

THE
FIVE ORDERS OF ARCHITECTURE

BY

GIACOMO BAROZZI

OF

VIGNOLA.



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CITY OF BROM.

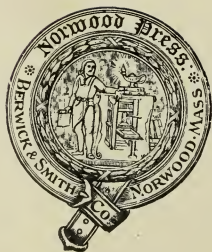
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CITY OF PROV.

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TOMMASO JUGLARIS AND WARREN LOCKE

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A SKETCH OF THE LIFE OF GIACOMO BAROZZI OF VIGNOLA.

GIACOMO BAROZZI was born on the 1st of October, 1507, in Vignola, near Modena, Italy. He was orphaned at an early age.

His mother's family, seeing his talents, sent him to an art school in Bologna, where he distinguished himself in drawing and by the invention of a method of perspective. To perfect himself in his art he went to Rome, studying and measuring all the ancient monuments there. For this achievement he received the honors of the Academy of Architecture in Rome, then under the direction of Marcello Cervini, afterward Pope. In 1537 he went to France with Abbé Primaticcio, who was in the service of Francis I. Barozzi was presented to this magnificent monarch and received a commission to build a palace, which, however, on account of war, was not built. At this time he designed the plan and perspective of Fontainebleau castle, a room of which was decorated by Primaticcio. He also reproduced in metal, with his own hands, several antique statues.

Called back to Bologna by Count Pepoli, president of St. Petronio, he was given charge of the construction of that cathedral until 1550. During this time he designed many

other buildings, among which we name the palace of Count Isolani in Minerbio, the porch and front of the custom house, and the completion of the locks of the canal to Bologna.

After this he again went to Rome, and was presented to Pope Julian III. by Vasari. Julian, knowing his ability, commissioned him his architect, and gave him the supervision of the Trevi aqueduct.

He also gave him orders to build a palace near the Popolo gate, called the Julian villa.

He also built the temple of St. Andrew, and restored the palace of Campo Marzo for the Monti family. This palace afterward became the property of the Duke of Florence, and is still called the Florentine palace.

At the death of Julian, Vignola went into the service of Cardinal Alexander Farnese, and built that portion of the palace which contains the gallery painted by Carracci. He designed and built the beautiful Corinthian doorway of SS. Lorenzo and Damaso; also a Doric doorway for the Pope's palace.

Cardinal Farnese desiring to build the beautiful church of Jesus, gave Vignola the order. The foundation was laid in 1568, but Vignola built it only as far as the cornice, the remainder being finished by Giacomo della Porta. After this Vignola built the churches of St. Anna and St. Martin, and many other edifices in Rome and vicinity; but none of them compare in beauty and grandeur with the Palace of Caprarola, which, according to many biographers, is the greatest work of this great artist.

Monsignor Barbaro declared that the palace was greater than Vignola's fame.

In 1564, after Michael Angelo's death, Vignola built the beautiful cupolas on St. Peter's. At this time he was invited by Philip II. of Spain to travel thither to put into execution the design Vignola had made for the famous Escorial Palace, but on account of his advanced age and his attachment to Rome, he resolved not to make the journey. After this Vignola settled a dispute between Pope Gregory XIII. and the Grand Duke of Tuscany, concerning the boundary between two States near Castello, satisfactorily to both parties, with great judgment and discretion.

On his return to Rome, he died at the age of sixty-six. His funeral was celebrated with great pomp, and was attended by the Academicians of Rome in a body. He was buried in the Pantheon.

Architecturē owes an eternal debt of gratitude to this founder of the laws governing the Five Orders of Architecture. He was the first to reduce to rule and proportion the various styles of ancient architecture. He also invented the rule for tapering the column. His treatise on the Five Orders has become a standard work, and he deserves the title of the Lawgiver of Architecture.

THE FIVE ORDERS OF ARCHITECTURE.



PLATE I.



CONCERNING THE MODULUS AND THE ORDERS IN GENERAL.

IN Architecture the word Order signifies a composition (in the same style) of a pedestal, a column, and an entablature, together with their ornamentation.

Order means a perfect and regular disposition of all the parts of a beautiful composition; in a word, order is the opposite of confusion.

Order is necessary in all things, because, without it, confusion exists, that is disagreeable to the eye and unintelligible to the mind.

There are five Orders of Architecture, of which three are Greek,—the Doric, Ionic, and Corinthian; and two Italian,—the Tuscan and the Composite.

Now, in treating of the Orders, we must put first the details of which they are composed, to give a general idea of that which will afterward be specified and described.

An Order is composed of three parts: a Pedestal, a Column, and an Entablature; but the first is not essential.

Each of these is also divided into three parts, which are, for the Pedestal: Base, Plinth, and Cap; for the Column: Base, Shaft, and Capital; for the Entablature: Architrave, Frieze, and Cornice.

For use in measuring and designing in the Orders, architects have adopted a conventional measure, called a Modulus. This modulus becomes the unit of measurement, and is generally so selected that it is easily subdivided, and is also one-half the largest diameter of the column. That is to say, a modulus is a variable measure, chosen as the architect's taste and talent dictates.

Generally, the modulus taken is the radius of the largest part of the column.

This modulus is divided into parts, and each part equally subdivided.

Vignola divided his modulus, for the Tuscan and Doric orders, into 12 parts, and the others into 18 parts.

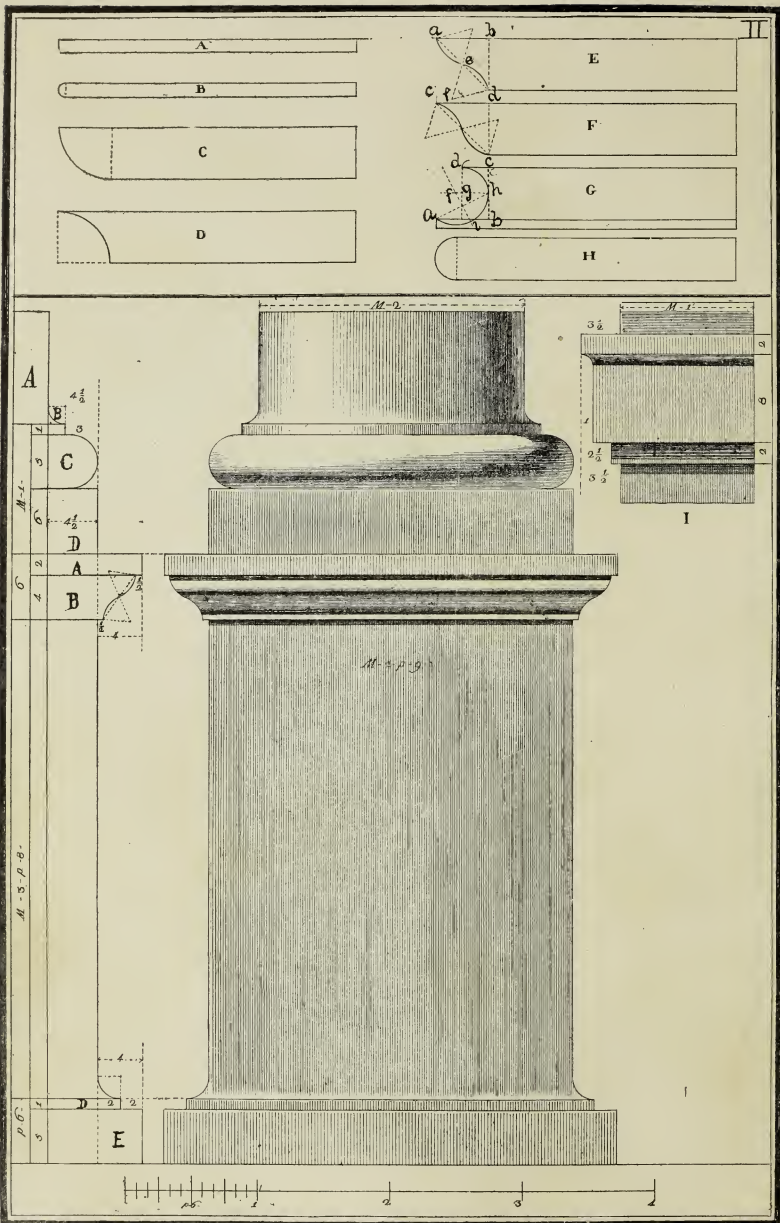


PLATE II.



THE MOULDINGS.

MOULDINGS are the alphabet of Architecture, and their different combinations produce different profiles for each order.

These mouldings are of three kinds, — plain, round, and mixed. No one can depart from these beautiful geometrical outlines of construction without falling into error. It will be noticed that the mouldings seldom project as much as their height, yet the position from which they are to be seen must be taken into consideration. In this latter connection it would be well to remember that the prominent parts of a building should be most ornamented.

There are eight kinds of mouldings, which are: A. The fillet of rectangular section (the term is independent of size). B. The bead, which has a semicircular face. C. The Quarter-round, a quarter-circle. D. The Concave, a quarter-circle. E. The Ogee. F. The reversed Ogee. G. The Scotia, or Mouth. H. The Toro, or *Bull*, which has a semicircular face.

The following are good rules for drawing the outlines of the mouldings lettered E, F, and G. The one lettered E and the reverse lettered F are described in the following manner: —

Draw a perpendicular line bd across the moulding. On the face of the moulding lay off $ba = bd$. Complete the square $abcd$: ad is its diagonal; e , the middle of the diagonal, is the middle of the ogee. From d and e lay off df

and ef each equal to de . The point f will be the center of an arc forming one-half of the ogee. The other half of the ogee is described in the same manner.

TO DESCRIBE THE SCOTIA.

Draw the perpendicular bc across the moulding in such a position that dc shall be $\frac{1}{2}$ of bc . Complete the square $dchg$: g is the center for the quarter-circle dh .

Draw ah , and bisect it by fi . The point f , where fi meets gh prolonged, is the center for the arc hia , which completes the curve of the face of the Scotia.

THE TUSCAN PEDESTAL.

In all the orders we have the general rule that the pedestal is $\frac{1}{3}$ part of the combined height of pedestal, column, and capital, or it is $4\frac{2}{3}$ moduli. Vignola gives the base of the pedestal a height of $\frac{1}{2}$ modulus, adorned by a listel (E) and a fillet (D).

The cap of the pedestal is also $\frac{1}{2}$ modulus high, and is made up of an ogee (B), with a fillet (A) over it. Both the base and cap project $\frac{1}{3}$ modulus from the side of the plinth. The plinth is $3\frac{2}{3}$ moduli in height.

THE BASE OF THE COLUMN.

The base of the column must be placed over the cap of the pedestal and be of the same width as the plinth. The height of the base of the column is 1 modulus, and its projection is $4\frac{1}{2}$ parts from the side of the column.

In the figure, A is the shaft of the column, B its bottom fillet, — the same for columns of all orders, — C the bull, D the base.

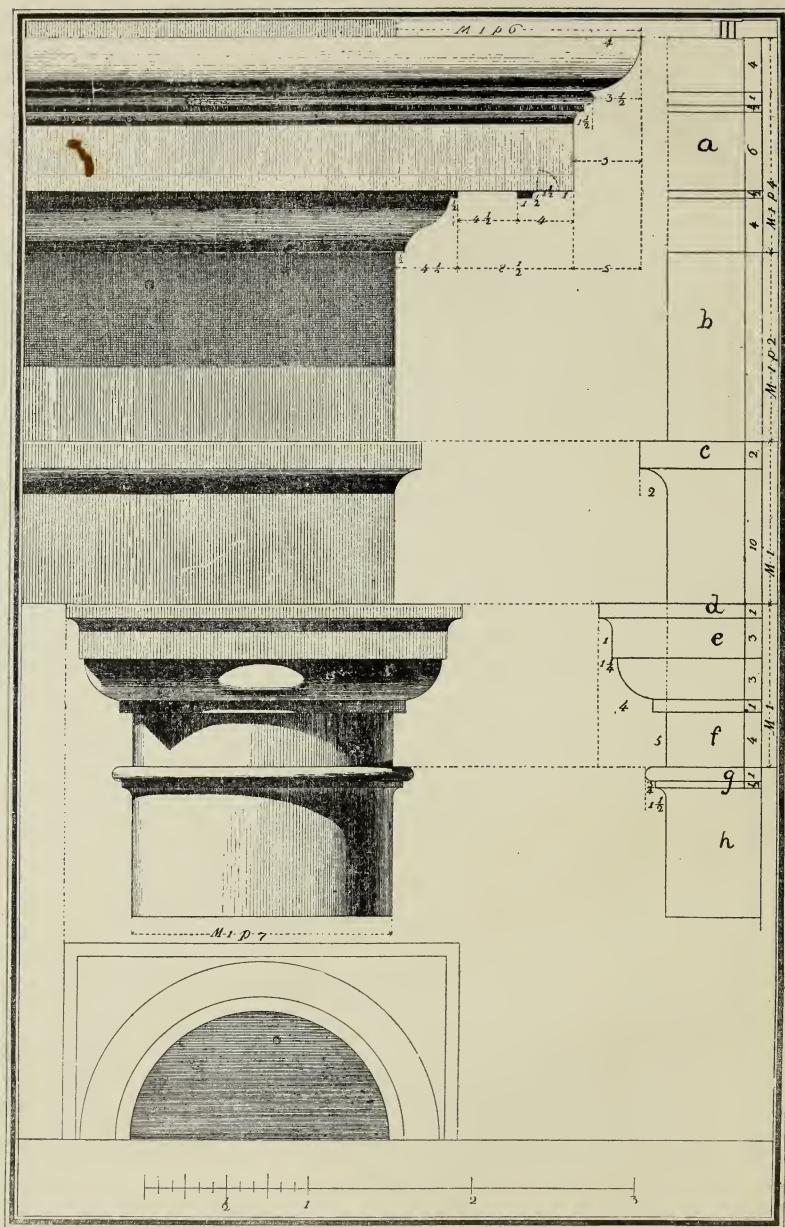


PLATE III.



THE TUSCAN CAPITAL AND ENTABLATURE.

VIGNOLA gives the Tuscan capital a height of 1 modulus and a projection of 5 parts.

The frieze of the capital has the same diameter as the upper part of the shaft of the column.

The entablature — that is, the architrave, frieze, and cornice — is $3\frac{1}{2}$ moduli in height, which is one-quarter of the combined height of base, column, and capital.

The architrave is 1 modulus in height, and is adorned by a listel of $\frac{1}{6}$ of its height and $\frac{1}{6}$ projection. The frieze is $1\frac{1}{6}$ moduli in height. The cornice is $1\frac{1}{3}$ moduli and projects $1\frac{1}{2}$ moduli.

The outline is as follows: *a*, cornice; *b*, frieze; *c*, listel, or fillet of architrave; *d*, listel of capital; *e*, abacus of capital; *f*, frieze of capital; *g*, top bead of column, — this last is the same in all orders, — *h*, the shaft of the column; *A*, plan of the capital.

