

**THE STORY OF
ARCHITECTURE
THROUGHOUT THE AGES**

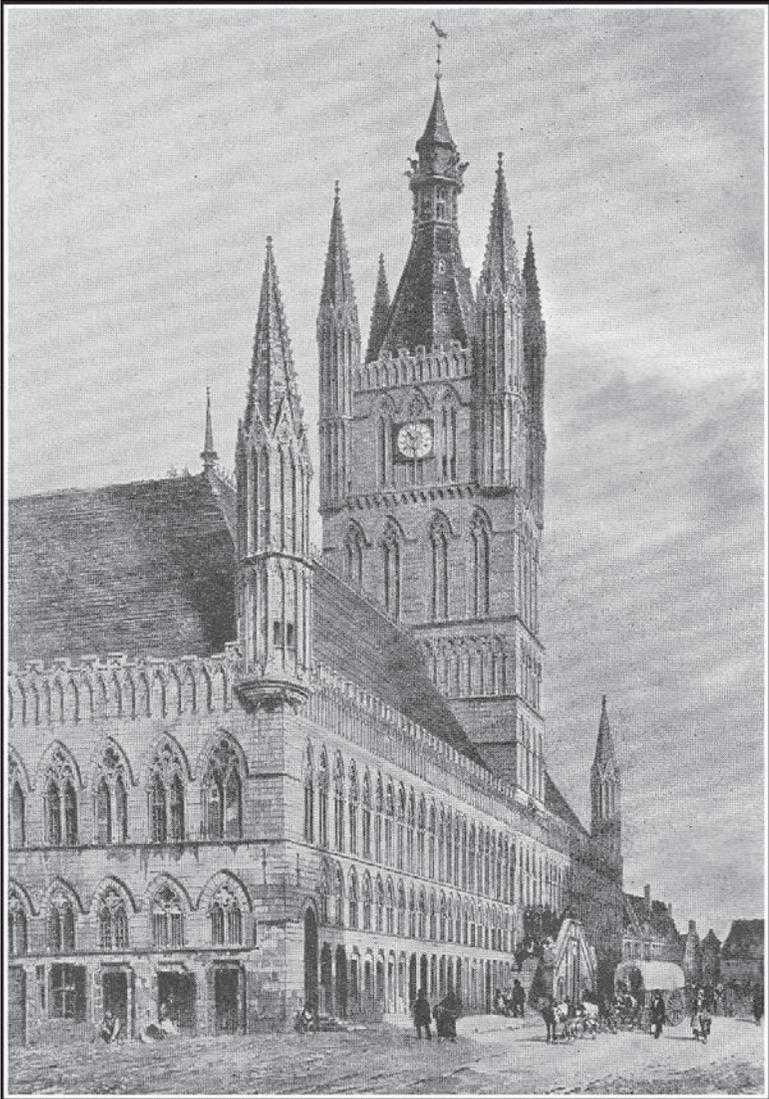


PLATE I — *The Old Cloth Hall, Ypres*

THE STORY
OF
ARCHITECTURE
THROUGHOUT THE AGES

BY
P. LESLIE WATERHOUSE

YESTERDAY'S CLASSICS
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PREFATORY NOTE

AN earlier edition of this book appeared many years ago and claimed a large circle of readers; it has, however, long been out of print. It has now been very fully revised, and in part re-written, and entirely re-illustrated from drawings and prints and from photographs. If in its new form it can open the door of desire, and lead to an increasing interest in buildings new and old, and to a proper appreciation of them, it will serve its purpose.

I am indebted to the Council and Librarian of the Royal Institute of British Architects for the loan of a number of books for illustration. Miss Spiers has kindly lent two water colours (PLATES II and III) from drawings by the late Mr. R. Phené Spiers. I have to thank Mr. Arthur Keen for his drawing of Stokesay Castle (FIGURE 73), and Mr. Marshall Jones, of Boston, has furnished the view of the Woolworth Building, (PLATE XXX). The view shown in PLATE XXXI is from a photograph by Messrs. Aerofilms, Ltd. I have to thank Mr. Fred. Saunders for FIGURE 59, Mr. C. B. Hutchinson for FIGURE 79, and Mr. Louis Ambler for FIGURE 84. The Council of the Architectural Association have also given permission for these to be reproduced from the A.A. Sketch book.

