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FRAGMENTS OF OLD WORK
PRELIMINARY.

TO THE READER.

DEAR FRIEND:—"The Five Orders of Architecture," as presented in this work, are mostly compiled from the works of Sir William Chambers, whose writings on the subject have been considered among the very best. They are scholarly, correct, and followed by our best architects as standards of good taste, and true to the originals. Nearly all the illustrations, with measurements included, are reproduced from the original drawings made by Sir William, and are valuable on that account as well as because of their being made in conformity to the most approved usage.

While I have kept pretty close to Sir William's text, I have in a number of instances included the expressed opinions of several other noted architects and authorities which I have not named in the general text, as I did not think this necessary in a work that is understood by the reader to be almost altogether a compilation. It has simply been my duty to rearrange the work, eliminate a large portion of the old text, to rewrite and modernize some portions, and endeavor to adapt it to the requirements of present usage and the understandings of American Workmen generally. If I have succeeded only in part, I will feel that I have done some little towards helping my fellow co-laborers in the Building trades—and this will be an appreciated reward.

Respectfully yours,

FRED T. HODGSON.

COLLINGWOOD, ONT., May, 1910.

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This book is intended to be one of INSTRUCTION; and it contains sufficient information, rules and directions to enable any studious or ambitious young workman to obtain a fair, workable knowledge of the design and construction of the Greek and Roman Orders of Architecture. The thirty-nine full-page plates, show beautiful examples of classic work, many of them being figured, giving dimensions and correct proportions of the work, so that the student may easily work out a series of designs to suit the work in hand, if it so happens to demand classic treatment. The designs for doors, windows, and details given should prove guides for the proper formation of such work in harmony with the style and character of the main structure: a most important matter in the designing of an edifice of any pretension.

The compiler of this work has endeavored to adhere closely to the rules and proportions as laid down by that eminent architect, Sir William Chambers, who based all his efforts on the rules and usages as practiced by the old masters, and which, up to this date, have never been superseded. There have been many attempts made by modern architects, to modify and change the proportions, and the assembling of the various orders; and while there has been a partial success in some instances, the greater number of these departures have been more or less failures, some of them miserable failures, and it would have been much better all round, if no departure had been attempted.
The introduction of structural steel work and the free use of Portland cement, have changed somewhat the character of buildings and mode of construction to such an extent, that in many instances a departure from the old cannon of proportion and methods of construction, became not only permissible, but were absolutely necessary to meet the demands and requirements of the new order of things. Under these conditions, however, the architect rarely attempts to produce purely classic work.

This book, if closely followed, will render it easy for the carpenter, the draftsman, the stone-cutter, or the general builder, to design columns or other details of the orders, in proper style and proportion in such a manner that even an expert would be obliged to admit the work as almost faultless.

The plates are fine reproductions from the originals, and are in themselves, lessons for instruction in art and education.
THE FIVE ORDERS OF ARCHITECTURE

INTRODUCTORY.

This treatise is prepared for the building operatives of America, merely to give them a working knowledge of the Grecian and Roman Orders, their various styles and proportions, and the character of details that should accompany each order; and in doing this I have followed Sir William Chamber's works as being in my estimation, the best and clearest expositions recorded, and the most suitable for the purpose I have in view.

While I shall follow Chambers closely, and quote him lengthily, I will not forget other great architects who have written on the subject, especially old Vitruvius, Palladio, Vignalo, Scamozzo, Inigo Jones, Wren, Leeds and other authorities, including Peter Nicholson, Gwilt and our own Sturgis. Indeed, the whole volume here presented, will be more of a compilation from the best sources attainable, than of originality on my part, but, as I have already stated, this work is prepared, first, to meet the wants of the operative builder, whether he be a mason, a bricklayer, a carpenter or a plasterer, and, as it is always a difficult undertaking to deal with matters that form the contents of this book, or similar ones I recognize the fact that in an endeavor to make the subject plain to the vision of the workman, I shall be compelled to violate certain canons of conventional usage and accepted good taste, in order to "level up" with my readers.
This work may not reach the altitude of the accomplishments of many practicing architects, but I do flatter myself that no treatise on the "Five Orders of Architecture," so concise, and so low priced, and so clear and understandable, was ever before laid before the American Workman.

The progress made, and being continually made, by the workmen in every trade and in every department of knowledges, renders it imperative that every man with a scintilla of ambition, should gather in, and foster every scrap of knowledge regarding his daily occupation, and it is with a view of helping those who are making efforts to help themselves, this book is prepared, and I am sure it will commend itself to all workmen who are interested in building because of its unassuming simplicity and clearness.

To know something of the "Orders" is a duty which no builder should overlook, and the volume here presented, will supply all the knowledge required, if thoroughly studied, to satisfy every requirement that any ordinary workman will ever be called upon to make use of.

The early Romans made a grave attempt to impress upon posterity, that the invention of the "Orders," or rather the perfecting of them, belonged to them. We now know better, and while the column and its enrichments may not have originated in Greece, it was Greek skill and Greek Art that gave us the models on which all our classic work is built. It is well to know this, and a very able architect puts the matter in verse:

Thus he spoke of Rome:—

"Go not there
For Architecture's due. Rome's temples were
But stol'n from Greece. Invention in the cause
Of Heav'n she never exercis'd. She wrought
With wondrous pow'r in all contrivances
Which minister'd to man alone; his pride,
His pleasure, comfort,—nay, his good, in much.
She gave a plastic yielding to the fix'd
And stubborn features of antique design.
With light material she vaulted space,
And emulated with capricious dome
The heaven's concave. Range on range she pil'd
Her column'd arcades, and, within th' ellipse
Of her colossal theatre, gave room
For populations. In her gorgeous baths
Her swarth artificers, in thousands, lav'd
Their limbs Herculean. In her palaces
Th' imperial sway did vault itself in pomp
Which startles record. Marble pillars, whose
High tops o'erlook'd the panorama vast
Of the world's capital; and arches, rich
In sculptur'd story, told of Conquest, far
'More dear to Rome than her own Liberty.'
In the blue distance merging, aqueducts
Stretched o'er the flat Maremma, to bear in
From their fresh gushing springs the mountain waters;
And e'en the filth and offal of the city
Found an imperial road to vent themselves
Into the torrent of the startled Tiber!
But this was architectural display;
Not the display of Architecture's self.
Greatness—not grandeur—lifted here her head.
Proud piles of masonry, hung with the spoils
Of conquered Greece, uprose, to captivate
The sense of sight—but not to strike the soul
Of feeling."

Of Greece he speaks more warmly:—
"GREECE claims our homage now, with milder show
Of giant pow'r; though not as if she lack'd it.
Her gentler feeling for the beautiful
All pride in grandeur qualifies. In vain
She might essay to pass the fore-gone might
Of Egypt; but, in grace of majesty,—
In all that marks the mind's accomplishment
In high imagining and finish'd thought,—
In elegance conjoining dignity,—
In noble form and feature exquisite,
Commanding deference and winning love,—
In sage simplicity,—in modest truth,—
In ardent worship of fair Nature's forms
(Ev'n where invention o'ersteps Nature's law,)
In decorative taste,—and, more than all,
In Sculpture's last perfection.—where, O where
May Greece a fore-goer, or successor, find!
"Behold her Temples: the material works
Of that pure intellect, which, through her Laws,
The Five Orders of Architecture

Her Poetry, Philosophy, proclaim'd
Itself alike. Had History been mute,
Nor aught of Sage or Poet had remain'd,
Th' Acropolis with all its eloquence
Of Art, had still declar'd, here must have been
The intellectual arch monarchy.
As on Olympus met the Court of Jove,
So on th' Athenian rock the symbols stand
Of the Greek mind in its analysis;
Its strength, its majesty, its beauty, grace.
Restore the Parthenon in all its pride!
See high conception in its noble form:
Each member in itself a studied piece
Of a distinct perfection, subject to,
And worthy of, the whole. Each ornament,
As 'twere a fitting flow'r of rhetoric,
By fancy us'd in aid of argument.
Behold those Sculptures: models of the life,
Which, as the world grows abler and more wise,
Show more and yet more unattainable
By rival skill or imitative care.
Once more, survey the Temple round and round.
No stone but is a monument of thought:
No moulding nor enrichment, howso'er
Remote, but shews an artist's reverence
For that all-seeing Eye, which dwells, well pleas'd,
On off'rings to its own exclusive sight."
OF THE ORIGIN AND PROGRESS OF BUILDING.

Buildings were certainly among the first wants of mankind, and architecture must undoubtedly be classed among the earliest antediluvian arts. Scripture informs us that Cain built a city; and soon after the deluge we hear of many cities, and of an attempt to build a tower that should reach the sky—a miracle stopped the progress, and prevented the completion of that bold design.

The first men, living in a warm climate, wanted no habitations; every grove afforded shade from the rays of the sun, and shelter from the dews of the night; rain fell but seldom, nor was it ever sufficiently cold to render closer dwellings than groves either desirable or necessary, even in the hour of repose; they fed upon the spontaneous productions of the soil, and lived without care as without labor.

But when the human species increased, and the produce of the earth however luxuriant, was insufficient to supply the requisite food; when frequent disappointments drew on contention, with all its train of calamities, then separation became necessary, and colonies dispersed to different regions, where frequent rain, storms, and piercing cold, forced the inhabitants to seek for better shelter than trees.

At first they most likely retired to caverns formed by nature in rocks, to hollow trunks of trees, or to holes dug by themselves in the earth; but, soon disgusted with the damp and darkness of these habitations, they began to search after more wholesome and comfortable dwellings.

The animal creation pointed out both materials and manners of construction—swallows, wrens, bees, storks,
were the first builders; man observed their instinctive operations; he admired, he imitated, and, being endued with reasoning faculties, and of a structure suited to mechanical purposes, he soon outdid his masters in the builder's art.

Rude and unseemly, no doubt, were the first attempts; without experience or tools, the builder collected a few boughs of trees, spread them in a conic shape, and covering them with rushes, or leaves and clay, formed his hut, sufficient to shelter its hardy inhabitants at night, or in seasons of bad weather. But in the course of time men naturally grew more expert; they invented tools to shorten and improve labor; fell upon neater, more durable modes of construction; and forms better adapted than the cone to the purposes for which their huts were intended. They felt the want of convenient habitations, wherein to taste the comforts of privacy, to rest securely, and to be effectually screened from troublesome excesses of weather. They wanted room to exercise the arts to which necessity had given birth; to deposit the grain that agriculture enabled them to raise in abundance; to secure the flocks which frequent disappointments in the chase had forced them to collect and domesticate. Thus stimulated, their fancy and hands went arduously to work and the progress of improvement was rapid.

That the primitive hut was of a conic figure it is reasonable to conjecture, from its being the simplest of solid forms and most easily constructed. And wherever wood was found, they probably built in the manner above described, but soon as the inhabitants discovered the inconvenience of the inclined sides, and the want of upright space in the cone, they changed it for the cube; and, as it is supposed, proceeded in the following manner.

Having, says Vitruvius, marked out the space to be occupied by the hut, they fixed in the ground several upright
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PLATE 1
trunks of trees to form the sides, filling the intervals between them with branches closely interwoven and spread over with clay. The sides thus completed, four beams were laid on the upright trunks, which being well fastened together at the angles of their junction, kept the sides firm, and likewise served to support the covering or roof of the building, composed of smaller trees placed horizontally like joists, upon which were laid several beds of reeds, leaves and earth or clay.

By degrees other improvements took place, and means were found to make the fabric lasting, neat and handsome, as well as convenient. The bark and other protuberances were taken from the trees that formed the sides, these trees were raised above the dirt and humidity on stones, were covered at the top with other stones, and firmly bound round at both ends with osier or cords to secure them from splitting. The spaces between the joists of the roof were closed up with clay or wax, and the ends of them either smoothed or covered with boards. The different beds of materials that composed the covering were cut straight at the eaves, and distinguished from each other by different projections. The form of the roof too was altered; for being, on account of its flatness, unfit to throw off the rains which sometimes fell in great abundance, it was raised in the middle on trees disposed like rafters, after the form of a gable roof.

This construction, simple as it appears, probably gave birth to most of the parts that now adorn our buildings, particularly to the orders, which may be considered as the basis of the whole decorative part of architecture, for when structures of wood were set aside, and men began to erect solid stately edifices of stone, having nothing nearer to imitate, they naturally copied the parts which necessity introduced in the primitive hut; insomuch that the up-
right trees, with the stones and cordage at each end of them, were the origin of columns, bases and capitals; the beams and joists gave rise to architraves and friezes, with their triglyphs and metopes; and the gable roof was the origin of pediments, as the beds of materials forming the covering, and the rafters supporting them, were of cornices with their corona, their mutules, modillions, and dentils.

That trees were the originals of columns seems evident, from some very ancient Egyptian ruins still existing; in which are seen columns composed of many small trees tied together with bandages to form one strong pillar, which, before stone was in use, became a necessary operation in a country where no large timber was to be had, and in which the stupendous size of their structures constituted the principal merit. Herodotus describes a stately stone building which stood in the courts of the temple of Minerva at Sais, the columns of which were made to imitate palm trees. The form of the bundle pillar above mentioned, though deriving its existence from necessity, is far from disagreeable. It was evidently a beauty in the eyes of the ancient Egyptians, since it was imitated by them in stone. And it seems more natural to suppose that fluted columns owe their origin to the intermediate hollows between the trees composing these pillars, than to the folds of a woman's garment, to which they have but very little resemblance.

Vitruvius, the only remaining ancient writer upon the decorative part of architecture, ascribes almost every invention in that art to the Greeks—as if till the time of Dorus it had remained in its infant state, and nothing had till then appeared worth notice; and most, if not all the modern authors, have echoed the same doctrine. Yet, if ancient history be credited, the Egyptians, Assyrians,
Babylonians, and other nations of remote antiquity, had exhibited wonders in the art of building even before the Grecians were a people.

It must indeed be confessed, that though the works of the Asiatic nations were astonishing in point of size and extent, yet in other respects they were of a nature calculated rather to give a high idea of the power and wealth of the founders, than of their skill or taste. We plainly see that all their notions of grandeur were confined to dimension, and all their ideas of elegance or beauty to richness of materials or gaudiness of coloring. We observe a barrenness of fancy in their compositions, a simplicity and sameness in their forms, peculiar to primitive inventions. But even in the early works of the Egyptians, beside their prodigious dimensions, there are evident marks of taste and fancy. It is in them we trace the first ornamental forms in architecture, and to their builders we are most probably indebted for the invention of columns, bases, capitals, and entablatures. We likewise read of roofs supported by figures of colossal men and animals in the works of the Egyptians, several ages before the introduction of Persians or Caryatides in the structures of Greece, and of temples adorned with stately porticoes, enriched with columns and sculpture, and built before there were any temples in Greece.

Hence it may be inferred that the Grecians were not the inventors of ornamental architecture, but had that art, as well as their religion and gods, from the Egyptians—or from the Phœnicians, their nearer neighbors, whose skill in arts is said to have been anterior to theirs—though both were of Egyptian origin.

Diodorus Siculus observes that the Egyptian priests proved, both by their sacred records and also by other undoubted testimonies, that not only the poets and philoso-
phers of Greece travelled anciently into Egypt to collect their knowledge, but also their architects and sculptors, and that everything in which the Grecians excelled, and for which they were famous, was originally carried from Egypt into Greece.

The Phoenicians, however, were very early celebrated for their proficiency in the arts of design, and there is no doubt but the Greeks availed themselves of their inventions.

We are told that Hiram made two capitals for the pillars Jachin and Boaz, in Solomon's temple; which, as far as can be collected from the accounts given of them in several parts of Scripture, very much resembled the Corinthian capital both in form and proportions, though executed some centuries before Callimachus is reported by Vitruvius to have invented it at Corinth. The cherubim of Hiram too, and the colossal figures of men and animals in the structures of the Egyptians, were prior inventions, and undoubtedly suggested to the Greeks their ideas of Persians and Caryatides.

And though architecture is certainly indebted to the Grecians for considerable improvements, yet it may with confidence be averred that they never brought the art to its utmost degree of excellence. The art of building, says Leon Baptista Alberti, "sprang up and spent its adolescent state in Asia; after a certain time it flowered in Greece, and finally acquired perfect maturity in Italy among the Romans." And whether we call to mind the descriptions given by ancient writers of Nineveh, Babylon, Thebes, Memphis, the Egyptian pyramids, the sepulchres of their kings, their temples, and other public monuments, or contemplate, among the Roman works, their palaces, amphitheatres, baths, villas, bridges, mausoleums, and numerous other yet existing testimonies of their splendor; it must candidly be confessed that the Grecians have been far ex-
celled by other nations, not only in the magnitude and grandeur of their structures, but likewise in point of fancy, ingenuity, variety and elegant selection.

How distant the Grecians were from perfection in proportions in the art of profiling, and other parts of the detail, will soon be evident to any impartial examiner, who compares the publications of Le Roi, Stuart, Revett, and other ingenious Levantine travellers with the antiquities of the Romans, either on the spot, or as they have been given in books, by Palladio, Serlio, Desgodetz, Sandrart, Paranesi, and other authors. The last of those here mentioned has published a parallel between the fairest monuments of Greece and Rome, which is recommended to the inspection and perusal of those who have not yet seen it.

Indeed, none of the few things now existing in Greece, though so pompously described and neatly represented in various publications of our time, seem to deserve great notice, either for dimensions, grandeur of style, rich fancy, or elegant taste of design; nor do they seem calculated to throw new light upon the art, or to contribute towards its advancement, nor even those erected by Pericles or Alexander, while the Grecian arts flourished most; neither the famous lantern of Demosthenes, nor the more famous Parthenon, which, though not so considerable as the church of St. Martin's Lane, exclusive of its elegant spire, had for its architects Phidias, Callicrates, and Ictinus; was the boast of Athens, and excited the envy and murmurs of all Greece. We find indeed, in Pliny and other ancient writers very pompous descriptions of temples, such as that of Apollo at Miletus, of Ceres and Proserpine at Eleusis, of the Olympian Jupiter at Athens, and above all, of Diana at Ephesus, one of the seven wonders of the world. But if the Grecian architecture was defective in the time of Alexander, it must have been more so some centuries ear-
lier, and concerning temples built in bogs, and founded upon wool to resist earthquakes, and of which the stones were set with sandbags, some doubts may be indulged, as well as of those made of wax, yet resisting the ardor of a Grecian sun; or those of brass, yet catching fire and melting down.

At first sight it may appear extraordinary that a people so renowned in arms, so celebrated for poetry, rhetoric and every sort of polite learning, and who carried sculpture further than any of the ancient nations, should be so deficient in architecture; yet, upon further consideration, many reasons will occur why it necessarily should be so: Greece, a country small in itself, was divided into a number of little states, none of them very powerful, populous, or rich so that they could attempt no very considerable works in architecture, having neither the space, the hands nor the treasures that would have been necessary. "It must be owned," says Monsieur D'Ablancourt, "that Greece even in the zenith of her greatness, had more ambition than power; we find Athens flattering herself with the conquest of the universe, yet unable to defend her own territories against the incursions of her neighbors; and who can refrain from laughter at the Lacedemonians—rivals in fame with the Athenians, yet in despair, and reduced to sue for peace by the loss of four hundred men!" The lake of Mœris would have deluged all Peloponnesus, and ruined all Greece, Babylon would have covered Attica, and more men had been employed to build that city than there were inhabitants in all the Grecian states. The Egyptian labyrinth was a hundred times larger than that of Crete, and more materials have been employed in one of the Egyptian pyramids than were used in all the public structures of Athens.

If at the same time it be recollected that Greece, while
divided into many governments, was constantly harassed with domestic wars, and, from its union, always in an unsettled situation; that an uncommon simplicity of manners prevailed among the Grecian states, and the strictest maxims of equality were zealously adhered to in most of them, it will be easy to account for the small progress made by the Greeks in architecture. Demosthenes observes, that the houses of Aristides, Miltiades, or any of the other of the great men of the time, were no finer than those of their neighbors, such was their moderation, and so steadily did they adhere to the ancient manners of their country. One of the laws of Lycurgus ordained that the ceilings of houses should only be wrought by an axe, and their gates and doors be left rough from the saw—no other tools than these being permitted, which law was so scrupulously observed among the Lacedemonians that, when King Leotychides saw, at Corinth, a ceiling, of which the timbers were neatly wrought, it was so new a sight to him that he asked his host, if trees grew square in that country. It seems, indeed, as if these sumptuary laws of Lycurgus had made a general impression, and inspired the Greeks rather with contempt than veneration for splendid structures; even in their best time they accounted it an effeminate folly to be ostentatious in that respect. "All the states of Greece," says Plutarch, "clamoured loudly against Pericles for decorating Athens like a vain fantastic woman, and adorning it with statues and temples, which cost a thousand talents."

What magnificence the Grecians displayed in their structures was confined to their public buildings, which were chiefly temples, wherein there appears to have been nothing very surprising either for dimensions, ingenuity of contrivance, or excellence of workmanship. Greece, almost constantly the theatre of war, abounded not like Italy
in magnificent villas, where the richest productions of art were displayed. Their public roads were not adorned with mausoleums to commemorate their heroes, nor the towns with arches or bridges to celebrate their triumphs. The Grecian theatres were inconsiderable, compared with those of the Romans; the naumachiae and amphitheatres unknown amongst them, as were also the thermae in which the Romans affected so much splendor.

In latter times, indeed, the Greeks, particularly the Athenians, abated of their original severity; the orator above mentioned observes that, in his time there were some private houses more magnificent than public edifices; but this does not appear to have been very common, and consequently could not be productive of much additional splendor; even Alcibiades, the most luxurious Greek of his time, for he was accused of wearing a purple cloak, and of sleeping upon a bed with a canvas bottom, doth not seem to have been better lodged than other Athenians, excepting that his house was painted.

Since therefore, the Grecian structures are neither the most considerable, most varied, nor most perfect; it follows that our knowledge ought not to be collected from them, but from some purer, more abundant source, which, in whatever relates to the ornamental part of the art, can be no other than the Roman antiquity yet remaining in Italy, France, or elsewhere—vestiges of buildings erected in the politest ages by the wealthiest, most splendid, and powerful people of the world, who, after having removed to Rome, from Carthage, Sicily, Egypt, and Greece, the rarest productions of the art of design; as also the ablest artists of the times were constantly employed, during many centuries, in the construction of all kinds of edifices that either use, convenience, luxury or splendor required. Pliny informs us that the works of the Romans were much more
considerable than those of any other people; that in the course of thirty-five years more than a hundred sumptuous palaces had been erected in Rome, the most inconsiderable of which was fit for the residence of a king, and that in his own time, the time of Vespasian, there were a great number much more splendid than any of the hundred above mentioned. The palaces of Caligula and Nero were in extent like towns, and enriched with everything that the most exquisite taste and the most unbounded liberality could suggest.

The Romans began early to cultivate architecture; several considerable works were erected by their kings, and many more during the magistracy of their consuls. Julius Cæsar was passionately fond of that art; and, besides the building erected by him in Rome, “he embellished with considerable structures,” says Suetonius, “the principal cities of Italy, France, Spain, Asia and Greece.” Augustus boasted on his death-bed that he had converted Rome into a city of marble; he not only built much himself, but excited his friends to follow the example; and Mecænas, his favorite and minister, was the patron of arts, as well as of letters.

Caligula and Nero were, to the utmost, splendid in their buildings. The latter carried his passion for architecture, as it is said, even to the extravagant excess of burning Rome, that he might have the pleasure of rebuilding it with greater regularity and magnificence, which he afterwards did.

During the reigns of Claudius, Vespasian, Titus, Domitian, and Nerva many very considerable public works were erected both at Rome and in other parts of the Roman dominions, and Vespasian not only re-edified the capitol with greater magnificence than before, but also all the other public buildings of Rome, which had suffered by the out-
rages of the Vitellians. He obliged the proprietors of ruined houses to rebuild them, and caused to be erected several new edifices of great cost and magnificence, such as the Temple of Peace, the largest covered building of antiquity; another, dedicated to Minerva, of the richest and most exquisite workmanship ever exhibited in Rome, the first artists then alive having been employed to paint, carve, and incrustate the same. He also built the largest amphitheatre in the world, capable of containing eighty thousand spectators, and many other works of less note. His care and munificence extended themselves in like manner to all other parts of the Roman empire, in which he erected new cities and towns, repaired, adorned and fortified such as were old or ruinous.

Titus, his successor, was so attentive to the beauty of his metropolis that, when a dreadful fire had destroyed many of its temples and public buildings, he resolved to re-edify them at his own charge, with all possible expedition, disposing of the furniture and ornaments of his own palaces to defray the expense. Death prevented the completion of his intentions; but Domitian finished what he had left undone, and also adorned Rome with many new structures, particularly with a palace, surprising for the magnificence of its colonnades, the number of its rooms, the splendor of its baths and female apartments. His love for building was such that he wished to be another Midas, to the end that he might indulge his passion without control.

Trojan, in whose reign the Roman empire was in its most flourishing state, cultivated all the arts of design, and with the assistance of the celebrated Appolodorus, his principal architect, executed many very considerable works. He erected a bridge of stone over the Danube, sixty feet wide, one hundred and fifty feet high, and almost two miles in length. He also built several cities among the Dacians,
embellished Rome and other parts of Italy with many public edifices, rebuilt Antioch, which had been almost totally destroyed by an earthquake, and also repaired many other towns in Syria that suffered at the same time by the same calamity.

Adrian, whose skill in different branches of polite knowledge is well known, particularly, in the arts of design, embellished various parts of the Roman city with splendid and beautiful structures, such as his bridge and mausoleum at Rome, his villa near Tivoli, his wall in Britain, which extended from the river Eden in Cumberland to the Tyne in Northumberland, many temples and other public buildings in Gaul, in Greece, and in Africa, where he re-edified a considerable part of Carthage. He also rebuilt Jerusalem which Titus had demolished about sixty years before, and erected in Egypt, a stately pillar to the memory of Pompey.

Antoninus Pius re-edified a great part of Rome, Narbonne, Antioch, and Carthage, all which cities had suffered considerably by fire. And it was his custom whenever any damage happened to a city by an earthquake, a fire, an inundation, or other calamitous accidents, to repair it with money taken out of the public treasury. He greatly improved the ports of Terracina and Gaeta, built considerable baths at Ostia, aqueducts at Antium, temples at Lavinium; and all must be sensible how powerfully the example of princes operates upon the minds of their subjects, inspires the same passions, and excites to the same pursuits.

In short, architecture continued to flourish among the Romans, though with abated lustre, till Constantine removed the seat of empire to Byzantium, and the number of stately structures with which Rome and the Roman dominions abounded is almost incredible. Their very remains excite at this day the astonishment and admiration
of every judicious beholder, in spite of all that length of time, wars, party rage, barbarism, casual events, superstition, and avarice have done to destroy them.

In these remains there will be found abundant materials to work upon, and form a complete system of decorative architecture. The labors of the celebrated masters of the fifteenth, sixteenth and seventeenth centuries may, perhaps, be added to enrich the stock, and we may avail ourselves of their labors to facilitate or shorten our own; but it should always be remembered that, though the stream may swell in its course by the intervention of other supplies, yet it is purest at the fountain's head. And whoever aims at being superiorly eminent in any profession must not receive his information at second hand from others, but mount himself to the origin and reason of things. "The man," says Michael Angelo, "who follows another always is behind, but he who boldly strikes into a different path may climb as high as his competitor, and though the road may be somewhat more rugged, yet, if his efforts are crowned with success, the reward will amply compensate for the risk and labor of the enterprise."

An anonymous Italian writer observes, that the superiority of Raphael, may perhaps be owing to his having been so universally admired and copied; that the modern sculptors never equalled the ancient, because they have done nothing but imitate them; and if, says he, all the ancient paintings hitherto discovered are inferior to the modern, it is perhaps owing to our painters not having had the works of an Apelles to copy.

Nature is the supreme and true model of the imitative arts, upon which every great artist must form his idea of the profession in which he means to excel; and the antique is to the architect what nature is to the painter or sculptor.
the source from which his chief knowledge must be col-
lected, the model upon which his taste must be formed.

But as in nature few things are faultless, so neither must
it be imagined that every ancient production in archi-
tecture, even among the Romans, or Greeks, was perfect
or a fit model for imitation, as blind adorers of antiquity
are sometimes disposed to believe. On the contrary their
remains are so extremely unequal that it requires the
greatest circumspection and effort of judgment to make
a proper choice. The Roman arts, like those of other
nations, had their rise, their era of perfection, their decline.
At Rome, as in London or Paris, there were few great archi-
tects, but many very indifferent ones; and the Romans
had their connoisseurs, as we have ours, who sometimes
would dictate to the artist, and cramp the fortunate sallies
of his genius, force upon him and the world their own
whimsical productions, promote ignorant flatterers, dis-
courage, even oppress, honest merit.

Vitruvius, supposed to have lived in the Augustan age,
complains loudly of this hardship, and there is a remark-
able instance of the vindictive spirit of an ancient
connoisseur, in Adrian, who put to death the celebrated
Apollodorus, for having ventured a shrewd remark upon a
temple designed by that Emperor, and built under his
direction.

In the constructive part of architecture the ancients do
not seem to have been great proficients. I am inclined to
believe that many of the deformities observable in the
Grecian buildings must be ascribed to their deficiency in
that particular, such as their gouty columns, their nar-
row intercolumniations, their disproportionate architraves,
their hypaethral temples, which they knew not how to
cover, and their temples with a range of columns running
in the centre to support the roof, contrary to every rule either of beauty or convenience.

Neither were the Romans much more skilful; the precepts of Vitruvius and Pliny on that subject are imperfect, sometimes erroneous, and the strength or duration of their structures is more owing to the quantity and goodness of their materials than to any great art in putting them together. It is not therefore from any of the ancient works that much information can be obtained in that branch of the art.

To those usually called Gothic architects we are indebted for the first considerable improvements in construction; there is a lightness in their works, an art and boldness of execution, to which the ancients never arrived, and which the moderns comprehend and imitate with difficulty. England contains many magnificent examples of this species of architecture, equally admirable for the art with which they are built, the taste and ingenuity with which they are composed.

One cannot refrain from wishing that the Gothic structures were more considered, better understood, and in higher estimation than they hitherto seem to have been. Would our dilettanti, instead of importing the gleanings of Greece—or our antiquaries, instead of publishing loose incoherent prints, encourage persons duly qualified to undertake a correct elegant publication of our own cathedrals and other buildings called Gothic, before they totally fall to ruin, it would be of real service to the arts of design, preserve the remembrance of an extraordinary style of building now sinking fast into oblivion, and at the same time publish to the world the riches of Britain in the splendor of her ancient structures.