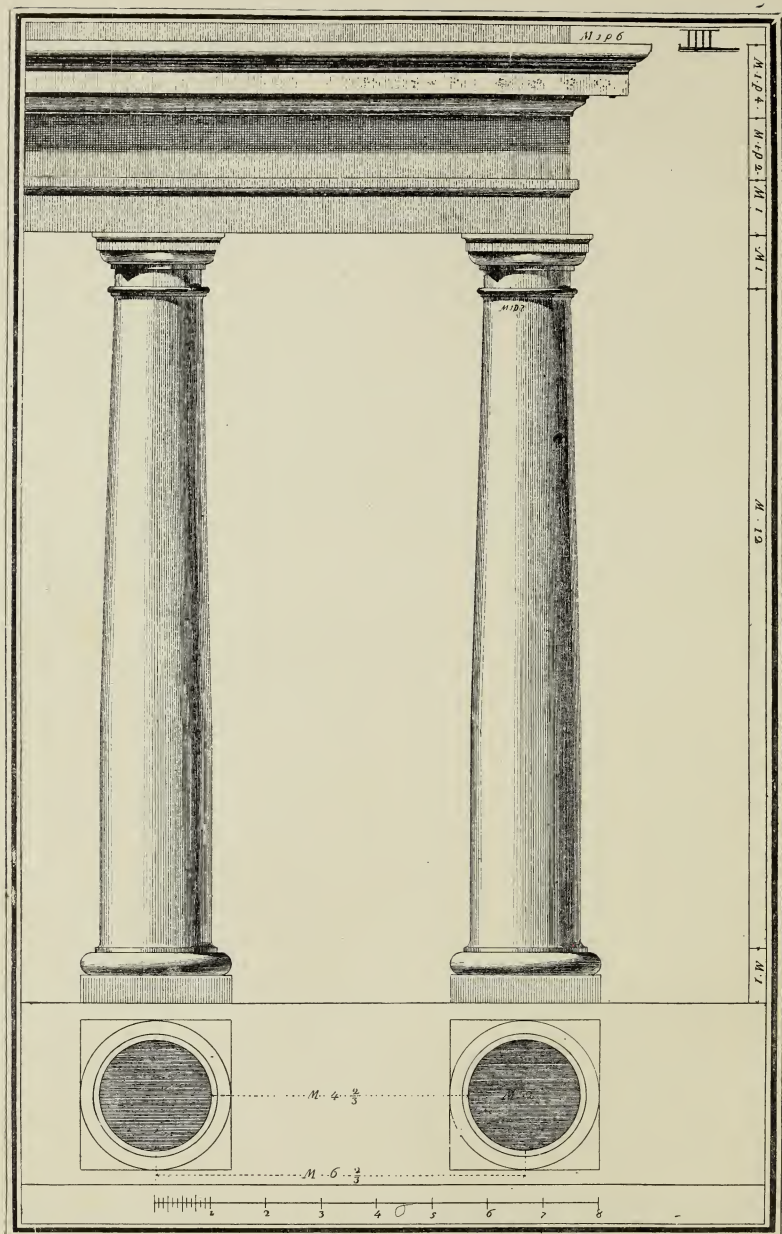


PLATE IV.



PLAIN TUSCAN INTERCOLUMNIATION.

As a general rule, Vignola divides every order — without pedestal — into 5 parts: 4 for the column, with base and capital, and 1 for entablature. Vignola gave the Tuscan column, with base and capital, 7 diameters in height, from which the entablature is $3\frac{1}{2}$ moduli high. Hence the total height is $17\frac{1}{2}$ moduli, or $8\frac{3}{4}$ diameters.

The distance between centers of columns is 6 moduli and 8 parts, or $3\frac{2}{3}$ diameters.

The mouldings have been described.

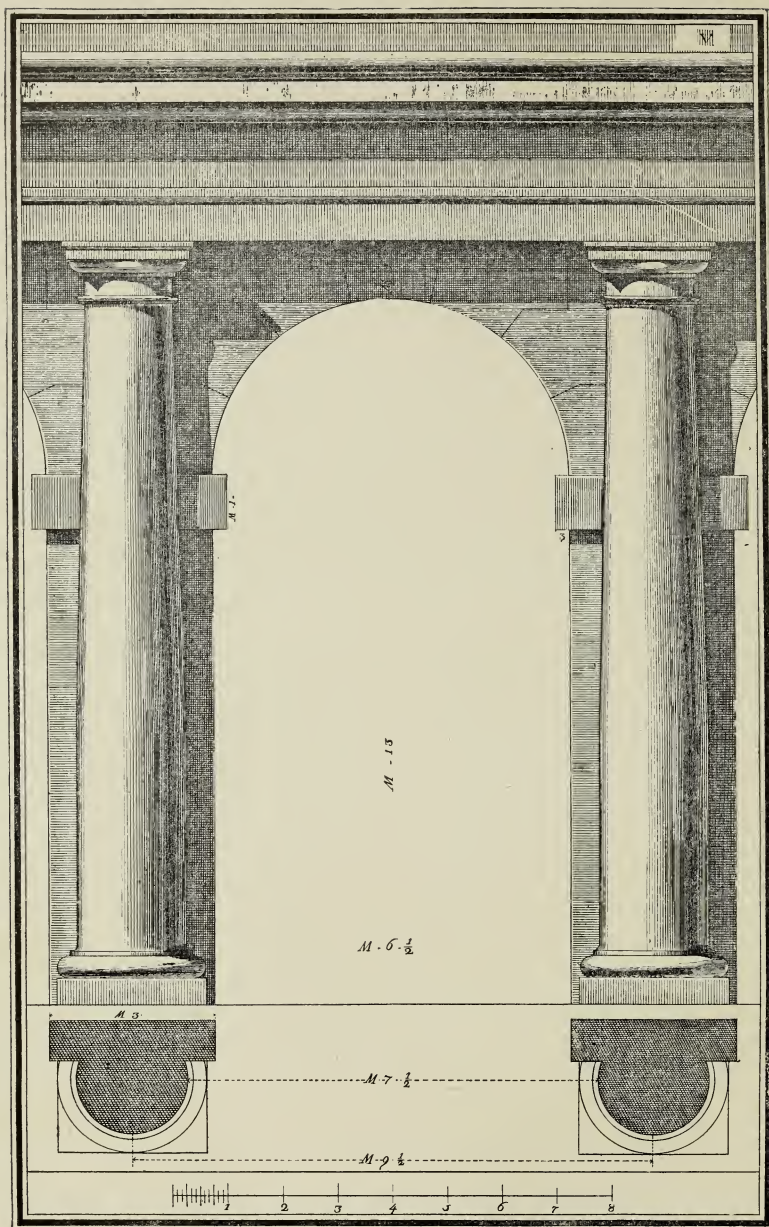


PLATE V.



TUSCAN ARCHED INTERCOLUMNIATION.

IN the arched Tuscan intercolumniation without pedestal we have the arch *opening*, with the proportion of the height twice the breadth, or, to be exact, 13 moduli high and $6\frac{1}{2}$ wide.

The pilasters behind the columns are 3 moduli wide, which gives $9\frac{1}{2}$ moduli between centers of columns. Given these dimensions, the others will be those established for the simple intercolumniation.

The top of the cap of the pilaster and the center of the arch are in the same horizontal line. The pilaster cap is 1 modulus thick, and projects $\frac{1}{4}$ modulus.

The pilaster projects $\frac{1}{2}$ modulus on each side of the column. One-third of the column is built into the pilaster.

For the mouldings and entablature, see Plates II. and III.

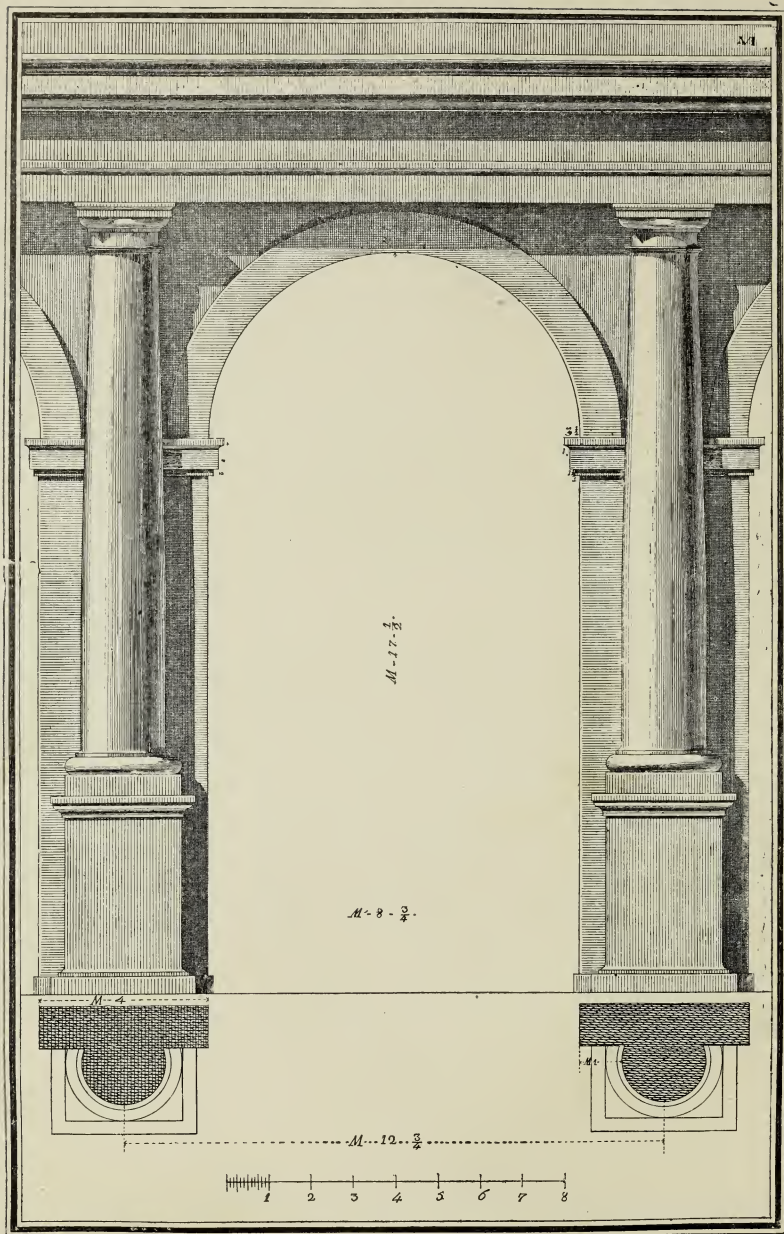


PLATE VI.



TUSCAN INTERCOLUMNIATION WITH ARCH AND PEDESTAL.

IN this modification of the Tuscan Order we first establish the opening of the arch as before, — the height twice the width, the measurements being $8\frac{3}{4}$ moduli in width and $17\frac{1}{2}$ moduli in height.

The pilasters are 4 moduli wide, and the distance between the centers of columns is $12\frac{3}{4}$ moduli, and the total height — pedestal, column, and entablature — $22\frac{1}{6}$ moduli.

The height of arch opening being fixed, we add one modulus for the depth of the arch.

This height is divided into 16 parts, and of these 12 are given to the column, with base and capital, and 4 to the pedestal. To this we add 3 parts for the entablature. The top of the cap of the pilaster is in a horizontal line with the center of the arch. The pilaster cap is 1 modulus high.

The top of the arch is 1 modulus and 2 parts below the entablature. The cap is shown in double scale on Plate II.

One-third of the column is built into the pilaster. The mouldings are taken from Plate II. as before.

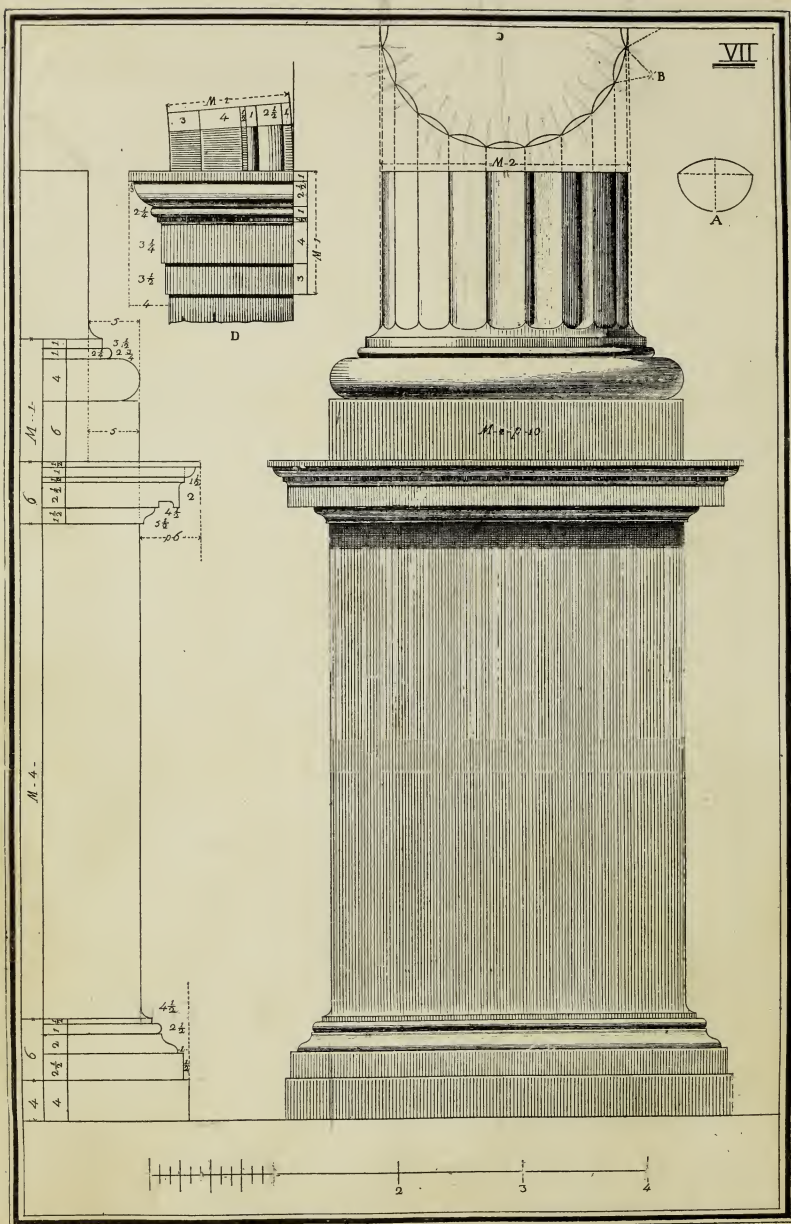


PLATE VII.



THE DORIC PEDESTAL.

VIGNOLA gives this Pedestal a height of $5\frac{1}{3}$ moduli, and divided it into 3 parts, — Base, Plinth, and Cap. The base is 10 parts high, and projects $4\frac{1}{2}$ parts. The plinth has a height of 4 moduli, and a width of 2 moduli and 10 parts. The cap is $\frac{1}{2}$ modulus high, and also projects $\frac{1}{2}$ modulus.

THE DORIC COLUMN.

