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**Vitruvius**

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Book the fourth.

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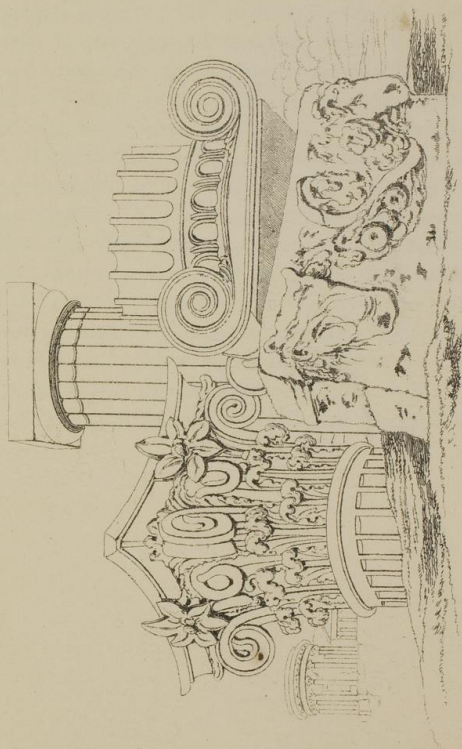
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J. E. Will. inv.

THE  
ARCHITECTURE  
OF  
MARCUS VITRUVIUS POLLIO.

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BOOK THE FOURTH.

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INTRODUCTION.

FINDING, O Emperor, that many persons have left us precepts in Architecture, and volumes of commentaries thereon, not systematically arranged, but mere general principles, little more indeed than scattered hints, I considered it a worthy and useful task, first, to give a general view of the whole subject, and then to dilate in each book on the detail. Thus, Cæsar, I treated in the first book on the duties of an architect, and the sciences in which he should be skilled. In the second, I taught the knowledge of the different materials used in building. The third contained instructions on the arrangement of sacred buildings, their different forms and species, and the distributions appropriate to each sort; confining myself, however, to the use of the Ionic order, which, of the three, from the great delicacy of its proportions, requires the most attention in its use. I shall now, in this book, point out the difference and properties of the Doric and Corinthian Orders.

## CHAPTER I.

OF THE ORIGIN OF THE THREE SORTS OF COLUMNS,  
AND OF THE CORINTHIAN CAPITAL.

THE Corinthian Column is, except in its capital, of the same proportion as the Ionic: but the additional height of its capital makes it taller and more graceful; the Ionic capital being but one third of the diameter of the shaft in height, whilst that of the Corinthian is equal to the thickness of the shaft. Thus, the two-thirds of the thickness of the shaft, which are added to its height, give it, in that respect, a more pleasing effect. The other members which are placed on the Columns, are borrowed either from the Doric or Ionic proportions: inasmuch as the Corinthian itself has no regular settled rules for its cornice, and other ornaments, but is regulated by analogy, either from the mutuli in the cornice, or the guttæ in the architrave, or epistylum in the Doric order; or it is set out according to the laws of the Ionic, with a sculptured frieze, dentils and a cornice. Thus, from the two orders, by the interposition of a capital, a third order arises. The three sorts of columns, different in form, have received the appellations of Doric, Ionic, and Corinthian, of which the first is of the greatest antiquity. For Dorus, the son of Hellen, and the Nymph Orseïs, reigned over the whole of Achaia and Peloponnesus, and built at Argos, an ancient city, on a spot sacred to Juno, a temple, which happened to be of this order. After this, many temples similar to it, sprung up in the other parts of Achaia, though the proportions which should be preserved in it, were not as yet settled. But afterwards when the Athenians, by the advice of the Delphic oracle in a general assembly of the different states of Greece, sent over into Asia thirteen colonies at once, and appointed a governor or leader to each, reserving the chief command