Michael Angelo, who, skilled as he was in mathematical knowledge, could have no very high opinion of the ancient
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construction, boasted that he would suspend the largest temple of antiquity, meaning the Pantheon, in the air, which he afterwards performed in the cupola of St. Peter's, at Rome. And Sir Christopher Wren has conducted all parts of St. Paul's, and many others of his numerous admirable works, with so much art that they are, and ever will be, studied and admired by all intelligent observers. To him, and to several ingenious artists and artificers since his time, we owe many great improvements in carpentry, which the English have established upon better principles, and carried to higher perfection than any other nation.

Some of the French architects have likewise been very skilful in construction. The mason's art in particular has been considerably improved by that nation. And we are indebted to the French, to the Italian, and to a few of our own countrymen, for many valuable books in which the manner of conducting great works is taught, the necessary machines, tools, carriages, and other apparatus described, together with the properties, modes of preparing and of employing all kinds of materials used in building. They likewise have treated of the nature of soils, and the manner of laying foundations, of raising superstructures, and of every other particular having relation to the mechanic arts connected with building.

These books, the structures above mentioned, and many others to be found in England or elsewhere, are the schools from which the architect must collect the rudiments of construction, but practice, experience, and attentive observation are requisite to render him consummately skilled in this important part of his profession.

The architect's aim being, as has been observed, to erect handsome, strong, convenient, salubrious, and comfortable edifices, to ascertain their value, and to build them with safety, ease, and frugality, the principals of his art may be
ranged under four distinct heads, which are—distribution, construction, decoration, and economy.

Of construction and decoration, it has been shown whence his knowledge should be collected; and of distribution, which comprehends all particulars relative to health, convenience, comfort, pleasure and profit, the artist may collect his general idea from books or observations made upon buildings erected for various purposes, in different climates and ages; but it is only by practice that he can become expert in discovering the advantages or defects of situation, the nature of climates or expositions, the qualities of air, water, sail, and many other things necessary to be known, and it is only by a thorough acquaintance with the customs and modes of living of his own times, and with the dispositions, amusements, occupations, and duties of his contemporaries that he can effectually learn how to supply their wants or gratify their wishes.

In countries where general custom governs most things, and where all persons of the same rank think, act and live nearly after the same manner, the distributive part of architecture has not so many difficulties; but wherever this is not the case, every new employer opens a fresh field for investigation, and the artist's task is never at an end.

The economy of architecture is of so complicated, so extensive a nature, that it is almost impossible for any man to know it perfectly, much more for an architect, whose mind must be loaded with a great variety of other knowledge. When, therefore, an artist has fixed his abode in any particular country or great city, it will be best to limit his researches at first to that place alone, informing himself of the different quarries, woods, kilns, seaports or other markets from whence it is supplied with materials for building, as also of the different natures and degrees of goodness of these materials, the proper times for providing
them, the best means of transporting them to the places of their destination, their value, and upon what circumstances that value depends, to the end that he may be enabled at all times to account for the fluctuation of price, and to ascertain what they are justly worth.

The principal difficulty of this inquiry arises, not only from the many causes upon which the value of things and their rise or fall depends but from the caution with which dealers and tradesmen of almost all denominations, conceal the secrets of their trade, and the real profits they have thereon.

His next step must be to find out all the able artists and artificers of the place and its environs, to form an acquaintance with them, and examine carefully in what branches they particularly excel, how far their skill extends, what their dispositions, circumstances, and tempers are, with their characters and connections, that by combining these particulars he may employ their abilities upon every occasion to most advantage, as well for them as for himself.

He must then make diligent inquiry into the usual prices allowed for every sort of labor or workmanship, according to its degree of perfection, how much time and what materials are requisite to produce given quantities thereof, what profits, according to the usage of the place are allowed thereon to the master workmen, and in what manner it is measured or accounted for when done, that he may be entire master of his subject, and enabled to judge equitably between the employer and employed, as his station requires. These inquiries at the first be attended with considerable difficulty for the reasons before mentioned, but, like propositions in geometry, one information will facilitate another, and in the course of a few years' practice the artist, if he be industrious and skilfully inquisitive, will have acquired a thorough acquaintance with whatever con-
cerns his own circle, and then he may extend his inquiries to other parts. What is already known will serve as a clue to further knowledge, and, by degrees, he may become a very competent judge of every economical particular in all the provinces of an extensive kingdom.

If in this chapter, or in other parts of the work, for it may be as well to apologize at once for all, the author has ventured to think for himself, and sometimes to start opinions differing from those of other men, he begs leave to say that it proceeds, not from the affectation of being either singular or dogmatical, but from conviction that his notions are always founded in reason or proved by well attested facts, and delivered with a wish to guide the reader right. All that has been said respecting the superiority of the Roman architecture was written a considerable time ago, when the Grecian had been extolled into repute, and structures were erecting in different parts of England after Attic designs. Fortunately, the sight of these first speci-
mens excited no desire for more; after a few ineffectual struggles the Roman manner obtained a complete victory. There seemed at that time, no further necessity to fight its cause, and these observations, intended for this work, were then suppressed.
THE COLUMN.

ITS ORIGIN AND HISTORY.

The fundamental rudiments of architecture originated in the employment of the column. The term building, in the sense now used, denotes a structure made up of several essential and component parts, erected for a certain purpose. In these creations of man's genius we find the column a central figure, about which there seems to cluster the first efforts of scientific construction, and in all the various gradations through which the science of architecture has passed, from the crude and gigantic piles of the ancients to the more finished and studied arts of modern times, the column has taken the lead of all other distinctive features, not only in deciding the style of the art employed, but in the method of the building. The use of a post, shaft or column for the purpose of sustaining some superincumbent weight was the outgrowth of man's necessity, and whether or not the suggestion came from nature, the fact remains that the first used was the trunks of trees, employed in the same position in which they grew; and although it did not require much of a genius to employ the column for the purpose of sustaining weight, it called for a knowledge of mechanical construction to build safely upon such supports. In the course of this plan of the ancient builders, it became necessary to place upon the head of the column a block or beam, to more equally distribute the weight. From this early suggestion we have the first idea of the capital.

Beauty and the embellishment in architecture follow in the wake of necessity; and this is strikingly verified from
the fact that as soon as the column became one of the factors of construction the ancients began its decoration, and they seem to have made it the alphabet of all their constructive methods.

We find that no sooner had it been employed by one of the ancient nations than it was taken up by another; and passing from period to period, it underwent a transitionary existence, until finally its character became so distinct and marked, that, instead of serving as one of the minor adjuncts of a building, it became the principal and most important feature, and in a measure regenerated and decided the style of the building in which it was used. The several ancient nations gave the column the characteristics of their educational development. The Egyptians are credited with the first efforts in the direction of a decided scientific proportion and form. From the plain cylindrical shaft, with a block or abacus at the top, they gradually developed the long curved capital, decorated with the lotus leaf and flower. The shaft also changed its proportion and appearance. Flutes were adopted, and it was otherwise decorated. From the use of wood for columns it was but another step to stone, and soon we find the roofs of their massive buildings and temples supported by monolithic structures of gigantic proportions, that would test the machinery of our own age to raise and set in place.

Following the Egyptians, the Assyrians, builders of that wonderful city of ancient Babylon, began the use of the column, and still further improved on its contour and beauty. Burned clay moulded and sun dried, covered with cementing materials, was first employed by these people, who later used stone and marble, after the example of the Egyptians.

To the Greeks, however, was left the problem of perfecting and bringing to a distinctive issue what as yet
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seemed an addition, and not an essential, to their architectural styles. The perfection of the Greek column began to assume shape B. C. 668; subsequently it branched into two distinct classes, which in time became known to history as the Doric and Ionic. The Doric was heavy and massive, with a plain abacus or capital; with none or very little, base. The Ionic, as of the most light and graceful character, was treated with a delicate and refined feeling, its distinctive features being the scroll-like volutes that ornamented its capital and the moulded base. From the ideas thus generated by the several details of these two styles, as they came to be termed, sprang the perfection of classic art in the Corinthian column and capital from which that style of architecture takes its name.

The Romans invented and used a composition of the Ionic and Corinthian, with less of the solid effect of the former and more of the graceful finish of the latter, and designated the Composite; but it never ranked as an original creation, and therefore did not reach the dignity of a distinctive style.

The Romans also added another column or style taken from the Doric and Ionic, and designated it the Tuscan, after the country in which it originated. From the idea thus given to the world, and embraced in these several orders or styles of architecture, the architects of the tenth to the sixteenth centuries gradually developed and produced the Gothic column, using all the distinctive features of the five orders of classic architecture, which culminated in a light and highly ornamented column, capital and base. These being clustered, acted as a support, with all the stability of the Doric, without its heavy and cumbersome outline. And although the Gothic column seems to be more distinct and original in its form and detail, and to be more of an inventive creation than any of its predecessors, a study
of its parts will determine the fact that it is but a copy from the ancients.

Following the column from its birth to the present time, we seem to reach a point beyond which the inventive genius of man cannot go; and it is a noticeable fact, that for three hundred years no improvement in these styles has been made, nor has any new style been invented. The ground had been so completely covered, and every form and outline employed has been so thoroughly analyzed, that any new combination of forms resolve themselves into mere copies.

We find, therefore, the architects of the present day using the same orders of architecture in the embellishment of their buildings, that were perfected in the erection of the gigantic works of antiquity, and those details that so marked the styles of Pagan temples now decorate the facades of our Christian buildings, without one single step towards improvement or originality. The fact that history repeats itself in the events of nations is aptly demonstrated in the practice of ancient and modern architects.
ON THE ORIGIN OF GRECIAN ARCHITECTURE.

Though Babylonia, Chaldea, and Egypt, had attained very considerable proficiency in their architectural works at a very early period, as we must conclude from the accounts in the Holy Scriptures, no less than from those of ancient authors, yet neither of these countries can, from all that we collect, be said to have known or understood the principles of the art so as to have rendered it capable of affecting the mind otherwise than by the enormous magnitude of the works it produced. Nimrod built three cities in Chaldea. Nineveh was founded by Ashur, and we read of the establishment of towns in Palestine as early as the age of Jacob and Abraham. Later, in Homer's time, Egypt boasted her celebrated Thebes, which had at that period been long in existence. The age of the architectural wonders and excavations of India is undecided. It seems likely that the Egyptians gained their architecture from the East, or as Jacob Bryant supposes, that the buildings of both nations were erected by colonies of some great original nation. This supposition is borne out amazingly by the singularities in common of the Indian and Egyptian styles. In the ornaments applied to each there is a striking similarity, and each delighted in structures of extraordinary dimensions. It was in Greece, however, that true architecture was reared; in that country she received all the elementary beauties of which she was susceptible, as well as those in her general forms with which the habits and character of the nation invested her. But it is not to be presumed that the Oriental and Egyptian architecture were devoid of beauty; on the contrary, much

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is to be admired in the detail of each. In that of the latter the forms of its masses are peculiarly grand. It has been noticed that the monotony of the ornaments which the Egyptians employed, renders them in some respect deficient in point of beauty, but let us always recollect it was from the foliage used by the Egyptians, particularly that of the lotus and palm tree, and even from their employment of volutes, that the Grecians evolved the Corinthian capital. They had sufficient penetration to discover the sound principles on which the Egyptian architecture was founded, and judgment to select, improve and adopt what was worthy of imitation.

It was, of course, by very slow steps that architecture proceeded to that perfection which it attained in Greece. The mechanical arts must have made considerable progress before buildings of stone could have been constructed. If we may believe Pliny, their early houses were but simple huts built of earth and clay, resembling the caverns from which they had but just emerged. The same author says, that the Greeks attributed the honor of inventing bricks to Euryalus and Hyperbias, brothers and natives of Attica. But the time in which these persons lived is unknown, and their introduction of the use of bricks into Greece is the utmost that can be assigned to them, if indeed the whole story be not a fable.

The Athenians were amongst the earliest of the Nations of Greece, who became a body politic. From their indisposition to move far away from their country, they received as some conjecture, the appellation of "the Movers," though according to Plato, the import is more literal, from a belief that their ancestors actually sprang from the earth. The earliest of their kings, of whom we have notice was Ogyges, but of him little more than his name is known. His son Eleusinus, however, built the city of Eleusis, so
that the father who also governed Bœotia must have introduced some civilization into those parts of Greece. The kingdom of Argos owed its foundation to Inachus, whose son Egialeus is said to have founded the kingdom of Sicyon. It has been conjectured, and with every appearance of probability, that the above two chiefs belonged to some of those different colonies which moved from Asia and Egypt, and first civilized the inhabitants of Greece, teaching them to dwell in cities, and to lead a less wandering life. These doubtless brought with them some remembrance of the arts of their native countries. The step from the unwieldy Egyptian column to the Grecian Doric was indeed wide, yet experience shows us how very gradual is the advance of science, and through what a number of stages it must pass before it even approaches perfection.

The earliest edifices of the Greeks were far from exhibiting skill or elegance. The temple at Delphi, celebrated by Homer, and supposed by Bryant to have been originally founded by Egyptians, was according to Pausanias, little better than a hut covered with laurel branches. During the time of Vitruvius the ruins of the building wherein the Areopagus assembled were still visible; even this was, according to that architect but a miserable sort of structure. Cadmus, about 1519 B. C., has the reputation of having introduced to the Greeks the worship of the Egyptian and Phœnician deities, and of having instructed them to quarry and work the stone of the country so as to make it useful in building, and moreover of having taught them the art of fusing and working metals. From this period the Greeks rapidly advanced in civilization; but the present state of the art at that early period cannot be satisfactorily determined, and the difficulties in the way of acquiring any certain knowledge on the subject render the task irksome, perhaps impossible to perform. The laws of Draco in the
39th Olympiad are the most ancient writing, says Bryant, to which we can securely appeal. "When the Grecians began afterwards to bestir themselves, and to look back upon what had passed, they collected whatever accounts could be obtained. They tried also to separate and arrange them to the best of their abilities; and to make the various parts of their history correspond. They had still some good materials to proceed upon, had they thoroughly understood them; but herein was a great failure. Among the various traditions handed down, they did not consider which really related to their country, and which had been introduced from other parts." If Pausanias could be relied on, the Greeks had at an extremely early period erected some very extraordinary buildings. This author, moreover, speaks of the Treasury of Minyas king of Orchomenus, and the Walls of Tiryns he designates as a work worthy the admiration of every age. The first mentioned building if constructed by Minyas must have existed previous to the taking of Troy, for Minyas reigned 1377 years before the Christian era, and the Walls of Tiryns, said to have been built by Proteus, which consist of immense irregular blocks of stone, must have been constructed about the same period. Goguet, to whom I am much indebted, observes that if these edifices are so ancient, it is very singular that Homer, Herodotus, Diodorus and Strabo should have never made any remark on, nor even mention of the Treasury of Minyas. Apollo- dorus and Strabo, however, speak of the Walls of Tiryns, saying that they were built by workmen whom Prœtus had brought from Lycia, and Homer records "the great walls." "The lasting Walls," of Tiryns still extant, in the small portion which remains, the work and arrangement are of a very remote age.

It has been conjectured that the Treasury of Minyas bore a resemblance to the Treasury of Atreus at Mycænæ,
still in existence, in which the beds of the courses of stones are horizontally adjusted, and manifest an advanced stage of the art. What has been called the vaulting of this last mentioned Treasury is not entitled to that appellation. Though the internal face of the work is in the form of a circular spindle generated by the revolution of a segment of a circle about its chord, and not a paraboloid as a noble author has stated, yet its construction indicates no knowledge of the principles of arching or vaulting. The curve is obtained by each course corbelling over in horizontal beds and by afterwards working the inverted steps to the shape required. Now in respect to that of Minyas, Pausanias says that it was vaulted and constructed of marble, although there is no likelihood, even so late as the age of Homer, that this material was employed in Grecian buildings. "Had that been the case," says Goguet, "Homer would scarcely have omitted the mention of it in his description of the Palace of Alcinous, and much less in the Palace of Menelaus which was celebrated by him for the gold, silver, brass and ivory which it contained."

If the introduction among the Greek of the instruments necessary for working materials be assigned to Dædalus, which it would be if we might rely on the authors of antiquity, it will be no easy task to reconcile the accounts of Pausanias and others with the truth, inasmuch as this person is allowed on all hands, to have existed, if at all, long subsequent to the periods above mentioned. Goguet has therefore made him altogether a fabulous personage, taking the name "Dædalus," to mean nothing more than a skillful workman, a meaning which he says has not escaped the notice of Pausanias. It is indeed surprising, had so wonderful an artist existed, that he should not have been celebrated by Homer, or that Herodotus, who availed himself of every opportunity for launching into anecdote,
should, in describing the Labyrinth of Egypt, have said nothing in relation to that of Crete, especially as it would have been so much to the honor of his own country. Goguet is of opinion that many of the instruments whose introduction was attributed to Daedalus were not known to the Greeks even in the time of Homer, who does not specify in his poems any other than the hatchet with two edges, the plane, the auger, and the rule. Neither square, compasses, nor saw are particularised. The Greek signification of a saw or its equivalent is not found in any of his works.

The information gained from the Homeric writings, whose authenticity it is unnecessary to discuss in this place, and from the Odyssey more particularly, which, if not so ancient as the Iliad, must, nevertheless, have soon followed it, and is admitted on all hands to be of very high antiquity, shows us that in the age of the poet, the patriarchal was the form of government that prevailed, and that the chief buildings of those days were the palaces of the princes. At this period the Altar appears to have been the only structure for sacred use; it was little more than a hearth on which the victim was prepared for the meal. In earlier times the tops of mountains were selected not only by the Greeks but by other nations for the worship of their gods. Thus we find Hector sacrificing on the top of Ida. Not until after Homer's time was a regular priesthood established in Greece. At Sparta the office of priest was vested in the Kings. In Egypt, and in many other places, the dignity was obtained by inheritance. When the principal person was absent, it was customary for the next highest in rank present to offer the sacrifice. Thus was Eumæus engaged, as we find by the Odyssey. In this age we consequently find the altar in the King's palace—the part therefore in which it stood must occasionally have
been used as a temple. Hence, it seems probable that until the sacerdotal was separated from the kingly office, the Grecian temple, properly so called, had no existence.

Whilst on this subject perhaps a few words might serve to illustrate the condition of the art at the period of which we are speaking. For this purpose we will take the house of Alcinous, which is described as follows:

"Within, seats were attached to the wall, in different places, from the entrance to the inner part of the house, and on them were covers of a light texture wrought by the women. These seats were occupied by the chiefs of the Phæacians, who sat eating and drinking. They were continually feasting. Golden youths with blazing torches in their hands stood on the well-built altars, to light the house for the guests at night," etc., etc.

Returning to the construction and arrangement of the hall, it has been surmised in a preceding page that it might, under all the circumstances, have furnished a hint for the rectangular and columnar disposition of the temple itself. We are unable to trace the degrees which intervened between the sole use of the altar and the establishment of the Greek temple, or when the latter became a necessary appendage to the religion of the country. "We are equally uninformed how the revolution happened which abolished the civil, judicial, and military offices of Kings, leaving the sacerdotal. But though the King's palace seems to have had no part appropriated to religious ceremony, yet being the depository of whatever furniture and utensils the rite of sacrifice required, a substitute would be wanted when this palace was no more. To supply this want the cell seems to have been added to the Greek temple." It is supposed by Eusebius and others that temples owe their origin to the reverence which the ancients had for their deceased friends and relations and benefactors, and that
they were nothing more than stately monuments erected in honor of the early heroes who had conferred whilst living some public benefit on mankind. The temple of Pallas, for instance, at Larissa, was the sepulchre of Acrisius; Cecrops was interred in the Acropolis at Athens, and Ericthonius in the temple of Minerva Polias. A custom prevailed of even offering sacrifices, prayers, and libations at almost every tomb,—and in some cases the sepulchre of the dead was as much an asylum or sanctuary as afterwards the temple itself. That this honor was not confined to the gods, but extended to other great persons, may be seen by the evidence of Strabo.

The houses of the Greeks at a very early period had an upper story over some part or parts of them. The passages in the Iliad, which tend to the proof of this, have by some persons, perhaps to strengthen a weak argument, been pronounced of doubtful antiquity. It will be needless, however, to examine this assertion critically, because it is quite manifest that the Eastern dwellings were not confined within the limits of a single story. In Scripture we shall find several notices which prove this point satisfactorily. David, for instance, withdrew himself to weep for Absolom, in the chamber over the gate. Ahaz erected his altars upon the terrace of the upper chamber. We read of the summer chamber of Eglon which seems to have had stairs to it, through which Ehud escaped after he had revenged Israel. And these are all of them, by the Seventy, translated steps, the word used by Homer. Terraces on the tops of the Eastern houses were also general, for the Jewish law enacted that persons should surround them with a protecting railing. In some of the Egyptian remains there are distinct traces of even more than two stories, and it is not, therefore, too much to contend for the existence of one in the time of the poet.
The word stairs frequently occurs in the Odyssey in connection with similar words. Whether it signify a ladder or a staircase is of no importance, though the usual progress of invention would seem to indicate the priority of the ladder.

Stone and brick were the materials most commonly employed in the works of the Egyptians, from whom if Greece gained her knowledge in the arts, one can hardly see the necessity for the intermediate step of those wooden structures which are said to have been the original type of the Doric temple. It is, indeed, true that the forests of the country would have supplied timber in abundance, and the little labor requisite to work it would have been an additional inducement for its employment.

The deducement of the parts of the Doric order entirely from wooden buildings is not without some anomalies which will be afterwards noticed in speaking of that order. The idea seems to have been current in the time of Vitruvius, but upon his authority in matters of historical research not much reliance is to be placed. It cannot, however, be denied that up to a comparatively late period timber was very extensively used in the construction of the Greek temple. In the time of Xenophon it was a material not considered too mean to be employed in forming the "statutes of Deities in the smaller temples, where neither a great revenue appropriated to religious purposes, nor extensive public favor, afforded means for large expense."

If the wooden temples had altogether escaped the flames which consumed so many of them, it is not to be expected that they would, from the nature of the material, have escaped the all-devouring hand of time. As the principles of construction must bear some relation to the nature of the materials, the proportions of the wooden temple would in all probability have been different from those in which
stone was employed. The epistylium or beam laid on the top of the supports in the former, probably ran through each side of the building in one piece, but a block of stone, could it have been procured sufficiently long and deep for the purpose, would not have been raised to its place and deposited on the heads of the columns without such assistance from the complication of the mechanical powers, as would in those days, if even known, have proved so unwieldy and expensive as to have rendered their application inexpedient. Here then is the first step towards a reduction of the space between the columns which is denominated an intercolumniation: for it is to be remembered that at the period of which we are speaking, the arch was to all appearance unknown.

Some general notion may be formed of the comparative antiquity of the different examples of the Grecian Doric by measuring their heights in terms of the lower part of the diameter of their shafts, of which more notice will be taken in a subsequent page—in this place, it is only necessary to state, that the massive proportions of the early Doric, such for instance as those used in the Temple at Selinuns in Sicily, where the columns are only five diameters in height, at a later period assumed a much greater appearance of delicacy and elegance, and that the intercolumniations of this order gradually increased as the art progressed towards perfection.

The account of the Origin of the Orders of Architecture as given by Vitruvius seems too absurd a fable to need much discussion. It will not escape the notice of any one, that the time which he assigns for their origin, is long previous to the time of Homer, who does not in any part of his poems give the slightest hint which could lead us to a belief that there was what is understood by the word order to be found in any part of the buildings he describes, which
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had it existed, it seems at least probable, he would have mentioned. He speaks of temples consecrated to Neptune and Minerva, without describing them; it is likely, therefore, that they were only altars to those deities. We will, however, give the account from Vitruvius, which is as follows:

"Dorus, son of Hellen and the Nymph Orseis reigned over Achaia and Peloponnesus. He built a temple of this (the Doric) order on a spot sacred to Juno at Argos, an ancient city. Many temples similar to it were afterwards raised in the other parts of Achaia, though at that time its proportions were not precisely established.

"When the Athenenians in a general assembly of the States of Greece, sent over into Asia, by the advice of the Delphic oracle, thirteen colonies at the same time, they appointed a Governor over each, reserving the chief command for Ion, the son of Xuthus and Creusa, whom the Delphic Apollo had acknowledged as son. He led them over into Asia, where they occupied the borders of Caria, and built the great cities of Ephesus, Miletus, Myus (afterwards destroyed by inundation, and its sacred rites and suffrages transferred by the Ionians to the inhabitants of Miletus), Priene, Samos, Teos, Colophon, Chios, Erythrae, Phocæa, Clazomene, Lebedos and Melite. This last, as a punishment for the arrogance of its citizens, was detached from the other states in the course of a war levied on it, in a general council, and in its place, as a mark of favor towards King Attalus and Arsinoe, the city of Smyrna was received into the number of Ionian States. These received the appellation of Ionian, after the Carians and Lelegæ had been driven out, from the name Ion, of the leader. In this country, allotting different sites to sacred purposes, they erected temples the first of which was dedicated to Apollo Panionius. It resembled that which they
had seen in Achaia, and from the species having been first used in the cities of Doria, they gave it the name of Doric. As they wished to erect this temple with columns, and were not acquainted with their proportions, nor the mode in which they should be adjusted, so as to be both adapted to the reception of the superincumbent weight, and to have a beautiful effect, they measured a man's height by the length of the foot, which they found a sixth part thereof, and thence deduced the proportion of their columns. Thus the Doric order borrowed its proportion, strength and beauty from the human figure. On similar principles they afterwards built the Temple of Diana; but in this, from a desire of varying the proportions, they used the female figure as a standard, making the height of the column eight times its thickness, for the purpose of giving it a more lofty effect. Under this new order they placed a base as a shoe to the foot. They also added volutes to the capital, resembling the graceful curls of the hair, hanging therefrom to the right and left certain moldings and foliage. On the shaft channels were sunk, bearing a resemblance to the folds of a matronal garment. Thus were two orders invented, one of a masculine character, without ornament, the other of a character approaching the delicacy, decorations 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, whose limbs are of a more delicate form, and whose ornaments should be unobtrusive. The invention of the Capital of this order arose from the following circumstance: A
Corinthian virgin, who was 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 shown 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 in sculpture, was called by the Athenians "the Master," 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 took the hint for inventing these columns, using them in the country about Corinth," etc.

Whoever reads the above account can give it but little credit. The testimony of Vitruvius on matters which occurred so long before his time, unless authenticated by earlier writers, cannot be received in an investigation similar to that in which we have followed.

History furnishes us with few means of ascertaining the progress and condition of the fine arts among the Greeks, between the period commonly assigned to the siege of Troy, and that of the time of Solon and Pisistratus 590 years B.C. In Greece Proper, it is probable that the advancement was slow, whilst its colonies established on the coast of Asia Minor were making rapid strides towards perfection. Goguet speaks of Asia Minor as the cradle in which architecture was rocked, and the soil on which it grew and flourished, and thinks that we must look to that country for the origin of the Doric and Ionic orders. This will be presently examined. The Corinthian order, from
what we can learn, did not appear till some time afterwards, and is generally allowed to have been the invention of the mother country itself. One of the earliest temples of the Greeks, that of Jupiter at Olympia, must, according to Pausanias, have been built about 630 years before the Christian era. That of Diana at Ephesus was begun at a period little less remote, if Livy be right in his assertion that it was reared at the time that Servius Tullius was King of Rome; and that date, be it observed, accords with the statements of other ancient writers. Notwithstanding the magnitude of these works, the science of mechanics was in its infancy. Even in the time of Thucydides, the powers of the crane though known, were not compendiously applied for raising weights. Before proceeding more particularly to the view which it is proposed to take of the Greek architectural orders, it may be convenient to state here, that the Greeks bestowed but little attention on their private houses. All the splendor and magnificence of the art was reserved for the embellishment of their temples and other public buildings.

If the birthplace of the Doric order gave it a name, to which of the provinces which went under the name of Doria is it to be referred, for they were many? To what author shall we turn to enlighten us on this subject, besides Vitruvius, on the very face of whose account we find such a mass of absurdity? It would be ridiculous to suppose that the order was perfected by one person, or in one period, and at this time all the researches that can be made are unfortunately not likely to give us a satisfactory account of the name which it bears. Names are often the last means that should be resorted to for ascertaining the import or origin of the things which bear them.

The detail of the Doric order is said by a host of writers, with Vitruvius at their head, to have been borrowed from
the assemblage of timber framing in a common hut, and
that it was the result of copying in stone the form and
parts of a wooden building. This, it must be confessed,
seems contrary to the ordinary progress of the arts and
sciences. Stone buildings would scarcely be the immediate
followers to those constructed in timber, where bricks were
known; however, if that were the case, the latter must
have been carried to great perfection in their forms, ar-
rangement, and proportions, and have attained a certain
style and character before they could have been deemed
objects worthy of imitation. If the Doric order could be
attributed to an inventor, that inventor was a people
among whom similar wants existed for a long period, and
among whom a style of building was retained suitable to
the climate and the habits of their life, and one which
time slowly and gradually modified and brought to per-
fection, on principles rendered sacred by custom.

The system of imitation in the Doric order has the ap-
pearance of having been founded on the elementary forms
of the hut; but it was guided, if that really be the case,
by the same principles which Nature herself adopts in her
works, without the aid of which no bounds could have
been set to the imagination and caprice of its improvers.
In the copy no part can be said to be precisely similar to
the model; the former displays sentiment, not calculation.
The triglyphs and metopes, which are said to represent
what in the original were the ends of beams and the spaces
between them, are generally found only in the exterior of
the building. The inclination of the mutules, originating,
as it is said, in the slope of the rafters, is still preserved,
though the front in which they appear be of a nature to
require a horizontal arrangement of them. These things
show that the artists at least adopted a free and not a
servile imitation of the primitive types. One cannot,
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GREEK ARCHITECTURE

Great Hexastyle Temple at Pastum

PLATE III
however, refrain from observing that on an inspection of Denon's plate of the Portico of the Temple of Tentyris, in the entablature whereof are to be found projections and intervals in its upper division, bearing a striking resemblance to the arrangement of the Doric frieze, a suspicion is induced that the usual hypothesis wants stronger confirmation than it has generally seemed to require. It is true that the projections in question are in the form of reeds, but the general effect, especially when we observe the way in which the intervals are ornamented, cannot fail to bring to mind the arrangement of the Doric Frieze and Cornice, not to mention the reeding at the external angles, which corresponds with the angular triglyphs of the Doric order. The introduction of the angular triglyph seems to have been an anomaly which could not have arisen, had the primitive type been what we have just seen. What could be more absurd than to give the end of the same beam two faces at right angles with its longitudinal direction. On the supposition of the type being the hut, and of the detail of the order being derived from the component parts of a hut, the Romans, and afterwards the restorers of art in Italy, were justified in altering this defect, which was the father of many more, in the arrangement of the intercolumniations. It is almost needless to observe that the materials of Egyptian architecture, from the great scarcity of wood in the country, must have generally been stone or brick. The large blocks of the former material precluded the necessity of making timber roofs, and it is therefore hardly reasonable to seek the origin of the projections of the entablature at Tentyris, and of other more ancient examples, in the ends of beams.