The base is 1 modulus high and projects 5 parts. Vignola gives the column 20 flutings, which are described as follows :

The largest circumference of the column is divided into 20 parts by points. Place one leg of a pair of compasses on one of these points, and with a radius equal to the chord between two adjacent points on the circumference, make an indefinite arc outside the circumference.

Reverse the position of the legs of the compasses, and make another arc, cutting the first.

The point B, where the two arcs cross, is the center of the arc, forming one fluting.

The flutings of the Doric Order meet, forming a sharp edge. The modulus of the Doric Order is divided into 12 parts.

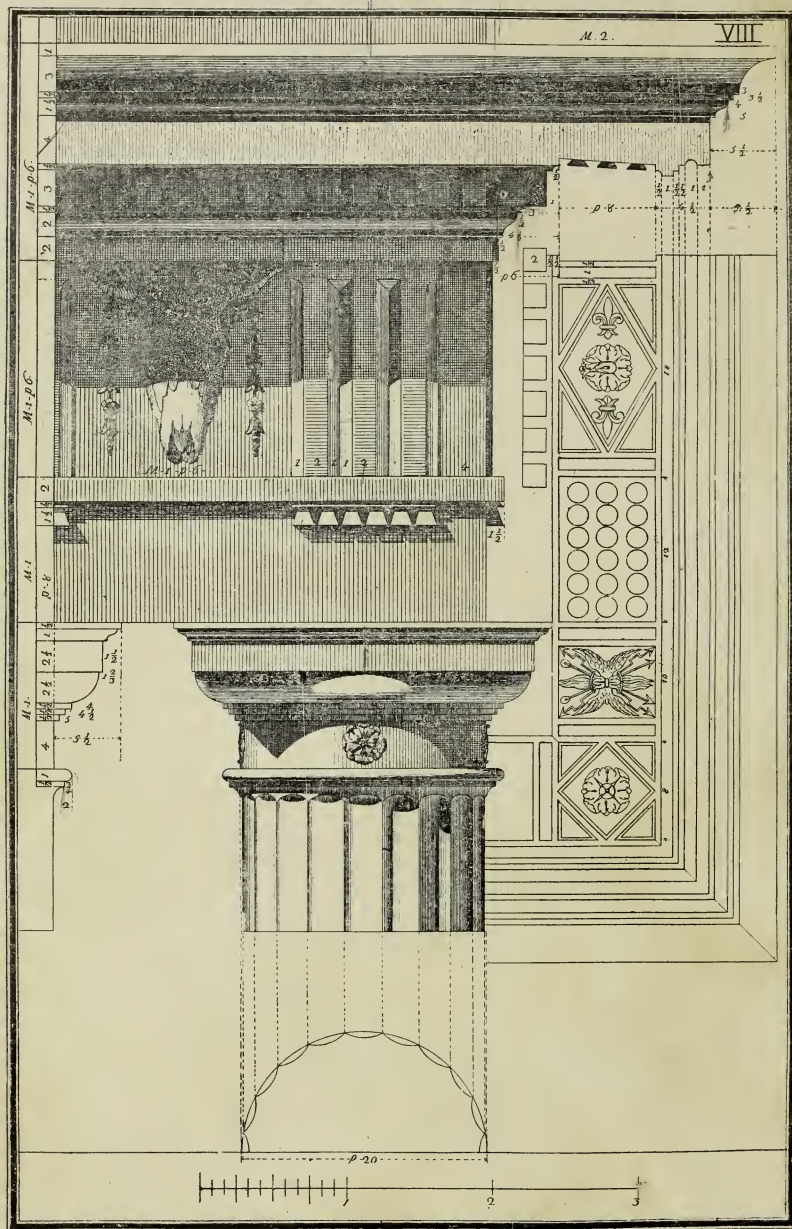


PLATE VIII.



THE DORIC CAPITAL AND ENTABLATURE.

FIRST STYLE.

THIS example of the Doric Order is taken from the theater of Marcellus in Rome, and has the same proportions. Vignola gives the Doric capital a diameter, in the body, of $1\frac{2}{3}$ moduli, a height of 1 modulus (exclusive of bead at top of column), and $5\frac{1}{2}$ parts of projection.

The entablature is 4 moduli high, which is $\frac{1}{4}$ the combined height of base, column, and capital.

The architrave is 1 modulus high, and is crowned by a fillet of $\frac{1}{6}$ of its height.

Under every triglyph is a little inclined fillet having pendent bell-shaped drops. (Guttæ.)

The frieze is $1\frac{1}{2}$ moduli high and is adorned with metope and triglyph. The metopes are always square, and may be ornamented with heads of animals, coats-of-arms, trophies of war, or may have symbols explaining the use for which the building is designed. The triglyph is 1 modulus wide, and is divided by 2 flutings. In designing the frieze of the Doric Order, whatever license is taken with the triglyph and metope, the centers of triglyph and column must be in line with each other. The height of the cornice is $1\frac{1}{2}$ moduli, and it projects 2 moduli. The mouldings will be understood from the illustrations. The plan of the under side (Soffit) of the projecting cornice is given to show Vignola's method of ornamenting that portion of the edifice; but the ornamentation is not fixed by rigid rule, but rather is adorned according to the fancy of the architect.

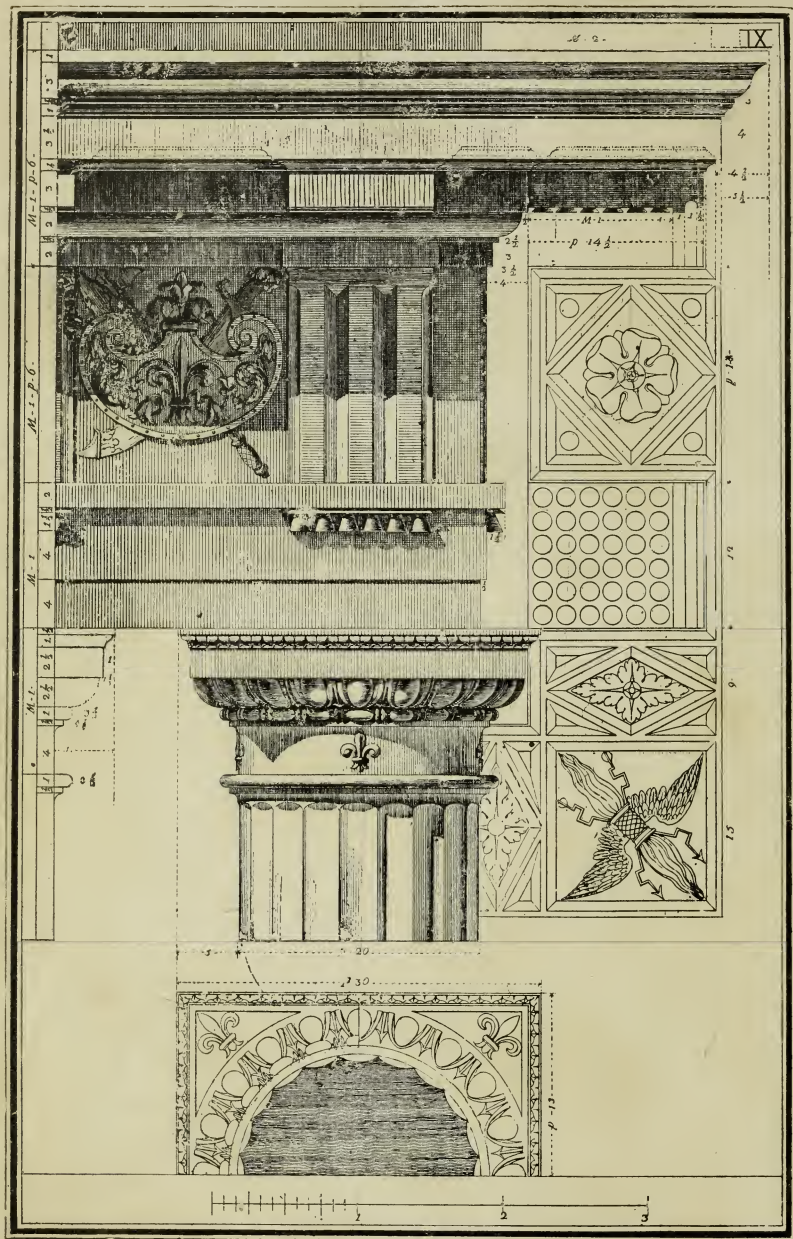


PLATE IX.



THE DORIC CAPITAL AND ENTABLATURE.

SECOND STYLE.

For this modification of the Doric Order, Vignola used many fragments from ancient Roman architecture.

The differences between this and the first style are in the capital, architrave, and cornice. In the place of the three little fillets of the first capital we have an ornamented bead. The convex moulding is also ornamented. The architrave has the same height and $\frac{1}{6}$ modulus projection. It is divided into two bands, and is ornamented at the top by a fillet which is $\frac{1}{6}$ modulus high.

The ornamentation of the metope only of the frieze is different. The upper moulding of the cornice is changed from a concave to an ogee, and in place of the dentils, or teeth, we have the modillions, or brackets, which must be placed in line with the triglyphs.



X

M. 1. 1/2

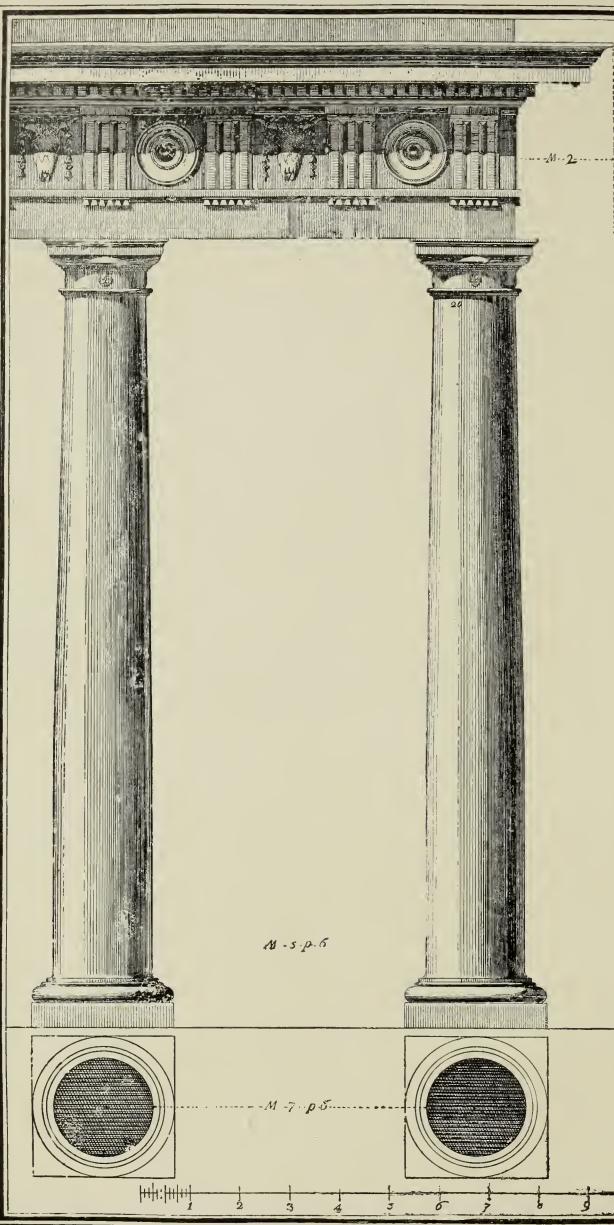
M. 1. 1/2

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M. 1.



M. 1. 1/2

M. 1. 1/2

PLATE X.



SIMPLE DORIC INTERCOLUMNIATION.

FROM this arrangement are taken the measurements for all the modifications of the Doric Order.

We divide the total height into 20 parts, one of which serves us as the modulus, and which is also divided into 12 parts. The base, with the fillet of the base of the column, is 1 modulus high. The shaft, with fillet and bead, is 14 moduli high.

The capital has a height of 1 modulus.

The entablature is 4 moduli high, or $\frac{1}{4}$ of column with base and capital. The total height is 20 moduli, and is divided as just described.

The best spacing of columns in this modification of the Doric Order is $7\frac{1}{2}$ moduli between centers. This spacing gives a nice adjustment of the triglyph and metope. The centers of triglyph and column must be in line with each other.

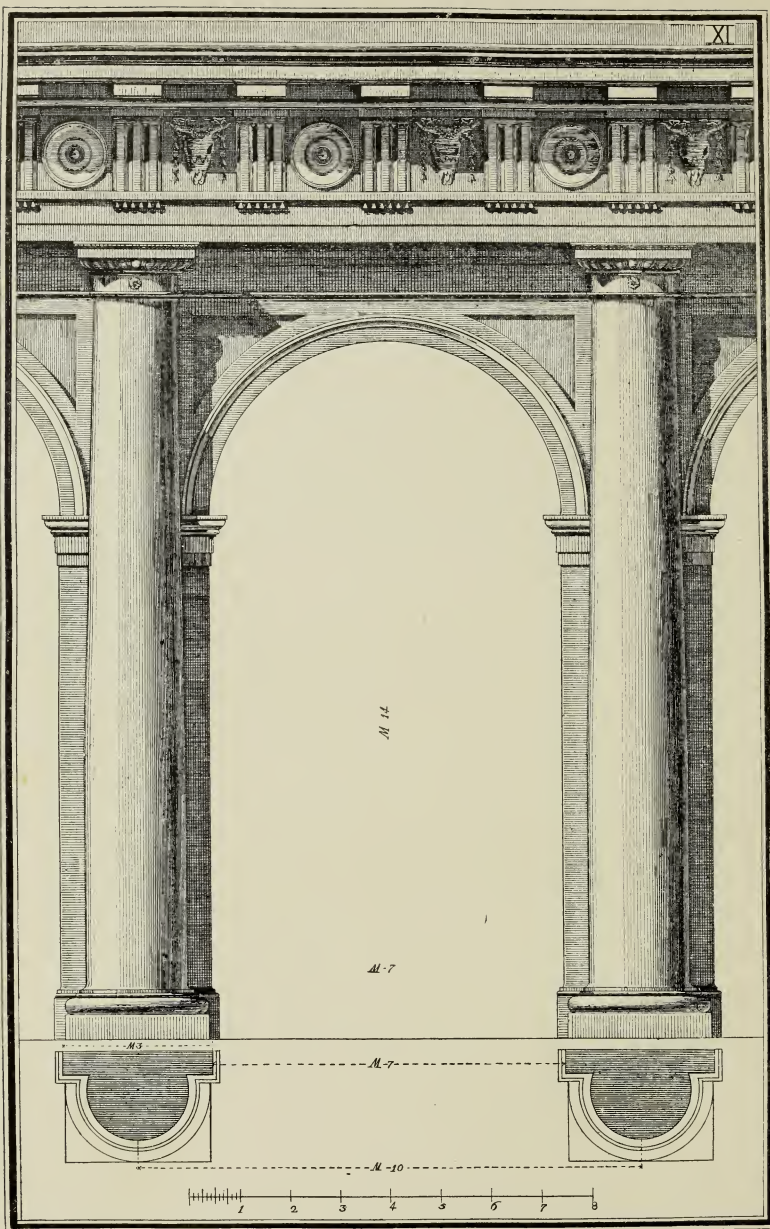


PLATE XI.