for Ion, the son of Xuthus and Creüsa, whom the Delphic Apollo had acknowledged as son; that person led them over into Asia, and occupied the borders of Caria, and there built the great cities of Ephesus, Miletus, Myus (which was long since destroyed by inundation, and its sacred rites and suffrages transferred by the Ionians to the inhabitants of Miletus), Priene, Samos, Teos, Colophon, Chios, Erythræ, Phocæa, Clazomenæ, Lebedos, and Melite. The last, as a punishment for the arrogance of its citizens, was detached from the other states in a war levied pursuant to the directions of a general council; and in its place, as a mark of favour towards king Attalus, and Arsinoë, the city of Smyrna was admitted into the number of Ionian states, which received the appellation of Ionian from their leader Ion, after the Carians and Lelegæ had been driven out. In this country allotting different spots for sacred purposes, they began to erect temples, the first of which was dedicated to Apollo Panionios, and resembled that which they had seen in Achaia, and they gave it the name of Doric, because they had first seen that species in the cities of Doria. As they wished to erect this temple with columns, and had not a knowledge of the proper proportions of them, nor knew the way in which they ought to be constructed, so as at the same time to be both fit to carry the superincumbent weight, and to produce a beautiful effect, they measured a man's foot, and finding its length the sixth part of his height, they gave the column a similar proportion, that is, they made its height including the capital, six times the thickness of the shaft, measured at the base. Thus the Doric order obtained its proportion, its strength, and its beauty, from the human figure. Under similar notions they afterwards built the temple of Diana. But in that, seeking a new proportion, they used the female figure as the standard: and for the purpose of producing a more lofty effect, they first made it eight times its thickness in height. Under it they placed a base, after the manner

of a shoe to the foot; they also added volutes to its capital, like graceful curling hair hanging on each side, and the front they ornamented with cymatia and festoons in the place of hair. On the shafts they sunk channels, which bear a resemblance to the folds of a matronal garment. Thus two orders were invented, one of a masculine character, without ornament, the other bearing a character which resembled the delicacy, ornament, and proportion of a female. The successors of these people, improving in taste, and preferring a more slender proportion, assigned seven diameters to the height of the Doric column, and eight and a half to the Ionic. That species, of which the Ionians were the inventors, has received the appellation of Ionic. The third species, which is called Corinthian, resembles in its character, the graceful elegant appearance of a virgin, in whom, from her tender age, the limbs are of a more delicate form, and whose ornaments should be unobtrusive. The invention of the capital of this order is said to be founded on the following occurrence. A Corinthian virgin, of marriageable age, fell a victim to a violent disorder. After her interment, her nurse, collecting in a basket those articles to which she had shewn a partiality when alive, carried them to her tomb, and placed a tile on the basket for the longer preservation of its contents. The basket was accidentally placed on the root of an acanthus plant, which, pressed by the weight, shot forth, towards spring, its stems and large foliage, and in the course of its growth reached the angles of the tile, and thus formed volutes at the extremities. Callimachus, who, for his great ingenuity and taste was called by the Athenians Catatechnos, happening at this time to pass by the tomb, observed the basket, and the delicacy of the foliage which surrounded it. Pleased with the form and novelty of the combination, he constructed from the hint thus afforded, columns of this species in the country about Corinth, and arranged its proportions, determining

their proper measures by perfect rules. The method of setting out the capital is as follows. Its height, including the abacus, is to be equal to the diameter of the lower part of the column. The width of the abacus is obtained by making its diagonal from opposite angles, equal to twice its height. It will thus have a proper front on each face. The faces of the four sides of the abacus are to be curved inwards from its extreme angles, equal to one ninth of its extent. The thickness of the lower part of the capital must be equal to the diameter of the top of the shaft, exclusive of the apothesis and astragal. The height of the abacus is a seventh of the height of the whole capital; the remainder is to be divided into three parts, one of which is to be given to the lower leaf, the middle leaf will occupy the space of the next third part, the stalks or caulicoli will be the same height as the last named, out of which the leaves spring for the reception of the abacus. Large volutes are generated from these, which branch out towards the angles. The smaller volutes spread out towards the flowers, which are introduced in the centre of each abacus. Flowers whose diameters are equal to the height of the abacus, are to be placed in the central part of each of its faces. By attention to these rules the Corinthian capital will be properly proportioned. Other sorts of capitals are however placed on these columns, which, differing in proportion, and standing on a different sort of shaft, cannot be referred to any other class; but their origin, though the detail be changed, is traced to, and deduced from the Corinthian, the Ionic, and the Doric, their only differences arising from a variation of the arrangement of the sculpture on them.

