, to the north, where a "vast belt of rainy green" meets the eye, we look down upon the "pastures of Switzerland and the poplar valleys of France and dark forests of the Danube and Carpathians," seen only at intervals, for we look through clefts in the shroud of mist that rises from the brooks meandering through the valleys, by the side of which is heard the bleating of the sheep or the lowing of the oxen. Still sweeping to the north, we look down upon mother earth, now heaving into "mighty masses of leaden rock and swarthy moor," and midst the breakers of the angry sea the "grisly islands beaten by storm and chilled by icedrift, and tormented by furious pulses of contending tide." Still further north till "the roots of the last forest fail from among the hill ravines, and the hunger of the north wind bites its peaks into barrenness, and at last the wall of ice, durable like iron, sets, deathlike, its white teeth against us out of the polar twilight." Then sweeping down nearer the earth till we see the various animals which sport on its surface, we notice the same gradation of change in

their appearance and habits as we have already witnessed in the physical peculiarities of the globe. In India's burning clime the woods are filled with birds of gayest colour and most gorgeous form, while 'mid the grass and flowers we see the serpent trail its slimy length, and from the jungle we hear the roar of the lion or see the tiger lurk, while across the plain the stupid zebra is seen to fly; in northern climes the plumage of the birds assumes a soberer aspect, more befitting our cloudy skies, while the shaggy bear and the gaunt wolf take the place of the lion and the tiger. Then, having seen all this, "and submissively acknowledging the great laws by which the earth and all that it bears are ruled throughout their being, let us," says Mr. Ruskin, "not condemn, but rejoice in the expression by man of his own rest in the statutes of the lands that gave him birth." He then introduces the fine parallel between the architecture of eastern countries, where the sun shines down unclouded from day to day, and that of northern climes, whose peculiar beauties are only brought out in times of change, when the "smile and the tear are there." "Let us watch man with reverence, as he sets side by side the burning gems, and smooths with soft sculpture the jasper pillars that are to reflect a ceaseless sunshine and rise into a cloudless sky; but not with less reverence let us stand by him, when with rough strength and hurried stroke he smites an uncouth imitation out of the rocks which he has torn from among the moss of the moorland, and heaves into the darkened air the pile of iron buttress and rugged wall, instinct with work of imagination as wild and wayward as the northern sea—creations of ungainly shape and rigid limb, but full of wolfish life, fierce as the winds that beat, and changeful as the clouds that shade them."

From these remarks will be derived some slight knowledge of what architecture is and should be; and how that the mere reproduction of the work of another age and another people may be a copy more or less successful, but is not the emanation of an independent thinker—is not, strictly speaking, a true architectural work, inasmuch as it does not embody the "expression of the wants, the faculties, and the sentiments of the age in which it is created." Such copies, however faultlessly carried out, cannot be taken as forming in any way part of the "stony records" of the nation to which they owe their existence; if they tell a tale, it is of other times and of another people, and they convey no idea of the peculiarities of the times in which they are produced. Hence it is that much of modern so-called architecture is not true in its mission; it does not embody, as above stated, the expression of the age in which it is brought out.

Our remarks on this subject could be greatly extended, but we must hasten to the consideration of other departments.

ASSYRIAN ARCHITECTURE.

A few years ago, all that was known of Assyrian architecture could be summed up in a sentence or two; and even this was almost purely conjectural. In the mis-shapen mounds that reared their huge bulks on the plains of Mesopotamia, the traveller little dreamed that there lay

concealed that which, with the remains of Egyptian architecture, gave the key to the origin of the Grecian and Latin styles. But—thanks to the discoveries of Layard and of Botta—we are no longer compelled to endeavour to picture to ourselves, from the vague descriptions of ancient authors, what the peculiarities were of the architecture of the great cities of the East. Now we are enabled to estimate, with almost as much certainty and clearness, what it was, as we are that of the Grecian or Egyptian architecture. Apart from the high interest which the remains of Assyrian architecture possess to us, as corroborative of the truth of Holy Writ, it is difficult to estimate the value of their discovery in an artistic point of view. "Until," says Mr. Fergusson, "the discoveries in Assyria were made, half the history of the architecture of Greece was a riddle—an inexplicable mystery. Now all is clear. And, with Egypt on the one hand, and Assyria on the other, we are enabled to trace every feature to its source. These two still stand, and probably will ever remain, as the primitive styles of the human race—essentially distinct in all their more important features; borrowing very little from each other, but each working out its own objects independently of the other. It seems absolutely hopeless to look for anything anterior to the style of Egypt which can have had any influence upon it; and, so far as we can see, nearly as idle to attempt to find in Asia anything that can have influenced the architectural style of the great Assyrian empire."

It will be interesting, therefore, to trace, as briefly as possible, the peculiarities of these two styles—the Assyrian and the Egyptian; styles which carry us back to the remotest times, and from which—according to the high authority we have quoted—have descended others which adorn and grace the various countries of the earth.

The principal feature in Assyrian structures was the artificial platform upon which they were erected. This was raised to the height of some thirty or forty feet above the level of the surrounding ground, and was constructed partly of sun-dried bricks, and partly of earth and rubbish. A solid limestone facing appears to have been used, giving a finish and a strength to the terraces. The building which crowned the platform was brought forward to the extreme edge, so as to completely command the view around; and was approached by flights of steps and inclined planes, made at intervals in the terrace. These platforms, or terraces, may have had their origin in the plan adopted in the earlier settlements in the plains—where no irregularity of surface occurred—of raising their public buildings, for defence or the purposes of religion, above the level of the ordinary habitations. It forms, however, whatever may have been the original cause of its adoption, a characteristic feature in Assyrian architecture.

The buildings which crowned these huge terraces were adapted to the climate; and, from the unvarying uniformity with which their arrangement was maintained, it appears to have been consecrated to religious observances. The exterior plan of the building was nearly square, and contained open courtyards, or large halls; round which were grouped oblong chambers, the length of which greatly exceeded their breadth. Thus, some chambers were 200 feet long and

25 broad. These lengthy chambers either led to the terrace, or were grouped around the internal halls or open courts. The building had usually two façades, each having three entrances, the centre of which was the principal, and was guarded with two colossal human-headed bulls (see fig. 148), one on each side. "The two side gateways in the more splendid edifices were flanked by similar figures, and between them and the centre entrance were pairs of the same winged monsters, of somewhat smaller size, placed back to back, and separated by a colossal human figure, usually represented as strangling a lion. These intervening bulls had the human head turned sideways, so as to look outwards from the front of the building. Each bull was, moreover, flanked by a colossal figure of a deity or priest, presenting a pine cone. Thus, the south-eastern front of Sennacherib's palace at Kouyunjik consisted

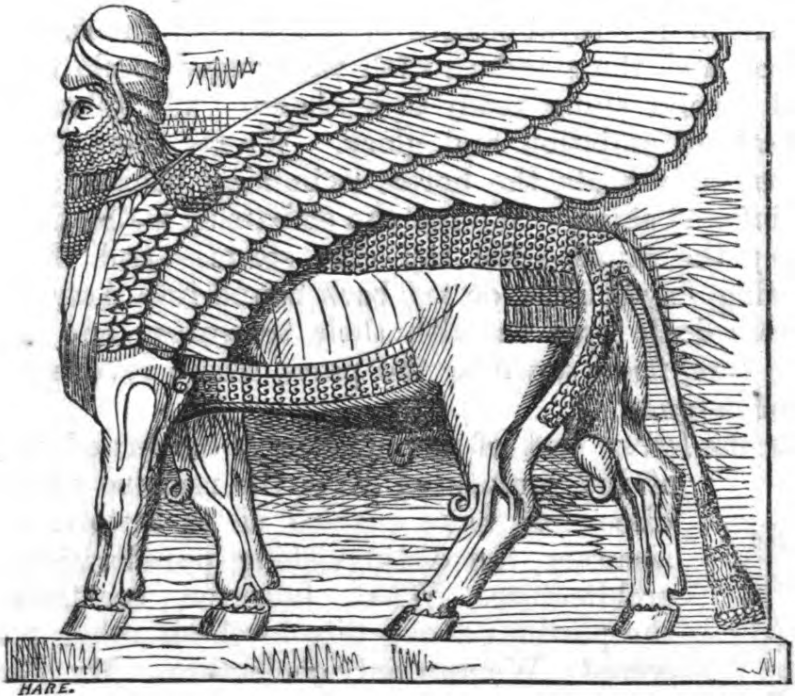


fig. 148.

of two human-headed bulls, the largest being about 19 feet high, and of six gigantic human figures, occupying altogether a space of no less than 180 feet. It was continued on either side by sculptured walls, which completed the whole façade."* The walls of sun-dried bricks were of extraordinary thickness, and were faced with large slabs of alabaster, on which were carved the stony records of the history of the life, the battles, and the sieges of their mighty kings. Where this panelling was not employed, the walls were covered with semi-columns, placed side by side, and separated, by means of square pilasters, into groups.

The floors of the halls and chambers were covered either with alabaster slabs or by large square bricks. On the bricks were sculptured, as on the slabs of the walls, inscriptions, giving the titles of the king, the extent of his dominions, or the names of the countries he

* *Crystal Palace Library. The Assyrian Court.* Described by Austen Layard. Bradbury and Evans.

conquered. They were often, however, sculptured with scroll-work. The under sides of the bricks contained the name of the king who founded the edifice.

While attending to the ornaments of their buildings, the Assyrians did not forget their sanitary requirements, for drains were carried under all the principal parts, these being frequently arched; and, singular to say, amongst the arches discovered, was a pointed, or what is now termed a "Gothic arch."

We have mentioned the sculptured slabs which formed the facing of the walls and sometimes the pavement of the floors of the chambers and halls; these—the stony records of the past ages—are of the greatest value and importance. On them "we can still trace," says an eloquent writer, "the greater part of Assyrian habits and customs. We see the king crowned with his jewelled tiara, surrounded by his eunuchs and soldiers, hurrying forth in his royal chariot to the battle; the royal canopy held over his head, and the standard with the winged circle beside him, and his bow and javelin slung ready to his hand. We follow his armies on their red path of ambition and glory. We see them ford rivers, their chariots fastened in boats, the horses swimming behind, and the soldiers floating on inflated skins. We see the embattled walls, the archers, and the slingers; the attack—the sap—the storm—and the pillage; the prisoners being flayed alive, or led back bound into Assyria. Then the tribute-bearers defile past us with their treasures; and now a galley, winged with oars, floats down to the ports, where revellers are drinking the health of Sargon."

So far as the lower part of the building is concerned, up to the level of the sculptured slabs, the remains which have been discovered have enabled us to restore, with singular accuracy, the distinguishing peculiarities of Assyrian architecture. What, however, constituted those of the portions above this level—if other portions there were? We can only conjecture. Mr. Fergusson is of opinion that we have their type in the remains of Persian architecture at Persepolis.

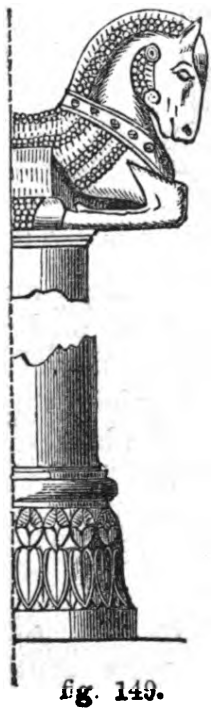


Fig. 149.

Fig. 149 is a sketch modified from one in the *Guide to the Assyrian Court, Crystal Palace*, showing the peculiarities of one form of pillar found at Persepolis, and adopted in the reproduction of Assyrian architecture at the Crystal Palace. "The bull capitals are peculiarly appropriate in an Assyrian building, where this animal, apparently looked upon as sacred, continually occurs in the painted and sculptured decorations."—p. 47.

The reader, desirous of further pursuing the subject of the restoration of Assyrian architecture, will consult with advantage the *Guide of the Crystal Palace*, above noted; and the chapters on "Assyrian and Persian Architecture," in Fergusson's *Illustrated Handbook of Architecture*, vol. i.

EGYPTIAN ARCHITECTURE.

Mr. Fergusson divides Egyptian art into two great periods—the one represented by the pyramids, the other by the temples at Thebes. The pyramids are singular only from their vastness, and interest us chiefly from being looked upon not only as the most ancient monuments of Egypt, but probably of the world. They have little interest in an instructive point of view.

Of the various pyramids met with in Egypt, those of Gizeh are the most interesting, and have excited the greatest wonder. Of these, three in number, the great pyramid—the erection of which is attributed to Cheops, and the date of which, according to Herodotus, is 900 B.C.—is the most interesting. Its base is 700 feet square, and its height 470; it covers an area of more than 13 acres, being, according to Mr. Fergusson, "twice the extent of that of St. Peter's at Rome, or of any other building in the world."