ARCHED DORIC INTERCOLUMNIATION.

IN this modification of the Doric Order the proportions are two to one (20 to 10); that is, the total height is twice the distance between centers of columns. The distance between pilasters is 7 moduli, and the pilasters are 3 moduli wide, giving 10 moduli between centers of pilasters.

The width of arch opening is 7 moduli, the height 14, the top being 2 moduli below the entablature.

These proportions afford the best opportunities for the arrangement of the details, notably the triglyphs and metopes.

Vignola builds one-third of his columns into the pilasters, which method brings the extreme projection of the cap of the pilaster to the center line of columns.

The cap of the pilaster is 1 modulus thick and $\frac{1}{3}$ modulus projection.

For details, see previous plates.

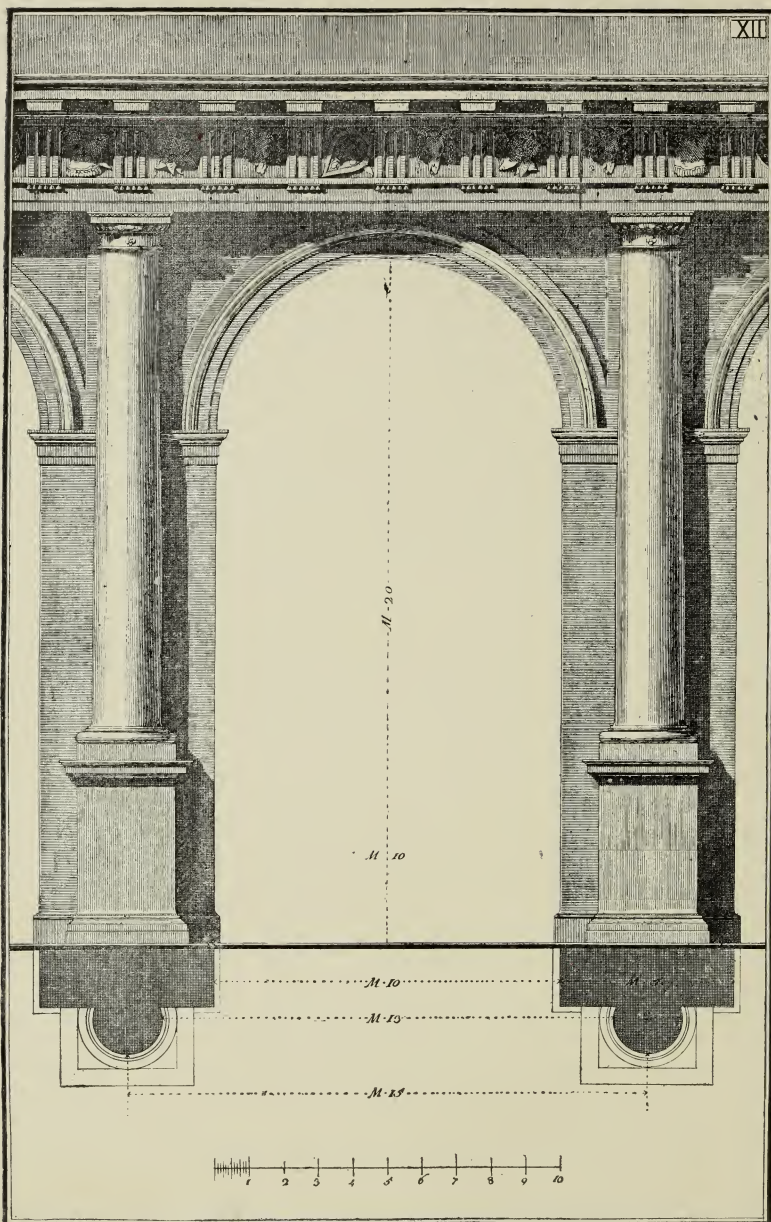


PLATE XII.



ARCHED DORIC INTERCOLUMNIATION WITH PEDESTAL.

IN this modification of the Doric Order there are 15 moduli between centers of columns, and $25\frac{1}{3}$ moduli in total height.

The arch opening is 20 moduli high and 10 moduli wide. This proportion of parts gives a good distribution of the triglyph and metope.

The pedestal is $5\frac{1}{3}$ moduli high, and the column, with base and capital, is 16 moduli high.

The pilasters are 5 moduli wide.

The top of the arch is 2 moduli below the entablature.

For the details, see previous plates.

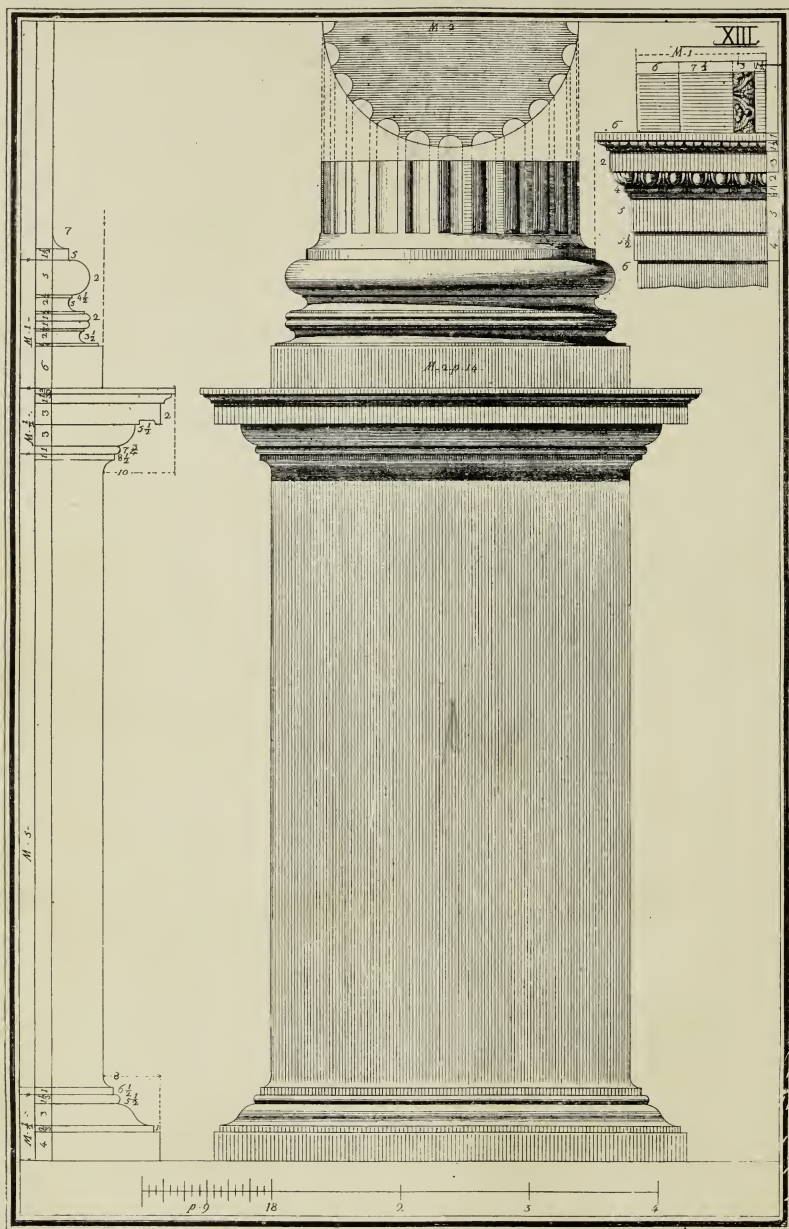


PLATE XIII.



THE IONIC PEDESTAL.

IT must be remembered here that the Ionic, Composite, and Corinthian modulus is divided into 18 parts. Vignola gives the pedestal as 6 moduli high (which is one-third of the column, with base and capital). It is divided into 3 parts,—base, plinth, and cap. The base is 9 parts high and projects 8 parts. The plinth is 5 moduli high, including two fillets. It is 2 moduli and 14 parts wide. The cap is $\frac{1}{2}$ modulus high and projects 10 parts. The outline is given with full dimensions.

CONCERNING THE COLUMN.

The base of the column is 1 modulus high and projects 7 parts.

Vignola gives this column 24 semicircular flutings, which are $3\frac{1}{2}$ parts in diameter, leaving a space between each two of one-third the fluting.

(The exact proportions are: fluting, 3.534 parts; space, 1.178 parts.)

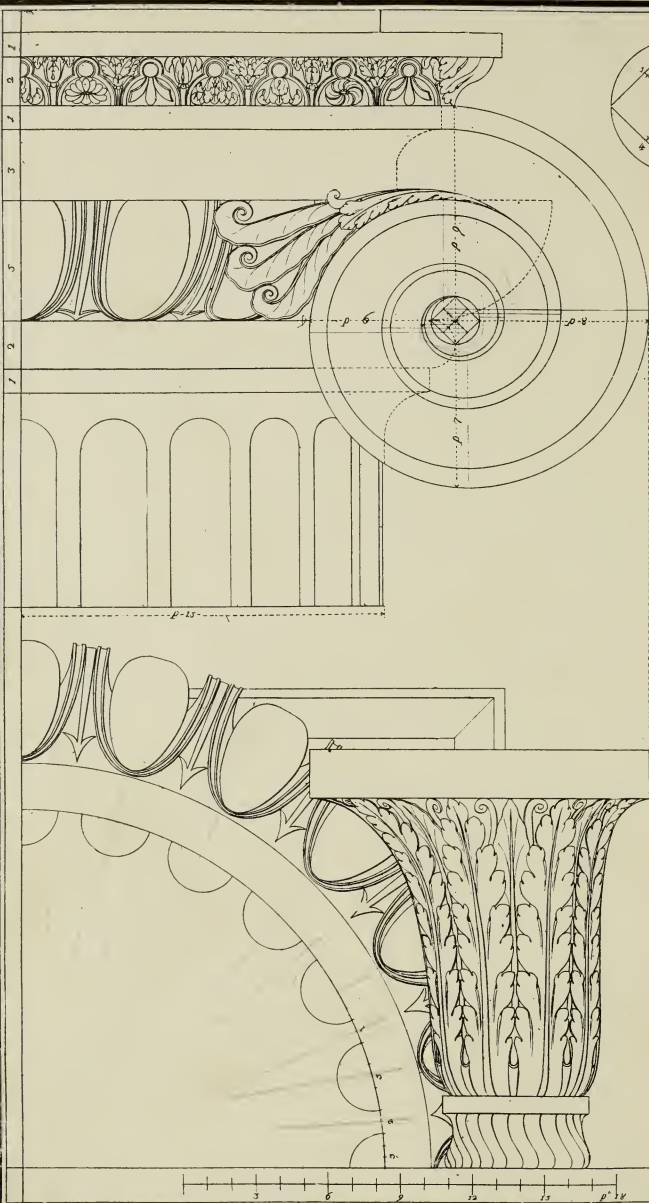
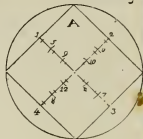


PLATE XIV.



THE IONIC CAPITAL.

IN this capital the volutes are of such construction that the fillet and bead, which properly belong to the column, are included in the construction of the capital, making it 15 instead of 12 parts high. The fillet is 1 part, and the bead 2 parts, high. The quarter-round is 5 parts high. Next comes the "gorge," 3 parts high, one half of which is perpendicular, and the other half a quarter-circle; next comes a fillet 1 part wide, which, with the gorge, is carried round the volute. After the fillet comes an ogee 2 parts high and a fillet 1 part high.

THE PROJECTION.

From a perpendicular from the side of the smallest diameter of the column, the first projection—the fillet at the top—is 5 parts, the ogee 3 parts, the fillet $2\frac{1}{2}$ parts, the gorge of the volute $\frac{1}{2}$ part. The convex projects 7 parts, the bead 3 parts, and the fillet 2 parts.

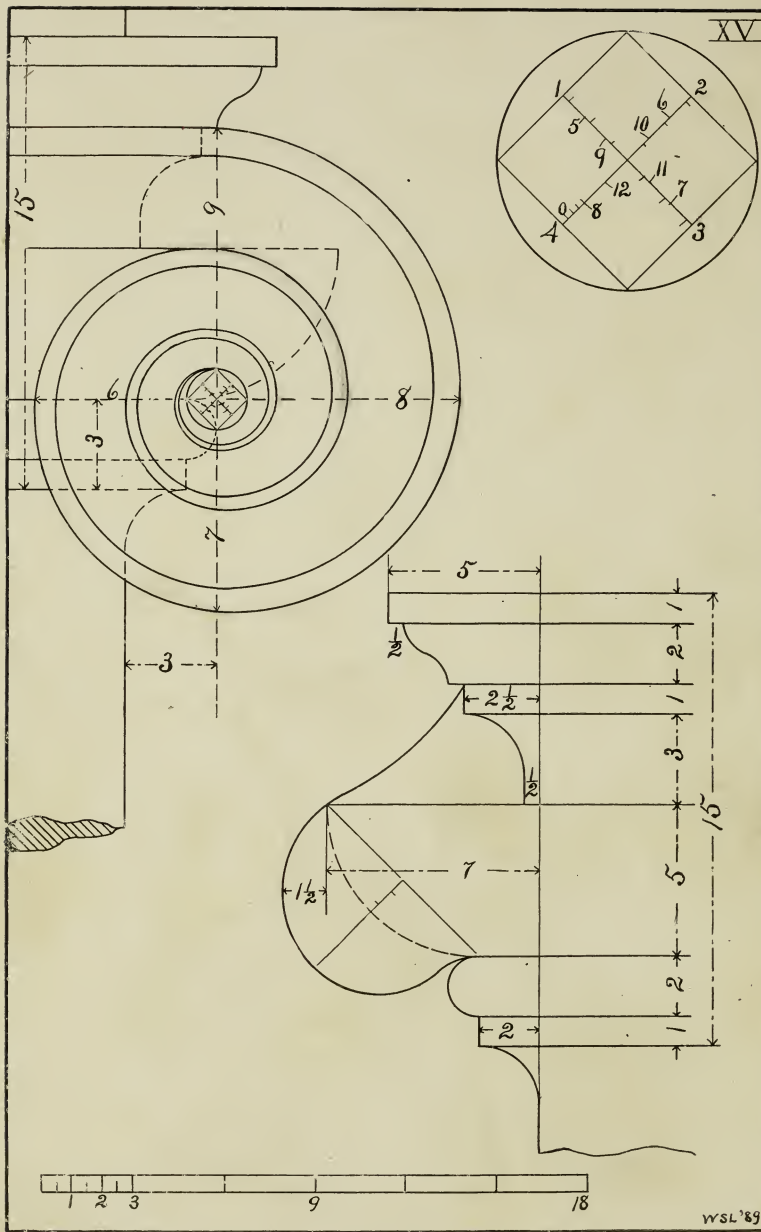


PLATE XV.