Proportions, and the rules necessary to be observed for the purpose of giving them elegance and effect, are only necessary to preserve uniformity in the principals on which
we proceed, and for preventing too great a latitude of imagination in the productions of art. We may be assured that whenever these become so fixed in any country, that its artists feel fettered by the restrictions which too rigid an adherence to ancient rules imposes, invention and taste are extinguished. The extraordinary difference which we find in the proportions and parts of the same order, plainly shows that the artists of Greece considered themselves restricted only in the general proportions.

It has been recently discovered that the columns of the Parthenon have an entasis or swelling. An examination of several examples with the view of comparing them with each other, would be not only extremely interesting but would serve to illustrate Vitruvius on this point, which was a refinement in art, though perhaps not early practised. It might perhaps determine the comparative ages of buildings more satisfactorily than any of the means which have hitherto been resorted to for that purpose.

In the Temples of Pæstum, Corinth, and Segesta, the intercolumniations are about equal to the diameter of the column, and they are nearly the same at the Parthenon. At the Temple of Theseus they exceed that width by about a quarter of a diameter, and in an example at Syracuse they are somewhat less than a diameter.

Two or three smaller matters remain to be noticed. These are the varieties in the forms of the echinus of the capital, and in those of the flutes. The echinus is sometimes inclined at once inward by a straight line, or by a slight curve without any double flexure. It is sometimes very much extended in its projection from the shaft; whilst in other examples we find it nearly approaching the quarter round of the Romans. When curved, the contour will be found composed of segments of curves formed by the section of a cone. The form of the flutes on the plan
is variable; we sometimes find them segments of circles, and at other times they are of a curvilinear form, partaking somewhat of the ellipsis. Their number also varies. In the examples at Athens, the number is twenty; whilst at Pæstum the exterior order of the great temple has twenty-four, the lower interior order twenty, and the upper interior only sixteen.

Those who from a passage in the Odyssey have discovered that the fluting of columns was made for the purpose of receiving and holding the spears of the persons whose duties led them to the temple, and that this want gave rise to the invention, do great injustice to the ingenuity of the Grecians. It is here unnecessary to argue in refutation of so strange a conjecture. We will only in passing observe, that a more inconvenient place for the armory could not possibly be assigned than such a situation, nor one where obstruction would have been more unnecessarily created than in the one comparatively narrow intercolumniations of the Grecian temple; nor one, if the spears were to stand in contact with the recess of the channel, in which they would have been more liable to be constantly displaced by accident. It is probable that the fluting is nothing more than an improvement which Grecian refinement would make on the polygonal column of Egypt.

Until after the defeat of Xerxes, when the active spirit of the Athenians languished for an object, we do not find that singular elegance in their works of fine arts, which through the exertions and fostering hand of Pericles appeared about 430 years before Christ. The Peloponnesians and their colonies had erected the temples at Corinth, Nemea, Pæstum, Syracuse, and other places in Sicily. From the introduction of architecture into Greece, a period of little more than three centuries elapsed before it
burst forth with astonishing lustre, and was raised to the summit of perfection.

In the country that gave birth to the Doric order, speaking of it as applied to Greece generally, it is not difficult to imagine that the art was not destined to be restrained within the limits of a single order, it was in truth impossible that it would have remained within such narrow bounds. It is more than probable that the orders advanced almost pari passu, and it would be difficult to prove that the Ionic order is of much less antiquity than that which has just been examined. Except in the capitals of the Ionic and Corinthian orders, one can scarcely say in which of the three the greatest degree of richness is manifest, more especially when we consider how exquisitely the metopes were sometimes decorated. On a glance at the capitals in question, and a comparison of them with many examples of the corresponding member in Egyptian Architecture, one would suppose there can be no doubt on their origin.

It may be, and is, indeed, true, that the Ionian colonies gave a preference to the Ionic Order; so did the Romans to the Corinthian, and yet whoever said that the Romans invented the Corinthian order?

The same species of variety which has been noticed in the different examples exhibited of the Doric, is not less observable in those of the Ionic order, as may be seen by a comparison of the Ionic edifices of Athens with those on the coast of Asia Minor; but it is not necessary to enter into the subject so much at length as we have done in respect to the Doric order.

Aware that the angular Ionic capital has its admirers, it may be proper to state that many men of taste are of a different opinion, and that it has been thought a defect which should be avoided in modern works. In a peripteral
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GRECIAN ARCHITECTURE

Temple on the Sicyonian.

PLATE V
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In the temple, much of the beauty would have been lost if the baluster side of the capital had been in the same direction as that of the flanks. The expedient which the Greeks adopted to remedy this evil was ingenious as well as judicious. It should, however, never be employed in porticoes which do not project more than one intercolumniation, or in peripteral buildings.

The most ancient temple of the Ionic order has been said to be that of Juno at Samos. Herodotus says it was considered one of the most stupendous edifices erected by the Greeks. It is but recently that any information has been obtained respecting this temple, or rather its ruins. It appears to have been built about 540 years before the Christian era. The octastyle temple of Bacchus at Teos, that of Appollo Didymaëus, near Miletus, and of Minerva Polias at Priene, are the chief temples of the colonies of which we know anything at this period. Hermogenes, the architect of the temple of Bacchus, is said by Vitruvius to have originally intended it to have been of the Doric order, but that, even after the preparation of all the materials, thinking that the Ionic was more suitable for a temple, he laid them aside and employed the order in question. This, however, is a story not authenticated by any other author, as we believe, and one may or may not, knowing the character of the writer in these respects, treat it as Hermogenes is said to have treated his Doric materials.

The height of the Ionic column varies from eight diameters and a quarter to nearly nine and a half in height, and the upper diameter of the shaft from full eight-tenths to seventeen-twentieths. The want of similarity in the capitals renders them unfit for comparison with each other. The mean height of the entablature is about a fourth of the height of the whole order. The cornice of the Grecian
Ionic may be generally considered as bearing a constant ratio to the whole height of the entablature as two to nine. The architrave is found, in most examples, divided into fasciae, below the cymatium.

The base, a figure which has not yet been considered, requires a little of our attention. In the examples at Athens we find it consisting of two tori, with a scotia or trochilus between them. A fillet above and below the scotia separates it from the tori. The former fillet is in general coincident with a vertical line let fall from the extreme projection of the superior torus. The lower fillet in the temple on the Llyssus projects about half way between the incavation of the scotia and the extreme projection of the lower torus. The height of the scotia and two tori are nearly equal. In the temple just named a bead and fillet are set on the upper torus to receive the shaft of the column. It will not escape observation, that in the temple of Erectheus, as well as that on the Llyssus, the lower torus is uncut, whilst the other is fluted horizontally, and that in the bases of the temple of Minerva Polias, the upper torus is sculptured with a guilloche. The form of the scotia is a portion of a curve formed by one of the conic sections. The base thus described has been usually denominated attic. It was, however, used in the colonies, as in the temple of Bacchus, at Teos, though in that the upper torus is not sculptured. The bases of the temple of Minerva Polias at Priene, and that of Apollo Didymæus near Miletus, are of very different and singular form. The upper torus of the former is to the height of the base as 427 nearly to 1,000, and its contour is not parabolic. The lower half is divided horizontally into four flutes, below this are two scotiae separated from each other by two astragals and fillets at the top and bottom of each,
except where they join the upper torus above, and the plinth below.

The volute, which so distinguishes this order from the others, is found with considerable varieties. In the edifices of the Ilyssus and the temple of Minerva Polias at Priene, also of Apollo Didymæus, this member contains only one channel between the revolutions of the spiral, whereas in those of Erectheus and Minerva Polias at Athens, each volute has two distinct spirals with channels between them. In the former of these two the column terminates with an astragal and fillet just below the level of the eye of the volute; in that of Minerva Polias, with a single fillet. In each of them the neck of the capital is ornamented with honeysuckles.

The flutes of the columns are usually of an elliptical form, and their number twenty-four. In the temples of Minerva Polias and Erectheus at Athens, those of Bacchus at Teos, and Minerva Polias at Priene, they descend into the apophyge of the shaft of the column. They are, moreover, distinguished from the Doric flutes by fillets separating them from each other.

No notice has been thought necessary respecting the tomb of Theron at Agrigentum, which is a singular instance of the mixture of the Ionic column with a Doric entablature. Some antiquarians may perhaps admit "the antiquity of this monument, or the truth of the appellation it has received," but surely no architect who has philosophically investigated the principles of his art will be inclined to concur in any such opinion.

In the Corinthian order, as in the Ionic, the chief distinguishing feature is the capital. Long previous to the age in which Callimachus, its reputed inventor, existed,—perhaps even before capitals or columns themselves were known to the Greeks,—leaves of the palm-tree, flowers of
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Grecian Architecture
Temple on the Ilyses

PLATE VI
the lotus, and even volutes, were applied as ornaments in the capitals of Egypt. The form of the bell itself, of the Corinthian capital, bears no trifling resemblance to the contour of the lotus flower. The difference of character between the Greek Corinthian and the Egyptian capital lies in the height. The Greeks, who so well knew how to improve and adopt, or reject, endowed their capital with a lightness and elegance to which the inventions of the Egyptians, perhaps from moral causes, were never carried; but the similitude between them is such that there never was a case which stood less in need of historical proof to identify the source of the invention, if it be but granted that there was the slightest intercourse between the two countries—a point which is sufficiently notorious.

Unfortunately, our knowledge of the Greek Corinthian is very limited, and though the delicacy of construction in this order would have necessarily tended to an earlier destruction and decay of its examples than would have been the case with those of the Doric and Ionic orders, yet, considering the very few Corinthian ruins which remain among so many others, it is not presuming, perhaps, too much, to conclude that it was not so great a favorite among the Grecians as the other two orders.

The only examples which can be produced of this order in a genuine Greek taste are, the Tower of the Winds and the Choragic Monument of Lysicrates at Athens; but the former of these can scarcely be denominated Corinthian; we shall, therefore, be obliged to confine our observations to the latter, as the only example before Greece was subdued by the Romans.

The height of the entablature here becomes somewhat less than a fifth of the total height of the order. The base varies little in its form from that of the Ionic order, but there is no horizontal fluting in the upper torus.
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PLATE VII
The celebrated bas relief of the Villa Albani is a proof that the Corinthian capital was known before the time of Callimachus. Its style and execution stamp it as a very early work, and I cannot agree with a noble writer, that the execution of the Corinthian temple is at all out of keeping with the other parts of the work. These capitals, which are without foliage, immediately remind us of the Egyptian capital.

Besides the orders which have been enumerated, the Greeks occasionally used the figures denominated Caryatides, for the support of the entablature. The following account of their origin is not without interest.

Vitruvius, Book I, c. I, on the introduction of statues for supporting an entablature, observes that “Carya, a city of Peloponnesus, took part with the Persians against the Grecian states. When the country was freed from its invaders, the Greeks turned their arms against the Caryans, and upon the capture of their city, put the males to the sword, and led the women into captivity. The architects of that time, for the purpose of perpetuating the ignominy of this people, instead of columns in the porticoes of their buildings, substituted statues of these women; faithfully copying their ornaments, and the drapery with which they were attired, the mode of which they were not permitted to change.”

Vitruvius is not, however, supported in the above account by any writer on the affairs of Greece, and it is clear that the origin of these statues for architectural purposes is of much higher antiquity than the invasion of Greece by the Persians. Herodotus, indeed, says that some of the states sent to Xerxes the required offering of earth and water; but no mention is made of Carya, nor, consequently, of the ignominious treatment it met with, which must have been too notorious, if true, to have been un-
known, and as a matter of history too curious to have been passed over in silence. Whether the use of statues to perform the office of columns travelled into Greece from Egypt or India, may be left for the discussion of those who respectively support the claims of one or the other of those countries to a priority of skill in architecture; both will, however, furnish examples of their application. In the latter country we have the authority of Diodorus Siculus, for two immense specimens. Speaking of the tomb of King Osymandyas, Diodorus says, that it was "ten stadia in circumference; its entrance of variegated stone; two hundred feet long, and forty-five cubits high. Hence you proceed to a stone Peristylium, four hundred feet square, supported by animals, sixteen cubits high, each in one stone, instead of columns, and carved after the ancient fashion." Again, speaking of Psammeticus, he says, "Having now obtained the whole kingdom, he built a propylæum on the east side of the temple, to the God at Memphis, which temple he encircled with a wall, and in this propylæum, instead of columns, substituted colossal statues some of them more than twelve cubits in height."

The use of statues, and the representations of human and other figures, is a prominent feature in Egyptian architecture. The temple at Ipsambul is indeed a striking proof of it. In India many instances of a similar use of statues are to be found; as in the excavations at the near Vellore, described by Sir C. Mallet, where heads of lions, elephants, and imaginary animals, project forwards for the apparent purpose of supporting the roof of the cave of Jugnath Subba; and at Elephanta, colossal statues are ranged along the sides, as high as the underside of the entablature. It has before been mentioned that it is not here necessary to settle the comparative dates of Egyptian and Indian architecture; yet most agree that the latter
was anterior to all except that of Egypt, and many that it is more ancient than that of Egypt itself. The object at present is to show—their early origin being, it is supposed satisfactorily settled to have been of much higher antiquity than Vitruvius makes it—that the first statues which could be strictly called Caryatides were either applied to temples of Diana, or were representations of virgins who were engaged in her worship.

The nut-tree, Nux Juglans, which Plutarch says, received its name from its effects on the senses, was that into which Bacchus, after cohabitation with her, transformed Carya, one of the three daughters of Dion, King of Laconia, by his wife Iphitea. The other two daughters, Orphe and Lyco, were turned into stones, for watching too closely the intercourse of their sister with the lover. Diana, who is supposed to have made the Lacedæmonians acquainted with this story, as well perhaps as with the excellence of the fruit of the tree, was therefore worshipped by that people under the name of Diana Caryatis.

There is, however, another account of the origin of the name of Diana Caryatis, which does not at all affect our hypothesis. It is to be found in one of the old commentators on Statius, and is to the following effect: Some virgins being threatened with danger, whilst celebrating the rites of the goddess, took refuge under the branches of a nut-tree; in honor and perpetuation of the memory of which event, a temple was raised to Diana Caryatis. If this, however, allude to the famous interposition of Aristomenes, to protect some Spartan virgins, who were taken by his soldiers, it is not perhaps, quite borne out by the words of Diodorus. It is hardly necessary to observe that Aristomenes lived 671 years before Christ, and consequently 150 years before Darius, the first invader of Greece.
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GRECIAN ARCHITECTURE.

Temple of Minerva Polias

PLATE VIII
Salmasius says, "Diana was worshipped in that place, Carya near Sparta, under the name of Diana Caryatis, and that at her temple and statue the Lacedæmonian virgins had an annual festival, and danced according to the custom of the country." Hence, he continues, arose the name given to those statues, which, according to Pliny, were made by Diogenes of Athens, for decorating the Pantheon at Rome.

Returning, however, to the subject, it is to be observed, that there was a temple to the goddess at Carya, of which Pausanias gives the following account in his Laconics: "The third turning on the right leads to Carya, and the sanctuary of Diana, for the neighborhood of Carya is sacred to that goddess and her nymphs. The statue of Diana Caryatis is in the open air, and in this place the Lacedæmonian virgins celebrate an annual festival with the old custom of the dance." The note of Kuhnius, on this passage, after a reference to Hesychius, contains the following notice: "Caryatides etiam dicuntur Lacaenae saltantes, sinistra ansatae, uti solebant Caryatides puellae in honorem Dianæ."

Plutarch, in his life of Artaxerxes, relates that after Clearchus had fallen, through treachery, into the hands of Tissaphernes, he gave Ctesias a ring, engraven with the representation of a dancing Caryatid.

From the foregoing observations, it may be reasonably inferred, that the statues called Caryatides were originally applied to, or used about, the temples of Diana; and instead of representing captives or persons in a state of ignominy, were in fact nothing more than figures of the virgins who celebrated the worship of that goddess. It is most probable that after their first introduction, other figures in buildings sacred to other divinities, gradually came into use, as in the Pandroseum, where it is likely that they are rep-
resentations of the virgins who assisted at the Panathenaea, and were called Canephoræ.

However appropriate these figures were in early days, it may be a fair question for discussion how far their application to modern purposes is in good or bad taste. Their exclusion from sacred buildings at least appears absolutely necessary, the allusion they have to heathen worship seeming sufficient, one would suppose, for their rejection. They may, peradventure, be more suitable and in character in palaces and theatres, where parade and pageantry are the leading features. Their introduction, for instance, at the Louvre, is far from being obtrusive or disagreeable.

The inclined sides of the roof of the Greek temple continuing through to the two ends, formed a pediment, which was often decorated by the hand of the sculptor. It seems manifest that the angle at which a roof should be inclined to the horizon, so as to shelter effectually the interior of the building from the effects of the rain and snow, depends on the climate to which the building is to be subjected. Thus, greatly inclined roofs are necessary only in cold and temperate climates. In hot climates we find the dwellings covered with terraced roofs, which are there sufficient protection against the elements; but as we advance northward a greater slope is necessary, and will or ought to be found of increased declivity the greater the distance from the equator. That this principle has operated on the styles of architecture in different countries is evident from a comparison of the Gothic of this country and of Germany with that of more southern latitudes. This will account for the low elevation of the pediment in the Grecian temples, in which we find the inclination of the roofs admirably adapted to the climate in which they are erected.

The most important discovery in architecture, in respect of its results, that was ever made, was the invention of
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Grecian Architecture.
Choragic Monument of Lysicrates.

PLATE X
the arch. When or where it was invented is quite uncertain. This is a subject which has occasioned much discussion, and perhaps will, at this remote period, never be satisfactorily settled. It is, however, now pretty generally agreed that it did not appear till after the age of Alexander. Visconti, nevertheless on the authority of a passage in Plutarch, assigns the period of the invention to the age itself of Alexander. "The perfect arch," says a writer who has been often quoted, "appears to have been comparatively of late birth. The want of a name for it, properly Greek, is so copious a language, and so ready for all occasions, would suffice to show how little the thing was known in early times among the Grecian people. By some it has been supposed much earlier known, or much earlier in known use among the Romans. That extraordinary structure, magnificent in its way, the Cloaca Maxima at Rome, has been attributed to Tarquinius Priscus; but Tarquinius Priscus, though a Roman king, was a Grecian man. A sewer, however, or a drain of some kind, in the bottom between the Palatine and Capitoline Hills at Rome, would, in almost the earliest age of the city, be obviously necessary towards any convenient union of those two hills in one town." The present sewer, however, bears evident marks of having been much more recently constructed than the time in question.

Till after the reign of Alexander, there are no authors who can lead us to consider that a word as signifying an arch, existed, nor is there any description extant in which we can trace the figure of an arch constructed on scientific principles. If its origin be Eastern, there is a strong probability that its appearance was not till after the age of Alexander. "During that time" (the age of Alexander), says an author, "the greatest change took place in the arts and sciences of Greece. They had arrived at a degree of
improvement, which, though perhaps in some measure exaggerated, was certainly far beyond what former ages had witnessed. The use of the arch was probably communicated to the Romans by the Greeks, at the time that they bestowed on their conquerors every other species of art and refined taste. In Sicily and Magna Grecia, it might have been introduced somewhat earlier."
OBSERVATIONS ON GREECIAN ARCHITECTURE.

PLATES I. TO XII.

Plate II. shows details of the Parthenon at Athens. This Temple, of which the parts and profile are given in the plate, was erected in the age of Pericles. The architect was Ictinus, and the sculptor Callicrates. The plan of the temple is a parallelogram, about 228 feet by 100 feet, including the outer columns. It had eight columns in front and rear, and seventeen on each flank. As the general features of this extraordinary and beautiful edifice are well known, from its representation in Stuart's "Athens," it will be necessary to state here some few particulars only which have come to light since the publication of that work.

The ceiling of the Pronaos appears to have been supported by four columns; and it seems more than probable that the cell was surrounded by columns, inasmuch as the marks of some of them 2 feet 1 inch diameter are indicated on the pavement, and their distance 8 feet 4 inches from centre to centre. A fragment, moreover, of a polygonal shaft of 20 sides, and 2 feet 1 inch diameter, has been discovered among the rubbish. The shaft of each column of the portico is composed of twelve courses of stone, and the bed of each has two circles described upon it, the outer one 9 inches from the edge and the termination to the surface which bears a polish. Between the two circles the surface is level, but not polished. The inner circle is rough and a little sunk, probably for mortar. About the centre is a square hole, 3 inches deep, as well as a hole in the upper stone; into these wooden dowels were inserted.
The Five Orders of Architecture

GRECIAN ARCHITECTURE.
Temple of Jupiter Olympus at Athens.

PLATE XI
It is worthy of remark that the stones of the Frieze were put together with cramps of (1) this form.

The diameter of the columns is 6 feet 2.12 inches, according to Stuart, whose measures have been adopted, though it is much to be regretted that the detail of that author frequently disagrees with his totals. The measures on the plate are founded on the diameter of the column, taken at 6 feet 2.72 inches, which, divided by 60, gives 1.24532 inches = 1 minute.

Plate III. exhibits the Great Hexastyle Temple at Pæstum. The temple from which this example is selected is Peripteral-Hypæthal. Its length on the upper step 202 feet 7 inches, and its breadth 82 feet 2 inches. The age of this temple has not been ascertained with precision. There are fourteen columns on each flank. Their diameter is 6 feet 8.2 inches; consequently 1 minute = 1.3366 inches.

Plate IV. shows Temple of Apollo and Portico of Philip in the Island of Delos; and Temple at Corinth. In the Island of Delos, says Stuart, "are two examples of the Doric order, both excellent in their kind, one of which belongs to what I imagine to have been the Temple of Apollo; the other to the Portico of Philip. The latter, on account of the lightness of its proportions, differs from all the examples we have given, and is more suitable for common use." It was found impossible to make out the extent or plans of either of the above buildings. The shafts of the two columns of the Temple of Apollo are fluted at their upper and lower extremities, but the intermediate part is plain. The diameter is 3 feet 1.11 inches; a minute is therefore = .6185 inch. The diameter of the columns of the Portico of Philip is 2 feet 11.5 inches; a minute, consequently, = .5916 inch. Rather more than a third of the lower part of the shafts are polygonal, above which they are fluted in the ordinary way.
Stuart conjectures the Temple at Corinth to have been Peripteral Hexastyle. The columns have twenty flutings, which terminate under the lintels of the capital, and are segments of circles. The guttæ are round, and detached from the architrave. The material, a rough, porous stone; the shafts of the columns are each of one block only, and the whole has been covered with stucco. The architraves are of one stone each, from centre to centre of columns. The drops under the triglyphs were all broken off, and could not, therefore, be measured. The columns are 5 feet 10 inches diameter; a minute, consequently, = 1.1666 inches.

Plates V. and VI. illustrate the Ionic Temple on the Ilyssus. This Temple stood on the southern bank of the Ilyssus. Its length, measured on the upper step, is 41 feet 7 inches, and its breadth 19 feet 6 inches. It was Amphiprostylos Tetrastyle. The Cymatium in the original is destroyed. Stuart conjectures the frieze was ornamented with bassi relievi. The echinus of the capital continues under the volutes, which are diagonal on the external angles and mitred on the internal angles, by the junction of two semi-volutes. The flutes are twenty-four in number. Diameter of the columns, 1 foot 9.4 inches; a minute, therefore, = .3566 inch.

Plates VII., VIII. and IX. exhibit the Temples of Minerva Polias, and Erectheus, Athens. The reason for my adoption of these names in accordance with Stuart, cannot be entered into here. I am inclined to think Stuart right, notwithstanding the passage in Pausanias, Attic. c. 26, quoted by Mr. Wilkins, from whom I differ with considerable hesitation. The Temples of Minerva Polias, Erectheus, and Pandrosus, which together compose one building, stand about 150 feet to the North of the Parthenon. That towards the west was the Temple of Minerva
Polias; that towards the east the Temple of Erectheus; and that on the south side was the Pandroseum, whose entablature and roof were supported by caryatides.

The first-named has a tetrastyle portico projecting two intercolumniations; its dimensions are about 33 feet 6 inches by 17 feet 6 inches. Diameter of the columns, 2 feet 9.4 inches; so that a minute = .5572 inch.

The Erectheum has an hexastyle portico, projecting only one intercolumniation; it extends in front about 37 feet. The diameter of the columns is 2 feet 3.8 inches; a minute, therefore, = .4633 inch. The upper member of the cornice, in the profile of the Temple of Minerva Polias, is a restoration.

Plate X. is a fine illustration of the Choragic Monument of Lysicrates, commonly called the Lantern of Demosthenes. This beautiful example stands on the eastern end of the Acropolis of Athens. "It is composed of three distinct parts," says Stuart. "First, a quadrangular Basement; secondly, a circular Colonnade, the intercolumniations of which were entirely closed up; and thirdly, a Tholus or Cupola, with the ornament which is placed on it." The diameter of this building taken on the lower step is 10 feet 8 inches. The columns are 1 foot 1.2 inches diameter; a minute consequently = .22 inch.

Plate XI. shows a part of the Temple of Jupiter Olympius. This is one of the most considerable remains of Athenian magnificence. It has been erroneously called by the name here given. Stuart considers the ruins rather the remains of a stoa or portico, than of either a palace, as some have supposed it, or of a temple. The external walls enclose a large quadrangular space of 376 feet by 252. In the middle of it are the remains of a gate or entrance. The whole extent of the front is ornamented with Corinthian columns and terminated at each ex-
The Five Orders of Architecture

Greek Architecture

Windows from Temple of Minerva, Pelasus and Caryatides.

PLATE XII
tremity by a Pteroma, or projecting wall, faced with a Corinthian pilaster. The original number of the columns was eighteen. Four of them, fluted were in the centre of the front on the upper step—carrying an Entablature and Pediment, and forming a Portico before the Gate. On each side were seven columns, not fluted, on pedestals level with the upper step of the Portico. The abacus of the capital in this example has acute angles, similar to those of the Temple of Vasta at Rome. The lower part of the shafts of the fluted columns are cabled. Their diameter is 2 feet 11.3 inches; so that a minute = .5883 inch.

Plate XII. exhibits a window from the Temple of Minerva Polias with the detail of the Moldings in profile. Also two examples of Caryatides, No. 1, from the Pandroseum. No. 2, from the Townley Collection.
OF THE PARTS WHICH COMPOSE THE ORDERS OF ARCHITECTURE, AND OF THEIR PROPERTIES, APPLICATION, AND ENRICHMENTS.

PLATE XIII.

As in many other arts so in architecture, there are certain elementary forms which, though simple in their nature and few in number, are the principal constituent objects (elements) of every composition, however complicated or extensive it may be.

Of these there are in our art two distinct sorts, the first consisting of such parts as represent those that were essentially necessary in the construction of the primitive huts, as the shaft of the column with the plinth of its base, and the abacus of its capital, representing the upright trees, with the stones used to raise and to cover them. Likewise the architrave and triglyph representing the beams and joists, the mutules, modillions, and dentils, either representing the rafters or some other pieces of timber employed to support the covering, and the corona representing the beds of materials which composed the covering itself. All these are properly distinguished by the appellation of essential parts, and form the first class. The subservient members contrived for the use and ornament of these, and intended either to support, to shelter, or to unite them gracefully together, which are usually called moldings, constitute the second class.

The essential parts were most probably the only ones employed even in the first stone buildings, as may be col-
lected from some ancient structures yet remaining: for the architects of those early times had certainly very imperfect ideas of beauty in the productions of art, and therefore contented themselves with barely imitating the rude model before them; but coming in time to compare the works of their own hands with animal and vegetable productions, each species of which is composed of a great diversity of forms, affording an inexhaustible fund of amusement to the mind, they could not but conceive a disgust at the frequent repetition of square figures in their buildings, and therefore thought of introducing certain intermediate parts, which might seem to be of some use, and at the same time be so formed as to give a more varied pleasing appearance to the whole composition; and this, in all probability, was the origin of moldings.

Of regular moldings there are eight; which are, the Ovolo, the Talon, the Cyma, the Cavetto, the Torus, the Astragal, the Scotia, and the Fillet.

The names of these are allusive to their forms; and their forms are adapted to the uses which they are intended to serve. The ovolo and talon, being strong at their extremities, are fit for supports. The cyma and cavetto, though improper for that purpose, as they are weak in the extreme parts, and terminate in a point, are well contrived for coverings to shelter other members; the tendency of their outline being very opposite to the direction of falling water, which for that reason cannot glide along their surface, but must necessarily drop. The torus and astragal, shaped like ropes, are intended to bind and strengthen the parts on which they are employed; and the use of the fillet and scotia, is only to separate, contrast and strengthen the effect of other moldings, to give a graceful turn to the profile, and to prevent that confusion which would be occasioned by joining several convex members together.
That the inventors of these forms meant to express something by their different figures, will scarcely be denied; and that the above-mentioned were their destinations, may be deduced, not only from their figures, but from the practice of the ancients in their most esteemed works; for if we examine the Pantheon, the three columns in the Campo Vaccino, the temple of Jupiter Tonans, the fragments of the frontispiece of Nero, the basilica of Antoninus, the forum of Nerva, the arches of Titus and Septimus Severus, the theatre of Marcellus, and indeed almost every ancient building, either at Rome or in other parts of Italy and France, it will be found, that in all their profiles, the cyma and the cavetto are constantly used as finishings, and never applied where strength is required; that the ovolo and talon are always employed as supporters to the essential members of the composition, such as the modillions, dentils and corona; that the chief use of the torus and astragal is to fortify the tops and bottoms of columns, and sometimes of pedestals, where they are frequently cut in the form of ropes, as on the Trajan column, in the Temple of Concord, and on several fragments which I have seen, both at Rome and at Nismes in Languedoc; and that the scotia is employed only to separate the members of bases, for which purpose the fillet is likewise used, not only in bases, but in all kinds of profiles.