## CHAPTER II.

## OF THE ORNAMENTS OF COLUMNS.

THE origin and invention of the different species of columns having been discussed, it is now necessary to say something on the subject of their ornaments, how they originated, and upon what principles and for what purposes they were invented. In all buildings the timber framed work, which has various names, crowns them. The timbers vary as much in their uses as in their names. Those are called bressummers (trabes) which are placed over columns, pilasters (parastatæ), and antæ. In the framing of floors, beams (tigna) and boards (axes) are used. If the span of a roof be large, a ridge piece (columen) is laid on the top of the king post (columna, whence is derived the word column), and a tye beam (transtrum) and struts (capreoli) will be necessary. If the roof be of moderate span, the ridge piece (columen), and rafters (cantherii), of sufficient projection at their feet to throw the water off the walls, will answer the purpose. On the rafters are laid purlines (templa), and again on these, to receive the tiles, are placed common rafters (asseres), which must be of sufficient length to cover the walls and protect them. Thus each piece has its proper place, origin, and purpose. Hence, following the arrangement of timber framing, workmen have imitated, both in stone and marble, the disposition of timbers in sacred edifices, thinking such a distribution ought to be attended to; because some ancient artificers, having laid the beams so that they ran over from the inner face of the walls, and projected beyond their external face, filled up the spaces between the beams, and ornamented the cornices and upper parts with wood-work elegantly wrought. They then cut off the ends of the beams that projected over the external face of the wall, flush with its

face; the appearance whereof being unpleasing, they fixed, on the end of each beam so cut, indented tablets, similar to the triglyphs now in use, and painted them with a waxen composition of a blue colour, so that the ends of the beams in question might not be unpleasant to the eye. Thus the ends of the timbers covered with tablets, indented as just mentioned, gave rise to the triglyph and metopa in the Doric order. Others, in subsequent works, suffered the rafters' feet above each triglyph, to run over, and hollowed out the projecting inferior surface. So, from the arrangement of beams, arose the invention of triglyphs; and, from the projection of the rafters, the use of mutuli under the corona. On which latter account it is observable, that in works of stone and marble the carving of the mutuli is inclined, in imitation of the feet of rafters, whose slope is necessary to carry off the water. Hence we have the imitation of the earliest works to account for the Doric triglyph and mutulus, and not, as some have erroneously said, from the circumstance of triglyphs being introduced as windows; which could not be the case, inasmuch as they are placed on external angles, and immediately over columns, in both which situations windows would be absurd in the highest degree, for the tye at the angles of buildings would be entirely destroyed, if occupied by windows; and therefore the dentils of the Ionic orders might as properly be seen to occupy the places of windows, if the spaces occupied by triglyphs have an origin of such a nature. The intervals, moreover, between dentils, as well as those between triglyphs, are called metopæ. Besides, the Greeks, by the word *ᾠραι*, signify the beds of the beams, which we call *cava columbaria*: thus the space between two beams obtained the name of a metopa. As in works of the Doric order triglyphs and mutuli were first used, so in Ionic works the use of dentils was first introduced; for as the mutuli bear a resemblance to the projecting feet of the principal rafters, so,

in the Ionic order, the dentils imitate the projection of the common rafters. Hence the Greeks never placed dentils below the mutuli, because the feet of common rafters cannot be below those of principal rafters. For a design must be anomalous, when that which ought to be above the principal rafters is placed below them. The ancients, therefore, neither approved nor used mutuli nor dentils in the cornices of their pediments, but coronæ simply; because neither principal nor common rafters tail on the front of a pediment, neither can they project beyond it, their direction being towards the eaves. Their opinion, therefore, evidently was, that a distribution would not be correct in a copy which could not exist in the prototype. For the perfection of all works depends on their fitness to answer the end proposed, and on principles resulting from a consideration of Nature herself, and they approved those only which, by strict analogy, were borne out by the appearance of utility. Their principles were thus established, and they have left us the symmetry and proportion of each order. Following their steps, I have already spoken of the Ionic and Corinthian orders: I shall now proceed to give a succinct account of the Doric order, and its most approved proportion.

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### CHAPTER III.