THE IONIC VOLUTE.

A DRAWING for the volute of an Ionic capital may be made as follows: Having the outline of the capital, the center of the volute is on the horizontal line of the top of the bead at the top of the column, and 3 parts from the side, and 18 parts from the center of the column. Draw the eye — a circle — 2 parts in diameter. Inscribe a square in this circle with perpendicular and horizontal diagonals. Bisect the sides with 45° lines through the center. The ends of these last are the four centers for the first turn of the volute. From the center of the eye lay off 9 parts above (just touching the ogee), 8 parts to the right, 7 parts below, and 6 parts to the left. From point 1 (see enlarged diagram of eye), with radius reaching the 9-point, strike an arc. It will pass through point 8. With radius 2, 8 make the next quarter, with 3, 7 make the third, and with 4, 6 complete the first turn of the volute. The second turn is made from centers 5, 6, 7, 8, which are $\frac{1}{3}$ of the half-diagonal from points 1, 2, 3, 4, and the third turn is made from points 9, 10, 11, 12. The inner line of the fillet of the volute is made to taper toward the outside line by using a center $\frac{1}{12}$ of a half-diagonal nearer the center of the eye (see O on diagram) than is used for the corresponding outside line.

The outlines and dimensions of the capital are given in the second drawing, which also shows the form of the roll of the volute midway between the two faces.

M. 1. p. 13

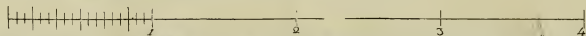
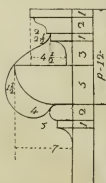
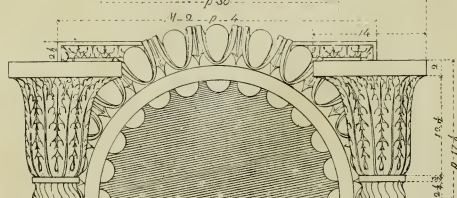
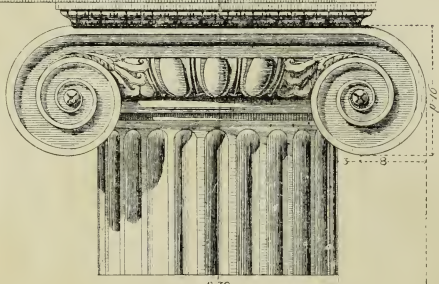
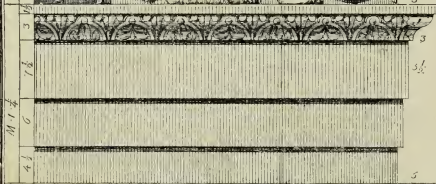
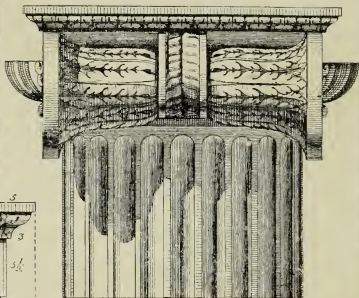
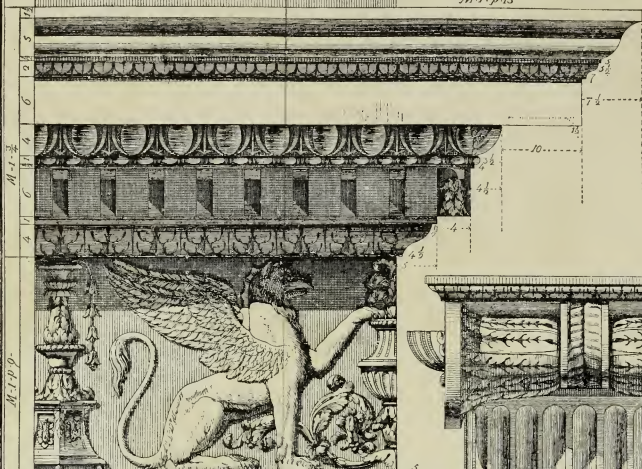


PLATE XVI.



THE IONIC CAPITAL AND ENTABLATURE.

THE capital is 15 parts high, and comprises the fillet and bead, which, in the other orders, belong to the column. The capital is outlined by two perpendiculars, each 1 modulus from the center of the shaft, which pass through the centers of the eyes of the volutes. The total height of the volute is 16 parts, — 8 over the eye, 2 of the eye, and 6 under the eye.

Vignola gives the Ionic entablature a height of $4\frac{1}{2}$ moduli, which is $\frac{1}{4}$ the altitude of the column, with base and capital. The ratio of altitude of the three members of the entablature is 5 to 6 to 7. The architrave is $1\frac{1}{4}$ moduli high, and projects 5 parts. The frieze is $1\frac{1}{2}$ moduli high, and is ornamented with griffins, candelabra, arabesque, etc. The cornice is $1\frac{3}{4}$ moduli high, and projects 1 modulus and 13 parts. The proportions of the mouldings may be learned from the plate.

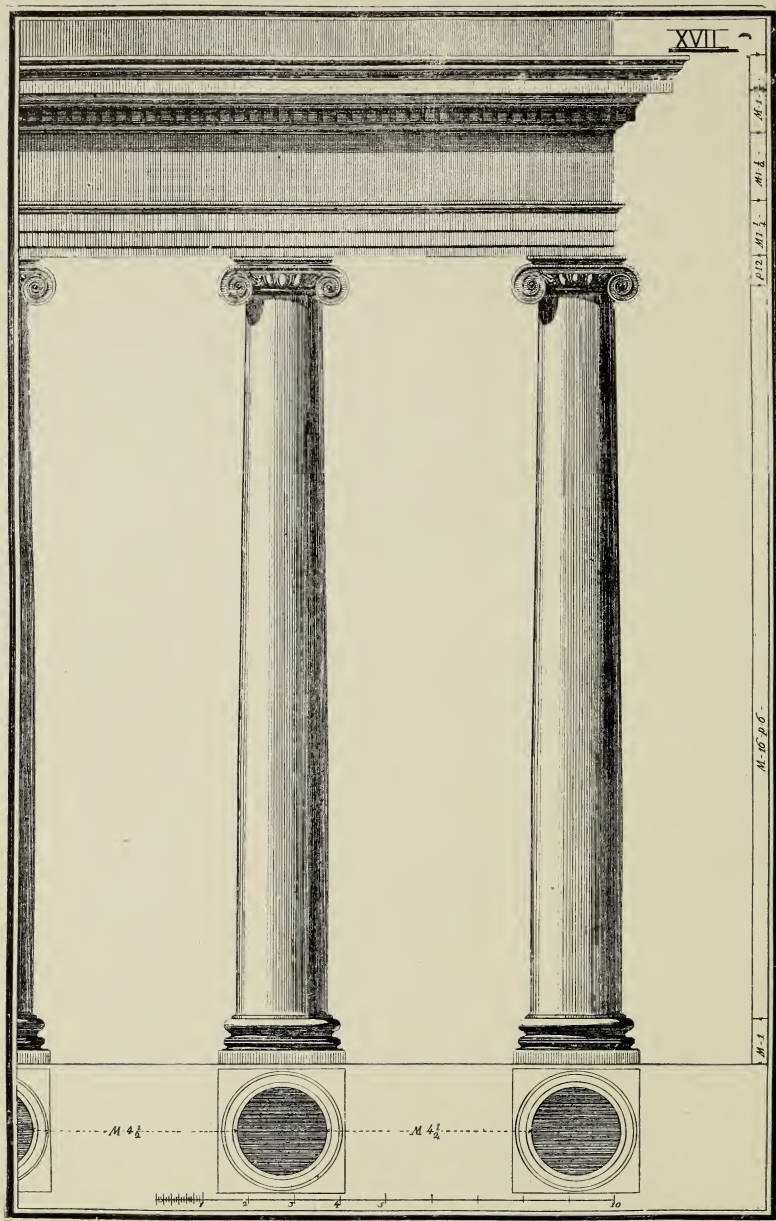


PLATE XVII.



SIMPLE IONIC INTERCOLUMNIATION.

IN this modification of the Ionic we divide the total height into 5 parts,—4 for the column, with base and capital, and 1 for the entablature.

The column, with base and capital, is 18 moduli high. The base is 1 modulus high, the shaft $16\frac{1}{3}$, and the capital $\frac{2}{3}$ modulus high.

The entablature is divided in proportions of 5, 6, and 7, $1\frac{1}{4}$ moduli for the architrave, $1\frac{1}{2}$ moduli for the frieze, and $1\frac{3}{4}$ moduli for the cornice.

The distance between columns is $4\frac{1}{2}$ moduli, and $6\frac{1}{2}$ moduli between centers.

For the details, see previous plates.

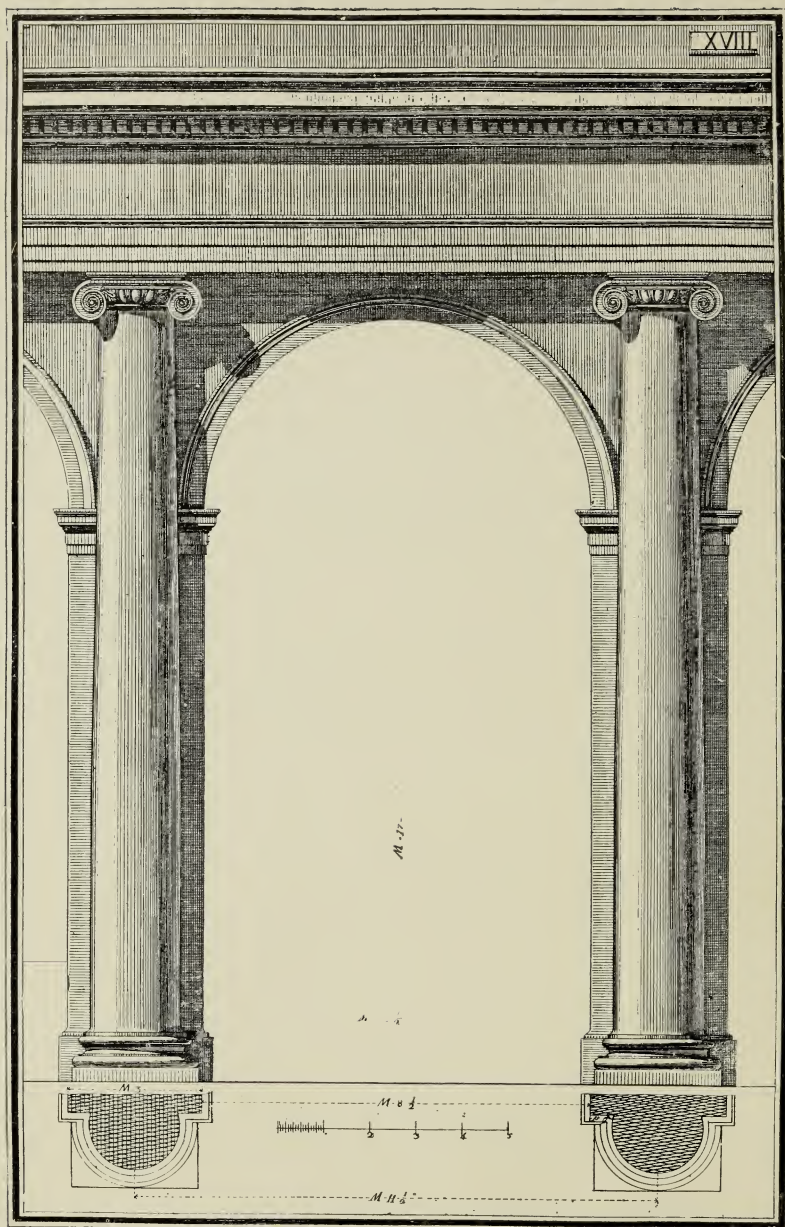


PLATE XVIII.



IONIC INTERCOLUMNIATION WITH ARCH.

THIS modification of the Ionic has $11\frac{1}{2}$ moduli between centers of columns. Three of these are for the pilaster and $8\frac{1}{2}$ for arch opening, whose height is double its width, or 17 moduli.

These proportions can only be departed from under extraordinary circumstances. See Plate II. for details.

This Intercolumniation is most easily calculated next to the Tuscan; the arrangement of the dentils not requiring so precise a location as that of the triglyph of the Doric Order nor that of the Corinthian modillion.

The pilaster projects $\frac{1}{2}$ modulus each side of the column, and its cap is 19 parts high. The depth of the arch is $\frac{1}{2}$ modulus, and the distance from the top of arch opening to the entablature is 1 modulus.

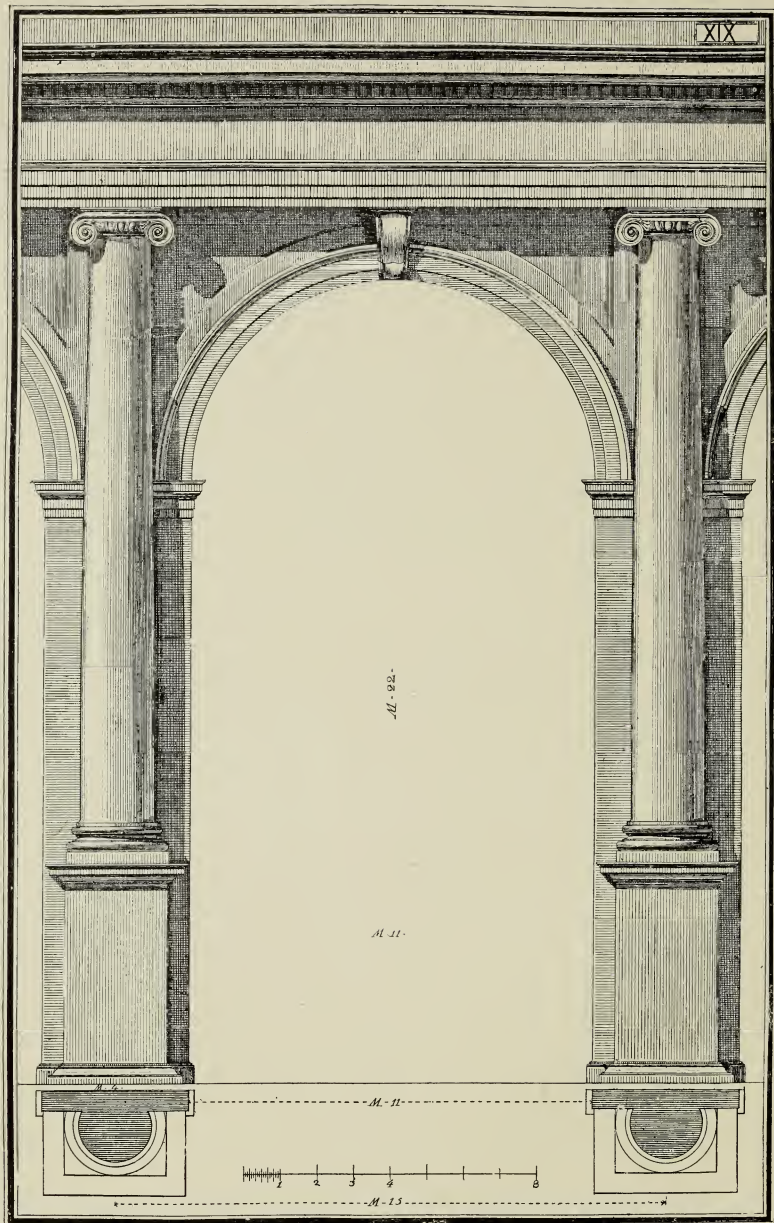


PLATE XIX.