P. L. W.

SHOTOVER, EPSOM.

October, 1924.

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INTRODUCTION

THERE is no subject that opens to us wide avenues of pleasure at such trifling cost of time as the study of Architecture. And in this field it can be said with truth that a little learning is not a dangerous thing: it is a pleasant and a helpful thing. One may go further and say that for all who wish to get their full share of interest and enjoyment out of life it has become a necessary thing.

Our opportunities for intelligent travel are increasing daily. Less than thirty years ago the motor-car in England was restricted to a pace of four miles an hour; moreover, the law required that it should be preceded by a man waving a red flag. Conditions in this and in other respects have changed in the course of the present century, and our radius of easy travel has enlarged greatly. All thoughtful people are now desiring to acquire an elementary knowledge of the history of the buildings which they may visit in the course of their wanderings, and of the conditions under which these buildings have arisen. And it matters little whether these wanderings be through the towns and villages around their home, or among the greater churches and cathedrals of England, or, further afield, along the banks of the Loire, the Arno, or the Tiber. For it is at last being recognised that Architecture is not a matter of styles and mouldings and students' terms: it has a human quality: it touches us at every point, and, of all the fine arts, is the one most intimately associated with the lives of all of us.

The reader is asked to bear in mind this close association between Architecture and its creators, between Architecture and the civilisation which produced it: to remember that through it, more readily than by any other means, we may grasp the spirit of the past. For Architecture has always been an expression of human life, the medium by which nations have recorded,— truly, because unconsciously,—their emotions, their aspirations, their beliefs. Viewed in this light, old buildings acquire an added charm, as the civilisations which they mark pass in review before us;— Egyptian, Greek or Roman: the genius of the Gothic constructors, expressed in those buildings which represent the “triumph of science and the incarnation of romance”; all the varied energies of the artists of the Renaissance. . . .

And so, down to the present time. For the glamour of the past must not be allowed to blind us to the claims of the present. The Architecture of to-day vitally concerns every householder and every citizen. We must learn,—indeed, we are learning,—to take an intelligent interest in all that is going on around us; to discriminate, to take pride in the glory of every new building in our midst which successfully claims to represent our nobler aspirations. And if, as has been well said, every nation has the Architecture which it deserves, we shall feel that we are, each of us, doing our part and making our contribution towards the “loud sum of the Silent Units.”

CHAPTER I

EGYPTIAN ARCHITECTURE

THE earliest men of whom any traces exist were cave-dwellers; and it has been well said that the father of all architecture was he who first discovered that he could build a wall by the simple process of piling one stone upon another. This new idea was followed by the introduction of carpentry, the use of the pier and the lintel, and the many other improvements which went to make true architecture.

A complete story of Architecture would therefore cover almost as great a period of time as the story of man himself. Unfortunately, the efforts of our earlier ancestors in this field have entirely disappeared. It was not until man, in the course of civilisation, became a mighty builder, and not that only, but a builder in materials of an imperishable nature, that he was able to leave behind him monuments to tell the story of his life to future ages. Thus it comes about that it is impossible to trace the growth of the art from its earliest beginnings, and to follow its development as it grew in importance. The oldest memorials of which we have records—the tombs and temples of ancient Egypt—were the work,

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not of a race of primitive men, but of a nation which had already attained a knowledge of the art of construction which later builders have never surpassed.

The waters of the Nile are the head-waters of architecture. On the banks of this stream—the cradle of the art—the colossal piles of these early builders still command the wonder of all who see them.

Earlier works of the Egyptian builders have been identified, but their greatest and most characteristic monuments, the pyramids of the fourth dynasty, have remained unchallenged for more than five thousand years as the greatest of all architectural undertakings. With these works of the mysterious inhabitants of the Nile valley begins the history of architecture, so far as our knowledge of it can at present go.