#### OF THE DORIC PROPORTIONS.

SOME ancient architects have asserted that sacred buildings ought not to be constructed of the Doric order, because false and incongruous arrangements arise in the use of it. Such were the opinions of Tarchesius, Pitheus, and Hermogenes. The latter, indeed, after having prepared a large quantity of marble for a Doric temple,

changed his mind, and, with the materials collected, made it of the Ionic order, in honor of Bacchus. It is not because this order wants beauty, antiquity (genus), or dignity of form, but because its detail is shackled and inconvenient, from the arrangement of the triglyphs, and the formation of the sofitæ of the corona (lacunaria). It is necessary that the triglyphs stand centrally over the columns, and that the metopæ which are between the triglyphs should be as broad as high. Over the columns, at the angles of the building, the triglyphs are set at the extremity of the frieze, and not over the centre of the columns. In this case the metopæ adjoining the angular triglyphs are not square, but wider than the others by half the width of the triglyph. Those who resolve to make the metopæ equal, contract the extreme intercolumniation half a triglyph's width. It is, however, a false method, either to lengthen the metopæ or to contract the intercolumniations; and the ancients, on this account, appear to have avoided the use of the Doric order in their sacred buildings. I will, however, proceed to explain the method of using it, as instructed therein by my masters; so that if any one desire it, he will here find the proportions detailed, and so amended, that he may, without a defect, be able to design a sacred building of the Doric order. The front of a Doric temple, when columns are to be used, must, if tetrastylos, be divided into twenty-eight parts; if hexastylos, into forty-four parts; one of which parts is called a module, by the Greeks ἐμβάτης: from the module so found the distribution of all the parts is regulated. The thickness of the columns is to be equal to two modules, their height equal to fourteen. The height of the capital one module, its breadth one module and a sixth. Let the height of the capital be divided into three parts; then one of those parts is to be assigned for the abacus and its cymatium, another for the echinus, with its fillets; the third for the hypotrachelium. The diminution of the column

is to be as directed for the Ionic order in the third book. The architrave or epistylum, with its *tænia* and *guttæ*, is to be one module in height; the *tænia* is the seventh part of a module; the length of the *guttæ* under the *tænia* plumb with the triglyphs, and including the fillet, the sixth part of a module. The width of the soffit of the architrave is to correspond with the thickness of the column at the hypotrachelium. Over the architrave triglyphs are placed, with metopæ one module and a half high, and one module wide on the face. They are to be distributed so, that as well over the columns at the angles, as over the intermediate columns, they may stand above the two central quarters of the columns. Two are to be placed in each intercolumniation, except in the central one of the pronaos and posticum, in which three are to be set; because, by making the middle intercolumniations wider, a freer passage will be given to those who approach the statues of the gods. The width of a triglyph is divided into six parts, of which five are left in the middle, and of the two halves of the remaining part, one is placed on the right and the other on the left extremity. In the centre a flat surface is left, called the femur (thigh), by the Greeks *μηρός*, on each side of which channels are cut, whose faces form a right angle; and on the right and left of these are other femora; and, lastly, at the angles are the two half channels. The triglyphs being thus arranged, the metopæ, which are the spaces between the triglyphs, are to be as long as they are high. On the extreme angles are semi-metopæ half a module wide. In this way all the defects in the metopæ, intercolumniations, and lacunaria, will be remedied. The capitals of the triglyphs are to be made the sixth part of a module. Over the capitals of the triglyphs the corona is to be laid, whose projection is one half and a sixth part of a module, with a Doric cymatium over it, and another above it, so that, with the cymatia, the corona is one half of a module high. In the soffit of the