All the pyramids face north; a circumstance which, in conjunction with the fact that the entrances slope downwards, has given rise to numerous ingenious speculations as to the uses to which the erections have been originally put.

In concluding a lucid description of the peculiarities and methods of construction of the pyramids, Mr. Fergusson gives the following remarks: "The early Egyptians built neither for beauty nor for use, but for eternity. To this last they sacrificed every other feeling. In itself nothing can be less artistic than a pyramid.* As examples of actual art they are unrivalled among the works of men; but they rank among the lowest, if judged by the æsthetic rules of architectural art. The same character belongs to the tombs and buildings around them. They are low and solid, and possess neither beauty of form nor any architectural feature at all worthy of attention or admiration."

Of the second period of Egyptian art we now propose briefly to treat. The city of Thebes, in which the illustrations of the period are met with, was one of the most ancient cities of antiquity. The peculiar feature of the period is the "obelisk," the oldest of which was erected in the reign of Osirtesen I., who flourished about 1650 B.C.

With Amosis, who drove out the Phœnicians, or Shepherds, whose invasion checked the rising prosperity of Egyptian art, "began that great family of Theban kings, whose buildings have so long been the wonder of the world. Their temples and colossal statues are the models from which the Greeks copied, while their obelisks even now grace the cities of those nations which rose when Egypt fell.

The largest and most magnificent temple at Thebes was that of Karnak. It was built in the reign of Rameses II., and joined the great temple of Luxor, built by Amunothph III., by an avenue of sphinxes. The area covered by this vast temple is 430,000 square feet, its length being about 1,200, and its breadth 360 feet. The grand feature in the temple of Karnak is the "hall of columns," the roof of which is supported by 134 columns; twelve of which, forming the central avenue, are of no

* The term pyramid is derived from the Egyptian words *pi-rama*, "the mountain."

less dimensions than 12 feet in diameter, and 66 feet in height. The others are of less dimensions, being 9 feet in diameter, and 42 high. These latter have their shafts copied from the "single stalk of the frail papyrus plant," with an unopened bud for the capital; while the twelve central pillars have a "full-blown flower for their capital," and the shaft made up of "single stalks of an older growth." Of this magnificent hall, Mr. Fergusson has the following fine remarks:—"No language can convey an idea of its beauty; and no artist has yet been able to reproduce its form, so as to convey to those who have not seen it an idea of its grandeur. The mass of its central piers illumined by a flood of light from the clerestory, and the smaller pillars of the wings gradually fading into obscurity, are so arranged and lighted as to convey an idea of infinite space; at the same time, the beauty and massiveness of the forms, and the brilliancy of their coloured decorations, all combine to stamp this as the greatest of man's architectural works; and such a one as it would be impossible to reproduce, except in such a climate, and in that individual style in which, and for which, it was created."

In this brief notice of Egyptian architecture, we must not omit adverting to the "rock-cut temples" and "tombs," in connection with which may be here noted the singular distinction pointed out by Mr. Fergusson, that, while in "Egypt Proper" all these excavations were "tombs," in Nubia they were "temples." A very celebrated example of the rock-cut temples is that of Abou-Simbel, executed in the reign of Rameses II. The façade extremity is about 100 feet in height, and has in front four statues of the king, of colossal height—from 60 to 70 feet. "Their grandeur and beauty," says a recent traveller, "are beyond expression, and the delight in their lofty character of beauty quite over-

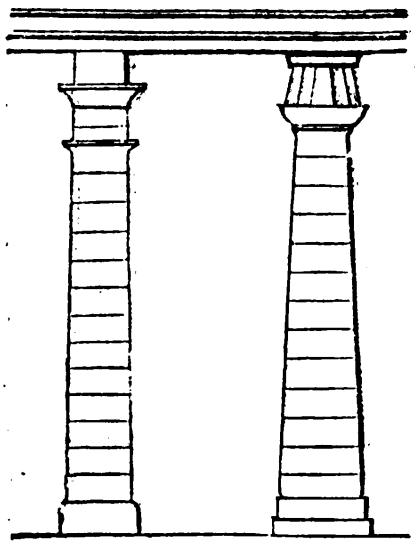


fig. 150.

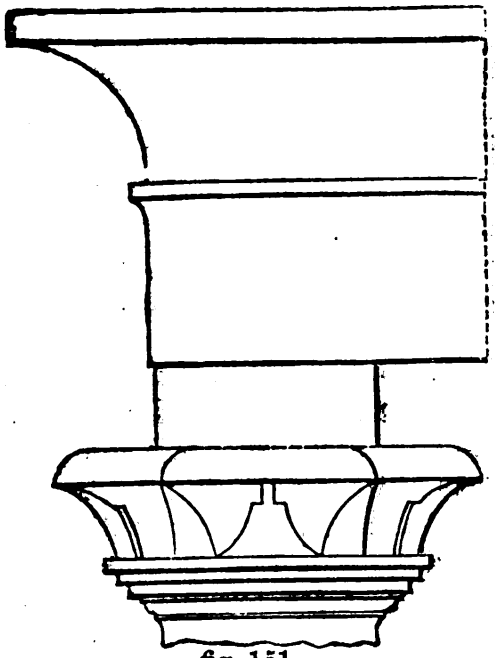


fig. 151.

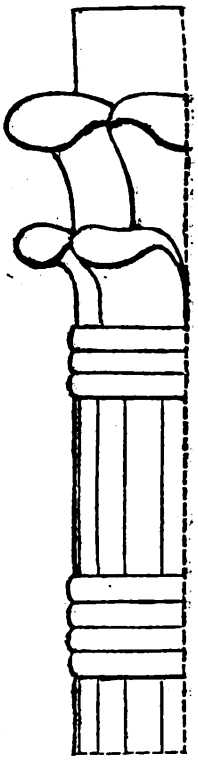


fig. 152.

comes the natural wonder at their imagined duration for twenty or thirty centuries. * * * In these faces, seven feet long, is a godlike grandeur and beauty which the Greeks never reached. They are not only colossal blocks of stone, but the mind cannot escape the feeling that they were conceived by colossal minds. * * * If a poet should enter in dreams the sacred groves of the grandest mythology, these are the forms he would expect to see, breathing grandeur and godly grace. * * * The Greek gods are human, but these elder figures are above humanity—they dwell serenely in abstract perfection." (*Nile Notes of a Howadji.* By G. W. Curtis, p. 144.) The Directors of the Crystal Palace at Sydenham have done the public good service by reproducing two of these colossal statues; they give, in conjunction with the other features of the *Egyptian Court*, an admirable idea of the peculiarities of this style of architecture. In figs. 150, 151 and 152, we give illustrations of Egyptian pillars and capitals.

INDIAN ARCHITECTURE.

We now proceed to notice very briefly the peculiarities of Indian architecture. Until the researches of Mr. Fergusson,* who visited the various temples and caves of those distant countries, there were no architectural remains about which so little was known as those of India. The most striking examples of Indian architecture are to be met with in the rock-cut temples. These were long supposed to be superior in antiquity to any of the ancient architectural remains of other countries, so much so as to have furnished the source of Egyptian and Persian architecture. That the latter was derived from the Indian is inferred from the close similarity existing between their details, as in the columns of the Persepolitan and Hindoo temples, and in the rock-cut temples of India and Nubia. This similarity, however, rests on very slight evidence; moreover, it is now established that the date of the Persian buildings is anterior to that of the Indian by some ten centuries. As to the other supposition, that Egyptian architecture owed its origin to the Indian, it is enough to state, in order to show its error, that there is abundant evidence to prove that the earliest of the Indian caves was excavated when Egypt's glory had faded, and her name was erased from the list of nations.

Indian architecture is divided into two great classes, excavated and structural, of which the former has the highest antiquity. The excavated or rock-cut temples are again divided into three classes—the "Vihara, or Monastery," the "Buddhist Chaitya," and the "Brahminical caves;" to these may be added a fourth class, which are supposed to be imitations of structural buildings, inasmuch as, though excavated or cut out of the solid rock, they are done in such a way as to convey the idea that they are *built* of stone. Of these classes we now offer a brief description. The simplest

* *Rock-cut Temples of India,* and *Illustrations, with Descriptions of the Ancient Architecture of Hindostan.*

form of the Vihara, or monastery cave, was a square cell, furnished with a porch; indeed, the earliest forms were simply natural caves, somewhat improved in shape by artificial means. In some the hall was large and decorated with pillars, a recess being made to face the entrance, in which was deposited a statue or figure of Buddha. Although the *Viharas* were designed as monasteries for the reception of the priesthood, still, in this way, they were made to serve as temples or places of worship. For this latter purpose, however, the second class, or Buddhist Chaitya caves were exclusively designed, namely, to serve as temples or churches; one or more of them being connected with every set of caves in Western India. In all the forms known of this class of caves, the plan is the same, and they are supposed, from this circumstance, to have been copies of structural buildings. The arrangement consists of a nave, divided from the aisles by octagonal or circular pillars. The furthest end is semi-circular, and the pillars are carried round this. In the centre stands the Daghopa, a plain circular drum, covered by a hemi-spherical dome; a niche is always provided in the Daghopa, in which is placed figures of Buddha and his attendants.

The "Brahminical caves" resemble in great part the Viharas; but the walls, instead of being covered with painting, as in the latter, are provided with sculpture.

Of the cave temples of India, the most celebrated is that of Elephanta. This is 130 feet long, by 110 wide, and 14½ high. Four rows of columns, nine feet high, with ribbed shafts and projecting capitals of a semicircular form support the flat ceiling; colossal human figures are ranged along the walls, cut in high relief out of the solid rock.

Of the fourth class of excavated architectural remains of India, the best specimen is to be met with at Ellora. This excavation is 401 feet long by 247 feet broad, and the deepest part 104 feet; round the area runs a cloister, supported on square pillars, on which are sculptured subjects from the Indian mythology. The sanctuary is in the centre. The whole details are profusely ornamented.

With reference to the historical details of the *constructive* buildings of India, much uncertainty prevails. From their ignorance of the arch and the consequent necessity to support the stone roofs which they employed by means of brackets projecting from the sides of the square capitals of the pillars, a variety of light and shade is produced pleasing to the eye. The *structural* buildings of India are generally characterised by their great height.

CHINESE ARCHITECTURE.

From the convex form of the roofs—the prevailing characteristic of many structures met with in China—the type of Chinese architecture is generally allowed to have been the tent. Wood is the material most generally used. The pagoda is a very characteristic building in China; this consists of a series of towers, diminishing as they proceed upwards, each tower being furnished with the concave roof. The domestic buildings are only one storey in height, and from their curiously painted trellises and

framework and the oddly-shaped doors—octagonal and circular being even used—they strongly resemble "bird-cages," to which by some they have been likened. Like other departments in that strange country, architecture allows of no change or progressive improvement: as it has been for ages, so it now is and so it is likely to remain. Every detail is under strict supervision, and no deviation from established rules, which dictate the size of a house according to the rank or *status* of its occupant, is allowed.

Chinese columns have no capitals; the shaft is shaped like the frustrum of a cone, the height varying from eight to twelve times the diameter at its lowest part. The base is formed of a square plinth, with, in some instances, a moulding above it. A pole which is passed through an aperture at the upper end of the shaft corresponds to the architrave in classical architecture; this is supported by two brackets, the lower part of which is inserted in the shaft. These are sometimes ornamented. A series of open panels placed above this corresponds to the frieze, ornaments being painted in the spaces between the panels. The whole is surmounted by the concave tent-like roof, the angles of which being turned up, are ornamented at their extremities by representations of heads of dragons. For a detailed account of the peculiarities of Chinese architecture, see the *Encyclopædia Metropolitana.*

GRECIAN ARCHITECTURE.

In our notes on Assyrian architecture, we adverted to the value of modern researches, in connection with that and the Egyptian style, in clearing up much that was previously doubtful as to the origin and peculiarities of Grecian architecture. Such, however, is the obstinacy with which recognised systems are adhered to, that there are some still met with who consider Greece as the source of all inspiration in art, and in their enthusiasm for everything "classical," will be with difficulty prevailed on to admit that Greece herself owed to other countries the first germs of the art which dignified and graced her. "That architecture and art," says an able writer, "always have been progressive, and have not appeared at once in full perfection, is a truism that need scarcely be advanced; yet in our admiration of their perfection we do not always consider the history of their progression or the sources from whence they sprang. No style, with the exception of the Egyptian, was the spontaneous growth of the soil in which it flourished, or proceeded directly from the nations that practised it; the germs of all other styles were borrowed from people whose habits and religious customs were totally dissimilar, and its advances or improvements were the natural results of civilisation, caused by intercourse with other nations in times of peace, or by the adoption of all that was worthy of imitation in conquered states, during the incessant wars that were carried on in the eastern parts of the world. Thus it was with the much admired architecture and arts of Greece and Rome, so that centuries elapsed ere anything worthy of these terms was to be found in either empire."—(*Rudi-*

mentary Architecture. By Talbot Bury. *The Styles of Various Countries.* Weale, London, p. 7.)