Hence it may be inferred, that there is something positive and natural in these primary forms of architecture, and consequently in the parts which they compose; and that Palladio erred in employing the cavetto under the corona, in three of his orders, and in making such frequent use through all his profiles of the cyma, as a supporting member. Nor has Vignola been more judicious in finishing his Tuscan cornice with an ovolo; a molding extremely improper for that use, and productive of a very disagreeable
effect; for it gives a multilated air to the whole profile, so much the more striking, as it resembles exactly that half of the Ionic cornice which is under the corona. Other architects have been guilty of the like improprieties, and are therefore equally reprehensible.

There are various manners of describing the contour or outline of moldings; the simplest, however, and the best, is to form them of quadrants of circles, as in the annexed designs; by which means the different depressions and swellings will be more strongly marked, the transitions be made without any angle, and the projections be agreeable to the doctrine of Vitruvius and the practice of the ancients; those of the ovolo, talon, cyma, and cavetto, being equal to their height, that of the scotia to one-third, and those of the carved parts of the torus and astragal to one-half thereof.

On particular occasions, however, it may be necessary sometimes to increase, and at other times to diminish these projections, according to the situation, or other circumstances attending the profile, as will hereafter appear. And whenever it so happens, the ovolo, talon, cyma, and cavetto, may either be described from the summits of equilateral triangles, or be composed of quadrants of the ellipsis; of which the latter should be preferred, as it produces a stronger opposition of light and shade, and by that means marks the forms more distinctly. The scotia may likewise be framed of elliptical portions, or quadrants of the circle differing more or less from each other, than in the annexed designs; by which means its projection may either be increased or diminished; but the curved part of the torus and astragal must always be semi-circular, and the increase in their projection be made by straight lines.

In some antiques, and likewise in various modern build-
Regular Mouldings with their proper Ornaments.
ings, where the parts are far removed from the eye, or where, from the extraordinary size of the structure, it has not been practical to give to every member its due projection, recourse has been had to artifice, in order to produce the desired effect. At St. Peter’s of the Vatican, this practice is very frequent; and I have given a section of the cornice, terminating the pendentives of the dome, which may serve as a guide, in cases where the like is necessary.

It will however be proper to observe, that a frequent use of this expedient is to be avoided; as the artifice never succeeds, but where, by reason of the great distance, it is undiscoverable: for the incisions and contortions made in the moldings, entirely destroy the natural beauty of their form.

Certain of the modern Italians, and likewise some of our own learned virtuosi, who eagerly grasp at every innovation, having observed these forms in the works of Michael Angelo, and in some of the temples of antiquity, without sufficiently considering why they were there introduced, have very injudiciously made use of them all in their own works; by which practice, their compositions, though having in other respects a certain degree of merit, are, in this particular, highly censurable.

An assemblage of essential parts and moldings, is termed a profile; and on the choice, disposition, and proportions of these, depend the beauty or deformity of the composition. The most perfect profiles are such as consist of few moldings, varied both in form and size, fitly applied, with regard to their uses, and so distributed, that the straight and curved ones succeed each other alternately. In every profile, there should be a predominant member, to which all the others ought to seem subservient, and made either to support, to fortify, or to shelter it from injuries of
weather; and whenever the profile is considerable, or much complicated, the predominant should always be accompanied with one or more other principal members, in form and dimension calculated to attract the eye, create momentary pauses, and assist the perception of the beholder. These predominant and principal members ought always to be of the essential class, and generally rectangular. Thus in a cornice, the corona predominates; the modillions and dentils are principles in the composition, the cyme and cavetto cover them, the ovolo and talon support them.

When ornaments are employed to decorate a profile, some of the moldings should always be left plain, in order to form a proper repose: for when all are enriched, the figure of the profile is lost in confusion. In an entablature, the corona should not be ornamented, nor the modillion band, nor the different fascias of the architrave; neither should the plinths of columns, fillets, nor scarcely any square members be carved, for generally speaking, they are either principal in the composition, or used as boundaries to other parts; in both which cases, their figures should be simple, distinct, and unembarrassed. The dentil band should remain uncut, where the Ovolo and Talon immediately above and below it are enriched; as in the Pantheon at Rome, and at St. Paul's in London. For when the dentils are marked; particularly if they be small, according to Palladio's Corinthian design; the three members are confounded together, and being covered with ornaments, become far too rich for the remainder of the composition: which are defects at all times studiously to be avoided, as a distinct outline, and an equal distribution of enrichments, must, on every occasion, strictly be attended to.

Scamozzi observes, that ornaments should neither be too frugally employed, nor distributed with too much profusion; their value will increase in portion to the judgment
and discretion shown in their application. For, in effect, says he, the ornaments of sculpture used in architecture, are like diamonds in a female dress, with which it would be absurd to cover the face, or other principal parts, either in themselves beautiful, or appearing with greater propriety in their natural state.

Variety in ornaments must not be carried to an excess. In architecture they are only accessories, and therefore they should not be too striking, nor capable of long detaining the attention from the main object. Those of the moldings in particular, should be simple, uniform, and never composed of more than two different representations upon each molding, which ought to be cut equally deep, be formed of the same number of parts all nearly of the same dimensions, in order to produce one even, uninterrupted hue throughout; so that the eye may not be more strongly attracted by any particular part than by the whole composition.

When moldings of the same form and size are employed in one profile, they should be enriched with the same kind of ornaments; by which means, the figure of the profile will be better apprehended, and the artist will avoid the imputation of a puerile minuteness, neither much to his own credit nor of any advantage to his works.

It must be observed, that all ornaments of moldings are to be regularly disposed, answering perpendicularly above each other, as at the three columns in the Campo Vaccino, where the middles of the modillions, dentils, eggs, and other ornaments, are all in one perpendicular line. For nothing is more careless, confused and unseemly, than to distribute them without any order, as they are in many of the antiques, and in most of the buildings of this metropolis; the middle of an egg answers in some places to the edge of a dentil, in some of its middle, and in others
to the interval; all the rest of the ornaments being distributed in the same slovenly, artless manner. The larger parts must regulate the smaller; all the ornaments in the entablature are to be governed by the modillions, or mutules; and the distribution of these must depend on the intervals of the columns, and be so disposed, that one of them may come directly over the axis of each column. It is further to be observed, that the ornaments must partake of the character of the order they enrich. Those used in the Doric and Ionic orders, are to be of simpler forms, and of larger bulk, than those employed in the Composite or Corinthian.

When friezes or other large members are to be enriched, the ornaments may be significant, and serve to indicate the destination or use of the building; the rank, qualities, profession and achievements of the owner; but it is a foolish practice to crowd every part with arms, crests, cyphers, and mottoes; for the figures of these things are generally bad, or vulgar, and their introduction betrays an unbecoming vanity in the master of the fabric. Hogarth has humorously ridiculed this practice, by decorating a nobleman's crutch with a coronet.

In sacred places, all obscene, grotesque, and heathenish representations ought to be avoided: for indecent fables, extravagant conceits, or instruments and symbols of Pagan worship, are very improper ornaments in structures consecrated to Christian devotion.

With regard to the manner of executing ornaments, it is to be remembered, that as in sculpture a drapery is not estimable unless its folds are contrived to grace and indicate the parts and articulations of the body it covers, so in architecture the most exquisite ornaments lose all their value, if they load, alter, or confuse the form they are designed to enrich and adorn.
All ornaments of moldings must therefore be cut into the solid, and never be applied on their surface, as D'Aviler erroneously teaches, because it alters both their figure and proportion. The profile must first be finished plain, and afterwards be adorned, the most prominent parts of the ornaments being made equal with the surface of the moldings they enrich; and great care must be taken that the angles, or breaks, be kept perfect and untouched with sculpture; for which reasons it is customary at the angles of most moldings, to place water leaves, or other plain leaves, the middle filament of which forms the angle, and keeps its outline entire.

The method of the ancient sculptors, in the execution of architectonic ornaments, was to aim at a perfect representation of the object they chose to imitate; so that the chestnuts, acorns, or eggs, with which the ovolo is commonly enriched are in the antiques, cut round, and almost entirely detached; as are likewise the berries, or beads on the astragal, which are generally as much hollowed into the solid of the body, as the molding projects beyond it; but the leaves, shells, and flowers, that adorn the cavetto, cyma, talon, and torus, are kept flat, like the things they represent.

In the application of their ornaments, they observed to use such as required a considerable relief, on molding that in themselves are clumsy, as the ovolo and astragal; which by means of the deep incisions made in them to form these enrichments, acquired an extraordinary lightness; but on more elegant parts, as the cavetto and cyma, they employed thin bodies, which could be represented without entering too far into the solid. The ornaments of their cornices were boldly marked, that they might be distinguished from afar; but those of the bases of columns, or of pedestals, being nearer the eye, were more slightly expressed; as well
on that account as because it would have been improper to weaken these parts, and impossible to keep them clean, had there been any deep cavities in them to harbor dust and filth.

When objects are near and liable to close inspection, every part of the ornament should be expressed and well finished; but when they are much exalted the detail may be slightly touched or entirely neglected; for it is sufficient if the general form be distinct and the principal masses strongly marked. A few rough strokes from the hand of a skilful master are much more effectual than the most elaborate finishings of an artless imitator which, seldom consisting in more than smoothing and neatly rounding off the parts, are calculated to destroy rather than to produce effect.
OF THE ORDERS GENERALLY.

The orders of architecture, as has been observed, are the basis upon which the whole decorative part of the art is chiefly built, and towards which the attention of the artist must ever be directed, even where no orders are introduced. In them originate most of the forms used in decoration; they regulate most of the proportions; and to their combination, multiplied, varied, and arranged in a thousand different ways, architecture is indebted for its most splendid productions.

These orders are different modes of building, said originally to have been imitated from the primitive huts, being composed of such parts as were essential in their construction afterwards also in the temples of antiquity, which, though at first simple and rude, were in the course of time, and by the ingenuity of succeeding architects, wrought up and improved to such a pitch of perfection that they were, by way of excellence, distinguished by the name of orders.

Of these were five: three, said to be of Grecian origin, are called Grecian orders, being distinguished by the names of Doric, Ionic, and Corinthian; they exhibit three distinct characters of composition, supposed to have been suggested by the diversity of character in the human frame. The remaining two being of Italian origin, are called Latin or Roman orders; they are distinguished by the names of Tuscan and Roman, or composite, and were probably invented with a view of extending the characteristic bounds on one side still further towards strength and simplicity,
as on the other towards elegance and profusion of enrichments.

At what time the orders were invented, or by which improved to the utmost, remains at least doubtful. Of their improvement we can now only judge from the structures and fragments of antiquity, built in different ages, and still remaining to be seen in various parts of Europe, Asia, and Africa. And of their origin little is known but from the relation of Vitruvius, the veracity of which has been much questioned, and is probably not much to be depended upon.

"Dorus," says he, "son of Hellen and the nymph Orseis, king of Achaia and of all the Peloponnesus, having formerly built a temple to Juno, in the ancient City of Argos, this temple happened to be in the manner which is called Doric, and was afterwards imitated in many others built in the several cities of Achaia.

"About the same time the Athenians, after having consulted the oracle of Apollo, at Delphi, by the common consent of all Greece, sent into Asia thirteen colonies, each under the command of a separate captain, but all under the general direction of Ion, son of Xuthus and Creusa. Ion being arrived in Asia, conquered all Caria, and founded thirteen large cities, the inhabitants whereof, having expelled the Carians and Lelegae, called the country Ionia, in honor of Ion, their leader, and erected temples of which the first, dedicated to Apollo Panionius, was built after the manner of those they had seen in Achaia, which they called Doric, because temples of the same sort had been erected in the cities of the Dori ans.

"But some time after, building a temple to Diana, different from these, and of a more delicate structure, being formed upon the proportions of a female body, as the Doric had been on those of a robust man, and adorning
The Tuscan Order

PLATE XV
the capitals of their columns with volutes, to represent the curls of a woman's hair, and the shafts with flutings, to express the folds of her garment; they gave to this second manner of building the name of Ionic, because it was invented and first used by the Ionians.

"The third sort of columns, which are called Corinthian, and represent the delicate figure of a young girl, owe their birth to the following accident.

"A young woman of Corinth being dead, her nurse placed on her tomb a basket containing certain trinkets in which she delighted when alive, covering it with a tile, to shelter them from the weather. The basket happened accidentally to be set on a root of an acanthus, which pushing forth its leaves and sprigs in the spring, covered the sides of it, and some of them, longer than the rest, being obstructed by the angles of the tile, were forced downwards, and by degrees curled into a form of volutes.

"Callimachus, a celebrated sculptor and architect, passing near the tomb, observed the basket, and in how graceful a manner the leaves of the acanthus had surrounded it; the form pleased him exceedingly, he imitated it on the tops of some columns, which he afterwards executed at Corinth, establishing and regulating, by this model, the manner and proportions of the Corinthian order."

Of the two Latin or Roman orders, the Tuscan is said to have been invented by the inhabitants of Tuscany before the Romans had intercourse with the Greeks, or were acquainted with their arts, whence it is called Tuscan. Probably, however, these people, originally a colony of Greeks, only imitated in the best manner they could what they remembered in their own country, simplifying the Doric, either to expedite their work, or perhaps to adapt it to the abilities of their workmen.

The second Latin order, though of Roman production,
is but of modern adoption, the ancients never having considered it as a distinct order. It is a mixture of the Ionic and Corinthian, and is now distinguished by the names of Roman, or Composite.

The ingenuity of man has hitherto not been able to produce a sixth order, though large premiums have been offered, and numerous attempts been made by men of first-rate talents to accomplish it. Such is the fettered human imagination, such the scanty store of its ideas, that Doric, Ionic and Corinthian have ever floated uppermost, and all that has ever been produced amounts to nothing more than different arrangements and combinations of their parts, with some trifling deviations scarcely deserving notice, the whole generally tending more to diminish than to increase the beauty of the ancient orders.

The substitution of cocks, owls, or lion's heads, etc., for roses, of trophies, cornucopias, lilies, sphinxes, or even men, women and children for volutes, the introduction of feathers, lyres, flower de luces, or coronets for leaves are more alterations than improvements; and the suspension of festoons of flowers, or collars of knighthood, over the other enrichments of a capital, like lace on embroidery, rather tends to complicate and confuse the form than to augment its grace or contribute to its excellence.

The suppression of parts of the ancient orders, with a view to produce novelty, has of late years been practiced among us with full as little success. And though it is not wished to restrain sallies of imagination, nor to discourage genius from attempting to invent, yet it is apprehended that attempts to alter the primary forms invented by the ancients, and established by the concurring approbation of many ages, must ever be attended with dangerous consequences, must always be difficult, and seldom, if ever, successful. It is like coining words, which, whatever may
Doric Entablature, Imitated from the Theatre of Marcellus.

Doric Entablature of Palladio, as Executed in the Basilica at Vicenza.
be their value, are at first but ill received, and must have the sanction of time to secure them a current reception.

An order is composed of two principal members, the column and the entablature, each of which is divided into three principal parts. Those of the column are the base, the shaft and the capital; those of the entablature are the architrave, the frieze, and the cornice. All these are again subdivided into many smaller parts, the disposition, number, forms and dimensions of which characterize each other, and express the degree of strength or delicacy, richness or simplicity, peculiar to it.

The simplest and most solid of all is the Tuscan. It is composed of few and large parts, devoid of ornaments, and is of a construction so massive that it seems capable of supporting the heaviest burdens, and has been compared to a sturdy laborer dressed in homely apparel.

The Doric order, next in strength to the Tuscan, and of a grave, robust, masculine aspect, is by Scamozzi called the Herculean. Being the most ancient of all orders, it retains more of the structure of the primitive buildings in its form than any of the rest, having triglyphs in the frieze to represent the ends of joists and mutules in its cornice, to represent rafters with inclined soffits, to express their direction in the originals, from which they were imitated. Its column, too, is often seen in ancient works, executed without a base, in imitation of the trees used in the first buildings, without any plinths to raise them above the ground. Freart de Chambria, speaking of this order, observes that delicate ornaments are repugnant to its characteristic solidity, and that it succeeds best in the simple regularity of its proportions. "Nosegays and garlands of flowers," says he, "grace not a Hercules, who always appears more becomingly with a rough club and lion's skin; for there are beauties of various sorts, and often so dis-
THE IONIC ORDER.

Side of the Capital.

Profile of the Capital.

Plan of the Capital.
similar in their natures that those which may be highly proper on one occasion may be quite the reverse, even ridiculously absurd, on others."

The Ionic, being the second of the Grecian orders, holds a middle station between the other two, and stands in equipoise between the grave solidity of the Doric and the elegant delicacy of the Corinthian. Among the antiques, however, we find it in different dresses; sometimes plentifully adorned, and inclining most towards the Corinthian; sometimes more simple, and bordering on Doric plainness, all according to the fancy of the architect or nature of the structure where employed. It is throughout of a more slender construction than either of the afore-described orders; its appearance, though simple, is graceful and majestic; its ornaments should be few, rather neat than luxuriant, and as there ought to be nothing exaggerated, or affectedly striking in any of its parts, is it, not unaptly, compared to a sedate matron, rather in decent than magnificent attire.

"The Corinthian," says Sir Henry Wotton, "is a column lasciviously decked, like a wanton courtezan. Its proportions are elegant in the extreme, every part of the order is divided into a great variety of members, and abundantly enriched with a diversity of ornaments." "The ancients," says De Chambria, "aiming at the representation of a feminine beauty, omitted nothing either calculated to embellish or capable of perfecting their work." And he observes, "that in the many examples left to this order such a profusion of different ornaments is introduced that they seem to have exhausted imagination in the contrivance of decorations for this masterpiece of the art. Scamozzi calls it the Virginal, and it certainly has all the delicacy in its form, with all the gaiety, gaudiness, and affectation, in its dress peculiar to young women."
The Composite order, being, properly speaking, only a different species of the Corinthian, distinguished from it merely by some peculiarities in the capital, or other trifling deviations, retains in a great measure the same character, and requires no particular description.

To give a striking idea of these different properties, and to render the comparison between the orders more easy, I have represented them all of the same height, by which means the gradual increase of delicacy and richness is easily perceivable, as are likewise the relations between the intercolumniations of the different orders and the proportions which their pedestals, impost, archivolts, and other parts with which they are on various occasions accompanied, bear to each other.

The proportions of the orders were by the ancients formed on these of the human body, and consequently it could not be their intention to make a Corinthian column, which, as Vitruvius observes, is to represent the delicacy of a young girl, as thick and much taller than a Doric one, which is designed to represent the bulk and vigor of a muscular full-grown man. Columns so formed could not be applied to accompany each other without violating the laws both of real and apparent solidity, as in such case the Doric dwarf must be crushed under the strapping Ionic, or gigantic Corinthian virago, triumphantly rising uppermost, and reversing the natural, the necessary predominance in the composition.

Nevertheless Vignola, Palladio, Scamozzi, Blondel, Parrault, and many others, if not all the great modern artists, have considered them in this light; that is, they have made the diameters of all their orders the same, and consequently their heights increasing, which, besides, giving a wrong idea of the character of these different compositions, has laid a foundation for many erroneous pre-
cepts and false reasonings to be found in different parts of their works, of which notice will in due time be taken.

In the opinion of Scamozzi, columns should not be less than seven of their diameters in height, nor more than ten; the former being, according to him, a good proportion in the Tuscan, and the latter in the Corinthian order. The practice of the ancients in their best works being com-
formable to this precept, in this treatise, as authorized by the doctrine of Vitruvius, I have made the Tuscan column seven diameters in height, and the Doric eight, the Ionic nine, as Palladio and Vignola have done, and the Corin-
thian and Composite ten; which last measure is a mean between the proportions observed in the Pantheon, and at the three columns in the Campo Vaccino, both of which are esteemed most excellent models of the Corinthian order.

The height of the entablature, in all the orders, I have made one-quarter of the height of the column, which was the common practice of the ancients, who, in all sorts of entablatures, seldom exceeded or fell much short of that measure.

Nevertheless Palladio, Scamozzi, Alberti, Barbaro, Cataneo, Delorme, and others of the modern architects, have made their entablatures much lower in the Ionic, Composite and Corinthian orders, than in the Tuscan or Doric. This, on some occasions, may not only be excusable, but highly proper, particularly where the intercolumnia-
tions are wide, as in a second or third order, in private houses, or inside decorations, where lightness should be preferred to dignify, and where expense, with every im-
pediment to the conveniency of the fabric, are carefully to be avoided, but to set entirely abide a proportion which seems to have had the general approbation of the ancient artists, is surely presuming too far.

The reason alleged in favor of this practice is the weak-
The Five Orders of Architecture

Goldman's Volute Described.

Fig. 1. Draw the Catheter $FC$ whose length will be half a Module, and from the point $C$ describe the Eye of the Volute $AEBD$, of which the Diameter is to be 3½ minutes divide it into four equal sectors by the Diameters $AB$, $BD$. Bisect the Radii $CA$, $CD$ in 1 and 4, and on the line $AC$ construct a Square $1,2,3,4$. From the Centre $C$, to the asymptote $2,3$ draw the Diagonals $2,3$ $C_2$, $C_3$, and divide the side of the Square $3A$ into six equal parts at $5,9,C'$. Then through the points $5,9,12,8$ draw the lines $5,9,12,8,13$, parallel to the Diameter $ED$ which will cut the Diagonals in $6,10,12$, and $7$ points $12,3,15,16$ will be the Centres of the Volute. From the first Centre 1 with the Interval $12$, describe the Quadrant $F, G$, from the second Centre 2, with the Interval 2, $G$ describe the Quadrant $G$, and continuing the same operation from all the twelve centres, the Centres of the Volute will be completed.

Fig. 2. The Centres for describing the volean are found in this manner. Construct a Triangle of which $\phi$ side $AF$ is equal to the part of the Catheter contained between $AF$ and the side $FF$ equal to $C_1$. On the side $AF$ place $\phi$ divisions $FS$ from $F$ towards $A$, equal to $FS$ the breadth of the Volute, and through the point $S$ draw the line $ST$, which will be to $C_1$ in the same proportion as $AS$ is to $AF$. Place this line on each side of the Centre $C$, on the Diameter of the Eye $A, B$, divide it into three equal parts, and through the points of division draw lines parallel to the Diameter $ED$, which will cut the Diagonals $C_2, C_3$, and you will have twelve new Centres, from whence the interior Centres of the Volute may be described, in the same manner as the exterior one was from the first Centre.

PLATE XIX
ness of the columns in the delicate orders, which renders them unfit for supporting heavy burdens; and where the intervals are fixed, as in a second order, or in other places, where wide intercolumniations are either necessary or not to be avoided, the reason is certainly sufficient; but if the artist is at liberty to dispose his columns at pleasure, the simplest and most natural way of conquering the difficulty is to employ more columns, by placing them nearer to each other, as was the custom of the ancients. And it must be remembered that though the height of the entablature in a delicate order is made the same as in a massive one, yet it will not, either in reality or appearance, be equally heavy; for the quantity of matter in the Corinthian cornice, A, is considerably less than in the Tuscan cornice, B; Plate XIV. and the increased number of parts composing the former of these will, of course, make it appear far lighter than the latter.

With regard to the parts of the entablature I have followed the method of Serlio, in his Ionic and Corinthian orders, and of Parrault, who, in all his orders, excepting the Doric, divides the whole height of the entablature into ten equal parts, three of which he gives to the architrave, three to the frieze, four to the cornice; and in the Doric order he divides the whole height of the entablature into eight parts, of which two are given to the architrave, three to the frieze, and three to the cornice.

These measures deviate very little from those observed in the greatest number of antiques now extant at Rome, where they have stood the test of many ages; and their simplicity renders them singularly useful in composition, as they are easily remembered and easily applied.

Of two manners used by architects to determine the dimensions of the moldings, and the lesser parts that compose an order, I have chosen the simplest, readiest, and
most accurate, which is, by the module or semi-diameter of the column, taken at the bottom of the shaft, and divided into thirty minutes.

There are, indeed, many who prefer the method of measuring by equal parts, imagining beauty to depend on the simplicity and accuracy of the relations existing between the whole body and its members, and alleging that dimensions which have evident affinities are better remembered than those whose relations are too complicated to be immediately apprehended.

With regard to the former of these suppositions it is evidently false, for the real relations subsisting between dissimilar figures have no connection with the apparent ones; and with regard to the latter it may or may not be the case, according to the degree of accuracy with which the partition is made; for instance, in dividing the Attic base, which may be numbered among the simplest compositions in architecture, according to the different methods, it appears to me as easy to recollect the numbers 10, $7\frac{1}{2}$, 1, $4\frac{3}{4}$, 1, $5\frac{3}{4}$ as to remember that the whole height of the base is to be divided into three equal parts; that two of these three are to be divided into four, that three of the four are to be divided into two, and that one of the two is to be divided into six, which are to be divided into three.

But admitting it were easier to remember the one than the other, it does not seem necessary nor even advisable, in a science where a vast diversity of knowledge is required, to burden the memory with a thousand trifling dimensions. If the general proportions be known, it is all that is requisite in composing, and when a design is to be executed it is easy to have recourse to figured drawings or to prints. The use of the module is universal throughout the order and all its appurtenances; it marks their relations to each other, and being susceptible of the minutest divisions, the
dimensions may be speedily determined with the utmost accuracy, while the trouble, confusion, uncertainty, and loss of time in measuring by equal parts are very considerable, seeing it is necessary to form almost as many different scales as there are different parts to be divided.

Columns, in imitation of trees, from which they drew their origin, are tapered in their shafts. In the antiques the diminution is variously performed, sometimes beginning from the foot of the shaft, at others from one-quarter or one-third of its height, the lower part being left perfectly cylindrical. The former of these methods was most in use amongst the ancients, and being the most natural, seems to claim the preference, though the latter has been almost universally practised by modern artists, from a supposition, perhaps, of its being more graceful, as it is more marked and strikingly perceptible.

"The first architects," says Mons. Auzoult, "probably made their columns in straight lines, in imitation of trees, so that their shaft was a frustrum of the cone; but finding this form abrupt and disagreeable, they made use of some curve, which, springing from the extremities of the superior and inferior diameters of the column, swelled beyond the sides of the cone, and, by that means, gave a more pleasing figure to the outline. Vitruvius, in the second chapter of his third book, mentions this practice but in so obscure and cursory a manner that his meaning has not been understood; and several of the modern architects, intending to conform themselves to his doctrine, have made the diameters of their columns greater in the middle than at the foot of the shaft. Leon Baptista Alberti, with others of the Florentine and Roman architects, carried this practice to a very absurd excess, for which they have been justly blamed as it is neither natural, reasonable, nor beautiful."

Monsieur Auzoult further observes "that a column, sup-
posing its shaft to be the frustrum of a cone, may have an additional thickness in the middle, without being swelled there, beyond the bulk of its inferior parts; and supposes the addition mentioned by Vitruvius to signify nothing more than the increase towards the middle of the column, occasioned by changing the straight line, which at first was in use, into a curve."

This supposition is exceedingly just, and founded on what is observable in the works of antiquity, where there is no single instance of a column thicker in the middle than at the bottom, though all, or most of them, have the swelling hinted at by Vitruvius, all of them being terminated by curves, some few granite columns excepted, which are bounded by straight lines; a proof, perhaps, of their antiquity, or of their having been wrought in the quarries of Egypt by unskilful workmen.

Blondel in his book, entitled "Resolution des quatre principaux Problèmes d' Architecture," teaches various manners of diminishing columns, the best and simplest of which is by means of the instrument invented by Nicomedes to describe the first conchoid; for this, being applied at the bottom of the shaft, performs at one sweep both the swelling and the diminution, giving such a graceful form to the column that it is universally allowed to be the most perfect practice hitherto discovered. The columns in the Pantheon, accounted the most beautiful among the antiques, are traced in this manner, as appears by the exact measures of one of them, to be found in Desgodetz's Antiquities of Rome.

To give an accurate idea of the operation it will be necessary first to describe Vignola's method of diminution, on which it is grounded. "As to this second method," says Vignola, "it is a discovery of my own; and although it be less known than the former it will be easily comprehended
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PLATE XXI
by the figure. Having therefore determined the measures of your column (that is to say, the height of the shaft, and its inferior and superior diameters), draw a line indefinitely from C plate XIII., through D, perpendicular to the axis of the column;” this done, set off the distance C D, which is the inferior semi-diameter, from A, the extreme point of the superior semi-diameter, to B, a point in the axis. Then from A, through B, draw the line A B E, which will cut the indefinite line C D in E; and from this point of intersection, E, draw through the axis of the column any number of rays as E B A, on each of which, from the axis towards the circumference, setting off the interval C D, you may find any number of points, a, a, a, through which, if a curve be drawn, it will describe the swelling and diminution of the column.

Though this method be sufficiently accurate for practice, especially if a considerable number of points be found, yet, strictly speaking, it is defective, as the curve must either be drawn by hand or by applying a flexible ruler to all the points, both which are liable to variations. Blondel, therefore, to obviate this objection (after having proved the curve passing from A to C through the points a, a, to be of the same nature with the first conchoid of the ancients), employed the instrument of Nicomedes to describe it, the construction of which is as follows:—

Having determined, as above, the length of the shaft with the inferior and superior diameters of the column, and having likewise found the length of the line C D E, take three rulers, either of wood or metal, as F G, I D, and A H; of which let F G and I D be fastened together at right angles in G; cut a dove-tail groove in the middle of F G, from top to bottom, and at the point E on the ruler I D (whose distance from the middle of the groove in F G is the same as that of the point of intersection from the axis
THE CORINTHIAN ORDER from the temple of JUPITER STATON

PLATE XXII
of the column) fix a pin; then on the rule A H set off the distance A B, equal to C D the inferior semi-diameter of the column, and at the point B fix a button, whose head must be exactly fitted to the groove made in F G, in which it is to slide; and at the other extremity of the ruler A H, cut a slit or channel from H to K, whose length must not be less than the difference of length between E B and E D, and whose breadth must be sufficient to admit the pin fixed at E, which must pass through the slit, that the ruler may slide thereon.