corona, perpendicularly over the triglyphs and centres of the metopæ, are arranged guttæ and sinkings. The former, so as to have six guttæ appearing in front, and three on the return: the remaining spaces, which occur from the increased width of the metopæ beyond that of the triglyphs, are left plain or sculptured with representations of thunderbolts, and near the edge of the corona a channel is cut, called a scotia. The remaining parts, the tympana, cymæ, and coronæ, are to be executed similar to those described for Ionic buildings. The above is the method used in diastyle works. If the work be systyle, with a monotriglyph: the front of the building, when tetrastylus, is to be divided into twenty-three parts; when hexastylus, into thirty-five: of these, one part is taken for a module; according to which, as above directed, the work is to be set out. Thus, over the epistylia are two metopæ and one triglyph, and in the angles a space will be left equal to half a triglyph. The middle part, under the pediment, will be equal to the space of three triglyphs and three metopæ, in order that the central intercolumniation may give room to those approaching the temple, and present a more dignified view of the statue of the god. Over the capitals of the triglyphs a corona is to be placed, with a Doric cymatium below, as above described, and another above. The corona, also, together with the cymatia, is to be half a module high. The soffit of the corona, perpendicularly over the triglyphs and centres of the metopæ, is to have guttæ and sinkings, and the other parts as directed for the diastyle. It is necessary that the columns should be wrought in twenty faces, which, if plane, will have twenty angles; but if channelled, they are to be so formed, that a square being described, whose side is equal to that of the channel or flute, if, in the middle of the square, the point of a pair of compasses be placed, and a segment of a circle be drawn, touching the angles of the square, such segment will determine their sinking. Thus is the Doric

column properly chamfered. In respect of the additional thickness in the middle thereof, as mentioned in the third book, respecting\* Ionic columns, reference must be made to that place. As the external symmetry of Corinthian, Doric, and Ionic edifices has been explained, it is necessary to give directions for the interior arrangements of the cell and pronaos.

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#### CHAPTER IV.

##### OF THE INTERIOR OF THE CELL AND THE ARRANGEMENT OF THE PRONAOS.

THE length of a temple must be twice its width. The cell itself is to be in length one-fourth part more than the breadth, including the wall in which the doors are placed. The remaining three parts run forward to the antæ of the walls of the pronaos, which antæ are to be of the same thickness as the columns. If the temple be broader than twenty feet, two columns are interposed between the two antæ, to separate the pteroma from the pronaos. The three intercolumniations between the antæ and the columns may be enclosed with fence work, either of marble or of wood, so, however, that they have doors in them for access to the pronaos. If the width be greater than forty feet, columns opposite to those which are between the antæ, are placed towards the inner part, of the same height as those in front, but their thickness is to be diminished as follows. If those in front are an eighth part of their height in thickness, these are to be one ninth; and if the former are a ninth, or a tenth, the latter are to be proportionally diminished. For where the air does not play round them, the diminution thus made will not be perceived; lest, however, they should appear

slenderer, when the flutes of the external columns be twenty-four in number, these may have twenty-eight, or even thirty-two. Thus, what is taken from the absolute mass of the shaft, will be imperceptibly aided by the number of the flutes, and though of different thicknesses, they will have the appearance of being equal. This arises from the eye embracing a greater number of surfaces, and thence producing on the mind the effect of a larger body. For if two columns, equally thick, one of them without flutes, and the other fluted, are measured round with lines, and the line is passed over the flutes and their fillets, though the columns are of equal thickness, the lines which girt them will not be equal, for that which passes over the fillets and flutes will of course be the longest. This being the case, it is not improper in confined and enclosed situations to make the columns of slenderer proportions, when we have the adoption of the flutes to assist us. The thickness of the walls of the cell must depend on the magnitude of the work, taking care, however, that the antæ are the same thickness as the columns. If built in the ordinary way, they are to be of small stones, very carefully laid, but if of square stone or marble the pieces should be chiefly small and of equal size, because then, the upper stones coming over the middle of the joint below them, bind the work together and give it strength; fillets of lime used in pointing the joints and beds give the work an agreeable appearance.

## CHAPTER V.

## OF THE DIFFERENT ASPECTS OF TEMPLES.

IF there be nothing to prevent it, and the use of the edifice allow it, the temples of the immortal gods should have such an aspect, that the statue in the cell may have its face towards the west, so that those who enter to sacrifice, or to make offerings, may have their faces to the east as well as to the statue in the temple. Thus suppliants, and those performing their vows, seem to have the temple, the east, and the deity, as it were, looking on them at the same moment. Hence all altars of the gods should be placed towards the east. But if the nature of the place do not permit this, the temple is to be turned as much as possible, so that the greater part of the city may be seen from it. Moreover, if temples be built on the banks of a river, as those in Egypt on the Nile, they should face the river. So, also, if temples of the gods be erected on the road side, they should be placed in such a manner that those passing by may look towards them, and make their obeisance.

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## CHAPTER VI.