The exigencies of the condition of the early population of Greece—a condition which maintained them for long as rival states—demanded from them works of defence rather than of convenience for their domestic, or grandeur and magnificence for their religious, edifices. Hence we find that the architecture of the earliest times of Grecian history was confined chiefly to the construction of walls and tombs. The remains of this period of art—known as Cyclopean, but more properly Pelasgic, from the name of the aboriginal race—give us little or no information regarding the development of ornamented construction amongst those who practised it.

The most ancient of the remains of this period are those belonging to the cities of Tiryns, the date of which, according to Sir William Gell, is 1379 B.C. The thickness of the walls now remaining is from 21 to 25 feet, the blocks of which they are constructed being of monstrous dimensions. The wall contains two ranges of galleries about five feet broad and twelve high, with sides sloping to the apex, forming a triangle. No care seems to have been given to the previous preparation of the huge blocks, these being merely laid together with some design to make the forms fit into each other, the interstices being filled up with smaller stones.

In the remains of Mycenæ, another of the ancient cities of Greece, the date of which is given as 1350 B.C., there is a most interesting example of early Grecian art—probably the most ancient—in the basso-relievo surmounting the gate or principal entrance to the "Acropolis," and which consists of two lions facing each other, and the fore paws of which rest on a pedestal. The subterranean building in the same city, known as the Treasury of Atreus, has a door, the lintel of which weighs nearly 140 tons, the width of which is 17 feet, its length 27, and thickness nearly four feet. The "Acropolis" in the Pelasgic cities was the portion first built, and always upon high ground; this was used as a citadel and as a place of security for the archives and articles of treasure.

THE GRECIAN ORDERS.

The Doric.—This, the most ancient of all the orders, is the most distinctive of Grecian architecture, and was the one to which the Greeks gave most attention. "As the Homeric poems have," says Mr. Garbett, in his *Principles of Design in Architecture* (Weale), "triumphantly refuted the attempts to regard them as compilations, so there is in the Doric order, and especially in its ancient examples, that perfect consistency and unity of idea that proclaims it to be, in all essential points, the production of one mind. Like other orders and styles, it must doubtless have received improvements from many hands, but, unlike them, or rather in a far greater degree than any of them, does it exhibit the marked predominance of one genius."

We have said that the Doric was essentially the Greek order; indeed, for a long period in the history of the art, it was the only style which they adopted. In endeavouring to trace the origin of the style,

many, indeed the majority of writers, affect to recognise the first hints of or suggestions for it in the timber huts which preceded or are presumed to have preceded those built of stone. On this point it is sufficient to state that the more the peculiar characteristics of the Doric order are studied, the less tenable will this theory be found. "Such theory, it must be admitted, is sufficiently plausible, if only because it can be made to account very cleverly for many minor circumstances." (*The Orders of Architecture.* By W. H. Leeds, Esq. Weale, p. 9.) Thus, one writer draws up the following plausible sketch :—"The trunks of trees set perpendicularly to support the roof, may be taken for columns; the tree laid upon the tops of the perpendicular ones, the architrave; the ends of the cross bearers which rest upon the architrave, the triglyphs; the tree laid upon the cross beams, as a support for the ends of the rafters, the bead moulding of the cornice; the ends of the rafters which project beyond the bead moulding, the mutules." "But," as remarks Mr. Leeds, "all this, unfortunately, does not account at all for, or rather is in strong contradiction to, the character of the earliest extant monuments of Grecian architecture. Timber construction would have led to very different proportions and different taste. Had the prototype or model been of that material, slenderness and lightness, rather than ponderosity and solidity would have been arrived at; and the progressive changes in the character of the orders would have been reversed, while the earliest of them all would have been the lightest of them all."

As refuting this fanciful theory, Mr. Fergusson draws attention to the fact, that the earliest examples of the Doric order resembled the Egyptian in strength and solidity. But as time progressed, they displayed the "weak and lean form of the Roman order of the same name." Indeed, so marked is the gradual attenuation of the shaft, that from the relative heights and diameters of the pillars may be gathered a pretty accurate notion of the date of their erection. Thus, the shorter the pillar, the earlier its date. "This fact," says Mr. Fergusson, "is in itself sufficient to refute the idea of the pillar being copied from a wooden post; as, in that case, it would have been slenderer at first, and would gradually have departed from the wooden form as the style advanced. This is the case in all primitive styles. With the Doric order, the contrary is the case."

Other writers, discarding the above "wooden theory," adopt another as fanciful, and even still more untenable; this is, the notion that the orders have their proportions in accordance with those of the human figure. Thus, the Doric is supposed to be proportioned from the development of a robust male—"the manly Doric;" the Ionic and Corinthian from females, of which the latter is after a more delicate model than the former; hence, the Ionic is likened to a "stately matron." Mr. Leeds thus disposes of this absurd theory—if, indeed, it is deserving of such a name. "Now, so far from there being any general similitude between a Grecian Doric column and a robust man, their proportions are directly opposite—the greater diameter of the column being at its foot, while that of the man is at his shoulders. The one tapers *upwards*, the other *downwards*. If the human figure and its proportions had been considered, columns would, in conformity with such type, have been wider

at the top of their shafts than below. * * With regard to the other two orders, it is sufficient to observe, that, if so borrowed at all, the idea must have been preposterous." (*Orders of Architecture*, p. 11.)

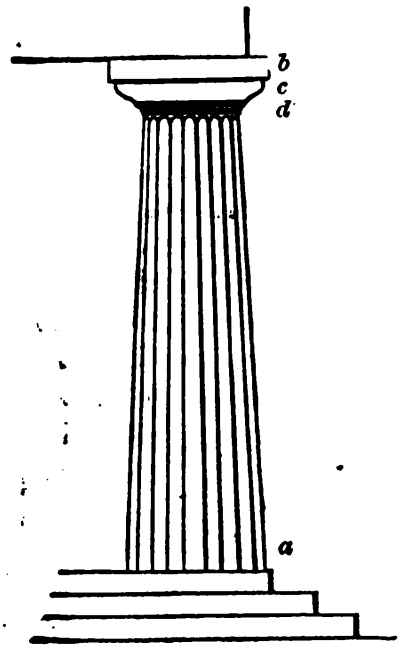


fig. 153.

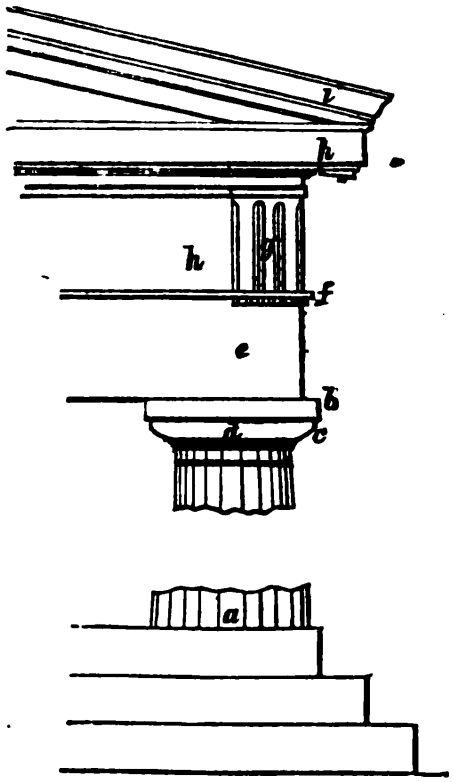


fig. 154.

We now proceed to describe the members and proportions of the Doric order. In fig. 153, we give a full length sketch of a pillar taken from a Corinthian temple (reduced from a drawing in *Durrand's Parallel of Architecture*, published at Berlin), and, in fig. 154, another sketch from the "Temple of Concord," reduced from the same work. As will be observed, there is no "base" to this order, the shaft springing at once from the "stylobate." Taking the average, the height of the column may be given at six diameters, the diameter being at that part of the shaft resting on the stylobate at *a*. The shaft, in some instances, is plain, as in fig. 155, but in the generality of examples fluted, there being generally twenty flutes; these being brought to an edge, as in fig. 40, p. 28, of *The Architectural Drawing-Book*, in this Series. In some modern reproductions of the "order," the flutes are furnished with fillets between them, as in fig. 38 of *The Architectural Drawing-Book*. This, however, is considered by good authorities as an innovation not consistent with the "severe simplicity" which is the principal characteristic of the style. Not content with the reasonable idea that these flutings have been introduced simply for æsthetic effect, the advocates of the "wooden theory," already alluded to, conceive that in the stone pillars of a later date, they were meant to represent the "cracks" in the boles or trunks of the trees, which formed the pillars in the structures of an earlier era. Still more absurdly, some hold that they were meant to act as grooves, in which "spears" could be placed, so as to prevent them falling when made to

lean against them; "than which idea," Mr. Leeds remarks very naïvely, "it is hardly possible for the utmost stretch of ingenuity to go further in absurdity." The same authority points out the "effect" obtained by the use of these flutes: first, "variety," by multiplying the surfaces of the shaft; secondly, a "pleasing diversity of light and shade;" thirdly, "they take from the heaviness, although detracting in no way from the strength, of the pillar;" and, lastly, they "serve to render the circularity more apparent."

As will be observed, on referring to fig. 153, the shaft diminishes very quickly, the proportion being one-fourth; that is, the diameter at the capital, *d*, is three-fourths of that of the base, *a*. This again, by the "wooden" theorists, is taken as another evidence of the wooden origin of the order. The "taper," however, of the best examples of the order is much greater in proportion than the taper of trees. That it was adopted for æsthetic reasons, we have no doubt.

Immediately beneath the capital, there will be observed an annular cut, or groove. In some examples there are three of these horizontal grooves. These seem to have been added to give effect, by producing shadows, or by marking the commencement of the capital, and by adding apparently to its proportions.

The capital is composed of two members, the "abacus," *b*, consisting merely of a square block, and the "echinus," or "ovolo," *c*.; in the under part of the latter are three "fillets," or "annulets," as they are commonly termed, projecting from the "ovolo," and having corresponding indentations between them. In some examples, the number of these annulets extends to five.

At first sight there is apparently little evidence of "design" in the capital, but a little consideration will show the fallacy of this notion. The square of the "abacus," *b* (fig. 154), is nearly equal to the diameter of the shaft at *a*, while the architrave, *e*, is narrower in its soffit, or under side, than *b*. The idea of security and repose is thus given at once. Again we notice in the square of the abacus and the circular and projecting form of the echinus, or ovolo, *c*, another evidence of the desire to keep "design" in view. By its projection beyond the diminished part of the shaft, it serves to join the latter easily with the capital, and the whole result is variety, contrast, and harmony.