The instrument being thus completed, if the middle of the groove, in the ruler F G, be placed exactly over the axis of the column, it is evident that the ruler A H, in moving along the groove, will, with its extremity A, describe the curve A aaa C, which curve is the same as that produced by Vignola's method of diminution, supposing it done with the utmost accuracy; for the interval A, B, a, b, is always the same, and the point E is the origin of an infinity of lines, of which the parts B A, b a, b a, extending from the axis to the circumference, are equal to each other, and to D C. And if the rulers be of an indefinite size, and the pins at E and B be made to move along their respective ruler, so that the intervals A B and D E may be augmented or diminished at pleasure, it is likewise evident that the same instrument may be thus applied to columns of any size.”

In the remains of antiquity the quantity of the diminution is various, but seldom less than one-eighth of the inferior diameter of the column, nor more than one-sixth of it. The last of these is by Vitruvius esteemed the most perfect, and Vignola has employed it in four of his orders, as I have done in all of them, there being no reason for diminishing the Tuscan column more, in proportion to its diameter, than any of the rest; though it be the doctrine
The Roman, or Composite Order

PLATE XXIII
of Vitruvius, and the practice of Palladio, Vignola, Scamozzi, and almost all the modern architects. On the contrary as Monsieur Parrault justly observes, its diminution ought rather to be less than more, as it actually is in the Trajan column, being there only one-ninth of the diameter. For even when the same proportion is observed through all the orders, the absolute quantity of the diminution in the Tuscan order, supposing the columns of the same height, exceeds that in the Corinthian in the ratio of ten to seven; and if, according to the common practice, the Tuscan column be less by one-quarter at the top than at its foot, the difference between the diminution in the Tuscan and in the Corinthian columns will be as fifteen to seven, and in the Tuscan and Doric nearly as fifteen to nine; so that, notwithstanding there is a very considerable difference between the lower diameters of a Tuscan and of a Doric column, both being of the same height, yet the diameters at their top will be nearly equal, and consequently the Tuscan column will in reality be no stronger than the Doric one, which is contrary to the character of the order.

Vitruvius allots different degrees of diminution to columns of different heights, giving to those of fifteen foot, one-sixth of their diameter; to such as are from twenty to thirty foot, one-seventh; and when they are from forty to fifty foot high, one-eighth only, observing that as the eye is easily deceived in considering distant objects, which always seem less than they really are, it is necessary to remedy the deception by an increase of their dimensions, otherwise the work will appear ill-constructed and disagreeable to the eye.

Most of the modern architects have taught the same doctrine, but Perrault in his notes, both on this passage and on the second chapter of the sixth book, endeavors to prove the absurdity thereof. In fact, it is on most oc-
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Composite Entablatures & Capitals

PLATE XXV
casions, if not on all, an evident error, which Vitruvius and his followers have probably been led into through neglect of combining circumstances. For if the validity of Perrault's arguments be not assented to, and it is required to judge according to the rigor of optical laws, it must be remembered that the proper point of view for a column of fifty foot high is not the same as for one of fifteen, but on the contrary more distant, in the same proportion, as the column is higher; and that consequently the apparent relation between the lower and upper diameters of the column will be the same, whatever be its size. For if we suppose A to be a point of view, whose respective distance from each of the columns f g, F G, is equal to the respective heights of each the triangles f A g, F A G, will be similar; and A f or A h, which is the same, will be to A g, as A F, or its equal A H is to A G; therefore if d e be in reality to b c as D E is to B C it will likewise be apparently so; for the angle d A e will then be to the angle b A c as the angle D A E is to the angle B A C, and if the real relations differ the apparent ones will likewise differ.

I have supposed the eye of the spectator to be in a line perpendicular to the foot of the shaft; but if the columns be proportionably raised to any height above the eye the argument will still remain in force, as the point of view must of course be proportionably more distant; and even when columns are placed immediately on the ground, which seldom or ever is the case, the alteration occasioned by that situation is too trifling to deserve notice.

When, therefore, a certain degree of diminution, which by experience is found pleasing, has been fixed upon, there will be no necessity for changing it, whatever be the height (of the column, provided the point of view is not limited; but in close places, where the spectator is not at liberty to choose a proper distance for his point of sight, the archi-
tect if he inclines to be scrupulously accurate, may vary; though it is in reality a matter of no importance, as the nearness of the object will render the image thereof indistinct, and consequently any small alteration imperceptible.)

Scamozzi, who esteems it an essential property of the delicate orders to exceed the massive ones in height, has applied the above-cited precept of Vitruvius to the different orders, having diminished the Tuscan column one-quarter of its diameter, the Doric one-fifth, the Ionic one-sixth, the Roman one-seventh, and the Corinthian one-eighth. In the foregoing part of this chapter I have shown the fallacy of his notion with respect to the heights of his orders, and likewise endeavored to prove the error of diminishing the Tuscan column more than any of the others, so that it will be needless to say anything further on these subjects now; for as the case is similar, the same arguments may be employed in confutation thereof.

My intention being to give an exact idea of the orders of the ancients, I have represented them under such figures and proportions as appear to have been most in use in the esteemed works of the Romans, who, in the opinion of Leon Bap. Alberti, and other eminent writers, carried architecture to its perfection. It must not, however, be imagined that the same general proportions, will, on all occasions, succeed. They are chiefly collected from the temples and other public structures of antiquity, and may by us be employed in churches, palaces, and other buildings of magnificence, where majesty and grandeur of manner should be extended to their utmost limits, and where, the whole composition being generally large, the parts require an extraordinary degree of boldness to make them distinctly perceptible from the proper general points of view. But in less considerable edifices, and under various circumstances of which I shall hereafter give a detail, more elegant proportions may often be preferable.
OF THE TUSCAN ORDER.

PLATE XV.

Among the antiques there are no remains of a regular Tuscan order; the doctrine of Vitruvius upon that subject is obscure; and the profiles of Palladio, Scamozzi, Serlio, Delorme and Vignola, are all, more or less imperfect.

Of the two designs left us by Palladio, that taken from the description of Vitruvius is unpleasingly rustic. The other, again, is too rich, and injudiciously composed. That of Scamozzi is yet richer, and much too like the Doric. Serlio's is heavy; and Vignola's, though superior to the others, is defective in the cornice, which is clumsy compared with the rest of the order, ill-proportioned in its parts, and incorrectly profiled, as it finishes with a supporting molding, which has nothing to support, and consequently must excite the idea of a mutilation; the more striking, as the general outline of the composition resembles exactly the bed molds of the Ionic cornice, supposing the dentil band left uncut, as is often the case.

In the design here annexed I have chiefly imitated Vignola's, who in this order has been almost universally followed. Even Inigo Jones, who was so close an adherer to Palladio, has employed Vignola's profile in his York Stairs, and others, his buildings. But as the cornice appears to me far inferior to the rest of the composition I have not scrupled to reject it, and to substitute in its place that of Scamozzi, with such alterations as were evidently necessary to render it perfect. Conformably to the doctrine of Vitruvius, and to the almost general practice of the moderns, I have given to the height of the
column fourteen modules or seven diameters, and to that of the whole entablature, three and a half modules; which being divided into ten equal parts, three of them are for the height of the architrave, three for that of the frieze, and the remaining four for the cornice. The capital is in height one module, the base, including the lower cincture of the shaft, is also one module, and the shaft, with its upper cincture and astragal, twelve modules. These are the general measures of the order.

With respect to the particular dimensions of the minuter parts, they may be collected from the design, whereon the heights and projections of each member are figured, the latter of these being counted from perpendiculars raised at the extremities of the inferior and superior diameters of the shaft—a method preferable to that of De Chambrai and Desgodetz, who count from the axis of the column, because the relation between the heights and projections of the parts are more readily discoverable, and whenever a cornice or entablature is to be executed without a column, which frequently happens, it requires no additional time or labor, as the trouble of deducting from each dimension, the semi-diameter of the column is saved.

Scamozzi, that his bases might be of the same height in all the orders, has given to the Tuscan one, exclusive of the cincture, half a diameter, but I have rather chosen to imitate Vignola and Palladio, who in this order have deviated from the general rule, for as the Tuscan base is composed of two members only, instead of six, which constitute the other bases, it becomes much too clumsy when the same general proportion is observed.

The Tuscan order admits of no ornaments of any kind; on the contrary it is sometimes customary to represent on the shaft of its column rustic cinctures, as at the Palace Pitti in Florence, that of the Luxembourg in Paris, York
Plates and Elevations of Pilaster Capitals.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 1.

Fig. 2.

Fig. 3.

Tuscan

Doric

Ionic

Pedestals for the Orders.

PLATE XXV
Stairs in London, and many other buildings of note. This practice, though frequent, and to be found in the works of many celebrated architects, is not always excusable, and should be indulged with caution, as it hides the natural figure of the column, alters its proportions, and affects the simplicity of the whole composition. There are few examples of these bandages in the remains of antiquity, and in general it will be advisable to avoid them in all large designs, reserving the rustic work for the intercolumniations, where it may be employed with great propriety to produce an opposition which will help to render the aspect of the whole composition distinct and striking.

But in smaller works of which the parts being few are easily comprehended, they may be sometimes tolerated, sometimes even recommended, as they serve to diversify the forms, are productive of strong contrasts, and contribute very considerably to the masculine, bold aspect of the composition. Le Clerc thinks them proper in gates of citadels and prisons, of which the entrances should be terrific, and they are likewise fit for gates to gardens or parks, for grottos, fountains, and baths, where elegance of form and neatness of workmanship would be out of character. Delorme, who was exceedingly fond of these cinctures, has employed them in several parts of the Tuileries, covered with arms, cyphers, and other enrichments; but this seems absurd, for they can never be considered in any other light than as parts, which, to avoid expense and trouble, were left unfinished. We likewise find in different parts of the Louvre vermiculated rustics, of which the tracks represent flowers de luce and other regular figures,—a practice still more unnatural than the forementioned, though Monsieur D'Aviler very gravely tells us that it should always be done with propriety, and express a relation to the owner of the structure; that is the figures should represent
Periapsis and Caryatides.
his arms, his crest, motto, cypher, and so forth, as if worms
were draughtsmen and understood heraldry.

In the plates of designs for gates, doors and windows,
and likewise in those of different compositions, at the end
of the book, are given several designs of rustic columns, and
other rustic work; all collected from buildings of note in
different parts of Europe; and for the manner of executing
them, as it cannot well be described, the student is referred
to various parts of Somerset Place, to the Horse Guards,
the Treasury, the Doric entrance of the King's Mews, the
gate of Burlington House, etc.; in all which, the different
kinds of rustication are managed with taste and command
of the chisel.

De Chambria, in the introduction to his parallel of an-
cient and modern architecture, treats the Tuscan order with
great contempt, and banishes it to the country, as unworthy
a place, either in temples or palaces; but in the second part
of the same work, he is more indulgent, for though he re-
jects the entablature, the column is taken into favor, "and
compared to a queen seated on a throne, surrounded with
all the treasures of fame, and distributing honors to her
minions, while other columns only seem to be servants and
slaves of the buildings they support."

The remainder of this passage, too long to be here in-
serted at full length, is calculated to degrade and totally
to exclude from buildings, the Tuscan order, but by a dif-
ferent mode of employing and dressing the column, to
exalt its consequence, increase its majesty and beauty, so
as to stand an advantageous comparison with any of the
rest. He therefore wishes, in imitation of the ancient archi-
tects, to consecrate the Tuscan column to the commemora-
tion of great men and their glorious actions, instancing
Trajan's column, one of the proudest monuments of Roman
splendor, which is of that order, was erected by the senate
and people of Rome, in acknowledgment of his services, and has contributed more to immortalize that emperor than the united pen of all historians. He further instances the Antonine Pius, and another of the same sort at Constantinople, raised to the emperor Theodosius, after his victory over the Scythians; both which prove, by their resemblance to the Trajan column, that this sort of appropriation, recommended by him, had passed into a rule among the ancient masters of the art.

I shall not here dispute the justness of M. De Chambria's remarks, but may venture to affirm that not only the Tuscan column, but the whole order, as represented in the annexed design, which being in fact the production of Vignola and Scamozzi, I may praise without the imputation of vanity, is extremely beautiful,—a useful, even necessary gradation in the art, and for its purposes, inferior to none of the rest.

The Tuscan order, as it conveys ideas of strength and rustic simplicity, is very proper for rural purposes, and may be employed in farm-houses, in barns, and sheds for implements of husbandry, in stables, manèges, and dog-kennels, in greenhouses, grottos, and fountains, in gates of parks and gardens, and generally wherever magnificence is not required and expense is to be avoided. Serlio recommends the use thereof in prisons, arsenals, treasuries, sea-ports and gates of fortified places; and Le Clerc observes, that though the Tuscan order, as treated by Vitruvius, by Palladio, and some others, ought to be entirely rejected, yet according to the composition of Vignola, there is a beauty in its simplicity which recommends it to notice, and entitles it to a place both in private and public buildings, as in colonnades and porticos surrounding squares or markets, in granaries or storehouses, and even in royal palaces, to adorn the lower apartments, offices, stables, and other
places where strength and simplicity are required, and where richer or more delicate orders would be improper.

In conformity to the doctrine and practice before mentioned, seven diameters, or fourteen modules, have been given to the height of the Tuscan column, a proportion very proper for rural or military works where an appearance of extraordinary solidity is required; but in town buildings, intended for civil purposes, or in interior decorations, the height of the column may be fourteen and a half, or even fifteen modules, as Scamozzi makes it; which augmentation may be entirely in the shaft, without changing any measures either of the base of capital. Nor need the entablature be altered, for as it is composed for few parts, it will be sufficiently bold, although its height be somewhat less than one-quarter of the height of the column.
OF THE DORIC ORDER.

PLATES XVI. AND XVII.

In the parallel are given three profiles of the Doric order; one of which is taken from the theatre of Marcellus, and the other two are copied by Pirro Ligorio, from various fragments of antiquity in and near Rome. Vignola's second Doric profile bears a near resemblance to the most beautiful of these, and was not improbably collected from the same antique which Ligorio copied, though it must be owned that Vignola has, in his composition, far exceeded the original, having omitted the many trivial, insignificant moldings with which that is overloaded, and in various other respects improved both its form and proportions.

This profile of Vignola, being composed in a greater style, and in a manner more characteristic of the order than any other, I have chosen for my model, having, in the general form and proportions, strictly adhered to the original, though in particular members I have not scrupled to vary, when observation taught me they might be improved.

Vignola, as appears by the preface to his rules, supposed that the graceful and pleasing aspect of architectonic objects was occasioned by the harmony and simplicity of the relations existing between their parts, and in composing his profiles he constantly regulates his measures by these simple affinities, imagining the deviations from them in his antique models to proceed rather from the inaccurate execution of the workmen than from any premeditated design in the contriver. To this notion may be ascribed many little defects in the proportions of his moldings and minuter members, which, though trifling in themselves, are yet, from the
smallness of the parts where they happen to be, of consequence, and easily perceivable by a judicious eye. These I have, therefore, endeavoured to correct, not only in this, but in others of his orders, which from their conformity to the best antiques, I have in the course of this work chosen to imitate.

It has already been observed that the real relations subsisting between dissimilar figures have no connection with the apparent, the form and situation of the object viewed ever altering the affinity, and it is a truth too evident to require demonstration. No one will deny, for instance, that the ovolo in the annexed Doric cornice, viewed in its proper elevation, will appear much larger than the capital of the triglyph under and contiguous to it, though they are in reality nearly of the same dimensions; and if the same ovolo were placed as much below the level of the spectator's eye as it is in the present case above, it is likewise evident that it would appear considerably lower than any flat member of the same height. These things being so, a strict attachment to harmonic relations seems entirely out of the question, since what is really in perfect harmony may, in appearance, produce the most jarring discord.

Perfect proportion in architecture, if considered only with regard to the relations between the different objects in a composition, and as it merely relates to the pleasure of the sight, seems to consist in this— that those parts which are either principal or essential should be contrived to catch the eye successively from the most considerable to the least, according to their degrees of importance in the composition, and impress their images on the mind, before it is affected by any of the subservient members; yet, that these should be so conditioned as not to be entirely absorbed, but be capable of raising distinct ideas likewise, and such as
may be adequate to the purposes for which these parts are
designed.

The different figures and situations of the parts may, in
some degree, contribute toward this effect; for simple forms
will operate more speedily than those that are complicated,
and such as project will be sooner perceived than such as
are more retired; but dimension seems to be the pre-
dominant quality, or that which acts most powerfully on
the sense, and this, it is apprehended, can only be dis-
covered by experience, at least to any degree of accuracy.
When therefore a number of parts arranged in a particular
manner, and under particular dimensions, excites, in the
generality of judicious spectators, a pleasing sensation, it
will be prudent on every occasion where the same circum-
stances subsist, to observe exactly the same arrangement
and proportions, notwithstanding they may in themselves
appear irregular and unconnected.

In composing the orders and other decorations which are
contained in the present publication, this method has con-
stantly been observed, the author having himself, with that
view, measured with the utmost accuracy, and not without
some danger, many ancient and modern celebrated build-
ings, both at Rome and in other parts of Europe, strictly
copying such things as appeared to be perfect, and carefully
correcting others which seemed in any degree faulty; relying
therein not alone on his own judgment in doubtful cases,
but much on the opinion and advice of several learned, in-
genious artists of different nations, with whom he had
the advantage of being intimately connected when abroad.

Sensible he is that the extraordinary degree of accuracy
which has been aimed at in these compositions is of little
consequence to the generality of spectators, who see in the
gross and feel by the lump. Nevertheless, as in poesy, music,
painting, and indeed in all arts, there are delicacies which,
The Five Orders of Architecture

Arches without Pedestals.

PLATE XXVIII
though they escape the vulgar notice, afford uncommon pleasure to persons of enlightened conception, so in architecture this kind of perfection is the source of secondary pleasures, less forcible perhaps, but not always less delightful, than the first. These may be compared to those excited by the energy or graces of language in poetry; by the shakes, swells, inflections, and other artifices of the instrument or voice, in music, which give sentiment and expression to the performance; or in painting, by a judicious choice and artful disposition of the objects, a nice discrimination of the passions, an elegant taste of design, and a spirited, masterly touch of the pencil. To all but local color and general resemblance, the unskilful are commonly blind; but the correct eye and ripened judgment derive their chief pleasure from that which the ignorant rarely perceive, and seldom or ever taste.

It may perhaps be objected that the proportions here established, though proper and good on one occasion, may on many others be defective; but this objection will, I flatter myself, have little weight, when it is remembered that the situation of capitals and entablatures with respect to the order of which they are parts is constantly the same, and the points of view more or less distant, according to the size or elevation of the order; and that, consequently, the apparent magnitudes of all their parts will always have very nearly the same proportion to each other, even though they should be exalted to a second or third story.

With regard to bases, indeed, their being placed on pedestals, or immediately on the ground, will occasion some little difference to their appearance; and when they are raised to a second story, their figure and apparent proportions will be considerably altered. Nevertheless it doth not seem necessary, in either of these cases, to vary their dimensions; for in the former of the two, the alteration
would be trifling, and in the latter, the object being far removed from the eye, the spectator will rather be occupied in considering the general mass than in examining its parts, which, on account of their distance, cannot be distinctly perceptible.

The height of the Doric column, including its capital and base, is sixteen modules, and the height of the entablature, four modules; the latter of which being divided into eight parts, two of them are given to the architrave, three to the frieze, and the remaining three to the cornice.

In most of the antiques, the Doric column is executed without a base. Vitruvius likewise makes it without one; the base, according to that author, having been first employed in the Ionic order, to imitate the sandal or covering of a woman's foot. Scamozzi blames this practice, and most of the moderns have been of his opinion, the greatest part of them having employed the Attic base in this order. Monsieur De Chambrai, however, whose blind attachment to the antique is, on many occasions, sufficiently evident, urges vehemently against this practice, which, as the order is formed upon the model of a strong man, who is constantly represented bare-footed, is according to him, very improper; and "though" says he, "the custom of employing a base in contempt of all ancient authority, has by some unaccountable and false notions of beauty prevailed, yet I doubt not but the purer eye, when apprised of this error, will easily be undeceived, and as what is merely plausible will, when examined, appear to be false, so apparent beauties, when not founded in reason, will of course be deemed extravagant.

Le Clerc's remarks on this passage are very judicious, and as they may serve to destroy a nation which, soon after our Athenian discoveries, about seventy years ago, was much
too prevalent among us, and might, perhaps in some future hour of extravagance, prevail again, I shall, for the benefit of such as are unacquainted with the original, translate the whole passage. "In the most ancient monuments of this order," says he, "the columns are without bases, for which it is difficult to assign any satisfactory reason. Monsieur De Chambria, in his Parallel, is of the same opinion with Vitruvius, and maintains that the Doric column, being composed upon the model of a naked, strong and muscular man, resembling a Hercules, should have no base—pretending that the base to column is the same as a shoe to a man. But I must own, I cannot consider a column without a base in comparing it to a man, but I am, at the same time, struck with the idea of a person without feet rather than without shoes; for which reason I am inclinable to believe either that the architects of antiquity had not yet thought of employing bases to their columns, or that they omitted them in order to leave the pavement clear; the angles and projections of bases being stumbling blocks to passengers, and so much the more troublesome as the architects of those times frequently placed their columns very near each other, so that had they been made with bases, the passages between them would have been extremely narrow and inconvenient. And it was doubtless for the same reason that Vitruvius made the plinth of his Tuscan column round,—that order, according to his construction, being particularly adapted to servile and commercial purposes, where conveniency is preferable to beauty. However this be, persons of good taste will grant that a base not only gives a graceful turn to the column, but is likewise of real use, serving to keep it firm on its plan, and that if columns without bases are now set aside, it is a mark of the wisdom of our architects, rather than an indication of their
Arches with Pedestals

PLATE XXIX
being governed by prejudice, as some adorers of antiquity would insinuate.

In imitation of Palladio and all the modern architects, except Vignola, I have made use of the Attic base in this order, and it certainly is the most beautiful of any, though for variety’s sake, when the Doric and Ionic orders are employed together, the base invented by Vignola, of which a profile is annexed, may sometimes be used. Bernini has employed it in the colonnades of St. Peter’s, and it has been successfully applied in many other buildings.

The ancients sometimes made the shaft of the Doric column prismatic, as appears by a passage in the fourth book of Vitruvius; and at other times they adorned it with a particular kind of shallow flutings, described from the centre of a square, no interval or fillet being left between them. Of this sort, there are now some columns to be seen in the temples of Pæstum, near Naples, in different parts of Sicily, and in the church of St. Peter in Catenis, at Rome. The first of these manners has not, I believe, been imitated by any of the modern masters; nor is the second very frequent; Scamozzi blames it for its want of solidity; the projecting angles between the flutings being easily broken, and, if the material be soft, very subject to moulder.

Vitruvius gives to the height of the Doric capital one module; and all the moderns, except Alberti, have followed his example. Nevertheless, as it is of the same kind with the Tuscan, they should both bear nearly the same proportion to the heights of their respective columns, and consequently the Doric capital ought to be more than one module, which it accordingly is, both at the Coliseum and in the theatre of Marcellus, being, in the former of these buildings, upwards of thirty-eight minutes, and, in the latter, thirty-three minutes high.

In the design here offered I have made the height of the
whole capital thirty-two minutes, and in the form and
dimensions of the particular members I have deviated
but little from the profile of the theatre of Marcellus. The
frieze, or neck, is enriched with husks and roses, as in
Palladio's design, and as it has been executed by Sangallo,
at the Farnese Palace in Rome, and by Cigoli, in the Cortile
of the Strozzi at Florence, as well as in several buildings of
note in this metropolis. The projection of these husks and
flowers must not exceed that of the upper cincture of the
column.

The architrave is one module in height, and composed
only of one fascia and a fillet, as at the theatre of Marcellus;
the drops are conical as they are in all the antiques; not
pyramidal, as they are improperly made by most of Amer-
ican workmen; they are supposed to represent drops of
water draining from the triglyph, and consequently they
should be cones or parts of cones, not pyramids.

The frieze and the cornice are each of them one module
and a half in height; the metope is square, and enriched
with a bull's skull, adorned with garlands of beads, in
imitation of those on the temple of Jupiter Tonans, at the
foot of the Capitol. In some antique fragments, and in
a greater number of modern buildings, the metopes are
alternately enriched with these ox-skulls, and with pateras,
but they may be filled with any other ornaments of good
forms, and frequently with greater propriety. Thus, in
military structures, heads of Medusa, or of the Furies,
thunderbolts, and other symbols of horror may be intro-
duced; likewise helmets, daggers, garlands of laurel or
oak, and crowns of various kinds—such as those used
among the Romans, and given as rewards for different mil-
itary achievements; but spears, swords, quivers, bows,
cuirasses, shields and the like must be avoided, because the
real dimensions of these things are too considerable to find
admittance in such small compartments, and representations in miniature always carry with them an idea of triviality, carefully to be avoided in architecture as in all other parts. In sacred buildings, cherubs, chalices, and garlands of palm or olive may be employed; likewise doves, or other symbols of moral virtues. And in private houses crests or badges of dignity may sometimes be suffered, though seldom; and indeed never, when they are of such stiff, insipid forms, as stars, garters, modern crowns, coronets, mitres, truncheons, and similar graceless objects, the ill effects of which may be seen at the Treasury, in St. James's Park, and in many other places.

Too much variety in the ornaments of the metopes must be avoided lest the unity of the composition should be destroyed. It is best never to introduce more than two different representations, which should not consist of above one, or at most two objects each, of simple forms, and not overcharged with ornaments. In the disposition of these, care must be taken to place them with symmetry; those on the right, in correspondence with those on the left. Therefore, when a triglyph happens to be in the middle of a front, it becomes necessary to couple the middle ones, by filling the two metopes on each side of the central triglyph with the same sort of ornaments, as is done at the gate of Burlington House, in Piccadilly, distributing the rest alternately throughout the composition as usual. It is likewise to be observed that ornaments in metopes are not to project so much as they do at Bow church, or at General Wade's house in Burlington gardens, where, from their great relief, they are far more striking than the triglyphs, which ought to predominate, as being essential and principal parts in the composition. Palladio in his Basilica of Vicenza, has given to the most elevated parts of the ox-skulls and pateras, with which the metopes are filled, very
little more projection than that of the triglyph; and in this he has copied the ancients, who seldom or never gave more projection to any ornament than that of the frame or border, in which it was enclosed: as appears by those inimitable fragments in the Villa Medici, and many others in different parts of Rome and elsewhere. The channels of the triglyph on their plan commonly form a right angle, but, to give them more effect, a narrow square groove may be cut in the inner angle, from top to bottom, and quite into the solid of the frieze.

In the cornice I have deviated very little from my original. Le Clerc, who in his Doric profile has imitated that of Vignola, makes the mutules as broad as the capital of the triglyph; Mr. Gibbs has followed his example, and they have been executed in that manner on a couple of doors to houses on the north side of Lincoln's Inn Fields. But Vignola's method is preferable, who makes them no broader than the triglyph, as it is more sightly, and more conformable to the carpenter's art, in which the width of the rafter never exceeds the width of the beam or joint it stands upon. The ornaments of the soffit are nearly the same as those of Vignola: they should be entirely sunk up, wrought in the solid of the corona, and never drop down lower than its soffit. There is no necessity for cutting them deep; in most of Palladio's buildings they do not enter above two minutes into the corona, and that is quite sufficient.

Vignola's other Doric profile is in imitation of that of the theatre of Marcellus; in it he has very judiciously pointed out, and in some measure corrected, the faults of the original; but reverence for the antique has made him rather too sparing of his amendments. I have given a design of this profile, with such further corrections as appeared necessary; the most considerable of them consisting
in the enlargement of the dentils, which are neither in the antique model nor in Vignola's profile sufficiently conspicuous to hold their due place in the composition.

At the theatre of Marcellus the ornaments of the soffit are not in a horizontal position, but hang down towards the front of the corona, which, as it appears by Vitruvius, was a common practice among the ancients; and done to imitate the inclination of the rafters. Palladio and Vignola have both adopted this peculiarity, which D'Aviler supposes to have been first used in order to make the projection of the entablature appear more considerable. To me it has an exceedingly disagreeable appearance; the whole soffit seems in a falling state; and so far is it from producing the effect which D'Aviler supposes, that it actually makes, as it evidently must, the projection seem less than in reality it is.

Vignola's two Doric entablatures, says D'Aviler, are both of them so elegantly composed, that it is scarcely possible to determine which of them ought to have the preference. The first, which is entirely antique is the lightest, and consequently properest for interior decorations, or objects intended for near inspection; the other composed by Vignola himself from various fragments of antiquity, being bolder and consisting of larger parts, seems better calculated for outside works and places where the point of view is either distant or unlimited. On polygonal plans, however, the mutule cornice must be avoided; because the soffits of the angular mutules would form irregular and very disagreeable figures; neither should it be employed in concaves of small dimensions for the same reason; nor in places where frequent breaks are requisite; it being extremely difficult, often impossible to prevent the mutules from penetrating and mutilating each other, in various unsightly manners. And wherever this
Various sorts of Arcades, taken from different Buildings at Rome, and in other parts of Italy.
The Five Orders of Architecture

cornice is used on a convex surface, the sides of the mutules must be made parallel, for it would be both disagreeable and unnatural to see them broader, and consequently heavier in front than where they spring out of the mutule band.

Palladio's Doric entablature is, likewise, very beautiful; I mean as it is executed in the Basilica of Vicenza, where it differs widely from the profile in his book, and is far preferable thereto. In the same plate with Vignola's dentil entablature there is a design of it, accurately copied from that building, which may serve as one instance of many to show how little the measures of his book are to be relied upon.

Of all the entablatures, the Doric is most difficult to distribute, on account of the large intervals between the centres of the triglyphs, which neither admit of increase or diminution, without injuring the symmetry and regular beauty of the composition. These constantly confine the composer of intercolumniations, divisible by two modules and a half; entirely exclude coupled columns, and produce spaces which, in general, are either too wide or too narrow for his purposes.

To obviate these difficulties, the triglyphs, have often been omitted and the entablature made plain, as at the Coliseum in Rome, the colonnades of St. Peter's, of the Vatican, and in many other buildings, both at home and abroad. This, indeed, is an easy expedient; but while it robs the order of its principle characteristic distinction, leaves it poor, and very little superior to the Tuscan. The remedy seems desperate, and should never be employed but as a last resource.