ARCHED IONIC INTERCOLUMNIATION WITH PEDESTAL.

IN this modification of the Ionic Order the distance between centers of columns is 15 moduli, and the total height is $28\frac{1}{2}$ moduli. The pilaster is 4 moduli wide, and the arch opening 11 moduli wide by 22 high. The total height ($28\frac{1}{2}$ mod.) is divided into 19 equal parts. Of these, 4 are for the pedestal, 12 for the column, and 3 for the entablature. Hence the pedestal is $\frac{1}{3}$ the height of the column, and the entablature $\frac{1}{4}$ that height.

The details have been explained.

The pilaster projects 1 modulus from the side of the column, and its cap is 1 modulus high with $\frac{1}{3}$ modulus projection.

The depth of the arch is 1 modulus. The bracket is 2 moduli high.

For an enlarged drawing of the pilaster cap, see Plate XIII.

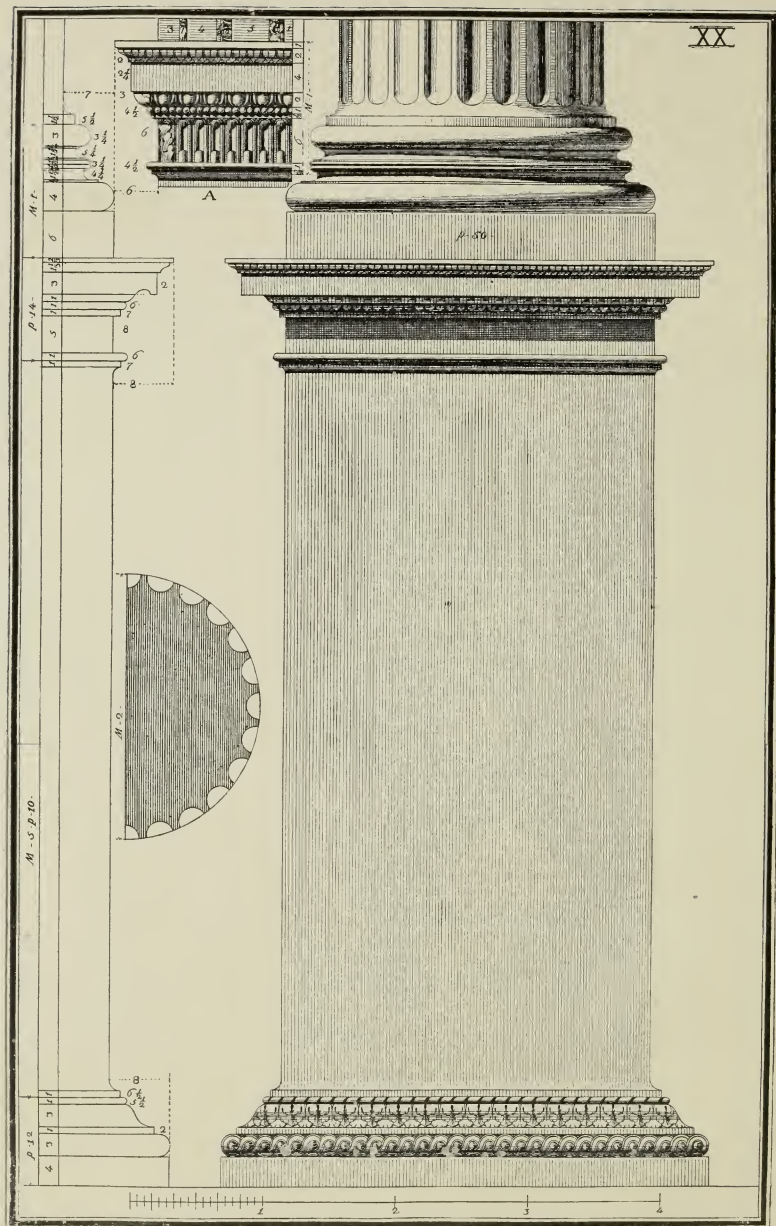


PLATE XX.



THE CORINTHIAN PEDESTAL.

THE height of this Pedestal is a little more than $\frac{1}{3}$ of the column.

The height of the plinth is double its width. The height is 5 moduli and 10 parts, with the fillets at top and bottom.

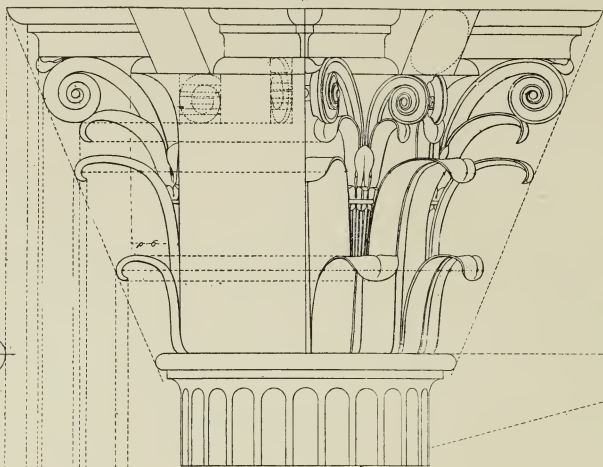
The cap is 14 parts high, or $\frac{1}{9}$ of the total height of the pedestal, and projects 8 parts.

The base is 12 parts high and projects 8 parts.

THE BASE OF THE COLUMN.

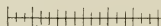
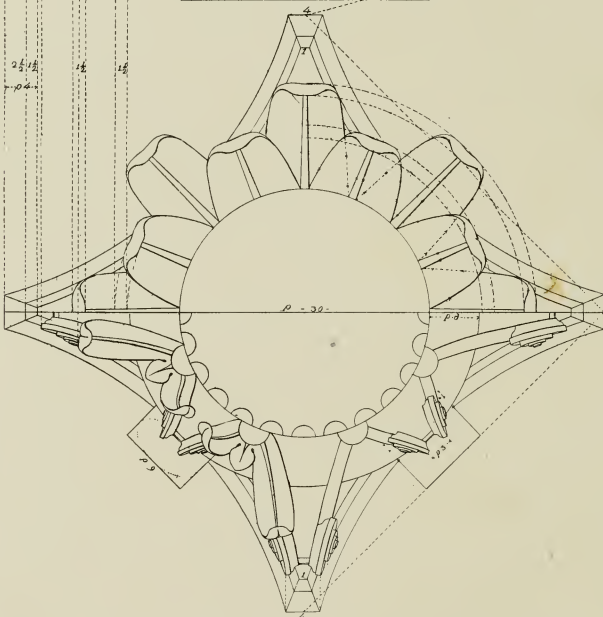
The Base is 1 modulus high and projects 7 parts.

The Shaft of the Column is ornamented with 24 semi-circular flutings, each about $3\frac{1}{2}$ parts wide, separated by spaces $\frac{1}{3}$ as wide as the flutings.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PLATE XXI.



THE CORINTHIAN CAPITAL.

VIGNOLA makes this Capital 2 moduli and 6 parts high. The bell is 2 moduli, and the abacus 6 parts high. The sides of the bell are perpendicular 1 modulus and 10 parts from the bottom. The concave moulding of the bell is 6 parts high and projects 6 parts, and the quarter-round moulding above it is 2 parts high.

The capital is ornamented by two courses of leaves of equal height, disposed in such a manner that, in the plan, they alternate round the column.

The stems of the upper leaves come between the lower leaves, and the stem from which spring the volutes comes from the space between the upper leaves, making the angle volute, and the smaller middle one. Over the small volutes in the middle of each side of the table, or abacus, of the capital is a flower or rosette.

The table is formed of three mouldings; at the top a quarter-round, then a fillet, and then the abacus.

The plan of the Capital is a hollow-sided square, having diagonals 4 moduli long. On one side of this square construct an equilateral triangle.

The outside angle of this triangle will be the center for an arc of a circle forming one side of the table.

The plan and elevation, together with this description, are sufficient to make the whole subject clear.

In the elevation, the projection and elevation of the leaves are shown, touching a line tangent to abacus and top bead of column.

The plan is indispensable in constructing the elevation.

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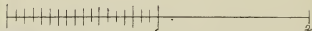
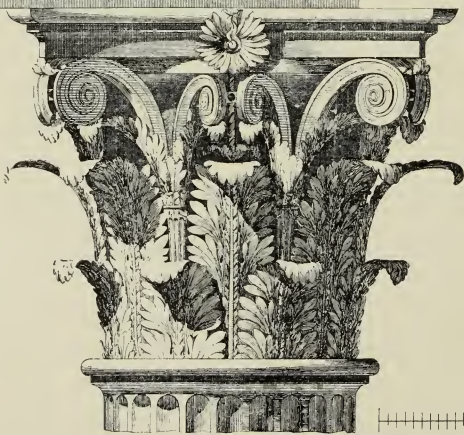
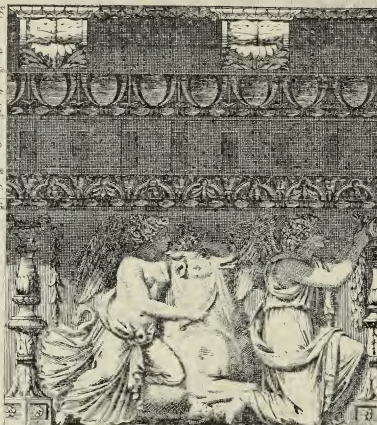


PLATE XXII.



THE CORINTHIAN ENTABLATURE.

THIS Entablature is taken from various places in Rome, but chiefly from the rotunda of the Forum.

The total height is $\frac{1}{4}$ the height of the column, with base and capital, or 5 moduli, divided in the proportions 3, 3. and 4. The architrave is $1\frac{1}{2}$ moduli high divided into 3 bands.

The frieze is $1\frac{1}{2}$ moduli high, and at the top is ornamented by a fillet and a bead.

The cornice is 2 moduli high, with 2 moduli and 2 parts projection. The mouldings are easily understood from the plate.

One bracket must come exactly in line with the center of a column.

The ornaments on the mouldings, the dentils, etc., must always be spaced in the same regular order.

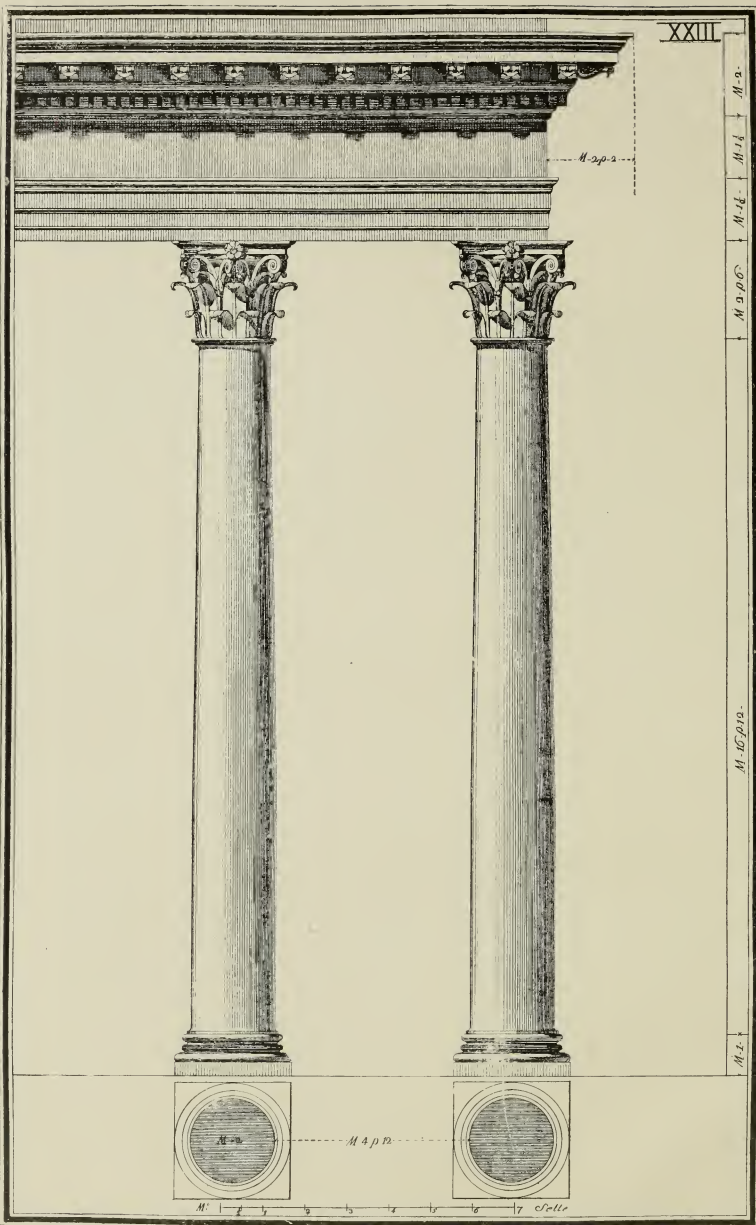


PLATE XXIII.



SIMPLE CORINTHIAN COLUMNIATION.

THE height of this modification of the Corinthian Order is divided into 5 parts, 1 for the entablature and 4 for the column, with base and capital.

The column, with base and capital, is 20 moduli, and the entablature 5 moduli high.

The Column is divided thus: base, 1 modulus; shaft, 16 moduli and 12 parts; capital, 2 moduli and 6 parts high.

The Entablature is proportioned as follows: the architrave, $1\frac{1}{2}$ moduli; the frieze, $1\frac{1}{2}$ moduli; and the cornice, 2 moduli high.

The mouldings will be understood from previous plates.

The distance between centers of columns is 6 moduli and 12 parts.