Resting on the abacus is the "architrave," *e*, a plain block, the height of which, inclusive of the "fillet," *f*, is equal to the diameter of the column at the capital. Underneath the "fillet," a number of smaller fillets are suspended, these are termed "guttæ" or "drops." These are fancifully enough supposed by some writers to represent the drops of rain which have trickled from above and settled on the under side of the fillet; while others see in them the representation of the heads of bolts and nails, which, according to the "wooden theory," were used to connect the various parts together. The "frieze," *g*, a characteristic feature of the Doric order, is next to be described. This consists of alternate projections and recesses, the latter denominated "metopes," the former "triglyphs." (See p. 41, *Architectural Drawing-Book*, in this Series.) The space between the triglyphs or the metopes is decided by the height of the triglyphs, the metopes being the square of the height of the

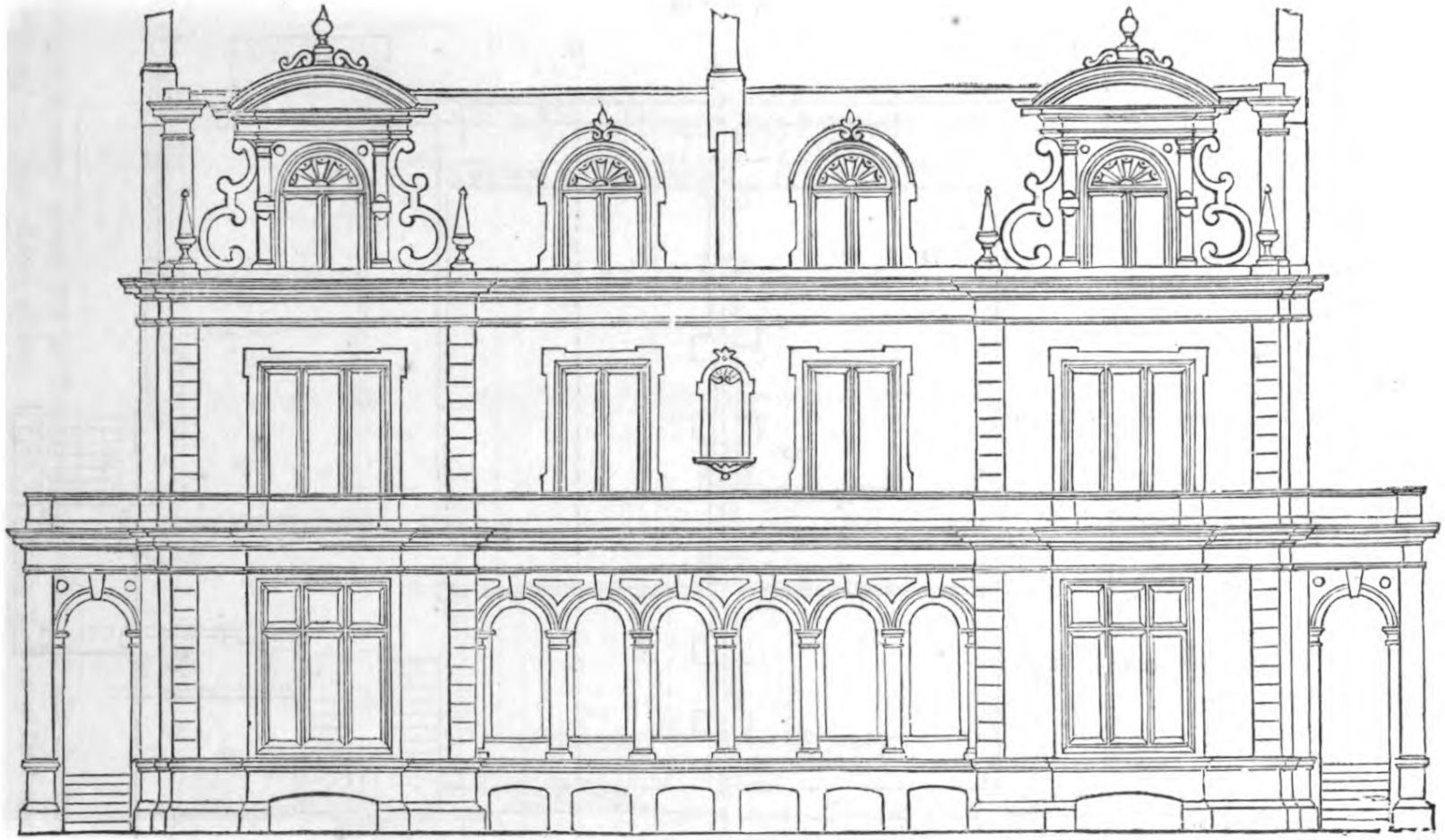
latter. The face of the projection, *g*, is diversified by channels cut in it, termed "glyphs;" two of these are complete, while a half one is joined at each side, thus making three in all; hence the name "triglyph." The "metopes," in some examples, are left plain, in others filled in with sculptured decoration. (See p. 95, *Architectural Drawing-Book.*)

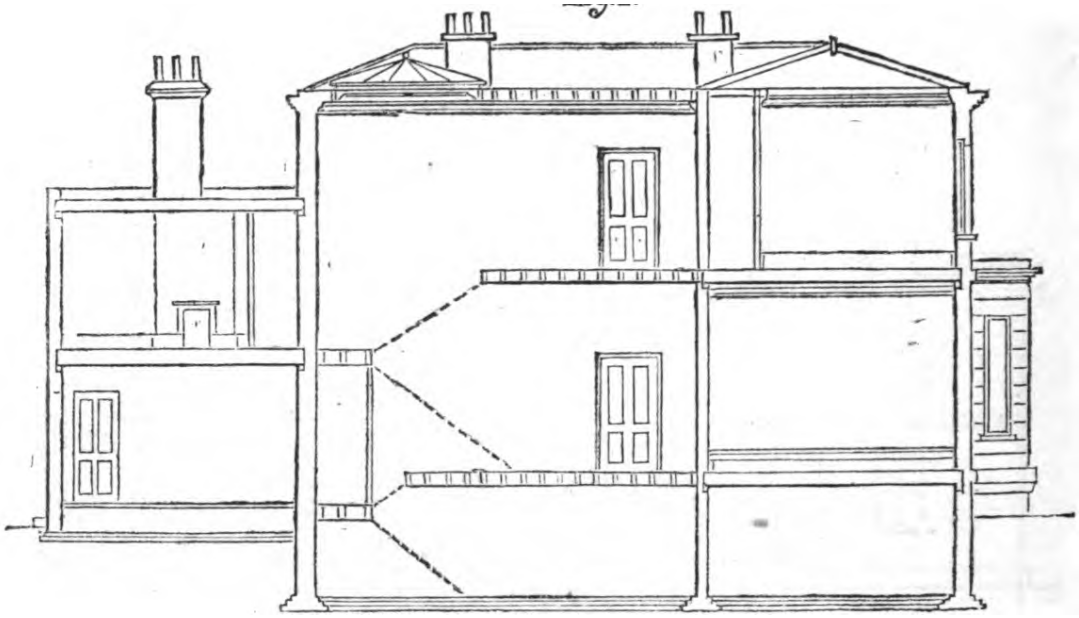
We now come to the consideration of the cornice, *h*, *i*. The distinguishing feature of this is the "corona," *h*, which projects considerably over the members below it. To the under side of this are suspended immediately over the "triglyphs," blocks, termed "mutules," to the under side of which "guttæ" or drops are attached. These blocks are not parallel to the fillet, *f*, but incline, as shown, at *h*. The upper part of the cornice is usually a "cymatium," but sometimes like the "echinus" or "ovolo" of the capital.

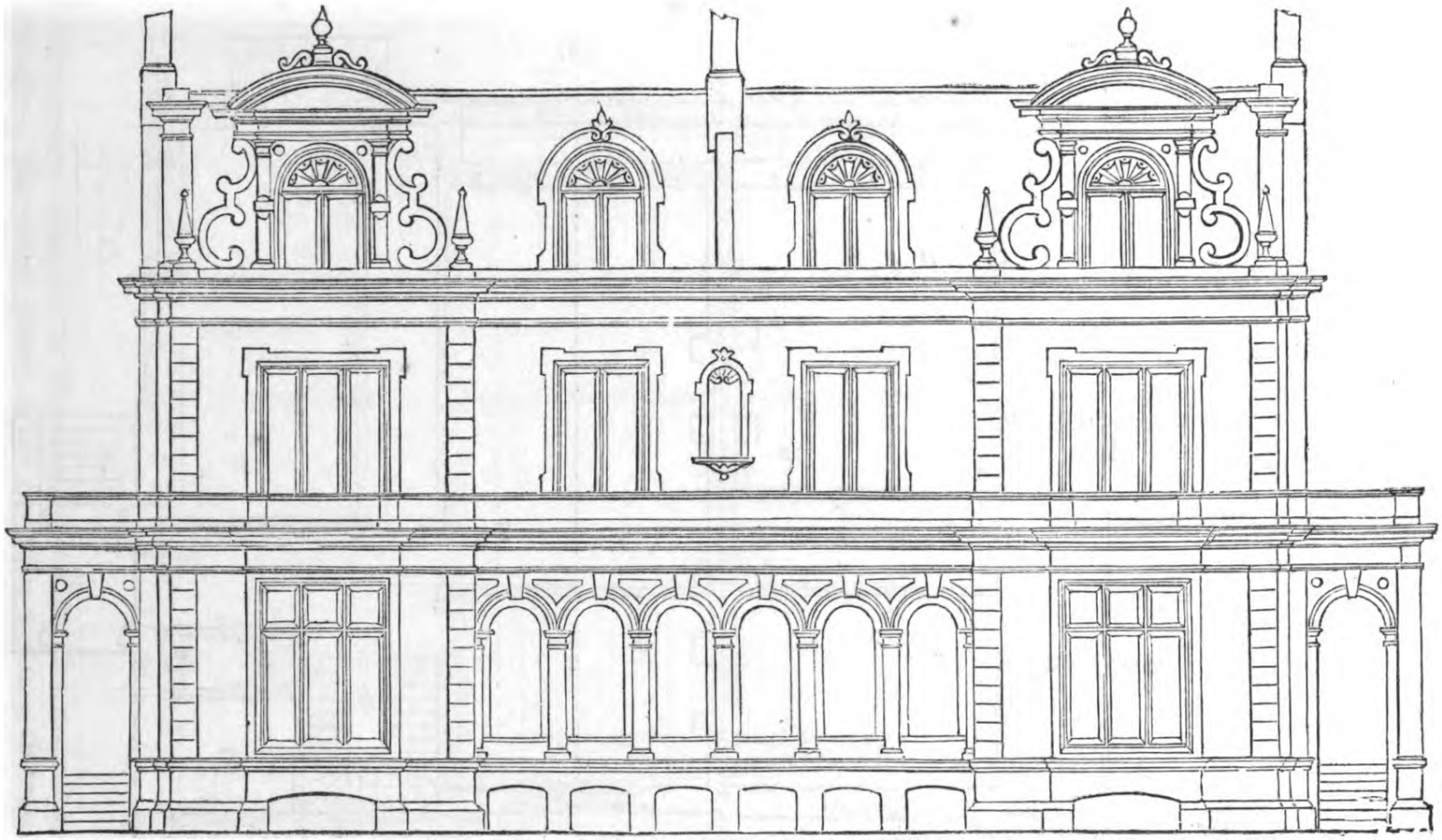
The following, from a good authority, may be taken as the average proportions of the Doric order :—

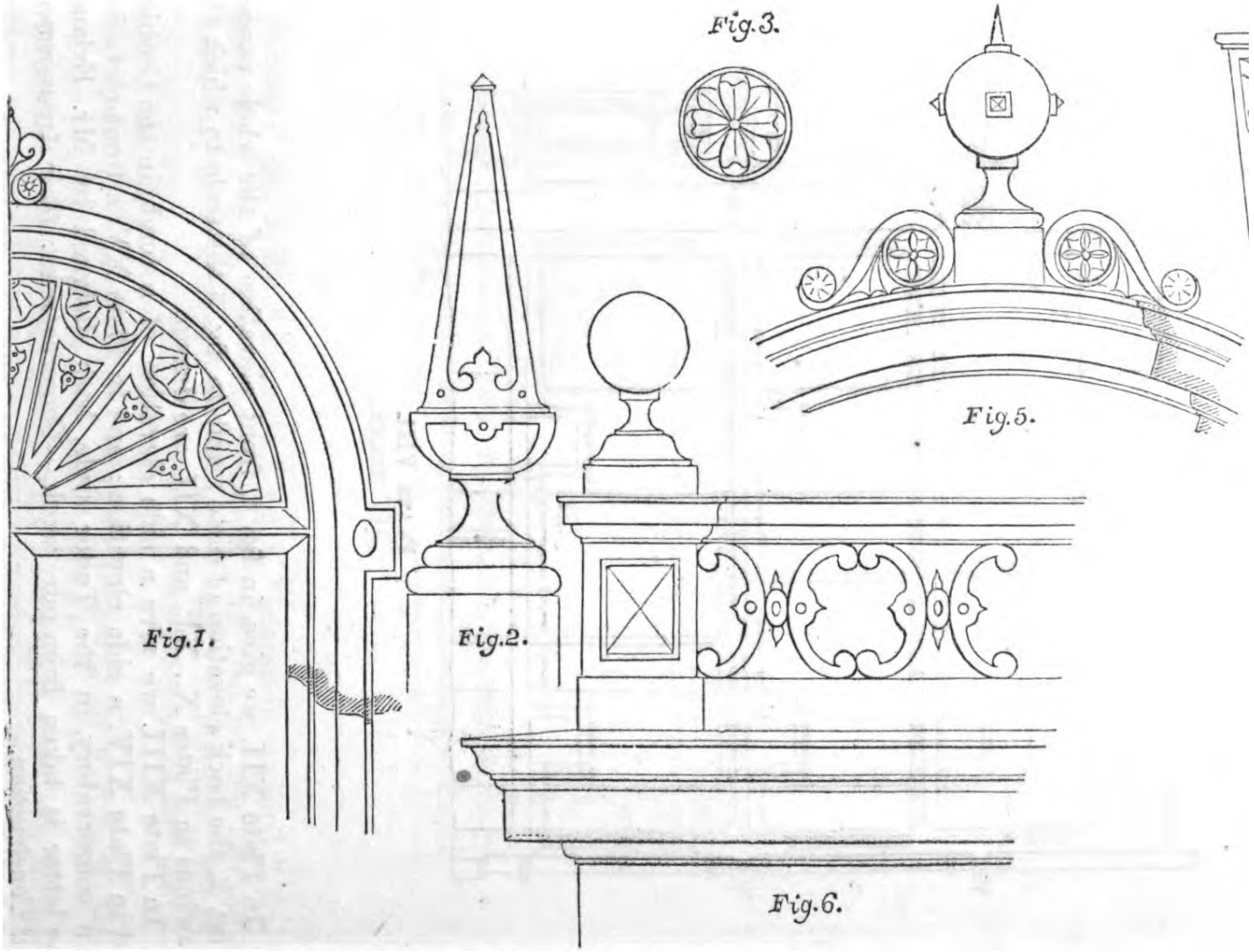
"The height of the capital is half a diameter; that of the ovolo, including the annulets, and that of the abacus, are each one quarter of the upper diameter, the annulets together being one fifth of one of the parts. The horizontal dimension of the abacus is six times its height. The height of the entablature is one third of that of the column or two diameters. If it be divided into eight equal parts, these are distributed between the architrave, the frieze, and the cornice, in the proportion of 3, 3, 2; thus the height of the architrave is equal to that of the frieze, and that of the cornice is two-thirds of either. The inner edge of the triglyph in the angle of the building, is in a vertical line with the axis of the column; the breadth of the triglyphs is three-fifths of its height, which is also that of the frieze, and the breadth being divided into nine equal parts, two are occupied by each glyph or channel, one by each semiglyph, and one by each of the three interglyphs or flat surfaces between the glyphs. * * * The metopes are square. The height of the capital of the triglyph is one-seventh of its whole height, and that of the metope one-ninth. The height of the cornice being divided into five equal parts, the lowest is given to the fillet, the mutule, and the drops; the next two to the corona. * * * The projection of the cornice over the capital of the triglyph is equal to its height, and being divided into four equal parts, three are given to the corona."