## OF THE PROPORTIONS OF THE DOORS OF TEMPLES.

THE following are the rules for door-ways of temples, and for their dressings (*antepagmenta*). First the species is to be considered: this is Doric, Ionic, or Attic. The Doric is constructed with these proportions. The top of the cornice, which is above the upper dressing, is to be level with the top of the capitals in the *pronaos*. The aperture of the door is determined as follows. The height from the pavement to the *lacunaria* is to be di-

vided into three parts and a half, of which two constitute the height of the doors. The height thus obtained is to be divided into twelve parts, of which five and a half are given to the width of the bottom part of the door. This is diminished towards the top, equal to one-third of the dressing, if the height be not more than sixteen feet. From sixteen feet to twenty-five the upper part of the opening is contracted one-fourth part of the dressing. From twenty-five to thirty feet the upper part is contracted one-eighth of the dressing. Those that are higher should have their sides vertical. The thickness of the dressings in front is to be equal to one-twelfth of the height of the door, and they are to diminish towards the top a fourteenth part of their width. The height of the architrave is to be equal to the upper part of the dressing. The cymatium is to be a sixth part of the dressing; its projection equal to its thickness. The cymatium is to be sculptured in the Lesbian form, with an astragal. Above the cymatium of the architrave of the dressing (supercilium), the frieze (hyperthyrum), is placed, and it is to have a Doric cymatium, with a Lesbian astragal, in low relief. Over this the corona is placed, unornamented, and with a cymatium. Its projection is to equal the height of the supercilium placed over the architrave of the dressing. On the right and left, projectures are made; and the cymatia of the dressings are connected by a mitre. If the doors are Ionic, their height is to be regulated as in those that are Doric. Their width is found by dividing the height into two parts and a half, and taking one and a half for the width below. The diminution is to be as in the Doric door-way. The width of the dressings is to be a fourteenth part of the height of the aperture; the cymatium a sixth part of their width; the remainder, deducting the cymatium, is to be divided into twelve parts, three of which are given to the first fascia, with the astragal, four to the second, and five to the third. The fasciæ, with the astragal, run quite round

the dressings. The upper members of the door-way are the same as those of the Doric. The trusses (ancones), or prothyrides, which are carved on the right and left, reach to the bottom of the level of the architrave, exclusive of the leaf. Their width on the face is one-third of the dressing, and at the bottom one-fourth part less. The wooden doors are to be so put together, that the hinge styles (scapi cardinales) may be one-twelfth of the height of the aperture. The pannels (tympana) between the styles are to be three out of twelve parts in width. The arrangement of the rails is to be such, that when the height is divided into five parts, two are given to the upper and three to the lower rail. In the centre the middle rails (medii impages) are placed; the others are disposed above and below. The width of the rail is to be one-third of the pannel, and its cymatium a sixth part of the rail itself. The width of the inner styles is one-half of the rail, and the raising (replum) four-sixths of the rail. The styles nearest the dressings are made one-half of the rail. If the doors are folding, the height remains the same, but the width is to be increased. If in four folds the height is to be increased. The Attic doors are made of the same proportions as the Doric, except that, in the dressings, the fasciæ return within the cymatium; and these are proportioned so, that exclusive of the cymatium, they are to be two-sevenths. These doors are not to be inlaid (cerostrota), nor in two folds, but single folded, and to open outwards. I have explained, to the best of my power, the proportions used in setting out Doric, Ionic, and Corinthian temples, according to the approved methods. I shall now treat of the arrangement of Tuscan temples, and how they ought to be built.