No other country bears such testimony as Egypt to the great *historical* value of architecture. Other nations of antiquity have, possibly, been equally powerful, or as highly civilised; but they have failed to leave behind them such enduring monuments to record their greatness—their literature in stone or marble—and they have almost disappeared from the pages of history. Not so the Egyptians. There is a “voicefulness” in these old tombs and temples along the banks of the Nile which gives reality and life to the history of the men who built them. Hence the unique interest which attaches to the architecture of Egypt. These temples, these walls, that have so long been “washed by the passing waves of humanity,” present a reliable record of the social and religious life of their builders, whose life-story would

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otherwise have been totally lost in obscurity. Egypt claims the attention of students of architecture, too, by reason of having produced monuments which, for massiveness and grandeur, have never been excelled in the world's history. Yet Egyptian architecture must ever remain, to some extent, a subject by itself; it occupies no very important place in the story of art, or of the architecture which chiefly concerns us—that of Europe. But as an expression of human character it reflects accurately the intellectual limitations of its designers and constructors. It is a strange fact that, with the exception of the few features which were borrowed by the Greeks, all the characteristic forms of Egyptian architecture have become obsolete; the Greeks, moreover, in adopting any feature, so modified and improved it that it became, in reality, their own. Greece, not Egypt, was the true parent of European architecture; yet the colossal monuments of the Nile valley had weathered thirty centuries before Grecian architecture had left its cradle.

In almost all countries we find that the chief structures are the outcome of the nation's religious beliefs. Such was the case in Egypt from the earliest times. Nothing reveals the character of the nation so clearly as its religion; nothing has a more permeating influence upon its architecture. The Egyptians were a highly civilised, but in no respects an intellectual people; they were essentially religious, with a very lengthy catalogue of deities; they themselves spoke of their "thousand gods," and, in addition to their many principal deities, they paid religious regard to animals.

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Cats, dogs and many of the common animals were held sacred; at death their bodies were embalmed, and interred in specially constructed tombs. When a sacred bull, or Apis, died, the funeral would be on an elaborate scale, costing the equivalent of £20,000 of our money. The remains were embalmed, placed in a solid granite sarcophagus weighing fifty tons or more, and deposited in one of the long galleries hewn out of the solid rock.

It will be readily seen, then, that this phase of the nation's religion was productive of a vast amount of architectural work. But of far greater importance in its influence upon the architecture of the country was the belief held by the Egyptians regarding man's life after death. While the bad soul was sentenced to a round of migrations into the bodies of unclean animals, the good soul, as its reward, was made the companion of Osiris for a period of three thousand years. At the end of this time it returned to earth, re-entered its former body, and again lived the life of a human being. Thus it was most desirable that, when the long allotted period had expired, the soul should be able, on returning to earth, to find the body which it was to re-enter.

The natural outcome of this belief was the process of embalming, and the erection of tombs which might be relied upon to last out the span of three thousand years, and to safeguard the body during that period.

The most colossal, and almost the oldest, of these sepulchral monuments are the mysterious structures with which, among the inhabitants of Europe, the name of Egypt has always been associated—the Pyramids.

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The largest, and the best known of these are the three at Ghizeh, near Cairo, built respectively by Cheops (or Suphis), Chephren and Mycerinus. The pyramid of Cheops, generally known as the "Great Pyramid," is the most important of the three. Its builder was a tyrant of the fourth dynasty (*circa* 3,500 B.C.), who closed all the temples and forced his subjects to labour for years at this gigantic structure, which was to serve in due course as his tomb. The pyramid has a square base, 755 feet in length, covering an area of about thirteen acres, or twice the extent of St. Peter's at Rome. The four sides were of the form of equilateral triangles, sloping towards and meeting at the top, at a height of 481 feet above the level of the platform. Limestone was chiefly used in its construction, upon a base of solid rock, but over this was an exterior facing of polished granite, every vestige of which has now disappeared. The internal passages are still lined with highly polished granite slabs, fitted together with astonishing accuracy.