The celebrated Parthenon at Athens was in the Doric style; it was built in the year 444 B.C. Phidias had the general superintendence, and the architects were Ictinus and Callicrates. Leake estimates the cost of the building at a sum equal to £700,000 of our money. The material used was marble. The dimensions were 228 feet long by 101 broad; the extreme height, including base, 64. There were seventeen columns at each side, and eight at each end, the height of these 34 feet, and diameter six feet three inches. This magnificent temple was built in honour of the tutelary goddess of Athens, Minerva; the whole of the decorations of the building forming one great design or sculptured poem in her honour. "In this temple," says Mr. Penrose, in *Murray's Handbook to Greece*, "an architecture, which had gone on through centuries of refinement, until it culminated there, was combined with the work of the greatest sculptor Greece and the world ever produced; and





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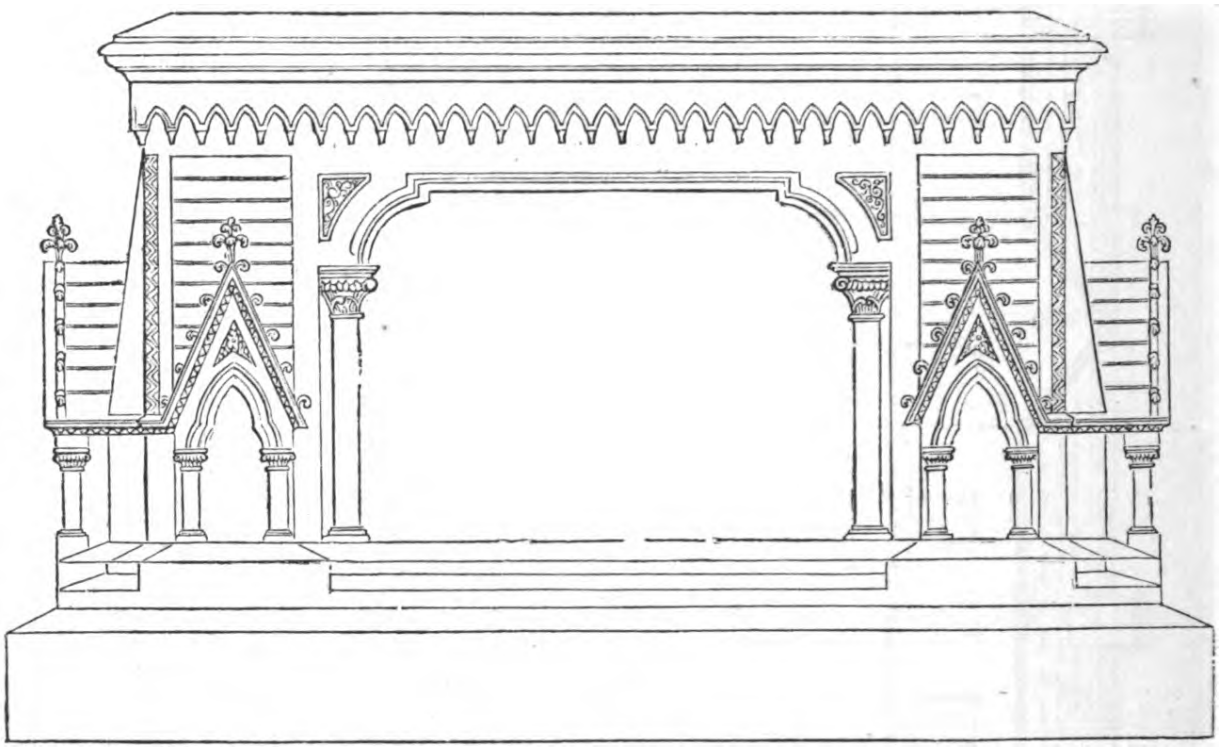


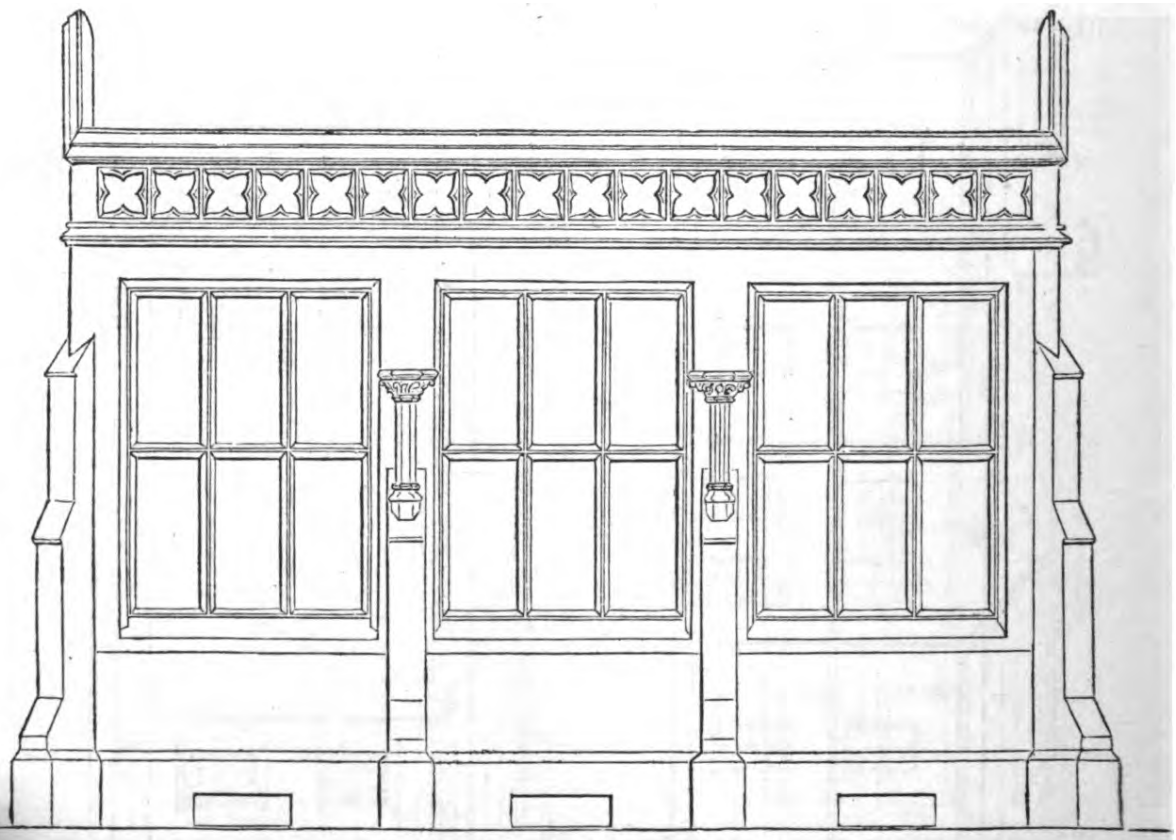
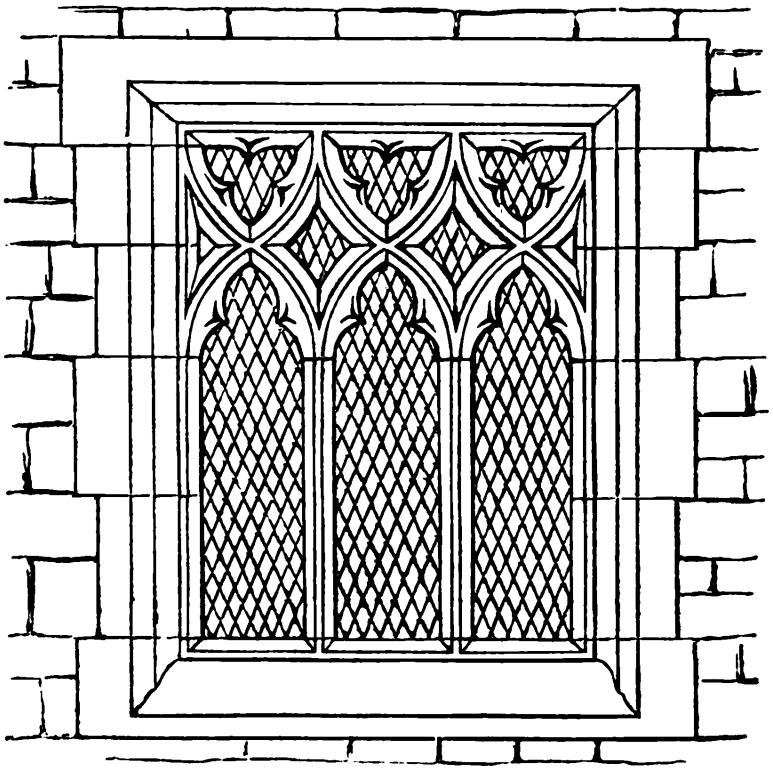


PLATE XIV.

fig. 185, a sketch of a domestic Gothic window, in the Decorated period; in fig. 186, a sketch of a domestic Gothic doorway; and in fig. 187, of an Elizabethan window, with plan.



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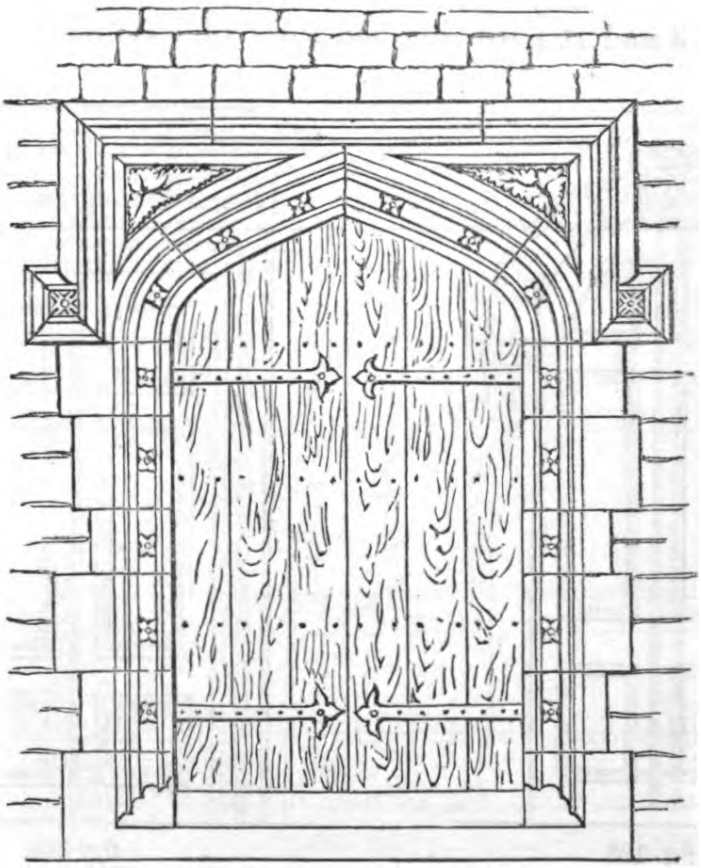


fig. 186.