## CHAPTER VII.

## OF THE TUSCAN PROPORTIONS: OF CIRCULAR TEMPLES, AND OTHER SPECIES.

THE length of the site of the temple intended, must be divided into six parts, wherefrom subtracting one part, the width thereof is obtained. The length is then divided into two parts, of which the furthest is assigned to the cell, that next the front to the reception of the columns. The above width is to be divided into ten parts, of which, thrée to the right and three to the left are for the smaller cells, or for the alæ, if such are required: the remaining four are to be given to the central part. The space before the cells in the pronaos, is to have its columns so arranged, that those at the angles are to correspond with the antæ of the external walls: the two central ones, opposite the walls, between the antæ and the middle of the temple, are to be disposed, so that between the antæ and the above columns, and in that direction, others may be placed. Their thickness below is to be one-seventh of their height: their height one-third of the width of the temple, and their thickness at top is to be one-fourth less than their thickness at bottom. Their bases are to be half a diameter in height. The plinths, which are to be circular, are half the height of the base, with a torus and fillet on them as high as the plinth. The height of the capital is to be half a diameter. The width of the abacus is equal to the lower diameter of the column. The height of the capital must be divided into three parts, of which one is assigned to the plinth or abacus, another to the echinus, the third to the hypotrachelium, with its apophyge. Over the columns coupled beams are laid of such height as the magnitude of the work may require. Their width must be equal to that of the hypotrachelium at the top

of the column, and they are to be so coupled together with dovetailed dowels as to leave a space of two inches between them. For if they are laid touching each other, and the air does not play round them, they heat and soon rot. Above the beams and walls the mutuli project one-fourth the height of the column. In front of these members are fixed, and over them the tympanum of the pediment, either of masonry or timber. Above the pediment the ridge-piece (columen), rafters (cantnerii), and purlines (templa), are distributed so that the water may drip therefrom on three sides. Circular temples are also constructed, of which some are MONOPTERAL, having columns without a cell; others are called PERIPTERAL. Those without a cell have a raised floor (tribunal), and an ascent thereto equal to one-third of their diameter. On the pedestals (stylobatæ) columns are raised, whose height is equal to the diameter which the pedestal occupies, and their thickness, including the bases and capitals, one-tenth part of their height. The height of the architrave is half a diameter; the frieze and members over it are to be proportioned according to the directions to that effect which have been given in the third book. But if the building be peripteral, two steps, and then the pedestals are built thereunder; the wall of the cell is raised at a distance from the pedestals of about one-fifth of the whole diameter, and in the middle is left an opening for the door. The clear diameter of the cell within the walls, is to be equal to the height of the columns above the pedestals. The columns round the cell are proportioned as above directed. At the centre of the roof, the height of it is equal to half the diameter of the work, exclusive of the flower. The flower without the pyramid is to equal in dimensions the capitals of the columns. The other parts are to be similar in proportions and symmetry to those already described. Other species of temples are also erected, regulated on the same principles, but with a dif-

ferent arrangement of parts, such as the temple of Castor in the Circus Flaminius, and of Beardless Jupiter (Ve-jovis), between the two groves. As also, though more ingeniously contrived, that of Diana Aricina, with columns on each flank of the pronaos. The first temples built similar to that of Castor in the Circus, were those of Minerva on the Acropolis of Athens, and of Pallas at Sunium in Attica, the proportions of which are similar. The length of the cells is double their breadth, and in other respects, those symmetries which are used in the fronts are preserved on the sides. Others, with an arrangement of columns similar to that observed in Tuscan temples, transfer it to Corinthian and Ionic designs; for in some examples, instead of the antæ which run out from the pronaos, two columns are substituted, and thus Tuscan and Greek principles are mixed. Others removing the walls of the cell, and placing them between the intercolumniations of the pteroma, give more space to the cell by their removal, and by preserving in other respects the same proportions and symmetry, seem to have invented another species which may be called PSEUDOPERIPTERAL. These different sorts of temples are dependent on the sacrifices performed in them; for temples to the gods are not all to be constructed in the same manner, the worship and sacred rites of each being different. I have, according to the rules taught to me, explained the different principles on which temples are constructed, the different orders and symmetry of their detail, wherein and how they respectively differ; and this I have written to the best of my ability. I shall now describe the altars of the immortal gods, and their situation as adapted to sacrifices.

## CHAPTER VIII.

## OF ALTARS TO THE GODS.

THE aspect of altars should be to the east, and they should always be lower than the statues in the temple, so that the supplicants and those that sacrifice, in looking towards the deity, may stand more or less inclined, as the reverence to be shewn may proportionably require. Hence altars are thus contrived; the heights of those of Jupiter and the celestial gods are to be as high as they may conveniently be; those of Vesta, the Earth, and the Sea are made lower. On these principles, altars in the middle of temples are fitly proportioned. In this book the method of designing temples is shewn; in the following, rules will be given for the arrangements to be observed in public buildings.

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