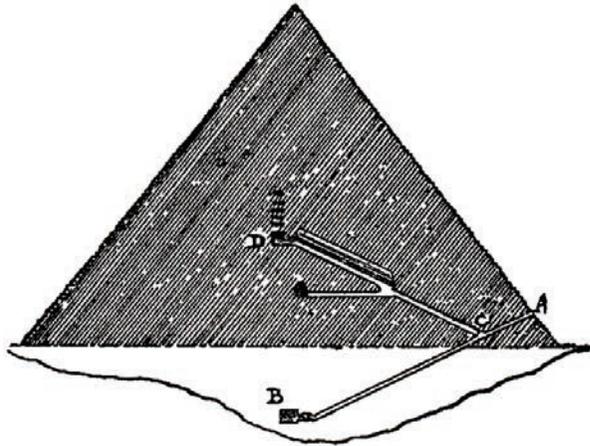


FIGURE I — Section through the Great Pyramid

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The entrance was at the point marked A, about 47 feet above the original base, and was carefully concealed, extraordinary precautions having been taken to prevent the tomb from being entered. From the entrance a passage slopes down to a chamber, B, cut in the solid rock 120 feet below the natural surface of the ground. The object of this chamber is not apparent; possibly it was intended as a blind. A corridor, turning off at C, leads up to the royal burial-chamber, D, situated almost in the centre of the structure. Below this is a third room, called the "Queen's Chamber," though there is no authority for the name. The chambers and corridors are interesting constructionally, for they show the methods adopted by these early engineers for bridging over openings in order to resist a super-incumbent weight. The central corridor is 28 feet high, with a ceiling formed by courses of masonry which overhang one another successively until they meet at the top. In the case of the "King's Chamber," in which the royal sarcophagus was

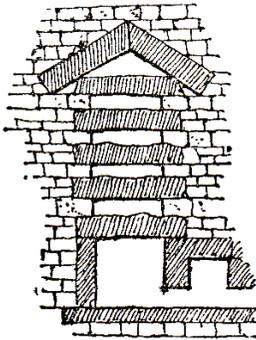


FIGURE 2 — *Corbelling over King's Chamber*

deposited, marvellous ingenuity was displayed in blocking off the tomb-chamber from the passage, and also in making the roof strong enough to prevent the weight overhead from crushing through. To relieve this weight five enormous slabs were fixed, with a small chamber between each of them; these were surmounted by a rudimentary arch, formed by two massive lintels tilted in such a way as to meet over the centre of the opening.

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How this colossal enterprise was carried out in all its details continues to be an excellent subject for speculation. The limestone quarries, which provided the bulk of the stone, were situated at El Massarah, a distance of fifty miles from Ghizeh; the red granite could not have been quarried nearer than Assouan, upon the banks of the Nile, 500 miles away. The blocks of stone could be readily floated down the stream upon rafts; thence it is probable that they were slowly moved into position by means of rollers, being gradually raised to the required height along an inclined plane or embankment constructed for this purpose. It is stated that 100,000 men were employed upon the Great Pyramid for a period of twenty years; so that the raising of such an embankment, though a gigantic undertaking, would represent but a small portion of this vast amount of labour. Many of the blocks of stone measure 30 feet in length and weigh as much as fifty tons, yet they were worked with the greatest exactitude; the polished granite slabs which line the corridors are fitted together with such accuracy that it is almost impossible to detect the joints. Similar accuracy was observed in the setting out of the structure. Professor Petrie's measurements show that the lengths of the sides varied from 755 feet 7.7 inches to 755 feet 9.4 inches, the extreme difference being 1.7 inches only!

Such a vast, unremunerative work could only have been undertaken by a despot with an unlimited amount of labour available. At this period there were few prisoners of war, so that the burden of the task fell mainly upon the shoulders of the King's "free" subjects.

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The royal tyrant failed, however, in the one object to which his efforts were directed—the safe preservation of his embalmed remains. The secret of the prison-house was discovered, the tomb rifled, and the royal dust scattered to the four winds of heaven. In the words of Byron's doggerel:

Let not a monument give you or me hopes,
Since not a pinch of dust remains of Che-ôps.

The custom of embalming led to the erection of a vast number of smaller tombs, many of which are found in the neighbourhood of the pyramids, for this locality was originally the necropolis of the ancient city of Memphis. These tombs were usually rectangular, with sloping sides, like a pyramid with the top cut off. Internally the walls were decorated with paintings illustrating the everyday life which the occupant had led, the evident intention being to make him feel as much "at home" as possible in his tomb. These paintings have been invaluable in enabling us to realise the exact conditions of life which prevailed at the period. The material employed in the construction of the tombs was limestone, but the constructive methods were evidently borrowed from wooden originals. This imitation, in stone, of wooden methods of construction had a remarkable influence upon later forms of architecture.