In fig. 188 we give a sketch of a window in the Italian style; and in fig. 189, an elevation of a chimney, adapted for construction in brick, of which fig. 190 is the plan; fig. 191 is an elevation of a chimney, adapted for construction in stone, of which fig. 192 is the plan.

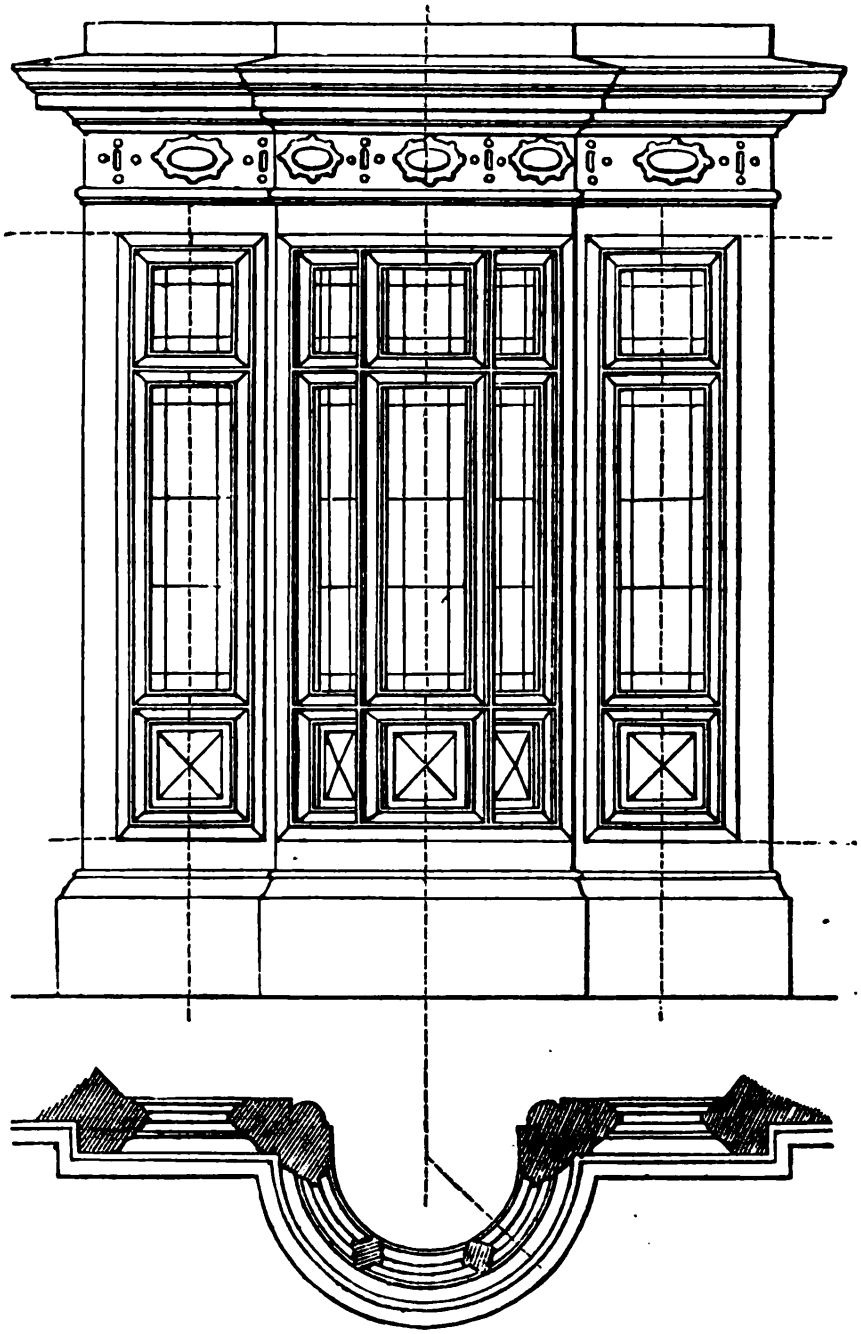
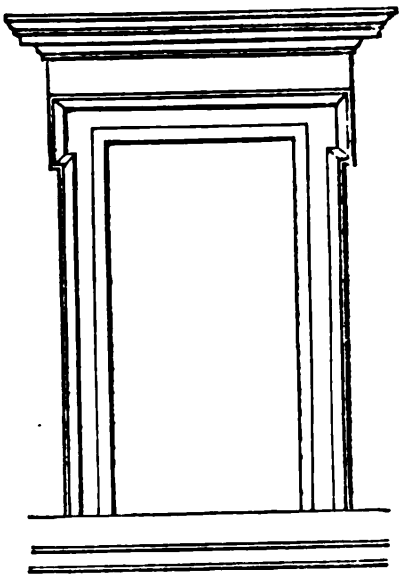


fig. 187.

Figs. 193 and 194 are sketches of a Gothic barge board.

In fig. 195 we give an elevation of the pier of a gateway in the Italian style; in fig. 196, one in the Gothic, or Tudor; and in fig. 197, another in the Elizabethan style.



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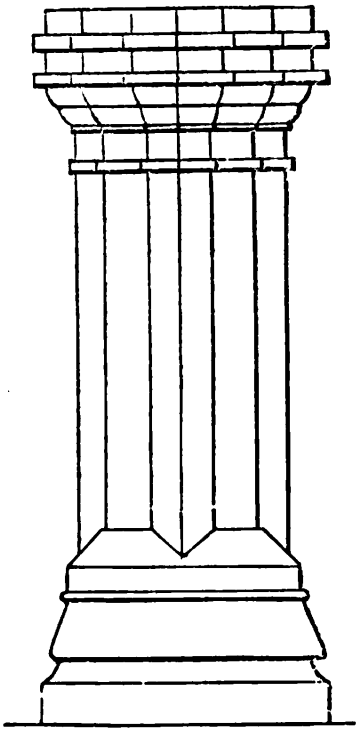

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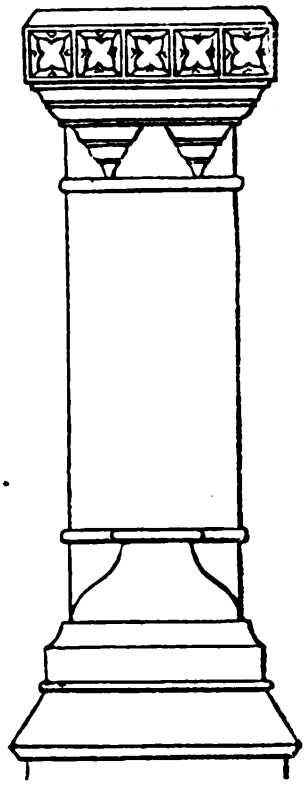

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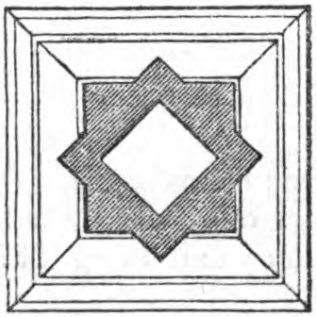

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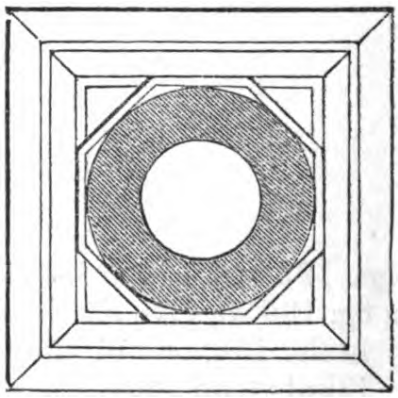

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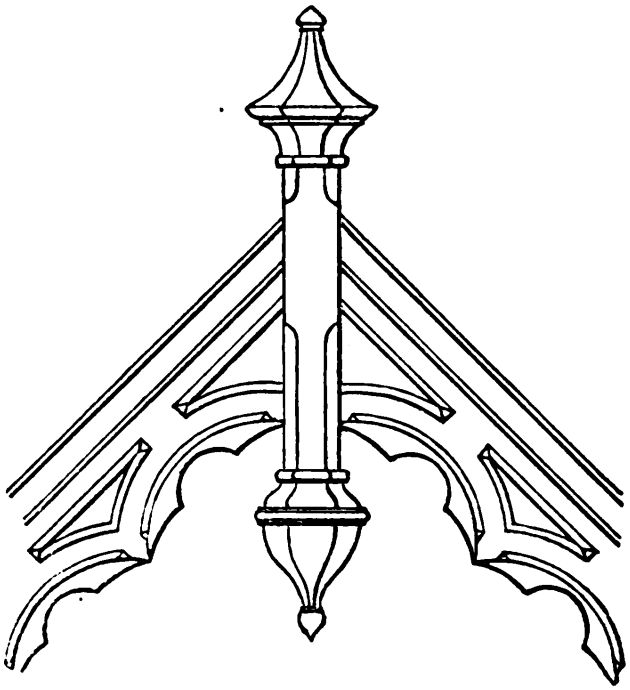

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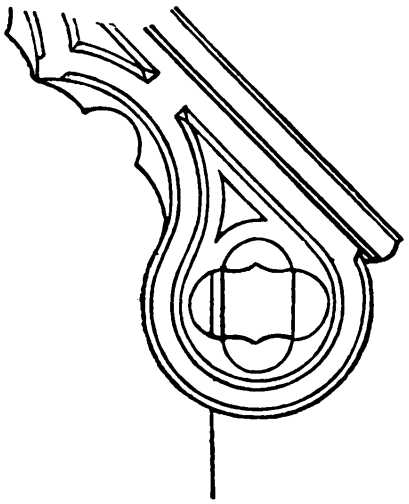

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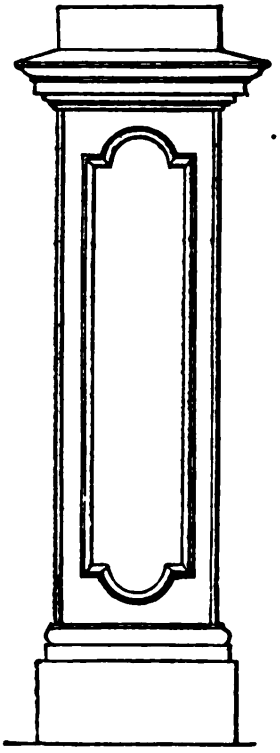

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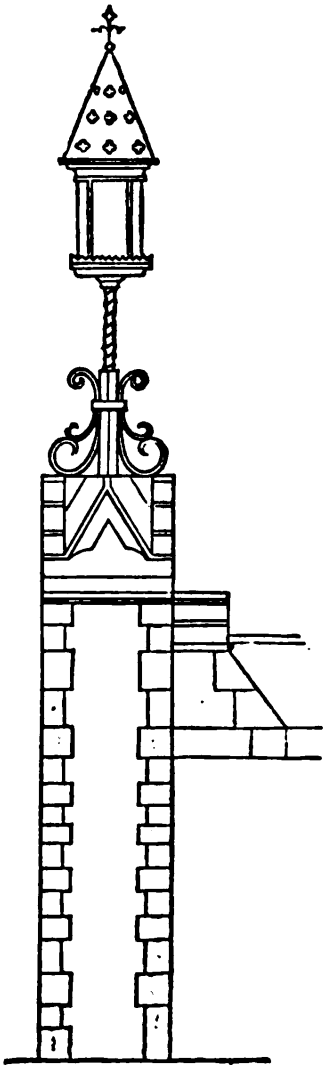
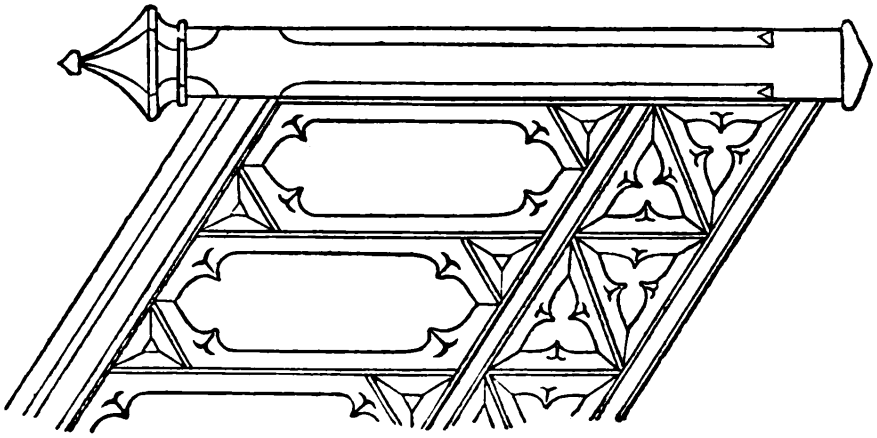


fig. 196.