The ancients employed the Doric, in temples dedicated to Minerva, to Mars, and the Hercules, whose grave and manly dispositions suited well with the character of this
order. Serlio says it is proper for churches dedicated to Jesus Christ, to St. Paul, St. Peter, or any other saints remarkable for their fortitude in exposing their lives and suffering for the Christian faith. Le Clerc recommends the use of it in all kinds of military buildings, as arsenals, gates of fortified places, guard-rooms, and similar structures. It may likewise be employed in the houses of generals, or other martial men; in mausoleums erected to their memory, or in triumphal bridges and arches built to celebrate their victories.

I have made the height of the Doric column sixteen modules; which, in buildings where majesty or grandeur is required, is a proper proportion; but in others it may be somewhat more slender. Thus, Vitruvius makes the Doric column in porticoes higher by half a diameter than in temples; and most of the modern architects have, on some occasions, followed his example. In private houses, therefore, it may be 16 1/3, 16 1/2, 16 2/3 modules high; in interior decorations, even seventeen modules, and sometimes perhaps a trifle more; which increase in the height may be added entirely to the shaft, as in the Tuscan order, without changing either the base or capital. The entablature, too, may remain unaltered in all the aforesaid cases; for it will be sufficiently bold without alteration.
OF THE IONIC ORDER.

PLATES XVIII., XIX. AND XX.

Among the ancients, the form of the Ionic profile appears to have been more positively determined than that of any other order; for in all the antiques at Rome, the Temple of Concord excepted, it is exactly the same, and conformable to the description Vitruvius has given thereof.

The modern artists have likewise been more unanimous in their opinions upon the subject; all of them, excepting Palladio and his imitators, having employed the dentil cornice, and the other parts of the profile, nearly as they are found in the Coliseum, the Temple of Fortune, and the Theatre of Marcellus.

In Palladio’s works we meet with three different Ionic entablatures, all of them very beautiful. The first is the true antique, which he has made use of at the palace of the Porti, and in several doors and windows of the Thiene, and Valmarana palaces, in Vicenza. The second is a very judicious imitation of the entablature in the Temple of Concord, and is executed by him in the upper arcade of the Basilica, in the same city. The third, which is an invention of his own, being the same with that in his book, he has employed, with some small difference, at the Chiericato Palace, at the Rotunda of Marchese Capra, and in various others of his buildings in the Vicentine, or at Venice.

In the first plate of the Ionic order, there is a design of the antique profile collected by me from different antiquities at Rome. The height of the column is eighteen modules, and that of the entablature four modules and a
Columns upon Columns

Tuscan V Doric

Doric V Ionic

Ionic and Composite or Corinthian

Fig. 1. Fig. 2.

Composite and Corinthian

PLATE XXXI
half, or one-quarter of the height of the column, as in the other orders, which is a trifle less than in any of the regular antique Ionics. The base is Attic, as in all of the antiques, and the shaft of the column may either be plain or fluted, with twenty-four or with twenty flutings only, as at the Temple of Fortune, of which the plan should be a little more than semi-circular, as it is at the Temple of Jupiter Tonans, and at the Forum of Nerva, because then they are more distinctly marked. The fillet, or interval between the flutes, should not be broader than one-third of their width, nor narrower than one-quarter thereof. The ornaments of the capital are to correspond with the flutes of the shaft, and there must be an ove or a dart above the middle of each flute. The volutes, Plate XIX., are to be traced according to Goldman's method, which is the best. I have given a design of it, with an exact description upon the plate. Perrault prefers Delorme's method of describing it, yet certainly it is not so perfect; for in Goldman's the circular portions that compose the volute have their radii at their junction, in the same straight line, so that they meet without forming an angle; whereas, in that of Delorme, the radii never coincide, and, consequently, no two of the curves can join without forming an angle. The space in Delorme's volute between the first quadrants, in the first and second revolution, is of the same breadth throughout, both the quadrants being described from the same centre; but in Goldman's the space between the revolutions diminishes regularly from the very first. Moreover, Delorme has given no directions for describing the inner spiral, which determines the breadth of the fillet, and which, in his design, is nearly of the same breadth from first to last; but Goldman has taught the manner of describing it, so as to diminish gradually, with the same accuracy as the outward spiral.
Palladio's volute, differing but little from that of Delorme, has nearly the same defects; and, though Mr. Gibbs has in some measure amended it, yet his likewise is faulty in the breadth of the fillet, which is equal through the greatest part of the first revolution.

Vignola and Scamozzi, Serlio, Alberti, and others have, in their architraves, imitated those of the theatre of Marcellus, and of the Coliseum; having composed them of three fascias distinguished from each other only by small projections. This has but an indifferent effect; the separations so faintly marked are not sufficiently striking; and the architrave is left too destitute of ornaments for the rest of the profile: a defect most striking, whenever the moldings of the profile are enriched.

On the other hand, Palladio's and Delorme's architraves appear too rich; being likewise composed of three fascias, separated by moldings. I have therefore, in this particular, chosen to imitate the profile of the Temple of Antoninus and Faustina, where there are only two fascias, separated from each other by a molding.

The three parts of the entablature bear the same proportion to each other in this as in the Tuscan order; the frieze is plain, as being most suitable to the simplicity of the rest of the composition; and the cornice is almost an exact copy from Vignola's design, in which there is a purity of form, a grandeur of style, and close conformity to the most approved antiques, not to be found in the profiles of his competitors.

If it be required to reduce this entablature to two-ninths of the height of the column (which, on most occasions, is a proportion preferable to that of one-quarter, particularly where the eye has been habituated to contemplate diminutive objects), it may easily be done, by making the module for the entablature less by one-ninth than the semi-diam-
eter of the column; afterwards dividing it as usual, and observing the same dimensions as are figured in the design. The distribution of the dentil band will, in such case, answer pretty nearly in all the regular intercolumniations; and in the outer angle there will be a dentil, as there is in the Temple of Fortune at Rome.

In interior decorations, where much delicacy is required, the height of the entablature may be reduced even to one-fifth of the column, by observing the same method, and making the module only four-fifths of the semi-diameter.

Of Palladio's profiles, that imitated from the Temple of Concord appears to me the best; its height is equal to one-fifth of the height of the column. The design which I have given of it is closely copied from the Basilica at Vicenza; but it will be more perfect if the frieze be made flat, and its height augmented so as to equal that of the architrave; by which means, the proportion of the entablature to the column will be better; for the relation of one to five is, generally speaking, too small. In the cornice it will likewise be well to add, between the corona and fillet, under the cyma, an ogee of the same dimension with that over the modillions. Thus all the parts will be equally rich, and the upper cyma be better supported. This Scamozzi has done in his profile; though, in other respects, his Ionic entablature may be considered as a copy from Palladio; the fillet, being thus sustained by the ogee, may be diminished a trifle.

Palladio's other profile I have copied from the Rotunda of Capra; its height is likewise one-fifth of the column. The frieze, as in the former design, is low and swelled; but it will be better to raise it to the same height with the architrave, and keep it upright as before directed; for the swell gives it a clumsy form, and, appearing a continuity of the same undulations which compose the architrave and
cornice, serves to render the outline of the whole entablature confused and much too abundant in curves. The frieze, when so formed, conveys the idea of a piece of timber used without being hewn, as was the practice of ruder times among the Greeks, and cannot with propriety be introduced in a finished work.

In the antique, there are few examples of these swelled friezes. Palladio probably took his hint from the Temple of Bacchus, near Rome, where the swelled frieze has been used in a Composite order; or, perhaps from the Basilica of Antoninus, where it has been employed in a Corinthian: with little success at the last, and with much less at the first, of these places; for as the columns are there insulated, and the profile is marked at the four angles, the deformity becomes so much the more conspicuous; and, notwithstanding Palladio's partiality to this form of frieze, which so frequently recurs in most of his works, it seldom or never can be introduced with success but on doors or windows, where the profile of the architrave is not marked under it; there, indeed, the swell forms a good contrast with the upright jambs, and has the further advantage of contracting the spread of the cornice which, in narrow intercolumniations, is very convenient; and, in most cases, may prevent the licentious practice of making the frieze and cornice no wider than the aperture of the door or window, and supporting them on each side with a sort of scroll, as at the Sorbonne in Paris, and at the Mansion House in this city.

Palladio, in both of these profiles, has enriched the soffit of the corona with roses, which are here omitted, as in most cases they ought to be. However, when the column is fluted, and the rest of the composition much adorned, they may and should be introduced, care being taken to proportion the panels, and other parts surrounding them,
in the same manner as if the order were Corinthian or Composite.

The antique Ionic capital differs from any of the others; its front and side faces are not alike. This particularity occasions great difficulty wherever there are breaks in the entablature, or where the decoration is continued in flank as well as in front; for either all the capitals in the flank must have the baluster side outward, or the angular capitals will have a different appearance from the rest, neither of which is admissible. The architect of the Temple of Fortune at Rome has fallen upon an expedient which, in some degree, remedies the defect. In that building the corner capitals have their angular volutes in an oblique position, inclining equally to the front and side, and offering volute faces both ways. Wherever persons are violently attached to the antique, or furiously bent on rejecting all modern inventions however excellent, this is the only means to gratify them; but when such is not the case, the angular capital invented by Scamozzi, or imitated and improved by him from the Temple of Concord, or borrowed from some modern compositions extant in his time, ought to be employed; for the distorted figure of the antique capital, with one volute straight and the other twisted, is very perceptible, and far from being pleasing to the eye.

Annexed is a design of Scamozzi's capital, and another of a very beautiful one, executed in St. Peter's, of the Vatican; probably composed by Michael Angelo. Similar capitals may also be seen in the church of the Roman College, and in various other buildings at Rome.

In this order I have employed the Attic base. Of the antique base described by Vitruvius, and used by Vignola and Philibert Delorme in their Ionic orders, and by Sir Christopher Wren in some parts of St. Paul's, I think there is no example among the antiques; and being uni-
versally esteemed a very imperfect production, I have not even given a design to it.

As the Doric order is particularly affected in churches or temples dedicated to male saints, so the Ionic is principally used in such as are consecrated to females of matronal state. It is likewise employed in courts of justice, in libraries, colleges, seminaries, and other structures having relation to arts or letters; in private houses and in palaces, to adorn the woman’s apartments; and, says Le Clerc, in all places dedicated to peace and tranquillity. The ancients employed it in temples sacred to Juno, to Bacchus, to Diana, and other deities, whose dispositions held a medium between the severe and the effeminate.

It is difficult, if not impossible, to agree with those who refer us to certain columns at Persepolis, as exhibiting the prototype of the Ionic capital; since what is pointed out as resemblance strikes as antipathetic difference. As regards general form and character, there is not the very slightest similarity, whatever, between the supposed Persepolitan parent and the offspring attributed to it; still less is there any with respect to taste; the former being as uncouth and unmeaning and capricious in its configuration, as the other is ben inteso, eumorphic and graceful. A formal and minute contrast between them would certainly be amusing, possibly instructive also; but it must not be looked for here. Suffice it then to observe, that what are imagined to have been prototypic of the so-called Ionic capital are no more than four little bits of detail stuck upon the sides of an upright square member super-imposed upon a circular shaft and capital. The question then is, by what process of æsthetic alchemy came those comparatively insignificant, certainly whimsical, adjuncts to be transmuted into the refined elegance of the Greek Ionic capital? The distance between the hypothetically assumed original and the
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Pediments and Imposts

Figures of Pediments to be avoided.

Tuscan Impost.

Regular Pediment.

Tuscan Impost & Archivolt.

Doric Impost.

Ionic Impost.

 Corinthian or Composite.

Doric Impost.

Ionic Impost.

Corinthian or Composite.

Plate XXXIII
fully developed Ionic capital is so great that there must have been very many intermediate stages of transition where the metamorphosis was completed; yet, not a single one of them can now be traced, or, at any rate, not one is produced. Admitting, however, for the nonce, that the germ of the Voluted capital is to be plainly detected in the Persepolitan example, such fact is tantamount to irrefragable proof that it is possible to seize upon a casual hint, however slight, or however rude, and shape out from it some untried, yet eminently successful form of the beautiful.

It has sometimes been alleged as an imperfection in the Ionic or Voluted capital, that it is irregular in plan; since, instead of presenting four faces, corresponding with those of the abacus, it has only two, whose flanks or “baluster” sides, as they are termed, are altogether different in configuration, both vertically and horizontally. Such is undeniably the case; yet, to say nothing of the variety of appearance so produced, what exquisite symphony of contrasted curved lines! The face of the Ionic capital, whether Asiatic or Attic, exhibits as charming a disposition of flowing lines as can well be conceived; and completely different as it is in form, the so-called “baluster” or pulvinated side of the capital contributes to the general expression of animated and graceful flexibility; for, while its horizontal section shows concave curvature, its vertical section has a convex surface. The marked dissimilarity between the sides and the faces of the capital is by no means displeasing—most assuredly does not partake of capriciousness, the entire composition being admirably well motivated, and thoroughly logical. We may suppose the problem to have been how to expand the capital horizontally in front, without, at the same time, enlarging the abacus, which had to be accommodated to the soffit of the
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Ballusters, etc.

PLATE XXXIV
architrave; and, never was difficult aesthetic problem solved more successfully. The lateral expansion of the face produces luxuriant fulness without heaviness; while the volutes are forcibly relieved by shadow—one of them by that which it casts upon the shaft of the column.

One rather enviable peculiarity of the Ionic or Voluted capital is that it admits of being so shaped as to be perfectly regular, and have four faces all alike, instead of only two. Such form of the capital does not, indeed, appear to have been adopted by the Greeks, but they showed with what facility it might be produced, when they occasionally turned the volute diagonally at the external angles of a portico, in order to obtain two similarly-shaped adjoining faces. It will, perhaps, then be said that though they had recourse to such treatment of the capital, as an expedient to accommodate it to that particular situation, they also rejected it, when not absolutely required for obviating what would have been an offensive irregularity, had the baluster side of a capital shown itself in the same range with the faces of other capitals on the return or flank of the building. Why the Greeks did not avail themselves of the felicitous invention they had hit upon, and carry it out much further, is rather surprising and difficult to be accounted for; at the same time, we ought, perhaps, to be grateful to them, for having been content to indicate a new phase of the beautiful in the Voluted capital, leaving to those who came after them to apply it without scruple, as being of decidedly Greek origin.

Existing and well authenticated examples of the antique, afford tolerably convincing proof that the Greeks allowed themselves considerable latitude in the treatment of the orders. So far from adhering to ready-cut and dry proportions and details, they sometimes ventured upon untried shapes of beauty, nothing less than shocking to
orthodox Vitruvianists, and the adherents of Vignola, and other architectural arithmeticians.

Of the Ionic, we have a most remarkable variety—undeniably, too, of the best period of Greek art, in the attached columns within the temple of Apollo Epicurius at Bassæ; than which nothing can be at once more awfully heterodox and more charmingly piquant. Not the capital alone, but the entire column, with its widely expanded base, and the very peculiar fluting or striating of the shaft, show consummate artistic study, and genuine artistic feeling.

In the hands of the Romans, and their modern Italian followers, the Voluted capital sadly degenerated. It completely lost its former expression of flowing gracefulness combined with vivifying energy; and it was at length tamed into such feebleness and insipidity, that its original character was all but entirely effaced. The voluted themselves were sometimes reduced to such utter insignificance as scarcely to manifest themselves; so that from being one of the most plastic of those three classes, which we now call orders, that form of capital, quite lost all its original æsthetic raciness of flavor.

It is almost exclusively the prerogative of the Ionic capital, that it admits of most decided and strongly marked differences, not only as regards its general configuration and plan, but with respect to various particulars of detail. It can, for instance, either dispense with or admit of a necking, which may, again, be either plain or carved; and in the latter case, it affords very great, almost unlimited, variety of ornamentation, so that there is no necessity for adhering to the precedent of the Greek "honeysuckle." Had the Voluted capital no other power of elasticity, than that of enlarging itself, at will, by the
addition of a necking, even that alone would be a most enviable privilege; but in addition to those already indicated, it possesses several other elements of diversified expression and design.
OF THE CORINTHIAN ORDER.

PLATES XXI AND XXII.

The three columns in the Campo Vaccino, supposed remains of the Temple of Jupiter Stator, are generally allowed to be the most perfect models of the Corinthian order amongst the antiques at Rome. Palladio, in his fourth book, where he gives the whole profile at large, acknowledges that he never had seen any work better executed, or more delicately finished; that its parts are beautifully formed, well proportioned, and skilfully combined; all which last qualities are certainly signified by his Benissimo intesi.

With these favorable sentiments, it is extraordinary that, in his design of the Corinthian order, he should so very considerably deviate from this excellent original, as scarcely to leave the smallest shadow of resemblance.

Vignola, in his Corinthian profile, has chiefly imitated the above-mentioned fragment, and the interior order of the Pantheon, another very perfect model. His composition is uncommonly beautiful, and, without dispute, superior to that of any other master, he having artfully collected all the perfections of his originals, and formed a whole far preferable to either of them.

The design which I have given differs but little from that of Vignola. The column is twenty modules high, and the entablature five; which proportions are a medium between those of the Pantheon and of the three columns. The base of the column may be either Attic or Corinthian; both are beautiful. Palladio and Scamozzi have employed the Attic base enriched with astragals; but so frequent a
repetition of the same semi-circular forms in junction has a very different effect, as may be observed at the church of St. Martin-in-the-Fields, at the Bank, and in various other buildings of this city, in which the profiles and forms of Palladio, good, bad, or indifferent, have indiscriminately been employed.

If the entablature be enriched, the shaft of the column should be fluted, provided it be not composed of variegated marble; for a diversity of colors renders even smooth surfaces confused, and ornaments of sculpture only serve to make the confusion greater. The flutings may be filled to one-third of their height with cablings, as on the inside order of the Pantheon, which strengthen the lower part of the column, and make it less liable to damage. But when the columns are not within reach, nor subject to be hurt by passengers, the cables are better omitted, as the general hue of the shaft will then be the same throughout, and seem of a piece, which, when a part of the flute is filled and the other part left empty, is not the case, for the shaft then appears divided, and is less calculated to produce a great effect.

In some very rich buildings the cablings are composed of reeds, husks, spiral-twisted ribands, flowers, and various other ornaments. At the Tuileries, in Paris, there are some Ionic columns exquisitely wrought in this manner, one of them by Jean Gougeon's own hand, and the rest under his immediate inspection.

It is, however, far better to reserve such niceties for interior decorations. In exterior compositions, whatever doth not contribute to the forcible effect of the whole structure is, in a great measure, useless, sometimes even detrimental, and an expense which might more judiciously be employed where it would be more attentively considered. In general, it may be laid down as a maxim, that excessive
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**Designs for Doors**

PLATE XXXV
ornaments, though they may, and often do, increase the magnificence of a building, almost always destroy, more or less, the grandeur of its effect. Parts in themselves large, formed and disposed to receive broad masses, or strong oppositions of light and shade, must necessarily excite great ideas; but when these parts are broken into a number of small divisions, and their surfaces so varied as to catch a thousand spotty impressions of light, demi-tints, and darkness, the whole will, of course, form a confused appearance of trifling objects, which divide the attention and are utterly incapable of exciting any powerful emotions whatever.

The capital is enriched with olive leaves, as are almost all the antiques at Rome, of this order; the acanthus being seldom employed but in the Composite. De Cordemoy, however, prefers the acanthus, and observes that the flexible sprigs, which accompany the leaves of that plant, may more naturally be supposed to form the contour of the volutes than the stiff branches of a laurel or an olive tree. "Strange it is," says he, "that we soon cease to esteem what is natural; nature and reason must always be violated, and thus a confused jumble of little pointed leaves of an olive or a laurel is preferred to the simple and graceful outline of the acanthus."

De Cordemoy's observation is, strictly speaking, just; yet to variety something must be sacrificed, some liberties taken, and both the ancient as well as modern sculptors have, by uniting several olive, laurel, or parsley leaves together, to form distinct bunches, separated by filaments between which they seem to grow, contrived to compose leaves, different in appearance from the acanthus, indeed, yet neither more confused nor less graceful than that.

With respect to the manner of tracing and working this capital, the designs, with what has been said on the same
subject in the Composite order, will serve as a sufficient explanation.

The divisions of the entablature bear the same proportion to each other as in the Tuscan, Ionic, and Composite orders. The frieze is enriched with a bas relief, composed from various fragments in the Villa Medici at Rome. The parts and ornaments of the cornice are all regularly disposed, and perpendicularly over each other; the coffers in the soffit of the corona are square, and the borders round them equal on all sides, as they are in the arch of Titus, and as Palladio has made them: a precaution neglected by Vignola, notwithstanding his usual regularity.

The ancients frequently employed the Ionic entablature in the Corinthian order, as appears by many of their buildings, and sometimes, according to Vitruvius, even the Doric; though of the latter practice there is not now, that I know of, any example extant. The same author observes, that the Greeks in their works never employed the dentils under the modillions, because the rafters, which are represented by the dentils, could never in reality be placed under the beams or joists, which are represented by the modillions. However this may be we are certain that the Romans were not so very scrupulous, for in their most esteemed works, such as the Temple of Jupiter Stator, the Forum of Nerva, the Temple of Jupiter Tonans, and several others, we find the dentils placed under the modillions. These examples will sufficiently authorize the same practice. The origin or reason of things of this nature is remote, and known to but few; while the general effect of a composition is obvious to all. If deviating, therefore, from what is little known and less felt, will eminently contribute towards the perfection of that which all see and all approve, it cannot justly be censured.

This liberty, however, of deviating from the origin or
reason of things, was by the ancients, and must by us, be exercised with great caution, as it opens a wide door to whim and extravagance, and leaves a latitude to the composer which often betrays and hurries him into ridiculous absurdities. Bernini sometimes quitted the beaten road with judgment; but Borromini, first his scholar, and at length his rival, in attempting to conquer by novelty, and quitting the ancient rules, was submerged in an ocean of extravagance. Thus, says the author of his life, from being among the first men of his time for abilities and extent of genius, Borromini sunk to a level with the last by a ridiculous application of his talents.

I do not know who first introduced among us the favorite ornament of festoons standing up like arches, instead of hanging down as nature directs; nor do I recollect the name of him who, in the church of St. Romolo at Florence, has, for the sake of variety, placed the capitals at the feet of his columns; but select these facts as absurd instances, among others, of the length to which innovators may carry any system unrestrained by rules, and subject to no other laws than the crude momentary effusions of a vitiated fancy. Things evidently absurd, no time nor authority can sanctify.

When the modillion cornice is employed on large concave surfaces, the sides of the modillions and coffers of the soffit should tend towards the centre of the curve, as in the Pantheon; but when the concave is small it will be better to direct them towards the opposite point in the circumference, that the contraction may be less perceptible, and the parts dependent thereon suffer less deviation from their natural form. The same rules must be observed with regard to dentils, to the abacus and bases of columns or pilasters, and likewise to the flanks of the pilaster itself. But on a convex surface the sides of all these should be
Designs for Gates & Piers.

PLATE XXXVI
parallel to each other, for it would be unnatural and very disagreeable to see them narrowest where they spring out of the cornice, diverging as they advance forward, forming sharp angles, and a sort of mutilated triangular plan, with enlarged solids and diminished intervals; all calculated to destroy the usual proportions and beauty of the composition.

The Corinthian entablature may be reduced to two-ninths, or one-fifth of the height of the column, by the same rules as are given in the Ionic and Composite orders; but where it becomes necessary, or is judged expedient, to make the entablature so small as one-fifth, it will, I apprehend, be best to substitute the Ionic entablature, as Palladio has done in the peristyle of his Olympic Theatre at Vicenza, and in many others of his buildings; or else to retrench the dentils of the cornice, as in one of Serlio's and in Scamozzi's profiles; the part of the cornice under the modillion band, remaining then composed of only the ovolo and ogee, separated by a fillet, as in the temples of Trevi and Scisi in Umbria, mentioned in Palladio's fourth book.

The Corinthian order is proper for all buildings where elegance, gaiety, and magnificence are required. The ancients employed it in temples dedicated to Venus, to Flora, Proserpine, and the nymphs of fountains; because the flowers, foliage, and volutes, with which it is adorned, seemed well adapted to the delicacy and elegance of such deities. Being the most splendid of all the orders, it is extremely proper for the decoration of palaces, public squares, or galleries and arcades surrounding them; for churches dedicated to the Virgin Mary, or to other virgin saints; and on account of its rich, gay, and graceful appearance, it may with propriety be used in theatres, in ball
or banqueting rooms, and in all places consecrated to festive mirth or convivial recreation.

It is not altogether without reason that the hitherto-received as orthodox doctrine of the Five Orders has been of late brought into disrepute. Not only does it authorize, but even insists upon, not only the most servile but the most mechanical copyism. Dispensing with, even prohibiting, any exercise of the artist mind, such system reduces what ought to be design nearly to the level of manufacture. What are termed orders are rather to be regarded as Classes of columns and their entablatures, which, though conforming respectively to certain normal proportions, and preserving certain characteristic details, admit of great, almost illimitable diversity.

Far better would it have been for Modern Classic had the writings of Vitruvius never been brought to light, or else estimated at their real worth, instead of being regarded with superstitious reverence.

The division of the Orders into Five gives either too many or else too few. Too many, because it makes distinct orders of the Corinthian, and that variety of it invented by the Romans, and called the Composite. The same may be said of the modern Tuscan and Doric orders, since they plainly enough belong to one and the same general class: or else, if each strongly-pronounced variety of the same original type is to be accounted as a separate order, the orders might be greatly and also very inconveniently multiplied. There are, for instance, authentic examples of the Ionic which have nothing in common—are altogether dissimilar in expression, except that the capital is voluted. The same may be said of the so-called Corinthian or foliaged capital order, to enumerate all the varieties of which would be no easy task. Let it suffice, then, for comparison's sake, to place only two of them in juxtaposition:
the Tivoli example of Corinthian and that of the Pantheon, or else that exhibited by Chambers himself as the technically-correct representative of the order. Hardly do we need stronger evidence to convince us that it is possible for striking varieties to be produced which, however strongly-marked may be their differences, partake alike of the same generic character.

There are very many examples of antique capitals and other sculpturesque architectural details treasured up in museums (some of them have been edited by Piranesi) which, though only fragments, are well deserving of being studied, not indeed as lessons for beginners, nor as express models for imitation, yet exceedingly useful as studies to those who are capable of profiting by them; at any rate they are suggestive, and it is very possible to derive an excellent idea from what, so far from being faultless, requires to be reshaped. To pretend to improve upon the worthiest examples of the Antique, may, indeed, be justly deemed presumptuous; yet it surely is, or ought to be, allowable, even laudable, to endeavor to compete with them; and he who has formed his taste by thoughtful artistic study may be safely trusted with a privilege which he would hardly abuse—that of being permitted to break away from technical routine without at the same time deviating from what constitutes the æsthetic spirit of his models.

Contrary to what has been urged by some as dissuasive from the artistic liberty here recommended, such liberty would rather stimulate to more diligent æsthetic study. So far from being a hasty, crude and ill-considered effusion of the moment, an idea for treating an Order with some touches of originality and inventive power might be the well-matured result of diligent study. The great mistake on the part of the Italian or Modern Classic school,
and its followers, has been the establishing for the Orders such minute and overstrict rules that, as far as they are concerned, what ought to be design, and give evidence of individual artistic mind, is reduced to what is little better than a mechanical process. Not altogether undeservedly, therefore, has Classic incurred or late, from some, the reproach of servile copyism and wearisome sameness of detail.
OF THE COMPOSITE ORDER.

PLATES XXIII. AND XXIV.

Strictly speaking, the ancients had but four orders; the Composite was not considered by them as a distinct production. Vitruvius expressly tells us, Book IV, Chap. 1, that on Corinthian columns other capitals of various kinds were employed, which nevertheless ought not to change the names of the columns, because their proportions remained still the same.

The moderns, however, have ranked the Composite with the four orders mentioned by Vitruvius, having among the great number of different Composite capitals to be met with in the remains of antiquity, chosen for their model that which has been used in the triumphal arches, in the Temple of Bacchus and at the Baths of Dioclesian: rather, I believe, as agreeing most with the description of Vitruvius, who observes that these capitals were composed of the Ionic, Doric, and Corinthian, than from any preference in point of beauty to many others.

Neither doth it appear that the ancients affected any particular form of entablature to this order; sometimes they made the cornice entirely plain, as in the Temple of Bacchus; at others, enriched with dentils, and differing very little from the Ionic, as in the arch of Septimius Severus; and in the arch of Titus there are both dentils and modillions, the whole form of the profile being the same with that of the Corinthian, as it is executed in most of the antiques at Rome and elsewhere.

The modern architects have varied more in this than in any other of the orders. Abandoned, as De Chambria
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observes, by their guide Vitruvius, and left entirely at large, they have all taken different paths, each following the bent of his own particular fancy. Among them, Serlio has been least successful, having chosen for the model of his entablature that of the fourth order of the Coliseum, a composition too clumsy, even for a Tuscan order. De- lorme, however, has followed his example, and mistaken the columns of the fourth order of the Coliseum, which are Corinthian, for Composite.

Palladio, in his profile, has imitated the cornice of the frontispiece of Nero, and corrected its defects with much judgment. His architrave is likewise taken from the same building, but he has omitted its beautiful frieze, and substituted in its place a swelled one, similar to that of the Basilica of Antoninus. His whole entablature is too low, being only one-fifth of the column, and it is remarkable, that though he has made the column more delicate than in the Corinthian order, yet his entablature is made far more massive, being composed of fewer and much larger parts. In the design given on the second plate of the Composite order, Palladio’s measures have been closely observed; but if the frieze were augmented, so as to raise the entablature to two-ninths of the column, made upright, and enriched with ornaments, it would be more perfect, and might be employed with success in works of large dimensions, which require to be seen from a considerable distance; but for interior decorations, or in places where much delicacy is required, the composition is somewhat too massive.

Palladio’s capital and base are imitations from the arch of Titus. The latter of them is designed without a plinth, as it is executed in the Temple of Vesta at Tivoli, and joined to the cornice of the pedestal by a slope, which not only has a bad effect, but is in itself defective, because the
base is thus divested of its principal member, and rendered disproportionate.

Vignola's Composite has nothing in it remarkable. The architrave differs but little from that of the frontpiece of Nero, and the cornice is nearly the same with that of his Ionic order, the principal difference consisting in the transposition of some moldings, and enlargement of the dentils; both which seem rather alterations for the worse than improvements.

Scamozzi's entablature being, like Palladio's only one-fifth of the column and much divided, has a trifling appearance. The cornice, however, is, upon the whole, well composed, and in a great measure imitated from that of the third order of the Coliseum; the capital is much like Palladio's, and the base is Attic, enriched with astragals, as at the Basilica of Antoninus.