It will be seen that the interest attaching to these earliest structures of Egypt is mainly historical, for they can lay claim to little architectural merit, in the true sense of the word. The object which the builders had in view was to make their monuments, not beautiful,

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but everlasting; and to this end all the refinements were sacrificed. Architecture was treated by them as one of the exact sciences, rather than as a fine art. In the tombs of a later period, however, belonging to the twelfth dynasty (*circa* 2600 B.C.), a more fully developed architectural style is seen. At Beni-Hasan, on the East Bank of the Nile, in Middle Egypt, is a group of tombs of this period, cut in the vertical face of the rock, in which we find the first examples of an important architectural feature, which subsequently influenced the architecture of Greece, and, through it, of Europe.

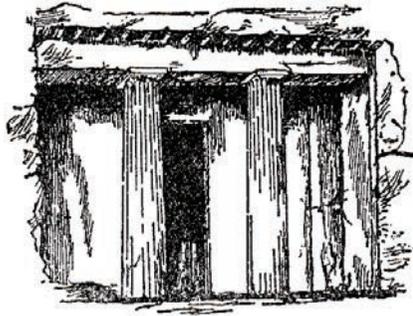


FIGURE 3 — *Tomb at Beni-Hasan*

The general view of one of these tombs shows a portico with two columns. The whole has been carved out of the solid stone, and two piers have been left in order to give support, or the appearance of support, to the overhanging rock. It will be noticed that the portion above the columns has been squared to the form of a lintel. Over this appears a row of dentils, or tooth-like projections, which are eminently suggestive of the ends of rafters, such as would be used in timber construction. The columns are of a form seldom seen in Egypt; they taper towards the top, and are surmounted

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by a square slab, or “abacus,” which has the appearance of transmitting the weight from the lintel. Some of them are polygonal, with sixteen or thirty-two sides, each side being slightly concave, in the manner of the “flutes” of the Greek columns, which we shall be considering in the next chapter.

If these shafts be compared with the columns of the Greek Doric order (p. 40), it will be seen that there are some notable points of resemblance—the square abacus, the fluted surface, and the tapering outline. A similar form of column was used at a later date at Karnak, but the Egyptians, mighty builders though they were, never grasped the essential principles of fitness and proportion in their architecture, and this column did not find favour with them, and was subsequently discarded by them. Yet this special form was destined to take an important place in the architecture of Europe, for the columns of Beni-Hasan appear to be the prototypes of the columns of the Greek Doric order. It is strange that the discriminating Greeks should have selected, here or elsewhere, for development the very feature which the great Egyptian builders had rejected. Certain it is, however, that the form reappeared, in a less crude state, in the earliest Doric temples of the Greeks about the seventh century B.C., and that, in the hands of the Greek masters, it was afterwards endowed with such beauty and refinement that it became the most perfect architectural feature in existence.

The ceiling of the Beni-Hasan tombs, although cut out of the solid rock, is divided by lintels into three spaces, curved in the form of segments of a

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circle, in evident imitation of an arched, or vaulted, ceiling. Arched construction finds no place in the great buildings of the Egyptians; but that these old builders were familiar with the true principles of the arch has been proved by the discovery of magnificent brick vaulting of the sixth dynasty (*circa* 3300 B.C.), and the still earlier barrel-vaulted passage in a king's tomb of the third dynasty (*circa* 3900 B.C.), discovered more recently by Professor Flinders Petrie.

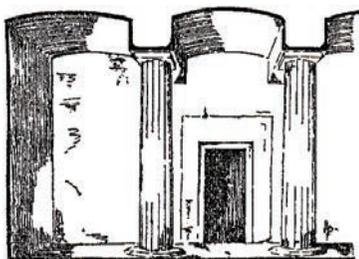


FIGURE 4 — Section through Tomb at Beni-Hasan

Between the date of the Beni-Hasan tombs and the great Theban period of the eighteenth and nineteenth dynasties—an interval of about eight centuries—little progress appears to have been made in architecture. During part of this period Egypt—or, more correctly, Lower Egypt—was in the hands of the “Shepherd” invaders, of whom we know little. Throughout their long rule they were hated by the Egyptians, and they left few permanent memorials behind them; but with the expulsion of the “Shepherd” kings began an era of great architectural activity lasting for three hundred years, down to the period assigned to the exodus of the Jews (*i.e.* from 1600 to 1300 B.C.). This was the great temple-building age, the “Theban period,” which