In fig. 198 we give a sketch of part of a design for a staircase in the Elizabethan style; and in fig. 199, another in the Gothic.



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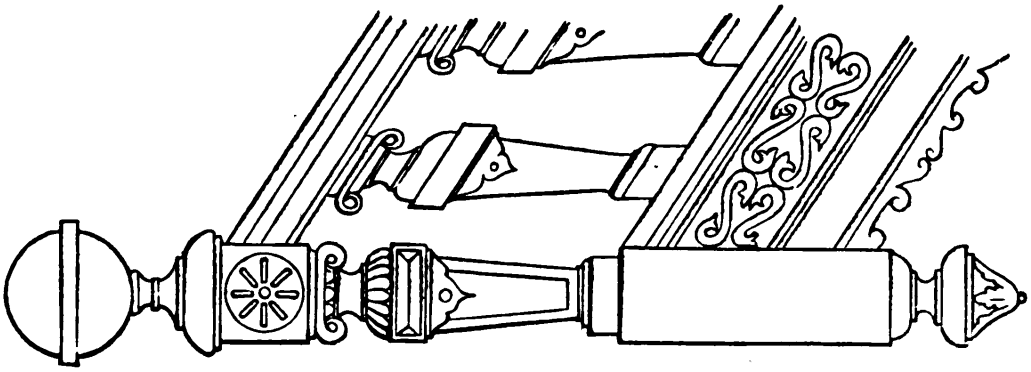

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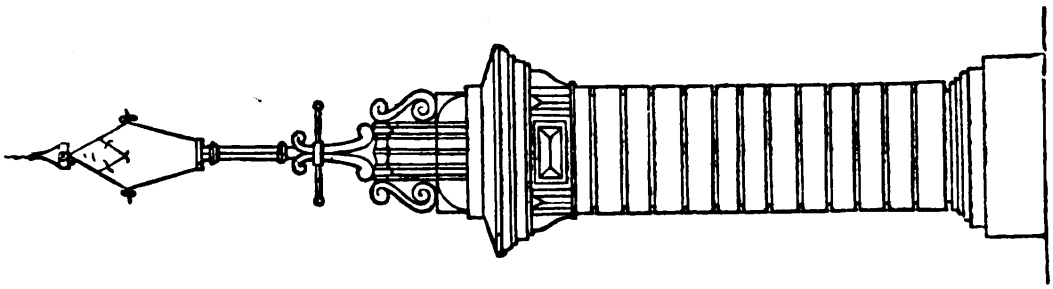


fig. 197.

Fig. 200 is an elevation of a pilaster, *a a*, in the Italian style, with ornamented frieze, *b*.

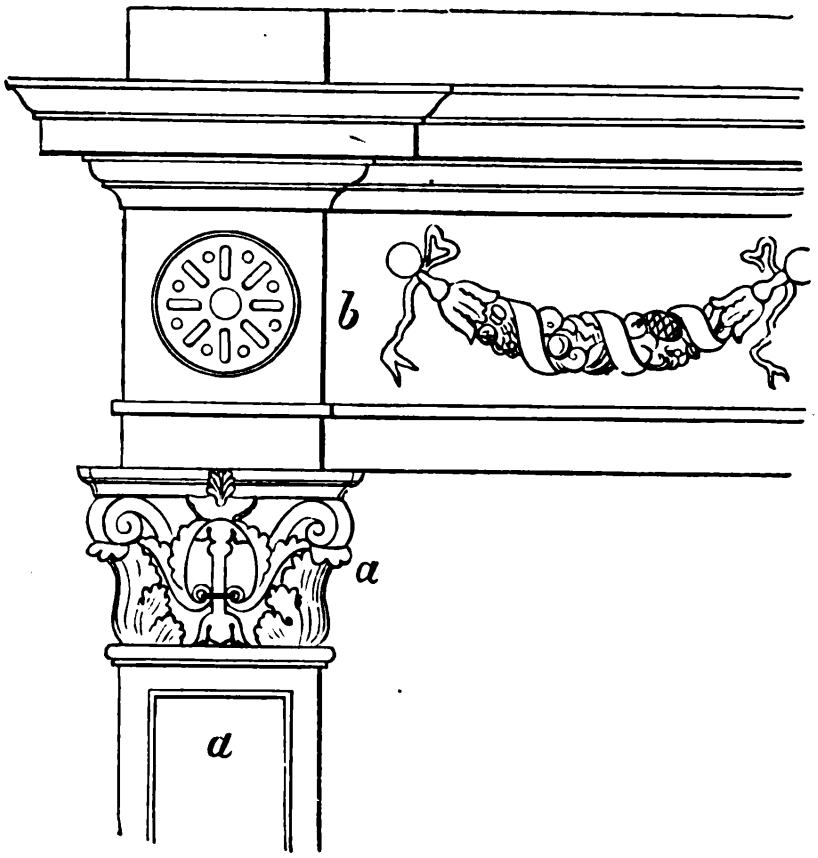
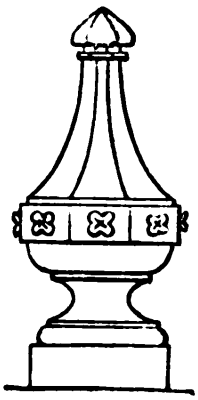


fig. 200.

Fig. 201 is a "pinnacle;" fig. 202, a range of balustrades; and figs. 203 to 208, "trusses," or brackets, all in the Italian style.



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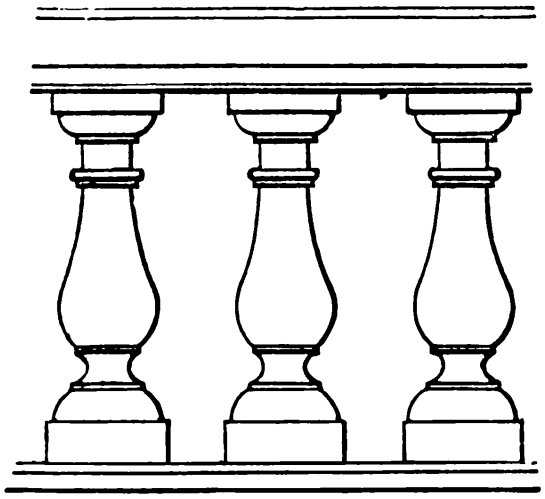
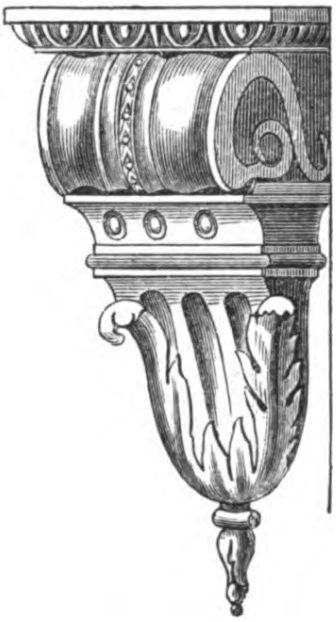


fig. 202.

fig. 203.



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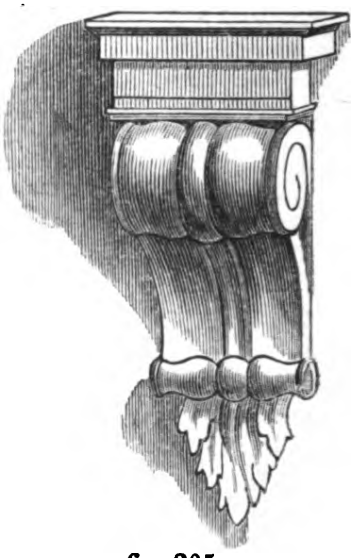

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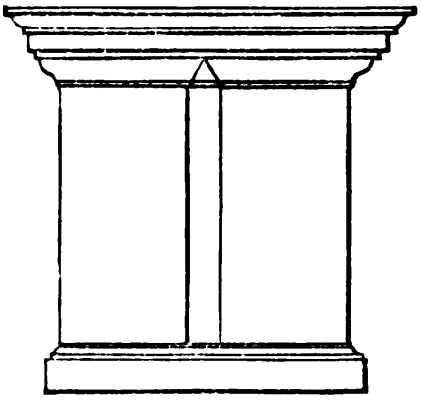

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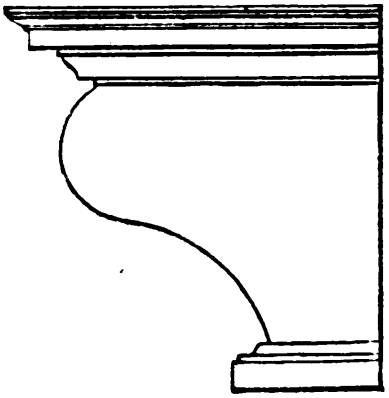

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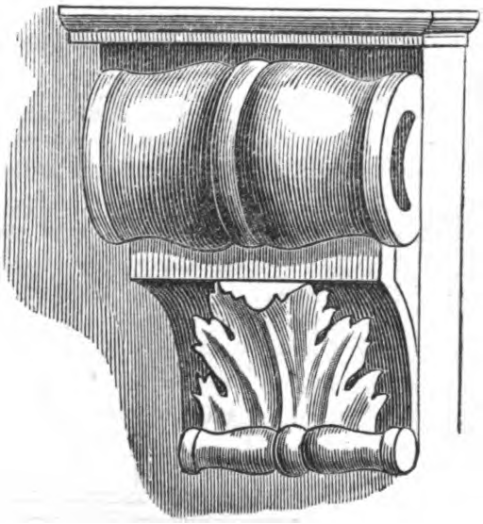

fig. 208.

INDEX.

Acanthus, Grecian, 82, 83.
Alhambra, the, 99.
Arch, Roman, 86 ; "Horse-shoe," 97.
Architecture, history and illustration of its styles, 59 ; definitions of, 59 ; Assyrian, 61 ; Egyptian, 65 ; Indian, 67 ; Chinese, 68 ; Grecian orders of, 70 ; Roman, 84 ; Romanesque, or Byzantine-Lombardic, 87 ; Gothic, 92 ; the "Renaissance," 97.
Assyrian architecture, 61.

Balustrade, open, or perforated parapet, 11.
Barge-board, Gothic, sketches of, 119.
Brackets, Italian, 122.
Bulls, colossal human-headed, 63.
Bury, Mr. Talbot, on Grecian architecture, 69.
Buttress, early English, 96 ; decorated, 96 ; perpendicular, 96.
Byzantine-Lombardic architecture, 87.

Capitals, bull, in Assyrian architecture, 64 ; Egyptian, 66 ; Doric, 73 ; Ionic, 75 ; Corinthian, 78.
Carpet, designs for, 58.
Carpets and oil-cloths, arrangement of figures used in, 16.
Chimneys, elevations of, and plans, 118.
Chinese architecture, 68.
Climate, influence of, upon the architecture of a country, 60.
Circle, ornaments to fill up, 36.
Circles, specimens of use of, 18—20 ; and lines, combination of, 21.
Circular lines, use of, 18 ; and straight, combination of, 21.
Coleridge's definition of architecture, 60.
Columniation, Grecian, 79.
Conservatory, side elevation of, 114 ; front elevation, 115.
Corinthian order, 78 ; proportions of, 78.
Curved lines, use of, 18 ; specimens of, 26—28 ; ornaments formed by, 29, 30.

"Decorated" mouldings, 92.
Decoration, "conventional" school of, 38 ; "natural" school of, 38.
Diamond, ornament to fill up, 36.
"Diaper" pattern, 12.
Doorways, Elizabethan, 115 ; domestic Gothic, 116.
Doric order, the, 70 ; proportions of, 74.
Dyce, Mr., on the adaptation of ornament to various purposes, 46.

Egyptian architecture, 65.
Elizabethan architecture, 99 ; doorways, 115 ; windows, with plan, 117 ; pier of a gateway, 120 ; staircase, 120.
English, Early, mouldings, 91 ; Gothic, 93 ; principles of, 94.
Erectheum, the, 77.

Fergusson, Mr. James, definition of architecture, 59 ; on Assyrian architecture, 62 ; on Egyptian architecture, 65, 66 ; on the Doric order, 71.
"Fluted scroll," part of, 31.
"Frets," specimens of, 23—25.
Frieze, Italian ornamented, 121.