The design which I have given in the first plate of the Composite order, is an invention of my own, in which I have attempted to avoid the faults, and unite the perfections, of those above mentioned; how far with success is left to the reader's determination, and, at any rate, recourse may still be had to Palladio, Scamozzi, or Vignola, as heretofore. The height of the column is twenty modules, that of the entablature five; the base is Attic, and its measures are the same as in the Doric or Ionic orders, but, as the module is less, all its parts are of course proportionably more delicate. The shaft is enriched with flutings, which may either be to the number of twenty or of twenty-four, as on the Ionic column; for there is no reason why, in different orders, their number should either be augmented or diminished; the module being less, the flutes will likewise be less, and correspond exactly with the character of the rest of the composition.

The capital is of the kind which all the moderns have
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DESIGNS FOR WINDOWS.

PLATE XXXVII
employed in this order, being enriched with leaves of the acanthus, as all the antique capitals of this sort are. With regard to the method of tracing it, few directions will suffice, for the designs are exactly drawn and figured. The curvatures of the abacus are described from the summits of equilateral triangles; the projection of the volutes is determined by a line drawn from the extremity of the astragal to the extremity of a horn of the abacus; and the projection of the leaves is determined by another line drawn parallel to that from the fillet, under the astragal.

The manner of executing both these and all other enriched capitals here is, generally speaking, bad. I do not, however, mean to accuse our workmen of incapacity; many of them are excellent, and in neatness of execution out-do, perhaps, those of any other country; but, sometimes from the parsimony of their employers, and in some degree, perhaps, for want of thorough skill and facility in design, their performances are often insipid without intention or effect, and by no means expressive either of the taste or intelligence of the performer.

Many even of our greatest architects have too much neglected the detail, having employed their attention wholly on the general disposition of their composition. This neglect, though authorized by great examples, ought by no means to be imitated. It is the business of the architect to attend to the minutest objects, as well as to the most considerable. If the entire execution of the fabric be left to his direction, the faults that are committed will, of course, be stated to his account, and therefore it will be prudent in him to select the ablest workmen, and to furnish them with proper models and precise instructions, in which he will show the extent of his capacity, and distinguish himself from the common herd of those who, without due qualifications, assume the title of architects. The most masterly disposition, incorrectly executed, can
only be considered as a sketch in painting, or as an excellent piece of music miserably murdered by village fiddlers, equally destitute of taste and powers of execution.

Care must be taken in Composite as well as in Corinthian capitals, that the feet of the lower leaves do not project beyond the upper part of the shaft of the column, as at St. Carlo in the Corso at Rome, and at the Banqueting-house in London; for nothing can be uglier. Neither are these leaves as they mount to bend forwards, as in many of the antiques, and in some modern buildings, because they then hide a considerable part of the upper row of leaves, and give a stunted disagreeable form to the whole capital. The different divisions of the acanthus leaf, and bunches of olive or parsley which compose the total of each leaf, must be firmly marked, and massed in a very distinct manner; the stems that spring from between the upper leaves are to be kept low upon the vase of the capital while rising between the leaves, then spring gradually forwards, to form the different volutes; and the ornaments, which sometimes are used, to adorn the sides of the angular volutes, are never to project beyond the fillets between which they are confined. These are all the directions that well can be given in writing, but those who would excel in ornamental works of this kind or any other, must consult the foliages and flowers of nature, the buildings, ancient or modern, in which they have been executed with care and judgment. The Ionic, Composite and Corinthian capitals to be seen in various parts of Somerset Place, were copied from models executed under my direction at Rome, and imitated, both in point of forms and manner of workmanship, from the choicest antique originals. They may serve as guides to such as have no opportunity of examining the buildings from which these models were collected.
The parts of the entablature bear the same proportion to each other as in the Ionic and Tuscan orders. The architrave is nearly of the same form with those of Palladio and Vignola, and that of the Basilica of Antoninus. The frieze is enriched with foliages, in imitation of those on the frieze of Nero's frontispiece, of which the most prominent parts should never project more than doth the uppermost molding of the architrave under them.

The cornice is imitated from Scamozzi, and differs from the Corinthian only in the modillions, which are square, and composed of two fascias. The soffit of the intervals between the dentils must be hollowed upwards behind the little fillet in front, as they are in most of the antiques, which occasions a dark shade that marks the dentil more distinctly; and the same method must be observed in the Ionic and Corinthian orders, for the same reason. The roses in the soffit of the corona are not to project beyond its horizontal surface, and care must be taken not to vary them so much as at St. Peter's of the Vatican, because the unity of the composition suffers thereby; the modillions or dentils might, with almost as much propriety, be varied. It will be proper, therefore, in small composition, to make them all alike, as they are in most of the antiques; that so they may not strike nor occupy the attention of the beholder as objects for distinct contemplation, but as parts of one great whole. In larger compositions, they may be of two kinds, but similar in outline and dimension, which occasions more variety, yet without confusion; for then the images succeed each other so rapidly, and are from their similitude, so instantaneously comprehended, that the third impression takes place before the first is in any degree obliterated; so that nearly the same effect is produced as by a continued succession of the same object.

But though this variety be practised, and is to a certain
degree allowable, in small objects which the eye peruses at a glance, or in such as, being merely accessory, may or may not be introduced, and do not affect the general outline or bent of the composition, yet it is by no means to be tolerated in columns and other principal or essential parts, which, from the number of their constituent points, are not conveyed to the mind at once, either with ease or perfect clearness, and therefore, if varied, cannot fail of exciting confused ideas.

In the fourth book of Palladio we find, among other ancient temples one, of which the portico consists of four Corinthian columns and two pilasters. The pilasters are fluted in a perpendicular direction; two of the columns are fluted spirally, and the other two have the shafts covered with laurel leaves—a variety absurd as unpleasing, which totally destroys the general effect of the composition, and conveys no idea but that of a structure made up of discordant fragments, as they happened to come in the builder's way.

The Romans used the Composite order more frequently in their triumphal arches than in any other buildings; meaning, as Serlio supposes, to express their dominion over those nations that invented the orders of which this is composed. It may, says Le Clerc, be used with propriety wherever elegance and magnificence are to be united, but it is more particularly adapted to buildings designed to commemorate signal events, or celebrate the virtues and achievements of conquerors and legislators, because the capitals and other ornaments may be composed of emblems and of elusive representations agreeable to the custom of the ancients, as appears by very many fragments of capitals and other members of architecture scattered about in different parts of Rome and elsewhere. Some of these are represented in the second plate of the Composite order,
and more may be found in the works of Montano, Le Clerc, Piranesi, and others, of whose works the reader will find a catalogue in the ABECEDARIO pittorico.

The Composite entablature may be reduced to two-nineths of the column, which, to avoid fractions, I shall call four modules and a half, by making the module only nine-tenths of the semi-diameter, and observing the same measures as are figured in the design, and there then will be a dentil in the outward angle, as in the Ionic order. It may likewise, if required, be reduced to one-fifth, by making the module four-fifths of the semi-diameter; though, in cases where it may be necessary to diminish so much, it will always be better to employ the Ionic cornice, which, being composed of fewer parts, will still retain an air of grandeur, notwithstanding the smallness of the general mass.

Most authors give to the Composite order the last place, as being last invented, and a compound which, of course, ought to be preceded by all the simples. I have, however, followed Scamozzi's arrangement, his appearing to me the most natural; for his orders succeed each other according to their degree of strength, and in the progression that must absolutely be observed whenever they are to be employed together.
OF PILASTERS.

PLATE XXV.

Pilasters are, I believe, a Roman invention, and certainly an improvement. The Greeks employed antæ in their temples, to receive the architraves where they entered upon the walls of the cell. These, though they were in one direction of equal diameter with the columns of the front, were in flank extravagantly thin in proportion to their height, and neither their bases nor capitals bore any resemblance to those of the columns they accompanied. The Roman artists, disgusted, probably, with the meagre aspect of these antæ, and the want of accord in their bases and capitals, substituted pilasters in their places, which, being proportioned and decorated in the same manner with the columns, are certainly more seemly, and preserve the unity of the composition much better.

Pilasters differ from columns in their plan only, which is square, as that of the column is round. Their bases, capitals, and entablatures have the same parts, with all the same heights and projections, as those of columns, and they are distinguished in the same manner by the names of Tuscan, Doric, Ionic, Composite and Corinthian.

Of the two the column is, doubtless, most perfect. Nevertheless, there are occasions in which pilasters may be employed with great propriety; and some where they are, on various accounts, even preferable to columns.

Engaged pilasters are employed in churches, galleries, halls, and other interior decorations, to save room for as they seldom project beyond the solid of the walls more than
one-quarter of their diameter, they do not occupy near so much space even as engaged columns. They are likewise employed in exterior decorations; sometimes alone, instead of columns on account of their being less expensive. They may likewise be employed instead of columns, detached, to form peristyles and porticoes, but there is no instance of this, that I remember, in all the remains of antiquity; neither has any modern architect, I believe, been so destitute of taste as to put it in practice.

When pilasters are used alone, as principal in the composition, they should project one-quarter of their diameter beyond the walls, as Scamozzi teaches. Mutilations are, on all occasions, studiously to be avoided, as being destructive of perfection, and strong indications either of inattention or ignorance in the composer.

When pilasters are placed behind columns, and very near them, they need not project above one-eighth of their diameter, or even less, excepting there should be impost or continued cornices in the inter-pilaster; in which case what has been said above must be attended to. But if they be far behind the columns, as in porticoes, porches, and peristyles, they should project one-sixth of their diameter at least; and when they are on a line with the columns, their projection is to be regulated by that of the columns, and consequently it never can be less than a semi-diameter, even when the columns are engaged as much as possible. This extraordinary projection, however, will occasion no very great deformity, as the largest apparent breadth of the pilaster will exceed the least only in the ratio of eleven to ten, or thereabouts. But if columns be detached, the angular pilaster should always be coupled with a column, to hide its inner flank.

It is sometimes customary to execute pilasters without any diminution; in the antiques there are several instances
thereof, as well as of the contrary practice, and Palladio, Vignola, Inigo Jones, and many of the greatest architects, have frequently done so. Nevertheless, it is certain that diminished pilasters are, on many accounts, much preferable. There is more variety in their form; their capitals are better proportioned, both in the whole and in their parts, particularly in the Composite and Corinthian orders; and the irregularities occasioned by the passage of the architraves, from diminished columns to undiminished pilasters, are thereby avoided; as are likewise the difficulties of regularly distributing the modillions and other parts of the entablature, either when the pilasters are alone, or accompanied with columns.

The shafts of pilasters are sometimes adorned with flutings in the same manner as those of columns, the plan of which may be a trifle above a semi-circle, and they must be to the number of seven on each face, which makes them nearly of the same size with those of the columns. The interval between them must be either one-third or one-fourth of the flute in breadth, and when the pilaster is placed on the pavement, or liable to be broken by the touch of passengers, the angle may be rounded off, in the form of an astragal; between which and the adjoining flute, there must be a fillet or interval of the same size with the rest, as in the porch of the Pantheon at Rome.

The flutes may, like those of columns, be filled with cablings to one-third of their height, either plain, and shaped like an astragal, or enriched, according as the rest of the composition is simple or much adorned. Scamozzi is of opinion that there should be no fluting on the sides of engaged pilasters, but only in front, and, whenever cornices or imposts are continued home to the pilaster, this should particularly be attended to, that the different moldings of these members, by entering into the cavities of the
flutes, may not be cut off in irregular and disagreeable forms. But if the flanks of the pilaster are entirely free, it may be as well to enrich them in the same manner as the front, provided the flutes can be so distributed as to have a fillet or interval adjoining to the wall; which is always necessary to mark the true shape of the pilaster distinctly.

The capitals of Tuscan or Doric pilasters are profiled in the same manner as those of the respective columns; but in the capitals of the other orders there are some trifling differences to be observed. In the antique Ionic capital, the extraordinary projection of the ovolo makes it necessary, either to bend it inwards considerably towards the extremities, that it may pass behind the volutes, or instead of keeping the volutes flat in front, as they commonly are in the antique, to twist them outwards till they give room for the passage of the ovolo. Le Clerc thinks the latter of these expedients the best, and that the artifice may not be too striking, the projection of the ovolo may be considerably diminished, as in the annexed design, which, as the molding can be seen in front only, will occasion no disagreeable effect.

What has been said with regard to the passage of the ovolo behind the volutes in the Ionic order, is likewise to be remembered in the Composite; and in the Corinthian the lip or edge of the vase or basket may be bent a little inwards towards its extremities, by which means it will easily pass behind the volutes. The leaves in the Corinthian and Composite capitals must not project beyond the top of the shaft, as they do at St. Carlo in the Corso at Rome; but the diameter of the capital must be exactly the same as that of the top of the shaft. And to make out the thickness of the small bottom leaves, their edges may be bent a trifle outwards, and the large angular leaves may be directed inwards, in their approach towards them, as in the
annexed design, and as they are executed in the church of the Roman College at Rome. Where the small leaves have a considerable thickness, though the diameter of the capital is exactly the same as that of the shaft, in each front of the Composite or Corinthian pilaster-capital, there must be two small leaves, with one entire and two half large ones. They must be either of olive, acanthus, parsley, or laurel, massed, divided, and wrought in the same manner as those of the columns are the only difference being, that they will be somewhat broader.

The employing half, or other parts of pilasters that meet, and, as it were, penetrate each other in inward or outward angles, should, as much as possible, be avoided, because it generally occasions several irregularities in the entablatures, and sometimes in the capitals also. Particular care must be taken never to introduce more than one of these breaks in the same place, for more can never be necessary. In many of the churches at Rome, we see half a dozen of them together, which produces a long series of undulated capitals and bases and a number of mutilated parts in the entablature, than which nothing can be more confused or disagreeable.
OF PERSIANS AND CARYATIDES.

PLATE XXVI.

Besides columns and pilasters, it is sometimes customary to employ representations of the human figure, to support entablatures in buildings. The male figures are called Persians, Telamones, or Atlantides, and the female Caryans or Caryatides. The origin of this custom, Vitruvius tells us, is as follows:

The inhabitants of Carya, a city of the Peloponnesus, having joined the Persians in a war against the rest of the Greeks, and that war being terminated by the defeat of the Persians, the Greeks commenced hostilities against the Caryates, took their city, demolished it, and putting all the males to the sword, carried the females into captivity; and to treat them with still greater ignominy, they forbade the ladies to divest themselves of their robes, or any of their ornaments; that so they might not only be once led in triumph, but in a manner suffer the mortification of a triumph all their lives after, by appearing constantly in the same dress as on the triumphal day. And further, as an everlasting testimony of the punishment inflicted on the Caryates, and to inform posterity what had been the nature of their chastisement, the architects of that time, instead of columns, employed the representations of these women, to support the entablatures of their public buildings.

The Lacedæmonians did the same thing after the battle of Platea, erecting with the spoils taken from the enemy a gallery which they called Persian; wherein statues, in the form of captive Persians, with their usual dresses, supported the arches, intending thereby to punish that nation
in such a manner as its pride had merited, and to leave posterity a monument of the valor and victories of the Lacedæmonians.

The introduction of figures of men and animals to support burdens in buildings or otherwise, had certainly an earlier origin than that ascribed to it by Vitruvius. It seems to have been a very early and favorite idea among several people of the remotest antiquity. Homer mentions the practice in the seventh book of the Odyssey, and I think, in one or more other places of his poems. Hiram's molten sea was supported by twelve bulls, and on the walls of the oracle he placed alternate cherubim and palm-trees, supporting wreaths of flowers, and probably the ceiling. In the sepulchre of King Osymandias, which, as Diodorus Siculus relates, was ten furlongs in circuit; there was a stone hall, forming a space of four hundred feet every way, of which the roof instead of pillars was supported by animals, each of a single stone, and twenty-four feet high, being carved in the ancient Egyptian manner. The roof was also entirely of stone, composed of stones twelve feet square; the whole being colored to represent an azure sky, bespangled with stars. Of the number or nature of these animals, nothing is said; but if the whole space was covered, more than one thousand would have been requisite to support the roof, and more than a thousand stones to form it. In several Indian buildings too, supposed to be of great antiquity, may be observed figures of men and animals supporting the roofs, after the manner described in the sepulchre of Osymandias; particularly in that cut in the solid rock near Bambay, usually called the Elephanta.

"It is not customary now, as formerly," says Le Clerc, "to represent Caryatides with attributes of slavery and servitude. Such characters are too injurious to the Fair. On the contrary, they are at present considered as the rich-
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These, most valued ornaments of buildings, and represented under the figures of Prudence, Wisdom, Justice, Temperance, etc."

Freart de Chambria blames this practice, which he considers as the effect of inadvertency in the architects who first introduced it; observing, that if they had sufficiently reflected on the text of Vitruvius, with regard to the origin of Caryatides, they would have perceived the impropriety of employing the representations of saints and angels, loaded like slaves, with cornices and other heavy burdens; and likewise, that of employing the Caryatic order promiscuously in all sorts of buildings, particularly in sacred structures, which are the houses of God and asylums of mercy, where vengeance and slavery ought never to appear.

The ancients, says the same author, made frequent use of Caryatic and Persian figures, and delighted in diversifying them in a thousand manners. The modern artists have followed their example, and there is a great variety of compositions of this kind to be met with in different parts of Europe, of some of which designs are exhibited in the annexed plate, and others may be invented and adapted to different purposes with great propriety, provided the figures introduced be analogous to the subject, as Mr. Ware observes, and seem at least a necessary part in the composition. Thus, says Le Clerc, if they are employed to support the covering of a throne, they may be represented under the figures and symbols of heroic virtues; if to adorn a sacred building, they must have an affinity to religion; and when they are placed in banqueting-rooms, ball-rooms, or other apartments of recreation, they must be of kinds proper to inspire mirth and promote festivity.

In composing them, particular care must be taken to avoid indecent attitudes, distorted features, and all kinds of monstrous or horrid productions, of which there are
such frequent instances in the works of our northern predecessors. On the contrary, the attitudes must be simple and graceful; the countenances, though varied, always pleasing, and strongly marked with the expression peculiar to the occasion, or the object represented. There must be no variety in the general form or outline of the different figures employed in the same composition, and but little flutter in the draperies, which ought to sit close to the bodies of the figures, with folds contrived to express distinctly both their action and shape. Le Clerc observes, that they should always have their legs close together and the arms close to the body or head, that so they may have as much as possible the shape of columns, whose office they are to perform; and it may be added, that for the same reason, their attitudes should be as nearly perpendicular as can conveniently be, without giving a stiff constrained air to the figures.

It is sometimes customary to employ Terms, instead of Caryatides or Persians, to support the entablatures of gates, monuments, chimney-pieces, and such like compositions. These figures owe their origin to the stones used by the ancients to mark the limits of each particular person's possessions. Numa Pompilius, to render these inviolable, and prevent encroachments, erected the Terminus into a deity, instituted festivals and sacrifices to his honor, and built a temple on the Tarpeian Mount, which he dedicated to him, and in which he was represented under the figure of a stone.

In process of time, however, the God Terminus was represented with a human head, placed on a post or stone, shaped like an inverted obelisk; which being on particular solemnities adorned with garlands, composed altogether a very pleasing form; to the imitation of which, may with great probability be attributed the introduction of these
ornaments into building, where they have been varied into a great diversity of shapes. I have occasionally, in the course of this work, given some designs of them; and many others may be invented, and adapted to the particular purposes for which they shall be intended.

In consideration of their origin, the Termini are proper ornaments in gardens and in fields, where the upper part of them may represent Jupiter, who, in the remoter ages of antiquity, was protector of boundaries; or some of the rural deities, as Pan, Flora, Pomona, Vertumnus, Ceres, Priapus, Faunus, Sylvanus, Nymphs, and Satyrs. Mr. Ware recommends the use of them as boundaries to counties, where they may be enriched with ornaments allusive to the produce, manufacture, and commerce of each respective county.

The first three figures in the annexed plate XXVI, of Persians and Caryatides, are copied from Candelabra in St. Peter's of the Vatican. They are cast from models of Michael Angelo Buonarotii, and repaired either by himself or doubtless under his direction, for the workmanship is very perfect. Fig. 2 may be employed in buildings, but the others are more proper for the angles of covered ceilings, or other such ornamental works, being not unlike some introduced by the Caracci, in the Farnesian ceilings at Rome. No. 4 is a copy of one of the figures that surround the choir in the cathedral of Milan, which are the work of Andrea Biffi, a celebrated Milanese sculptor. No. 5 is executed in the Judgment-Hall of the Stadt-House of Amsterdam, by Artus Quellinus. No. 6 is an admired work of Michael Angelo, now in the Villa Ludovisi at Rome. No. 7 is, in part, by the same hand, and executed, from the waist upward, in the monument of Pope Julius the Second, in the church of St. Peter ad Vincula, at
Rome. No. 8 is one of those executed by Jean Gougeon, in the Swiss Guard-Room of the Old Louvre, at Paris, as has before been mentioned. Nos. 9 and 10 are taken from paintings of Daniel de Volterra, in the Church of the Trinita dei Monti, at Rome. No. 11 is a figure in basso relievo, on the Goldsmiths' arch at Rome; and No. 12 is copied from an original design of Polidoro de Caravaggio, now in my possession.
OF INTERCOLUMNIATIONS.

PLATES XXVII AND XXVIII

Columns are either engaged or insulated, and when insulated they are either placed very near the walls or at some considerable distance from them.

With regard to engaged columns, or such as are near the walls of a building, the intercolumniations are not limited, but depend on the width of the arches, windows, niches or other objects, and their decorations, placed within them. But columns that are entirely detached, and perform alone the office of supporting the entablature, as in peristyles, porches, and galleries, must be near each other, both for the sake of real and apparent solidity.

Among these different intercolumniations, the pycnostyle and systyle are too narrow, and though M. Perrault imagines, from their frequency in the remains of antiquity, that the ancients delighted more in them than in any of the others, yet, I believe their use must be ascribed rather to necessity than to choice; for as the architraves were composed of single stones or blocks of marble, extending from the axis of one column to that of another, it would have been difficult to find blocks of a sufficient length for diastyle intervals in large buildings.

With regard to the aëostyle and Tuscan intercolumniations, they are by much too wide, either for beauty or strength, and can only be used in rustic structures, where the architraves are of wood, and where convenience or economy takes place of all other considerations; nor is the diastyle sufficiently solid in large compositions. The eustyle, therefore, being a medium between the narrow and
wide intervals, and at the same time being both spacious and solid, has been preferred by the ancients as well as moderns to any of the rest.

Sometimes, on account of the windows, doors, niches, or other decorations, which correspond with the intercolumniations in the peristyle or gallery, it is not possible to make the intervals so narrow as eustyle, or even as diastyle; wherefore the moderns, authorized by some few examples of antiquity, where grouped columns are employed, have invented a manner of disposing them, by Perrault, called Aræostyle, which admits of a larger interval, without any detriment to the apparent solidity of the building. This kind of disposition is composed of two systyle intercolumniations, the column that separates them being approached towards one of those at the extremities, sufficient room being only left between them for the projection of the capitals, so that the great space is three diameters and a half wide, and the small one only half a diameter.

The simplest and best manner of proceeding is to observe a regular distribution in the entablature, without any alterations in its measures beginning at the two extremities of the building, by which method the modillions will answer to the middle of every other column, and be so near the middle of the intermediate ones that the difference will not easily be perceivable. The only inconvenience arising from this practice is, that the three central intercolumniations of the composition will be broader by one-third of a module, than is necessary for eleven modillions; but this is a very trifling difference, easily divided and rendered imperceptible if the extent be anything considerable.

In the Doric order, grouped columns are not so easily managed; and though they have been employed in many considerable buildings, and by eminent architects, yet,
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Windows.

PLATE XXXIX
in very few of them have they been properly treated. At the church of St. Gervais, and several other buildings in Paris, the metope between the coupled columns is much broader than any of the others; at the Minims near the Place Royale, that the metope might be square, the bases of the columns are made to penetrate each other; at the castle of Vincennes, the height of the frieze is considerably augmented for the same reason; and Scamozzi, wherever he joins together two Doric columns or pilasters, omits the base of one of them, substituting a plinth in its place, that so the interval may not be too broad to admit of a regular metope.

When buildings are to be executed on a small scale, as is frequently the case of temples, and of other inventions, used for the ornament of gardens, it will be found necessary to make the intercolumniations, or at least the central one, broader in proportion to the diameter of the columns than usual; for when the columns are placed nearer each other than three feet, there is not room for a fat person to pass between them.

The rules laid down by Vitruvius for regulating the several modes of intercolumniation, or spacing of columns according to certain fixed measurements and names, are of no particular value whatever. The intervals between the columns or width of the intercolumns must depend upon and be governed by a variety of circumstances connected with each particular case, and on the character of the general composition, which also has to be taken into account. As regards the proportions of the intercolumns, it surely makes a very great difference whether the columns be six or ten diameters in height. As regards the proportions of intercolumns, one tolerably safe general rule is that they should not be less than three nor much more than four squares in height. Even that leaves, however, a wide
margin for exceptions, for in what professes to be art all rules of the kind ought to be looked upon as no more than indefinite normal directions. What further may here be remarked is that it is a solecism to make use of the term intercolumniation, in the plural number in the sense of intercolumn, for we might with equal propriety call columns columniations, or window fenestrations.
OF PEDESTALS.

PLATES XXVII. AND XXVIII.

A pedestal, like a column or an entablature, is composed of three principal parts, which are the base, the die and the cornice. The die is always nearly of the same figure, being constantly either a cube or a paralleloiped; but the base and cornice are varied, and adorned with more or fewer moldings according to the simplicity or richness of the composition in which the pedestal is employed. Hence pedestals are, like columns, distinguished by the names of Tuscan, Doric, Ionic, Composite and Corinthian.

Some authors are very averse to pedestals, and compare a column raised on a pedestal to a man mounted on stilts, imagining that they were first introduced merely through necessity, and for want of columns of a sufficient length.

It is, indeed true that the ancients often made use of artifices to lengthen their columns, as appears by some that are in the Baptistry of Constantine, at Rome, the shafts of which being too short for the building, were lengthened and joined to their bases by an undulated sweep, adorned with acanthus leaves, and the same expedient has been made use of in some fragments which were discovered a few years ago at Nismes, contiguous to the Temple of Diana. Nevertheless, it doth not seem proper to comprehend pedestals in the number of these artifices, since there are many occasions on which they are evidently necessary, and some in which the order, were it not so raised, would lose much of its beautiful appearance. Thus, within our churches, if the columns supporting the vault were placed immediately on the ground, the seats would hide their
bases and a good part of their shafts; and in the theatres of the ancients, if the columns of the scene had been placed immediately on the stage, the actors would have hid a considerable part of them from the audience; for which reason it was usual to raise them on very high pedestals, as was likewise customary in their triumphal arches, and in most of their temples, the columns were placed on a basement or continued pedestal, that so the whole order might be exposed to view, notwithstanding the crowds of people with which these places were frequently surrounded. And the same reason will authorize the same practice in our churches, theatres, courts of justice, or other public buildings where crowds frequently assemble.

In interior decorations, where, generally speaking, grandeur of style is not to be aimed at, a pedestal diminishes the parts of the order which, otherwise, might appear too clumsy; and has the farther advantage of placing the columns in a more favorable view, by raising their base nearer to the level of the spectator's eye. And in a second order of arcades there is no avoiding pedestals, as without them it is impossible to give the arches any tolerable proportion.

In the designs Plate XXIX. given of arches with pedestals, the pedestals are all of the same height, each of them being three-tenths of the height of their respective columns; but it is not necessary to adhere always to this proportion; they may be higher or lower, as the occasion shall require. It is, however, to be observed, that when pedestals are profiled under each column, and the dye is much less than a square in height, the pedestal has a clumsy appearance; and when a pedestal of the same kind exceeds two-thirds of the height of the column, it has a lean, unsolid, tottering aspect. But if they are continued without any breaks, this need not be attended to; though
indeed there are very few occasions in which pedestals higher than one-third of the column ought to be suffered, as they lessen too much the parts of the order, and become themselves too principal in the composition.

With regards to the divisions of the pedestal, if the whole height be divided into nine parts, one of them may be given to the height of the cornice, two to the base, and the remaining six to the dye; or if the pedestal is lower than ordinary, its height may be divided into eight parts only, of which one may be given to the cornice, two to the base, and five to the dye, as Palladio has done in his Corinthian order, and Perrault in all the orders.

The plan of the dye is always made equal to that of the plinth of the column, the projection of the cornice may be equal to its height, and the base, being divided into three parts, two of them will be for the height of the plinth, and one for the moldings, of which the projection must be somewhat less than the projection of the cornice, that so the whole base may be covered and sheltered by it,—a precaution which Scamozzi has observed in all his designs, though Palladio has neglected it in the greatest part of his, the palace of the Porti, and one or two other buildings in the Vicentine, excepted.

These measures are common to all pedestals, and in the annexed plate there are designs of proper ones for each other, in which the forms and dimensions of the minuter parts are accurately drawn and figured.

In my designs of pedestals I have represented them under the proportions observed by me in arches with pedestals, but when it is necessary to vary the general height, the measures of the particular members may easily be determined, by dividing the whole height in the Tuscan order into 4 1/5 parts, in the Doric into 4 4/5, in the Ionic
into 5 2/5, and in the Composite or Corinthian into 6 parts, making use of one of these parts as the module, and determining the heights and projections of the different members according to the figures marked in the designs.
OF ARCADES AND ARCHES.

PLATES XXV., XXIX. AND XXX.

There are various manners of decorating arches; sometimes their piers are rusticated, at others they are adorned with pilasters, columns, terms, or Caryatides; and on some occasions they are made sufficiently broad to admit niches or windows. The circular part of the aperture is either surrounded with rustic arch stones, or with an archivolt, enriched with moldings, which in the centre is generally interrupted by a key-stone in form of a console, a mask, or some other proper ornament of sculpture, serving, at the same time, as a key to the arch, and as a seemingly necessary support to the architrave of the order. Sometimes the archivolt springs from an impost placed at the top of the pier, and at others from columns with their regular entablature or architrave cornice placed on each side of the arch, and there are some instances of arcades without any piers, the arches being turned from single or coupled columns, sometimes with, sometimes without entablatures; as in the Temple of Faunus at Rome, and at the Royal Exchange in London, which however is a practice seldom to be imitated, being neither solid nor handsome.