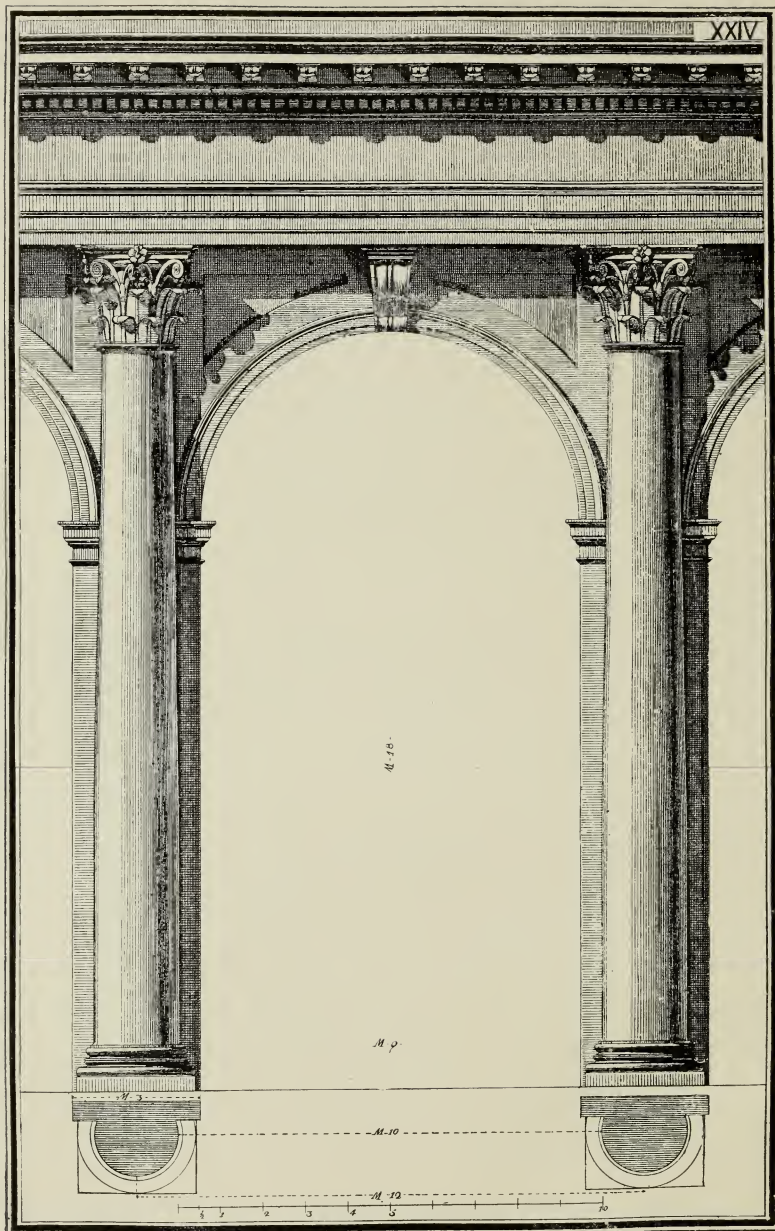


PLATE XXIV.



ARCHED CORINTHIAN INTERCOLUMNIATION.

IN this modification of the Corinthian Order the distance between centers of columns is 12 moduli, and the total height 25 moduli. The arch opening is 9 moduli wide and 18 high. The pilaster is 3 moduli wide — $\frac{1}{3}$ of the width of arch opening.

The details will be comprehended from what has already been stated.

The cap of the pilaster is 1 modulus high and projects 6 parts. This is ornamented by various mouldings, in proportions which may be easily understood from the double scale drawing on Plate XX.

The top of the arch opening is 2 moduli below the entablature.

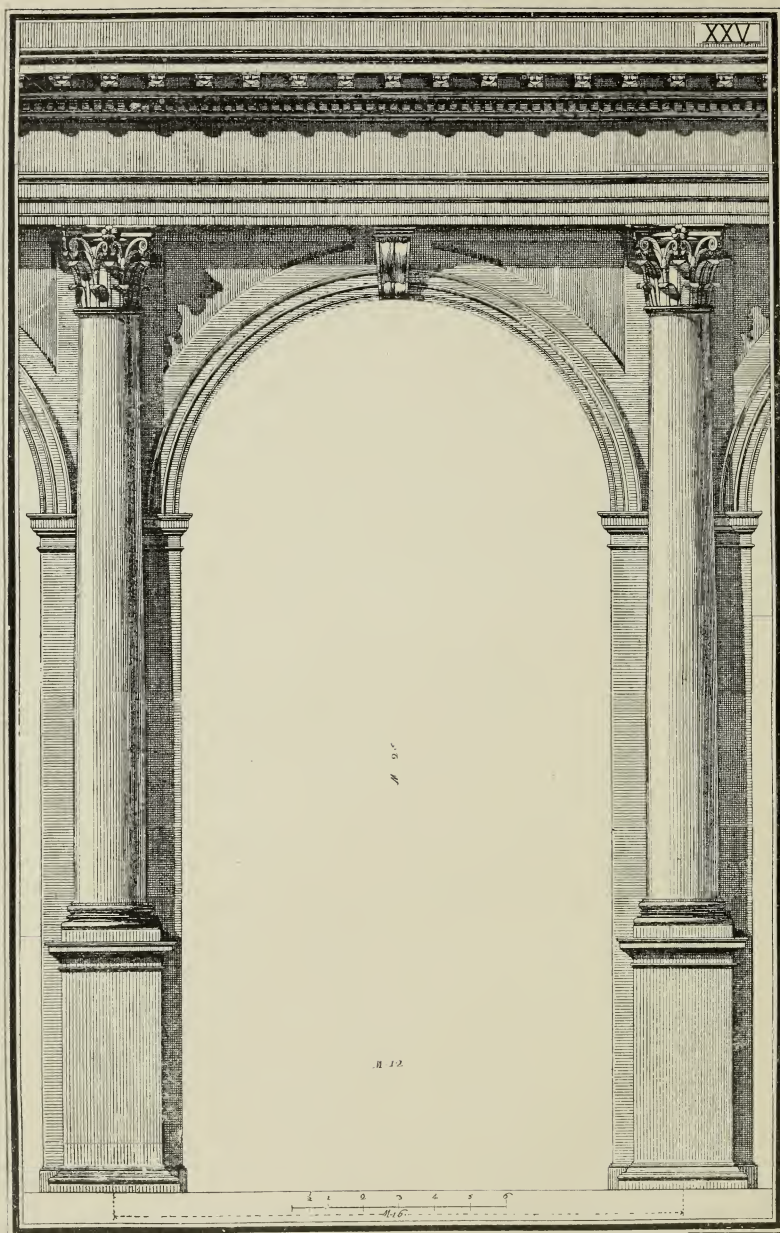


PLATE XXV.



*ARCHED CORINTHIAN INTERCOLUMNIATION
WITH PEDESTAL.*

THIS modification of the Corinthian Order is spaced 16 moduli on centers.

The total height is 32 moduli. Of this, 7 moduli are for the pedestal, 20 for the column, and 5 for the entablature. The arch opening is 12 moduli wide and 25 high.

The pilasters are 4 moduli wide. The top of the arch opening is 2 moduli below the entablature.

In the proportions of this arch, Vignola violates the regular rule of proportion of width to height. The result is, less wall under the entablature, a better proportion for the bracket, and a more elegant appearance of the whole structure.

For the cap of the pilaster, see Plate XX.

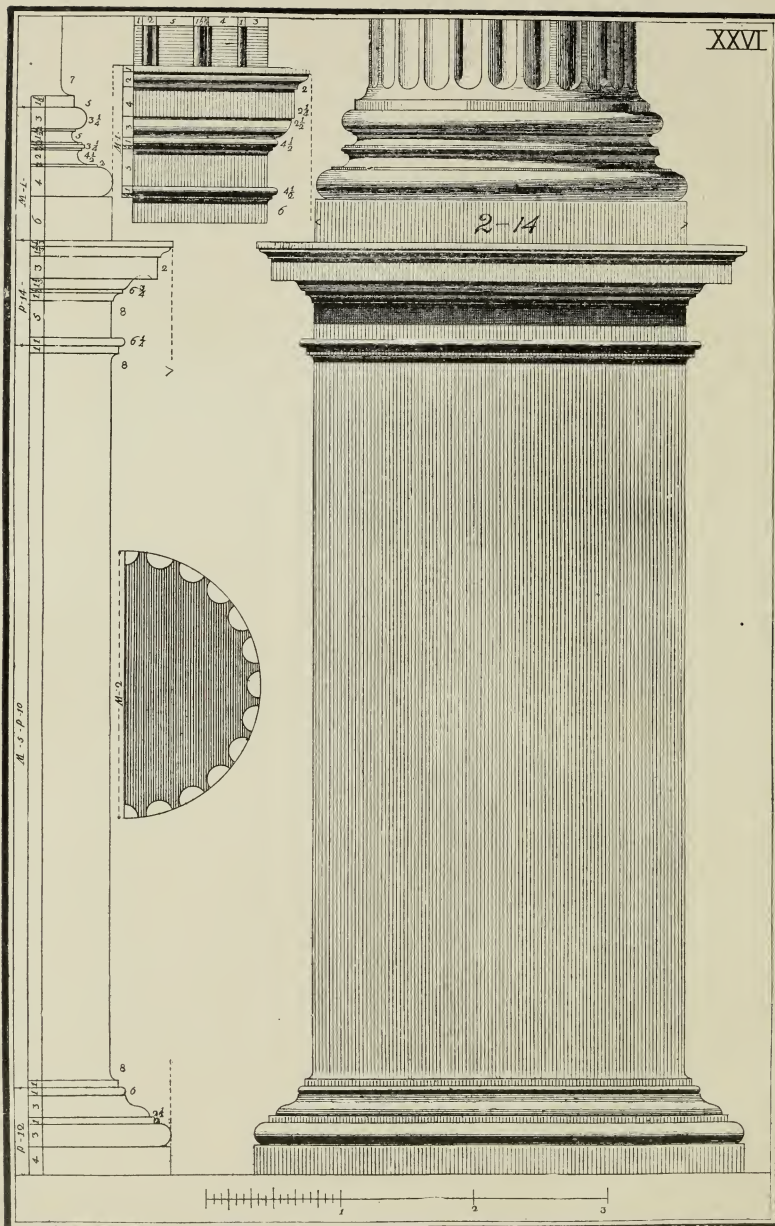


PLATE XXVI.



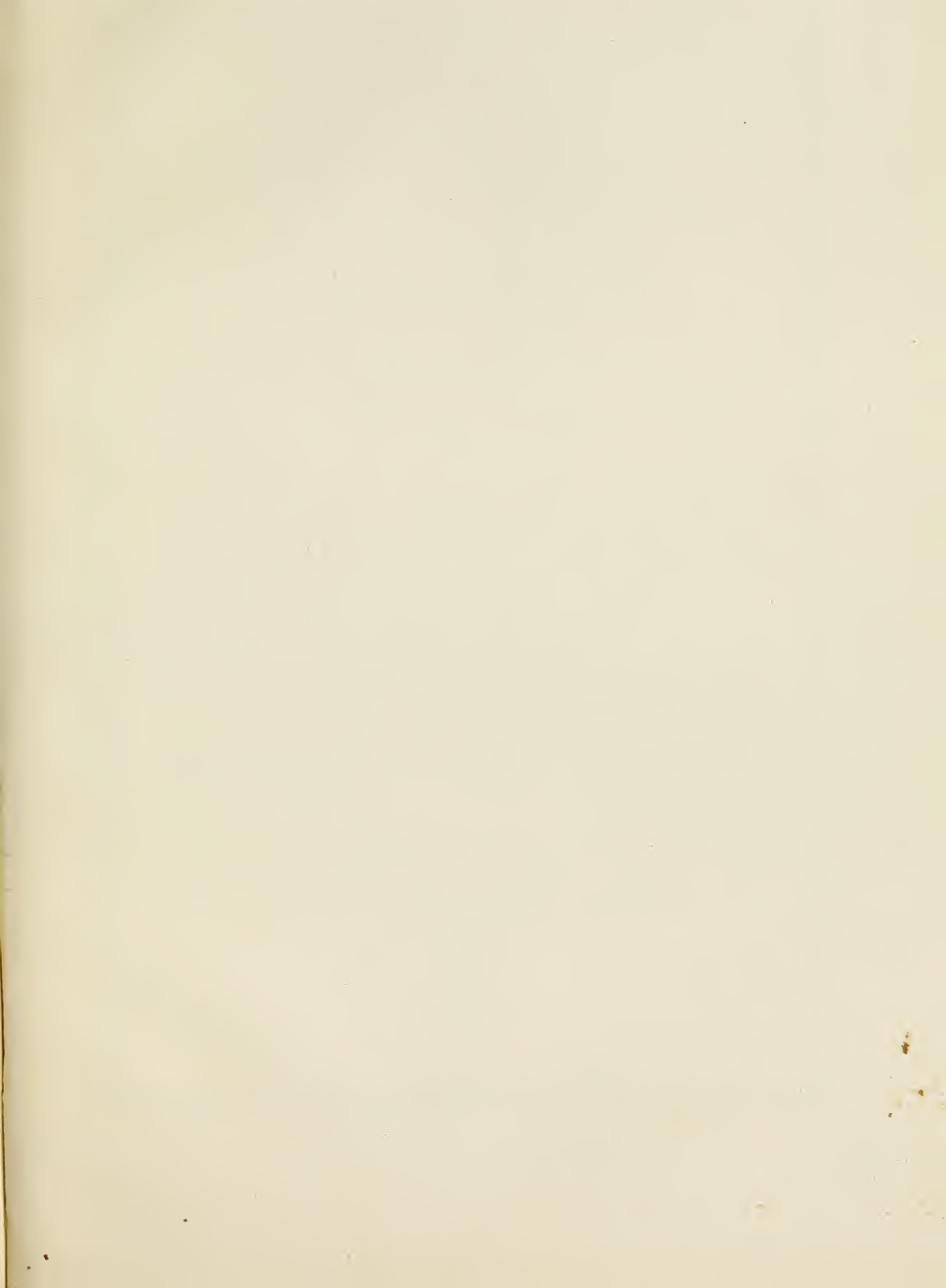
THE COMPOSITE PEDESTAL.

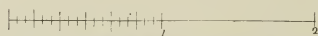
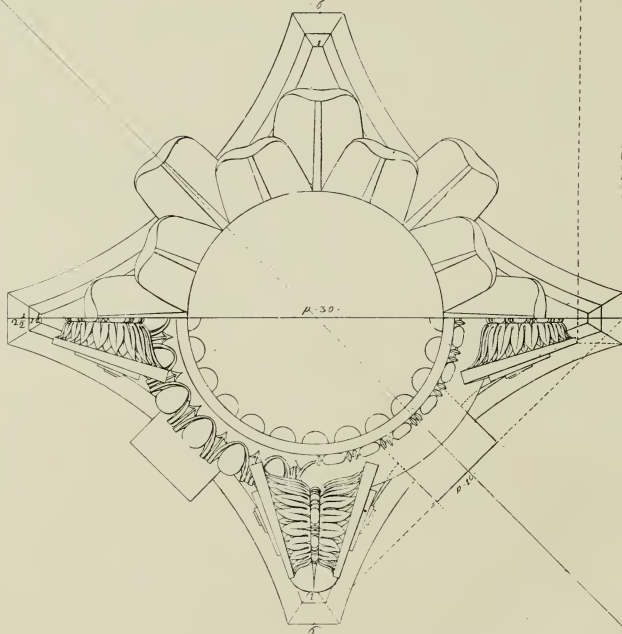
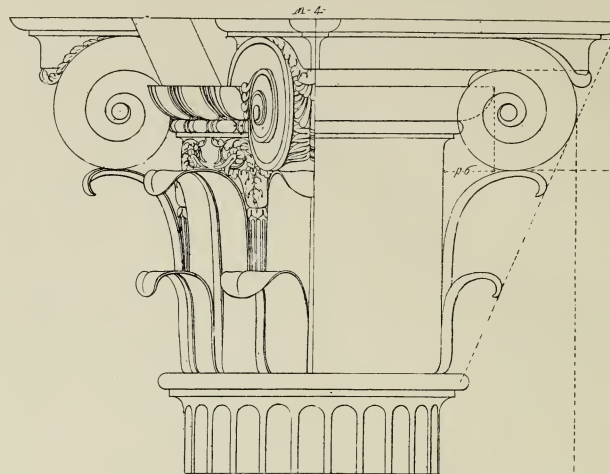
THE Composite Pedestal is like the Corinthian, with exception of a few details, which will be understood at a glance.