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witnessed the culmination of Egyptian power and artistic greatness, and produced the greater number of the noblest buildings in the country. Constructively, however, there was a falling-off from the precision and careful work of the earlier periods. The masonry was hastily and clumsily wrought, angles were inaccurately set out, and columns irregularly spaced; in many respects the work bears marks of carelessness and haste which detract considerably from its merit. In spite of technical defects, however, the buildings of this period were noble works which still remain the chief glory of Egyptian architecture.

The cause of this architectural revival is not far to seek. Before the period of the "Shepherd" kings, and during their rule, the inhabitants of the Nile valley had not been a fighting nation. But when Aahmes ascended the throne of Upper Egypt (*circa* 1600 B.C.), he set himself the task of ridding the country of the invaders, and, after pursuing them into Palestine, completely routed them. As a result of this victory, many thousands of slaves were brought back by the king on his return to Egypt. These advantages, and various successes over the Syrians, whetted the appetites of the Egyptians for further conquests, and they henceforth became a nation of conquerors. Under Thothmes III (*circa* 1450 B.C.), their "sphere of influence" advanced by leaps and bounds. Each year witnessed new expeditions, which brought into the country not only enormous quantities of treasure, but vast numbers of prisoners of war—for the object of the king was to capture rather than to kill. This wholesale importation of captives had an

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immediate effect upon the architecture of the country. By their forced labour, Thothmes was enabled to erect temples and other vast structures which placed him in the first rank of Egyptian builders.

The great city of this period was Thebes—the “hundred-gated Thebes” of Homer—which was practically the capital of the country. Memphis, situated farther north, nearer to the delta of the Nile, vied with Thebes in the magnificence of its temples; but its remains which have come down to us are comparatively unimportant, owing to the fact that the site has been used as a quarry for the supply of materials to Cairo and adjoining modern towns. Thebes, however, was more fortunately situated; no great city has sprung up in its neighbourhood, and its buildings have suffered only from the wasting hand of time, more merciful than that of man.

The great building monarchs of the Theban period were Thothmes III, Amenhotep III, Seti I and Rameses II, each of whom endeavoured to surpass the efforts of his predecessor with some “new temple, nobler than the last.” Their names, it will be seen, appear in connection with the greatest temple structures of this era.

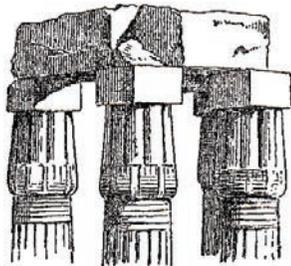


FIGURE 5 — *Lotus-bud Capitals, Luxor*

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The most imposing of all the Theban buildings was the great temple at Karnak, 1,200 feet long, around which were grouped several smaller ones; at Luxor, two miles farther south, was another vast palace-temple. The groups on the opposite bank of the river included the sepulchral temple of Amenhotep III—second only to that of Karnak—and the Ramessium, built entirely by the great Rameses.

The principal work of Thothmes was the rebuilding of a portion of the great temple at Karnak. Isolated examples of this master-builder's work are familiar to Europeans. In front of the grand entrance to the temple at Karnak he erected two obelisks; one of these, which now stands before the church of S. John Lateran in Rome, is the largest and most splendid monument of its kind extant. He built, or added to, temples at Heliopolis, Abydos, Denderah, Memphis and many other places, both in Egypt and in Nubia. An obelisk of this monarch has been re-erected at Constantinople; another, which stood originally at Heliopolis and afterwards at Alexandria, is now to be seen on the Thames Embankment, where we know it as "Cleopatra's Needle"; its companion has crossed the Atlantic and has been erected in New York.