Garbett, Mr., definition of architecture, 60 ; on the Doric order, 70.
Garment fabrics, designs for, 55.
Gateway, elevation of pier of, in Italian style, 119 ; Gothic, 119 ; Elizabethan, 120.
Gothic cross, in the "decorated style," 31 ; architecture, 91 ; tomb, 114 ; window, 185 ; doorway, 116 ; barge board, 119 ; pier of a gateway, 119 ; staircase, 120.
Grecian architecture, 69 ; orders, the, 70.

Hangings, paper and other, designs for, 57.
Hexagon combined with lozenge and equilateral triangle, 14.
Hexagons, combination of, 13.
"Honeysuckle ornament," Grecian, 28, 29, 82.
Humphrys, Mr., on Gothic architecture, 94 ; on the "Renaissance," 98.

Indian architecture, 67.
Intercolumniation, Grecian, 81.

Ionic order, 75; proportions of, 76.
Italian window, 118; pier of a gateway, 119; pilaster, with ornamented frieze, 121; "pinnacle," 121; range of balustrades, 121; "trusses," or brackets, 122.

Jones, Mr. Owen, on combination of lines, 37; on "conventionalising" in decoration, 38.

Layard, Austen, LL.D., on Assyrian architecture, 63.
Leeds, Mr. W. H., definition of architecture, 59; on the Doric order, 71; on the Ionic order, 75; on Corinthian capital, 78.
Lines, combinations of, Mr. Owen Jones's directions for, 37.
"Lozenge" or diamond shape, 10, 12.

Mansion, plans of a, 102; front and back elevations, 103; sections, 104; end elevation, 104; plan of roof, 104.
Minerva Pollias, temple of, 76.
"Mouldings," Grecian, 83; Early English, 91; "decorated," 92; perpendicular, 92.

Oblong or rhomboid, ornament adapted for, 36.
Octagon, specimen of use of, 15.
Orders, the Grecian, 70.

Parallelograms, arrangement of, 9.
Parthenon, the, 74.
Perpendicular mouldings, 92.
Pilaster, Italian, elevation of, 121.
Pilasters, Grecian, 79.
Pillars, Egyptian, 66; Doric, 72; in the Alhambra, 99.
Pointed architecture, 91.

Redgrave, Mr., on the two schools of ornamentation, 40; on the adaptation of ornament to various purposes, 46; on designs for garment fabrics, 55; on designs for paper and other hangings, 57; on designs for carpets, 58; on Byzantine architecture, 89.
"Renaissance" style of architecture, 97.
Roman architecture, 84.
Romanesque architecture, 87.
Ruskin, Mr., on the "natural" school of ornamentation, 45; on the influence of climate upon the architecture of a country, 60; on Byzantine architecture, 89; on English Gothic architecture, 94.

Saracenic or Arabian architecture, 99.
Saxon architecture, 93.
Scrolls, examples of, 32—35.
Square, placed diagonally, 10; ornaments to fill up, 36.
Squares, arrangement of, 9; and oblongs, arranged as tiles, 11; combination of, with rhomboids, 16; intersecting, combined with lozenges, 22; and oblongs, combination of 22.
St. Mark's, at Venice, Ruskin's description of, 89.
Staircase, Elizabethan, 120; Gothic, 120.
Straight lines, use of, 9; and circular, combination of, 23.
Street, row of, ground plan of, 111; chamber and cellar plan, 112; front and back elevation, 113.

Textile fabrics, examples of ornamentation for, 38—57.
Tomb, Gothic, side elevation of, 114.
Transition style of architecture, 93.
Triangles, two equilateral, construction of, 13; equilateral, ornamentation formed by, 21; ornament to fill up, 36.
"Trusses," Italian, 122.

Villas, pair of semi-detached, front elevation of, 105; basement and ground plan, 106; half-plans, 107; end elevation, 108; transverse section, 109; various details, 110.

Wallis, Mr. George, on the "conventional" idea in decoration, 38.
Whewell, Dr., on the technical characteristics of the Romanesque architecture, 88.
Window, domestic Gothic, 116; Elizabethan, with plan, 117; Italian, 118.
Wyatt, Mr. Digby, on the principles which should determine form in the decorative arts, 48.

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3. Tables, giving a full account of the abbreviations used in writing and printing.

4. A collection of Latin, French, and Italian words, and phrases of frequent occurrence, with translations.

5. An account of the principal Deities and Heroes of Antiquity.

N.B.—For Specimen page of Typography, see next page.

CO-AG'Ū-LĀTE, *v. t.* To curdle; to concrete; to change from a fluid to a thick or fixed state; *v. i.* to turn from a fluid to a concrete state.
CO-AG-Ū-LĀ'TION, *n.* The act or process of curdling; concretion; the body formed by coagulating.
CO-AG'Ū-LĀ-TIVE, *a.* Having power to coagulate.
CO-AG'Ū-LĀ-TOR, *n.* That which causes to curdle.
CO-AG'Ū-LUM, *n.* Runnet; that which causes coagulation; a coagulated mass.
COAL, *n.* Wood charred; a solid combustible substance used for fuel, found embedded in the earth.
COAL, *v. t.* To burn to charcoal; *v. i.* to get or take in coal; as, the steamer stopped to coal.
COAL'ER-Y, *n.* A place where coal is dug.
CO-A-LESCE' (ko-a-lĕss'), *v. i.* To unite; to grow together.
CO-A-LES'CENCE, *n.* The act of uniting; union.
CO-A-LES'CENT, *a.* Joined; united.
COAL'-FIELD, *n.* A bed of fossil coal.
COAL'ING, *n.* The act of taking in coal.
CO-A-LI"TION (-lĭsh'un), *n.* Union in a body or mass; union of persons, parties, or states.—SYN. Confederacy; alliance; league; combination.
COAL'-MEAS'URE, *n.* A measure for coals; *coal measures*, beds of coal. [the earth.
COAL'-MINE, *n.* A mine where coal is taken from
COAL'-PIT, *n.* A pit where coal is dug. In the *United States*, a place where charcoal is made.
COAL'Y, *a.* Full of coal; like coal.
COAM'INGS, *n. pl.* In *ships*, the raised borders or edges of the hatches.
CO-ARCT'ĀTE, *a.* Pressed together.
COARSE, *a.* Not fine; not refined; inelegant; mean.—SYN. Gross; rude; rough; unpolished.
COARSE'LY, *ad.* In a coarse manner; roughly; rudely. [ness; largeness.
COARSE'NESS, *n.* Grossness; rudeness; rough-
COAST, *n.* Edge or border of land next to the sea; sea-shore; limit or border of a country [*Scrip.*]. [shore.
COAST, *v. t.* or *i.* To sail along or near to the
COAST'ER, *n.* A person or vessel that sails along a coast trading from port to port.
COAST'ING, *a.* Sailing along the coast; *n.* a sailing near land, or from port to port in the same state.
COAT (19), *n.* A man's upper garment; a covering or layer; the covering or fur of a beast, &c.; petticoat; a tunic of the eye; that on which ensigns armorial are portrayed, usually called a coat of arms. *Coat of mail*, a kind of shirt, consisting of a net-work of iron rings.
COAT, *v. t.* To cover with a coat or layer.
COAT-EE', *n.* A coat with short flaps.
COAT'ING, *n.* A covering; cloth for coats.
COAX, *v. t.* To lead on by kind treatment.—SYN. To wheedle; flatter; appease; persuade; entice.
COAX'ER, *n.* One who entices by flattery; a wheedler.
COB, *n.* *Literally*, head; hence, a rounded mass, as in *cobble*-stone, *cob*-coal, &c.; a thick, strong pony. In *America*, a spike of maize.
CŌ'BALT (kō'bolt), *n.* A mineral of a reddish-gray color, used to give a blue color to glass, enamels, porcelain, &c.
CO-BALT'IC, *a.* Pertaining to cobalt.
COB'BLE, *n.* A boat used in the herring fishery.
COB'BLE, } *n.* A roundish stone; a pebble.
COB'BLE-STONE, }
COB'BLE, *v. t.* To mend coarsely or clumsily; to make or do bunglingly.
COB'BLER, *n.* A mender of shoes; a bungler.
COB'WEB, *n.* A spider's web; a trap; *a.* slight; flimsy.
COC-AGNE' (kok-āne'), *n.* An imaginary country of idleness, luxury, and delight. Hence, applied to London and its suburbs. [berries.
COC-CIF'ER-OUS (kok-sĭf'er-us), *a.* Producing
COCH'I-NEAL, *n.* A substance composed of dried insects, used in dyeing scarlet.

COCH'LE-A-RY, } (kŏk'le-), { *a.* Like a screw; spiral.
COCH'LE-ATE, }
COCK, *v. t.* To set upright; to strut; to set the cock of a gun; to gather hay into conical heaps.
COCK, *n.* The male of birds and fowls; a spout or instrument for discharging fluids; the hammer or part of a gun-lock which strikes fire; a pile of hay; a small boat; a projection; a leader.
COCK-ADE', *n.* A ribbon, or knot of ribbon, or something similar, to be worn on the hat.
COCK'A-TRICE, *n.* A kind of serpent imagined to proceed from a cock's egg.
COCK'-BOAT, *n.* A small boat.
COCK'-CHAF-ER, *n.* The dorr-beetle.
COCK'-CROW-ING, *n.* The time of the crowing of cocks in the morning; early morn.
COCK'ER, *v. t.* To fondle; to caress; to pamper.
COCK'ER-EL, *n.* A young cock.
COCK-ER-ING, *n.* Indulgence. [tom-house.
COCK'ET, *n.* A ticket or warrant from the cus-
COCK'-FIGHT, } (-fīte), { *n.* A contest of cocks.
COCK'-FIGHT-ING, }
COCK'-HORSE, *a.* On horseback; triumphing.
COCK'LE (kŏk'kl), *n.* A genus of shell, or shell-fish; corn-rose. [to shrink.
COCK'LE, *v. t.* or *i.* To contract into wrinkles;
COCK'LE-STAIRS, *n. pl.* Winding or spiral
COCK'-LOFT, *n.* A room over the garret. [stairs.
COCK'NEY (kŏk'nĭ), *n.*; *pl.* **COCK'NEYS**. A native of London; *a.* pertaining to or resembling a cockney. [cockney.
COCK'NEY-ISM, *n.* Dialect or manners of a
COCK'PIT, *n.* A place where cocks fight; a room in a ship under the lower gun-deck.
COCK'ROACH, *n.* A troublesome insect, the Blatta, infesting houses. [cock; a plant.
COCK'S'COMB (kŏx'kōme), *n.* The comb of a
COCK'SWAIN (in familiar speech contracted into kŏk'sn), *n.* The steersman of a boat, having command in the absence of an officer.
CŌ'COA (kō'kō), *n.* The chocolate-tree; the nut of this tree; a decoction from a preparation of the nut. [The more proper spelling would be *cacao*.]
CŌ'COA-NŬT, *n.* The nut or fruit of a kind of palm-tree inclosed in a fibrous husk.
CO-COON', *n.* The silken ball in which the silk-worm involves itself; the like ball or case formed by certain other insects. [silk-worms.
CO-COON'ER-Y, *n.* A building or apartment for
COC'TILE, *a.* Made by baking, as a brick.
COC'TION, *n.* A boiling; a digestion.
COD, *n.* A sea-fish of the genus *Gadus*; a bag; envelope, or case of seeds.
COD'DLE, } *v. t.* To caudle; hence, to make
COD'LE, } much of. digest of laws.
CŌDE, *n.* A book of the civil law; a collection or
CŌ'DEX, *n.*; *pl.* **CŌ'DI-CES**. [*L.*] A manuscript; a book; a code.
COD'GER, *n.* A rustic; a clown; a miserly man.
COD'I-CIL, *n.* A supplement to a will.
CO-DI-FI-CĀ'TION, *n.* The act or process of reducing laws to a system.
CŌ'DI-FY, *v. t.* To reduce to a code.
COD'-LINE, *n.* A line for taking codfish.
COD'LING, *n.* A young cod.
CO-EF'FI-CA-CY, *n.* Joint efficacy or power.
CO-EF-FI"CIEN-CY (-fish'en-sy), *n.* Joint operation. [gether.
CO-EF-FI"CIENT (-fish'ent), *a.* Operating to-
CO-EF-FI"CIENT, *n.* That which is connected with something else in producing an effect; in *algebra*, a number or letter prefixed as a multiple to another letter or quantity.
CŒ'LI-AC, } *a.* Pertaining to the belly or to the
CE'LI-AC, } intestinal canal.
CO-EMP'TION, *n.* A purchasing of the whole.
CO-E'QUAL, *a.* Equal with another. [another.
CO-E-QUAL'I-TY (-kwŏl'e-tĭ), *n.* Equality with
CO-E'QUAL-LY, *ad.* With joint equality.