The cap projects 8 parts and is 14 parts high. The base projects 8 parts and is 12 parts high.

THE COLUMN.

The Composite Column is like the Corinthian, with the exception of the base, the differences of which will be readily understood from the engravings.





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PLATE XXVII.



THE COMPOSITE CAPITAL.

THE ancient Romans employed a part of the Corinthian and a part of the Ionic capitals, and from them composed a capital of perfect beauty. The plan and profile of this capital have the same proportions as the Corinthian. The variations are: Instead of the flower stems, the Composite has the volute of the Ionic capital. The dimensions of the upper and lower leaves Vignola makes of the same dimensions as the Corinthian, changing them, however, from olive leaves to the leaves of the acanthus.

Over the second leaves he puts the volute in the same way as in the Ionic capital. This volute is, with the abacus, 16 parts high, and is arranged as in the Corinthian. In the place of the stem of the small volutes of the Corinthian are two flowers. The bell is made more prominent with a fillet, an ornamented bead, and an ornamented quarter-round moulding ("egg and dart").

In the center of the side of the abacus is a flower, as in most antique capitals.

The plate shows the dimensions of the details.

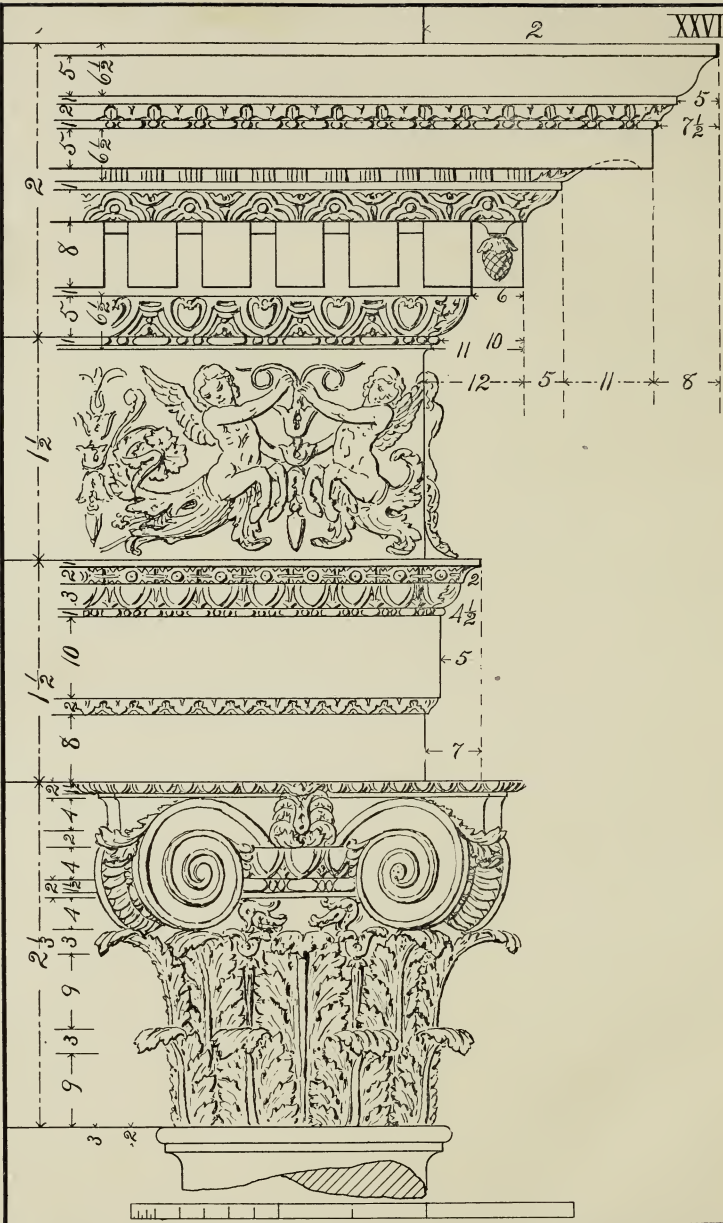


PLATE XXVIII.



THE COMPOSITE ENTABLATURE.

THIS Entablature and Capital are, like the Corinthian, deduced from many ancient Roman examples. The plate shows the dimensions of the details.

This entablature does not have the brackets and some small details of the Corinthian.

In the ornamentation of the mouldings no rigid rule of spacing or location is enforced, because of their small size.



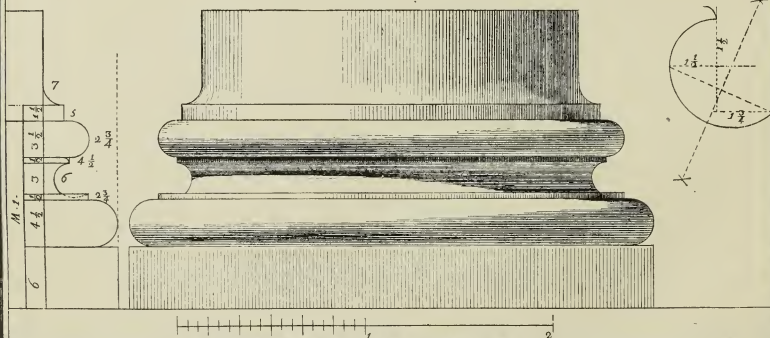
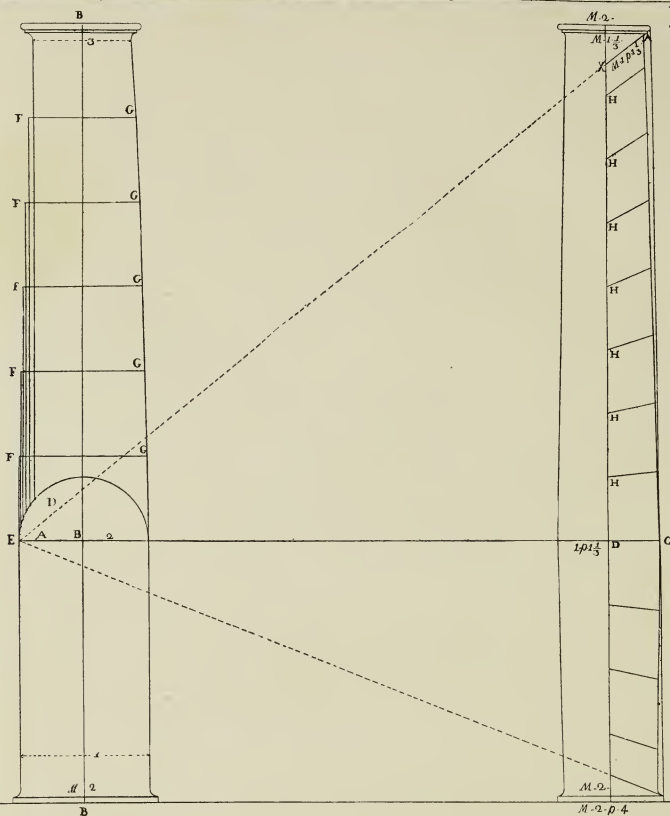
PLATE XXIX.



THE ATTIC BASE.

THE Attic Base has been used indiscriminately for all the Orders except the Tuscan, because of its beauty; but it is only appropriate for the Ionic.

The dimensions of its details are seen in Plate XXIX.



METHODS OF TAPERING COLUMNS.

The first method is the better known, and is used for the Tuscan and Doric columns.

At a point $\frac{1}{3}$ from the bottom draw a horizontal line across the center line of the column, and with the point of intersection as a center, describe a semicircle. From this point the column is tapered upward. Divide the height into any number of equal parts. From the end of the top diameter of the column, which is $\frac{5}{6}$ of the diameter at the bottom, drop a perpendicular upon the semicircle at the point D. Divide the arc DE into the same number of equal parts as is the upper part of the column. From each one of these points erect perpendiculars to the division lines across. The points of intersection will be points on the surface of the column. The points F show the intersections, and the points G the outline.

SECOND METHOD OF TAPERING COLUMNS.

Vignola invented this method, and, while it is less known than the first, it is simpler.

A point $\frac{1}{3}$ up the column is selected as before. Through this point the axis of the column and a horizontal line are drawn. A point E on the horizontal 6 diameters from D is selected, and lines drawn from E across the axis at points H. Each one of these is made of the same length as DC from H, and the outline of the column is defined. This method is best for Ionic, Corinthian, and Composite columns.

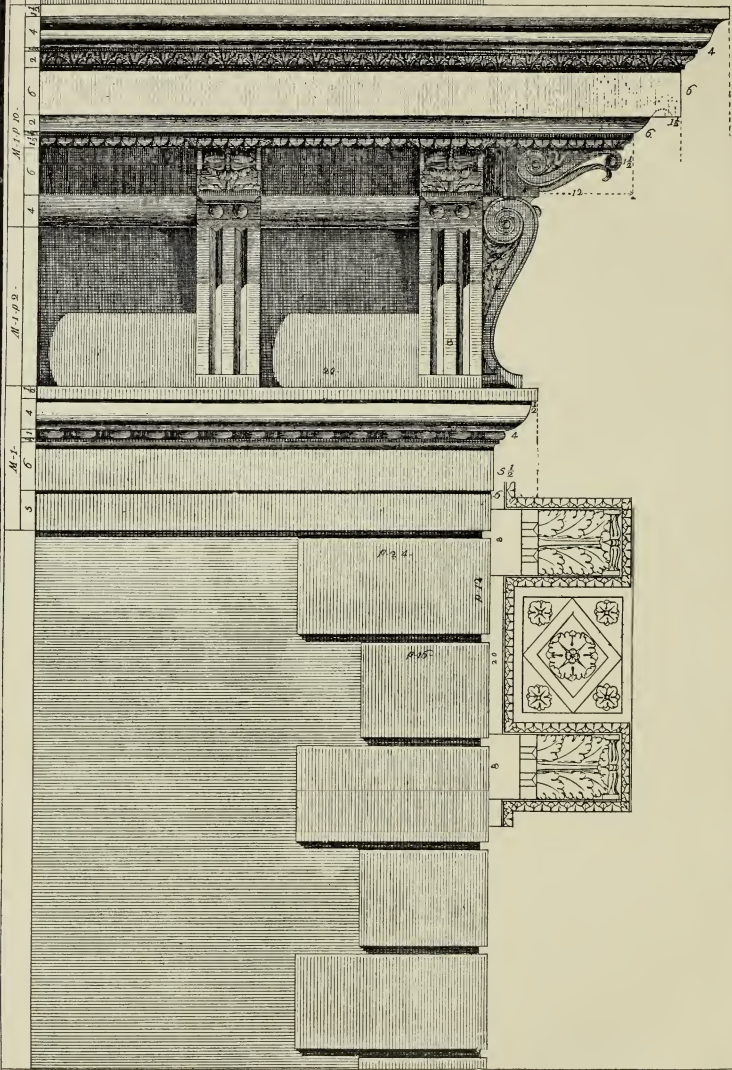


PLATE XXX.



ENTABLATURE.

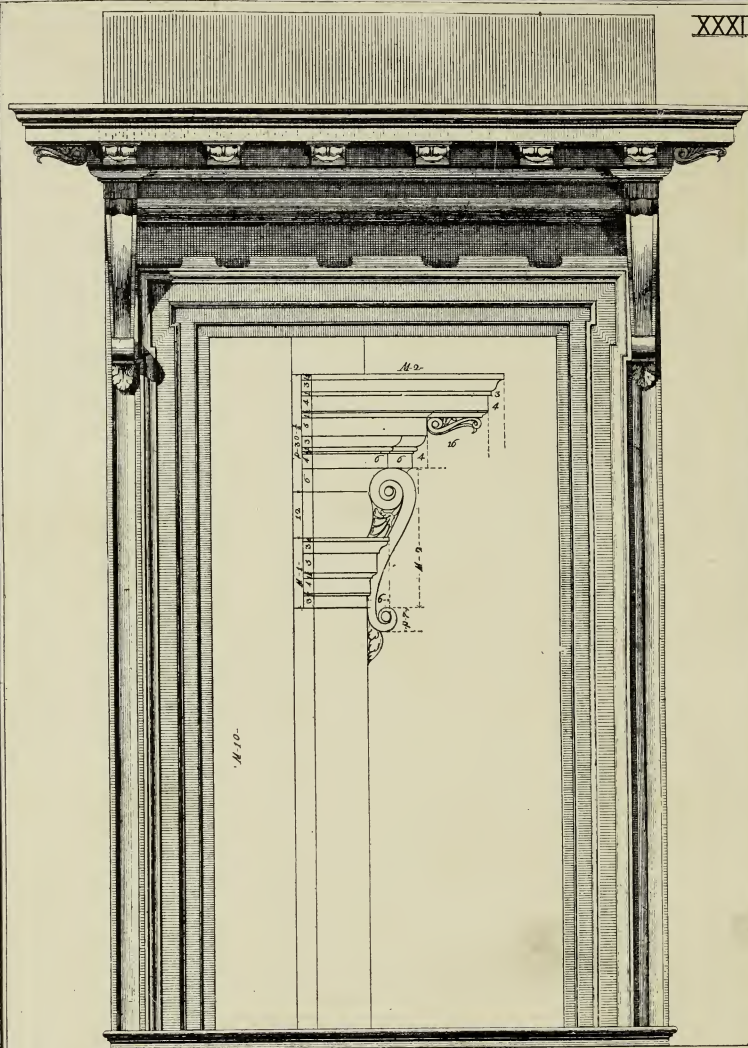
THIS beautiful mixed Doric and Corinthian composition is often used.

While the composition is not classical, it is in good taste and pleases many.

The height of the building is divided into 11 parts, of which the entablature is 1.

The entablature is divided into $3\frac{2}{3}$ moduli of 18 parts each.

The architrave is 1 modulus high; the frieze, 1 modulus and 2 parts; and the cornice, 1 modulus and 10 parts.



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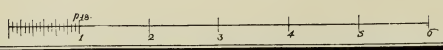


PLATE XXXI.



DOORWAY.

THIS illustration is of a doorway in the Corinthian Order of architecture, and is from the church of Sts. Lorenzo and Damaso.

The height is twice the width.

The entablature is $\frac{1}{3}$ the height of the door.

The brackets under the cornice ornament and support it.





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