When arches are large the key-stone should never be omitted, but cut into the form of a console, and carried close up under the soffit of the architrave; which by reason of its extraordinary length of bearing, requires a support in the middle. And if the columns that adorn the piers are detached, as in the triumphal arches at Rome, it is necessary to break the entablature over them, making its
projection in the interval no more than if there were no columns at all; for, though the architrave might be made sufficiently solid, yet it would be disagreeable to see so great a length of entablature hanging in the air, without any prop or apparent support.

Vignola in all his orders, excepting the Corinthian, makes the height of the arch double its width. His piers, when the columns have no pedestals, are always three modules, and four modules when they have pedestals; his imposts are all of them one module in height, and the archivolts are either one module, or half a module, as they belong to arches with or without pedestals.

Palladio has given designs only of arches with pedestals. Their height is from one and two-thirds to two and a half of their width, and his piers are all of them nearly three modules and three-quarters, excepting in the Composite order, where they are four and four-fifths.

Scamozzi’s Tuscan arch is, in height, somewhat less than double its width, which height he increases gradually till, in the Corinthian arch with pedestals, it is nearly twice and one-half in width. His piers diminish in proportion to the increase of delicacy in the orders. His Tuscan pier in arches without pedestals being four modules and a half, and his Corinthian only three modules and three-quarters. In arches with pedestals, his Tuscan pier is four modules and two-thirds, and his Corinthian only four modules. His imposts and archivolts are likewise varied, and their proportions are relative to the width of the arches, and the height of the piers, so that they are considerably larger in arches with pedestals than in those without.

Vignola’s arches, being all of the same proportion, do not characterize the difference of the orders. His piers in arches without pedestals are too narrow, and his archivolts too slight. In his Doric arch without pedestals, the dis-
tance between the arch and architrave of the order is too considerable, as it is indeed in several other of his arches; and in his Doric with pedestals, the piers are much too broad. Palladio makes too great a difference between the height of his arches. His Tuscan and Doric are too low, his Corinthian and Composite much too high. His piers bear a greater proportion to the void of the arch, in the delicate orders than in the massive. His archivolts are slender, his imposts clumsy and ill profiled. The apertures of Scamozzi's arches are well proportioned, except in the Corinthian order, where they are, like Palladio's, of an excessive height. His piers bear a proper relation to the arches, as do likewise his imposts and archivolts, excepting in the arches with pedestals, where they are much too predominant in regard to the other parts of his composition, and the members of which they consist are larger than those of the cornice of the order, a fault which Palladio has likewise been guilty of to a very great excess.

In the annexed Plates XXVIII. and XXIX. are given designs of arches in all the orders, wherein it has been attempted to avoid the faults with which the above mentioned masters are charged. In the arches without pedestals, their height is made equal to the length of the column; which height is, in the Tuscan and Doric orders, something less than double the width of the arch, and in the Corinthian or Composite something more than double; and in arches with pedestals nearly the same proportion between the height and the width of the aperture is observed.

The proportions of the Tuscan arch may be changed if required, and the height of the aperture be made nearest to double its width, which, as there are neither modillions nor dentils in the cornice, may be done without changing the proportion of any part of the order.
Should the breadths which I have given to the piers of all the above-mentioned arches, though they seem to me well-proportioned, be thought too considerable, they may be diminished, and in arches without pedestals, be reduced to three modules and three-quarters, like those of Palladio, observing, in such case, to reduce the archivolts to twenty-six minutes, instead of the thirty which they have in the annexed designs. The piers of arches with pedestals may likewise be lessened, and instead of four modules and a half, be only four in breadth, which may be done without changing the dimensions of the archivolts; nor need, in either of the cases, the impost of any of the arches be altered.

In Plate XXX. of arches are six different designs of arcades, all of them composed by celebrated masters, and perfect in their kind. Fig. 1, though less so than the rest, is, notwithstanding, the invention of Serlio, who recommends that manner of arching in cases where columns are already provided, as it frequently happens in places abounding in antiquities, of which the length is not sufficient for the intended purpose. And he observes that where these arches are used, it will be necessary to secure them with strong abutments at each end. The great aperture of this kind of arch may be from four and a half to five diameters of the column in width, and in height double that dimension; the width of the small aperture must never exceed two-thirds of that of the large one, and its height is determined by the height of the columns. To me it seems that this sort of disposition might be considerably improved by adding an architrave cornice or an entablature to the column, by omitting the rustics, and by surrounding the arches with archivolts.

Fig. 2 is of Vignola's invention, and executed by him in the Cortile of the castle at Caprarola. The arches are, in
height, somewhat more than twice their width; the distance from the arch to the top of the cornice is equal to one-third of the height of the arch. The breadth of the pier is equal to the width of the arch; and the aperture of the window occupies nearly one-third of that breadth. Fig. 3 is an invention of Bramante, and executed in the Garden of the Belvedere at Rome. The height of the arch is a trifle more than twice its width; the breadth of the pier is equal to the width of the arch; and, being divided into twelve parts, two of them are given to the parts of the pier supporting the archivolts, four to the two columns, two to the intervals between the niche and the columns, and four to the niche. The height of the pedestal is half the diameter of the arch; the columns are ten diameters in height, and the height of the entablature is one-quarter of the height of the columns; the impost and archivolt, are, each of them, equal to half a diameter of the column. Fig. 4 is very common in the works of Palladio, and has been often imitated by Inigo Jones. The height of the arch may be about twice its width, and the breadth of the pier should never be less than one, nor more than two-thirds, of the width of the arch. Fig. 5 is a design of Vignola, executed at Monte Dragone, a seat of the Princes Borgese, near Frascati. The height of the arch is something more than twice its width, and the breadth of the pier, including the columns that support the arch, is a trifle less than the width of the arch itself. Fig. 6 is an invention of Palladio, and executed by him in the Basilica at Vicenza. The most beautiful proportion for compositions of this kind is, that the aperture of the arch be in height twice its width; that the breadth of the pier does not exceed that of the arch, nor be much less; that the small order be in height two-thirds of the large columns, which height being divided into nine parts, eight of them
must be for the height of the column, and the ninth for the height of the architrave cornice, two-fifths of which should be for the architrave, and three for the cornice. The breadth of the archivolt should be equal to the superior diameter of the small columns, and the keystone, at its bottom, must never exceed the same breadth.
OF ORDERS ABOVE ORDERS.

PLATES XXXI. AND XXXII.

When two or more orders are employed, and placed upon each other in a building, the laws of solidity require that the strongest should be placed lowermost; wherefore the Tuscan is to support the Doric, the Doric the Ionic, the Ionic the Composite or Corinthian, and the Composite the Corinthian only.

This rule, however, has not always been strictly adhered to; most authors place the Composite above the Corinthian, and we find it so disposed in many modern buildings. There are likewise examples where the same order is repeated; as at the theatre of Statilius Taurus and the Coliseum, and there are others where an intermediate order is omitted, and the Ionic placed on the Tuscan, or the Corinthian on the Doric; but none of these practices are regular. The first of them is an evident trespass against the rules of solidity, and should never be imitated; the second occasions a tiresome uniformity; and the last cannot be effected without several disagreeable irregularities; for if the diameter of the superior order be in the same proportion to that of the inferior, as if the succession were regular, the upper order will be higher than the lower one; and if the diameter be lessened, in order to diminish the height, the column will be too slender, the intercolumniation, which at best becomes too wide, will be still more enlarged, and the piers, if there be arches, will be considerably too broad. Besides all which, the characters of the different orders will be much too opposite to be employed.
in the same aspect, without being connected by some preparatory decoration.

In placing columns above each other, it is always to be observed, that the axis of all the columns must correspond, and be in the same perpendicular line, at least in front; in flank they may or may not be so, as shall be most convenient, though it is certainly more regular, as well as more solid, to place them on a perpendicular line in flank likewise. At the theatre of Marcellus, the axis of the Ionic column is almost a foot within that of the Doric one below it, which, as the columns are engaged, and the wall of the second story is considerably retracted, could not well be avoided, and in cases of a similar nature, where the solidity of the structure is not affected by it, the same method may be taken; observing, however, never to make the retraction greater than it is at the theatre of Marcellus, where the front of the plinth, in the second order, is in a line with the top of the shaft in the first.

In the first plate of orders above each other, I have given designs of double colonnades in all the orders, which are so disposed that the modillions, mutules, triglyphs, and other ornaments of the entablature fall regularly over the axis of the columns, except in the Composite and Corinthian combination, where in the Eustyle interval, the modillions of the second cornice do not exactly answer. But the distance of the object from the spectator’s eye makes this irregularity less important, more especially as a modillion will fall exactly over the axis of every third column. Nevertheless, if a scrupulous accuracy should be required, the entablature may be augmented and made full five modules high, by which means the distribution will be perfectly regular.

Among the intercolumniations exhibited in the above-mentioned plate, there are some in the second orders ex-
tremely wide, such as the Ionic interval over the Doric Arœostyle; the Composite and Corinthian intervals over the Ionic and Composite Arœostyles; which, having a weak, meagre appearance, and not being sufficiently solid, excepting in small buildings, are seldom to be suffered, and should seldom be introduced. The most eligible are the Eustyle and Diastyle for the first order, which produce nearly the Diastyle and the Arœostyle in the second.
OF PEDIMENTS.

PLATE XXXIII.

A pediment consists of a horizontal cornice, supporting a triangular or curvilineal space, either plain or adorned, called the Tympanum or Tympan, which is covered either with two portions of straight inclined cornice or with one curvilineal cornice following the direction of its upper outline. At each end of these cornices and on their summit are placed little plinths or pedestals called acroteria or acroters, serving to support the statues, vases, or other ornaments which are used to enrich and to terminate the pediment gracefully.

Pediments owe their origin, most probably, to the inclined roofs of the primitive huts. Among the Romans they were used only as coverings to their sacred buildings, till Cæsar obtained leave to cover his house with a pointed roof after the manner of temples. In the remains of antiquity we meet with two kinds of them, viz., triangular and circular. The former of these are promiscuously applied to cover small or large bodies, but the latter, being of a heavier figure, are never applied but as coverings to doors, niches, windows or gates, where the smallness of their dimensions compensates for the clumsiness of their form.

As a pediment represents the roof, it should never be employed but to terminate and finish the whole composition; yet, in the churches of Rome and of Paris, we frequently see one used to finish the first order of a porch, another to finish the second order, and sometimes even a
third or fourth above these; but this, however, is a practice which should not be imitated. Licinius, the mathematician, anciently reprehended Apaturius, the painter, merely for representing an absurdity of this kind in a picture, for who, said he, ever saw houses and columns built upon the roofs and upon the tilings of other houses? Besides, the inclined top of a pediment is, in appearance, at least, a very unstable base for a range of columns or other heavy bodies.

Nor is it more reasonable to place two or three pediments one within another, as on one of the pavilions in the court of the old Louvre at Paris, at St. Mary's in Campitelli, and at the church of the Great Gesu at Rome, since the same building can certainly want but one roof to cover it.

On circular bodies pediments should never be applied, as at the church of St. Thomas in the Louvre, at Paris; that kind of roof being of a very improper construction for covering circles, and far from pleasing to the eye, as in such cases they appear, in almost every view, contorted and irregular.

Some writers there are who object to pediments in interior decorations, because, say they, where the whole is covered and enclosed, there can be no occasion for coverings to shelter each particular part. In this, however, they seem to carry their reasoning rather too far; a step further would lead them into the same road with Father Laugier, who, having sagaciously found out that the first buildings consisted of nothing but four trunks of trees and a covering, considers almost every part of a building, excepting the column, the entablature, and the pediment as licentious or faulty; and in consequence thereof, very cavalierly banishes at once all pedestals, pilasters, niches, arcades,
attics, domes, etc., etc. It is only by special favor that he condescends to tolerate doors or windows, or even walls.

Even considered merely aesthetically, the Pediment is of great value in composition, for the reason that it produces variety, the oblique or diagonal lines of its raking cornices contrasting favorably with the others, and thereby breaking up horizontality and rectangularity, besides which, its apex serves to emphasize, by distinctly pronouncing it the central line of the whole composition. To a prostyle of any kind,—that is a range of columns projecting from the main structure, a pediment is almost a *sine qua non*. With but one, it shows too much like an excrescence, which having no marked termination to it might be extended indefinitely.

With regard to the decoration of pediments, almost the only mode hitherto devised is that of filling up the tympanum with a crowd of figures squeezed into what is the most ungainly of framings, and one which compels the most monotonous treatment,—a tall figure in the centre, accompanied by others which grow gradually less, till they diminish into dwarfs crouching into the acute angles of such framing. No doubt, a pediment, as being the very front and forehead of a portico, is a very proper place for decoration, for without something to enrich it, it is apt to strike as bare and blank, more especially if ornateness is affected for the order and the rest of the structure. It does not follow, however, that it must of necessity either be left blank or filled in with phonetic sculpture, which in modern buildings is scarcely ever better than an enigma in stone. The same degree of enrichment may be produced just as well by ornamental carving as by figure sculpture, or perhaps better, because then what seems intended to challenge particular examination would not be put where it cannot be seen properly. In his "Principles
of Design in Architecture," Garbett has started an idea for decorating the tympanum of a pediment, of which much might be made. Or if figures there must be, three are quite sufficient; they would acquire importance by showing themselves far more distinctly than a mob of them can possibly do, and be introduced with far greater propriety than the same number of statues perched on the apex and extremities of a pediment, where they make no better appearance than so many pinnacles, nor even so good, for they always seem to stand insecurely and totteringly, and to be put where any statue worth looking at ought never to be placed.

To go satisfactorily into the subject of pediments would require not only a note but an entire chapter, and not only a chapter but a special treatise on the use and abuse of the pediment. Of its abuse Chambers himself has shown us many instances, among them one most notable for its execrable hideousness. Never even in his maddest freaks did Borromini put forth anything like the morbid maniacal strength of Vasari (shown in Fig. 8). Borromini may have been insane, but Vasari must have been a downright raving Bedlamite.

One of the simplest and safest rules for regulating the height of a pediment, is to proportionate it in accordance with the horizontal entablature beneath it, so that its height and bulk never seem oppressive to the latter.

Chambers gives it as his opinion that when a pediment is small it is better to leave its tympanum quite plain; but there we may be permitted to dissent from him, for carved ornament is not out of place within the pediments to windows where an unusual degree of richness is aimed at. Sir C. Barry has left an example of such decoration in the principal floor windows of Bridgewater House.
OF BALUSTRADES.

PLATE XXXIV.

Balustrades are sometimes of real use in building, and at other times they are merely ornamental. Such as are intended for use, as when they are employed on steps or stairs, before windows, or to enclose terraces or other elevated places of resort, must always be nearly of the same height, never exceeding three feet and a half, nor ever being less than three, that so a person of an ordinary size may, with ease, lean over them without being in danger of falling. But those that are principally designs for ornament, as when they finish a building, or even for use and ornament, as when they enclose the passage over a large bridge, should be proportioned to the architecture they accompany; and their height ought never to exceed four-fifths of the height of the entablature on which they are placed; nor should it ever be less than two-thirds thereof, without counting the zoccolo or plinth, the height of which must be sufficient to leave the whole balustrade exposed to view from the point of sight for the building. Palladio has, in some of his works, made the height of the balustrade equal to the whole entablature, and Inigo Jones has followed his example in many of his buildings, particularly at the Banqueting House; where, besides this extraordinary loftiness, it is raised on a very high plinth. I do not think either of these great artists are to be imitated in this practice, as it renders the balustrade much too predominant, and very prejudicial to the effect of other parts in the composition, particularly of the entablature to which it is contiguous.
There are various figures of balusters, the most regular of which are delineated in the annexed plate. The handsomest are the three in the first row, their profiles and dimensions are all different; the simplest of them may serve to finish a Tuscan order, and the others may be employed in the Doric, Ionic, Composite or Corinthian orders, according to their degrees of richness.

The best proportion for balustrades of this kind is to divide the whole given height into thirteen equal parts, and to make the height of the baluster eight of those parts, the height of the base three, and that of the cornice or rail, two. Or, if it should be required to make the baluster less, the height may be divided into fourteen parts, giving eight of these to the baluster, four to the base, and two to the rail; one of the parts may be called a module, and being divided into nine minutes, serve to determine the dimensions of the particular members, as in the annexed designs.

The other balusters exhibited in the same plate are likewise perfect in their kinds, and collected from the works of Palladio, or other great masters. The double-bellied ones being the lightest, are therefore properest to accompany windows or other compositions of which the parts are small and the profiles delicate. The base and rail of these balusters may be of the same profile as for the single-bellied ones, but they must not be quite so large. Two-ninths of the baluster will be a proper height for the rail, and three for the base. The proportions of the balusters may easily be gathered from the designs, where they are marked in figures, the whole height of each being divided into such a number of parts as is most convenient for the determination of the inferior divisions; one of these parts is the module, and is divided into nine minutes.
OF GATES, DOORS AND PIERS.

PLATES XXXV. AND XXXVI.

Amongst the restorers of the ancient Roman architecture, the style of Palladio is correct and elegant, his general dispositions are often happy, his outlines distinct and regular, his forms graceful; little appears that could with propriety be spared, nothing seems wanting, and all his measures accord so well that no part attracts the attention in prejudice to any of the rest.

Scamozzi, in attempting to refine upon the style of Palladio, has over-detailed and rendered his own rather trifling, sometimes confused. Vignola’s manner, though bolder and more stately than that of Palladio, is yet correct, and curbed within due limits, particularly in his orders; but in Michael Angelo’s we see license, majesty, grandeur, and fierce effect extended to bounds, beyond which it would be very dangerous to soar.

But whether there is anything natural, positive, convincing, and self-amiable in the proportions of architecture, which, like notes and accord in music, seize upon the mind, and necessarily excite the same sensations in all, or whether they were first established by consent of the ancient artists, who imitated each other, and were first admired because accompanied with other real convincing beauties, such as richness of materials, brilliancy of color, fine polish, or excellence of workmanship, and were after only preferred through prejudice or habit, are questions which have much occupied the learned. Those who wish to see the arguments for and against these respective notions, are referred to Perrault, Blondel, and other writers upon the subject.
To the plurality of students in the profession it may be sufficient to observe, without attempting to determine in favor of either side, that both agree in their conclusion; the maintainers of harmonic proportions proving their system by the measures observed in the most esteemed buildings of antiquity, and the supporters of the opposite doctrine allowing that, as both artists and critics form their ideas of perfection upon these same buildings of antiquity, there cannot be a more infallible way of pleasing than by imitating that which is so universally approved.

It must, however, be observed that sounds operate very differently from visible objects; the former of which affect all, and always in the same manner. The operation being merely mechanical, the same sort of vibration produces at all times the same effect, as equal strokes upon a bell produce the same sounds; but visible objects act differently. Their effect is not alone produced by the image on the organ of sight, but by a series of reasoning and association of ideas, impressed, and guiding the mind in its decision. Hence it is, that the same object pleases one, and is disliked by another; or delights today are seen with indifference or disgust tomorrow; for if the object seen had alone the power of affecting, as is the case with sounds, it must affect all men alike, and at all times in the same manner, which by long and repeated experience we know is not the case.

Fig. 1 in the plate of doors is a rustic door, composed by Vignola in which the aperture occupies two-thirds of the whole height and one-half of the whole breadth, the figure thereof being a double square. The rustics may be either smooth or hatched, frosted or vermiculated, but their outline must be sharp, and their joints must form a rectangle. Each joint may be in breadth one-third or two-sevenths of the vertical surface of a rustic. The joints of the Claveaux, or arch-stones, must be drawn towards the
summit of an equilateral triangle, whose base is the top of the aperture. The architrave surrounding the aperture may be composed either of a large ogee and fillet, or of a plat-band, congé, and fillet. Its whole breadth must be one-tenth of the breadth of the aperture, the remaining part of each pier being left for the rustics. The entablature is Tuscan; the cornice thereof is to be one-fifteenth of the whole height of the door; and what remains below it being divided into twenty-one equal parts, the two upper-most of them will be for the frieze and architrave, and the remaining nineteen for the rustics and plinth at the foot of the door. Fig. 2 is another very beautiful composition of the same great master, executed by him at the palace of Caprarola, in the Ecclesiastical State, and copied by Inigo Jones in the hospital at Greenwich, a circumstance which pleads strongly in its favor, though I cannot say but our English architect has altered the proportions of the original much for the worse. The aperture is in the form of an arch, and occupies somewhat more than two-thirds of the whole height. It is adorned with two rusticated Doric pilasters, and a regular entablature. The height of the pilasters is sixteen modules, that of the entablature, four. The width of the aperture is seven modules, its height fourteen, and the breadth of each pier is three modules. Fig. 3 is likewise a design of Vignola. It is of the Corinthian order, and executed in the Cancellaria at Rome. The height of the aperture is equal to double its width, and the whole ornament or entablature at the top is equal to one-third of the height of the aperture. The breadth of the architrave is one-fifth of the width of the aperture, and the pilasters which support the consoles are half as broad as the architrave. The whole is well imagined but rather heavy, and it would succeed better if the architrave were reduced one-sixth of the aperture, the whole entablature
being proportionally diminished. The pilasters may remain of the breadth they now are, which is not too considerable. Fig. 4 is a disposition of Michael Angelo. The windows of the Capitol are of this kind, and Sir Christopher Wren has executed doors of this sort under the beautiful semi-circular porches in the flanks of St. Paul's Cathedral. The aperture of this design may be a double square, the architrave one-sixth of the width of the aperture, and the whole entablature one-quarter of its height. The front of the pilasters or columns on each side must be on a line with the lower fascia of the architrave, and their breadth must be a semi-diameter. Fig. 5 is imitated from a design of Philibert Delorme. It may serve either for a gate or outward door, by observing, in the former of these cases, to raise the columns on plinths, and in the latter, besides plinths, to place them on steps, as all outside doors ought to be, both because the lower apartments should never be on a level with the ground, and because this elevation will show the door, or indeed any other composition, to more advantage. The aperture may be in height twice its width, the piers may be a little more than half that width, and the columns must occupy half the breadth of the pier; their height may be eight diameters, or somewhat more, the architrave and cornice must bear the usual proportion to the columns, the frieze is omitted. The archivolt is in breadth a semi-diameter of the column, and its whole curve being divided into thirteen equal parts, there will be no room for seven Claveaux and six intervals. The shafts of the column from the top of the impost downwards, if divided into eight equal parts, will afford room for four intervals and four rustic cinctures; whereof that which levels with the impost may be square, as in Delorme's design, the rest of them being made either cylindrical or square at pleasure. Fig. 6, Plate XXXVI., is a door in
the saloon of the Farnese Palace at Rome, designed by Vignola. The aperture forms a double square, and the entablature is equal to three-elevenths of the aperture's height, the architrave being one of these elevenths. The whole ornament on the sides, consisting of the architrave and pilasters, is equal to two-sevenths of the width of the aperture. The cornice is Composite, enriched both with mutules and dentils, and the frieze is in the form of a festoon of laurel. Fig. 7 is copied from a door at Florence, said to be a design of Cigoli. The height of the aperture is a trifle more than twice its width; it is arched. The impost is equal to half a diameter; the columns are Ionic, somewhat above nine diameters high, and their shafts are garnished, each with five rustic cinctures. The entablature is less than one-quarter of the column; and the length of the tablet, in which there is an inscription is equal to the width of the aperture.
OF WINDOWS.

PLATES XXXVII., XXXVIII. AND XXXIX.

The first considerations with respect to windows are their number and their size; which must be such as neither to admit more nor less light than is requisite.

Wherever sunshine predominates, light must be admitted and distributed with caution, for when there is an excess, its constant attendant, heat, becomes insufferably incommodious to the inhabitant. In Italy, and some other hot countries, although the windows be less in general than ours, their apartments cannot be made habitable but by keeping the window shutters almost closed while the sun appears above the horizon. But in regions where gloom and clouds prevail eight months of the year, it will always be right to admit a sufficiency of light for these melancholy seasons, and have recourse to blinds or shutters, whenever the appearance of the sun renders it too abundant.

With regard to the beauty of exterior decorations, if an order comprehends two stories, the apertures of the windows with which it is accompanied should not much exceed three modules in width, but when it contains only one story, their width may be four and a half or even five modules. Windows contained in arches may have from two-fifths to three-sevenths of the arch in width, and their height must be such that the last horizontal molding of their cornice may answer to the top of the impost of the arch, the whole pediment being contained in the circular part. The pediment must be triangular, for curves above each other, unless they be similar and parallel, do not succeed.
The proportions of the apertures of windows depend upon their situation; their width in all the stories must be the same, but the different heights of the apartments make it necessary to vary the heights of the windows likewise.

In the principal floor it may be from two and one-eighth of the width to two and one-third, according as the rooms have more or less elevation; but in the ground floor, where the apartments are usually somewhat lower, the apertures of the windows should seldom exceed a double square; and when they are in a rustic basement, they are frequently made much lower. The windows of the second floor may be, in height, from one and a half of their width to one and four-fifths, and those of attics or mezzanines, either a perfect square or somewhat lower. The character of the order in which the windows are employed, and that of the profiles with which they are enriched, must, likewise, in some measure be consulted, and the apertures be made more or less elevated as the order of the whole decoration, or of the window itself, is more or less delicate.

In the three annexed plates of windows, I have given a great variety of designs. Fig. 1, in the first of these plates, is imitated from the lower windows of St. Peter's, composed by M. Angelo Buonaroti. The aperture is somewhat lower than a double square in height; the architrave is one-seventh of the width of the aperture, which is likewise the breadth of the pilasters; the consoles, both at bottom and top of the window, are in length one-third of the width of the aperture; and the whole entablature is equal to one-quarter the height thereof. Fig. 2 is a composition of Bartolomeo Ammanati, executed in the ground floor of the Mattei Palace at Rome. The whole design, and particularly the lower part, is well composed, but rather approaching towards the heavy; the parts made somewhat less would succeed better, as would also a pedi-
ment instead of the sloped covering at top. Figs. 3 and 4 are both of them composed by Bernardo Buontalenti, and executed in different places. The aperture of this sort of window may be a double square, or a trifle more; the architrave from one-sixth to one-seventh of the width of the aperture, and the pilasters either the same or less than by one-third, one-quarter, or one-fifth, according as the architrave is broader or narrower, there being very few cases in which both together should exceed one-third of the width of the aperture at the most. The height of the whole entablature should not exceed one-quarter of the height of the aperture, nor ever be much lower. The consoles may be equal in length to half the width of the aperture at most, and to one-third of it at the least.

In the second plate, Fig. 1, is a design of P. Lescot, abbot of Clagny, executed in the old Louvre at Paris. The proportions may be the same, as in the two last mentioned ones. Fig. 2 is what we commonly call in England a Venetian window. It is an invention of Scamozzi. The height of the arched aperture is twice and one-half its width; those on the sides are half the width of that in the middle, and their height is regulated by the height of the columns. The breadth of the archivolt is equal to the superior diameter of the columns. Fig. 3 is a design of Palladio, executed by him in many of his buildings. The aperture is a double square, the breadth of the architrave is one-sixth of the width of the aperture, the frieze and cornice together are double the height of the architrave, and the breadth of the consoles is two-thirds of the breadth of the architrave. Fig. 4 is likewise a design of Palladio, executed at the Chiericato in Vicenza. Its proportions differ very little from the former; the plat band that supports the window is equal to the breadth of the architrave. Fig. 5 is a Venetian window, invented, I believe, by
Mr. Campbell. Fig. 6 is a design of Inigo Jones, executed at the Banqueting House. I do not know exactly what proportions he has observed, having never had an opportunity, of measuring the original; but the aperture may be a double square, the architrave one-sixth of the aperture's width, and the whole entablature one-quarter of its height; the breadth of the consoles may be two-thirds of the breadth of the architrave. Fig. 7 is a design of M. Angelo Buonaroti, executed at the Farnese Palace in Rome. For the beautiful disposition represented in Fig. 8, we are indebted to the late Mr. Kent, and it is executed, with some little difference, at the Horse Guards, in St. James's Park. Its proportions may be collected from the design. Fig. 9 is a design of Ludovico da Cigoli, and executed in the ground floor of the Renuccini Palace at Florence. In the third plate of windows, Fig. 1, Plate XXXIX., is imitated from a design of Raffaelle Sanzio da Urbino, executed in the principal floor of the Pandolfini Palace at Florence. The height of the aperture is a trifle more than twice its width; the architrave is equal to one-seventh of the width of the aperture; the columns are Ionic, and will succeed best if entirely detached, yet that cannot well be, excepting on a ground floor; their height is nine diameters, their distance from the architrave of the window is a quarter of a diameter, which is likewise the distance of the entablature from the top of the same architrave. The height of the whole entablature is equal to two-ninths of the column, and the height of the pediment is one-quarter of its base or a trifle less; the pedestals and balustrades are in height one-quarter of the column and entablature taken together. Fig. 2 is an invention of Andrea Palladio, executed, with some little difference, in the Porto Barbarano Palace at Vicenza. Inigo Jones has very judiciously introduced the same
design in the flanks of Greenwich Hospital, and managed all the parts of it more gracefully than in the original. Fig. 3 is imitated from the windows in the principal floor of the Bracciano Palace at Rome, designed by Bernini. Fig. 4 is an invention of Palladio, and the design here given is very accurately measured and copied from the Thiene Palace at Vicenza, in the principal floor of which it is executed. The key-stones are distributed in the manner represented in the design; they incline forwards towards the top, their surface is rough, and hatched irregularly with long chops, as are likewise the dies on the columns, their angles alone being left smooth, and with a sharp outline, which roughness makes an agreeable opposition to the smooth finishing of the other parts. The entablature is Ionic, the architrave composed of two fascias, only the frieze is swelled, and the dentil-band is placed immediately on the frieze without any molding to support it, a singularity which Palladio has repeated in others of his designs, though it has but an indifferent effect. The pedestals and balustrade are a trifle higher than one-third of the columns; the dies and balusters are placed immediately on the plat-band that finishes the basement, which is not so well as if there had been a base, but has been done in order to diminish the projection. This beautiful window differs considerably from the design given of it in Palladio's book, and is undoubtedly superior to it. Fig. 5 is likewise a design of Palladio, copied from the Porto Palace at Vicenza; and Fig. 6 is, I believe, an original invention of Inigo Jones, which has been executed in many buildings in England.

I have given, in all, nineteen designs for windows, and for greater variety the figures 3, 4, 6, 7, 8, 9, in the plate of doors, may be employed, they being equally proper either for windows or doors.
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