Amenhotep continued the building of the temple at Karnak, and erected a vast new temple, of which, however, hardly a trace remains, for it has suffered from the inundations of the Nile; but an enduring memorial of the king, and of an architect bearing the same name, survives in the two mutilated colossi, fifty-six feet high,

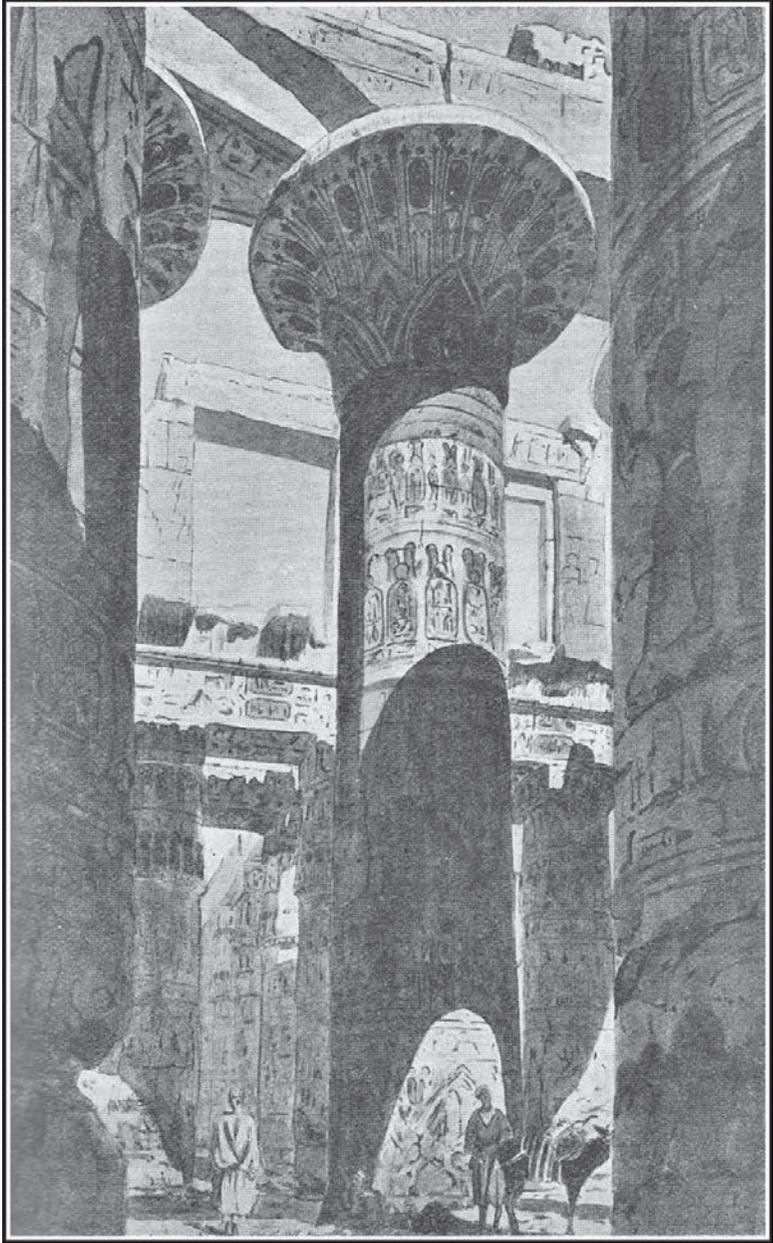


PLATE II — *Hall of Columns, Karnak*

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PLATE III — *Temple of Ramses, Karnak*

of which one has been known, since the days of the Greeks, as the “vocal Memnon.”

By far the greatest and most impressive of all the buildings of this period was the grand temple of Ammon at Karnak. Like many of our mediæval cathedrals, this was the work of successive kings and generations; its walls and columns, covered with inscriptions, furnish almost a complete history of the Theban kings.

The temple was begun by Usertesen I, the great king of the twelfth dynasty (*circa* 2400 B.C.). After an interval of several centuries, Thothmes I continued the work, adding a courtyard surrounded by a colonnade of Osirid pillars. Thothmes III constructed a magnificent columnar hall, 143 feet by 53 feet—dimensions which had never before been approached in a building of this form. He also set to work to restore the ancient

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sanctuary of Usertesen, reverently preserving all the lines of the old building, and recording the details of the restoration in an inscription on the walls. But the great glory of the temple was the Hypostyle Hall, begun by Rameses I (*circa* 1350 B.C.), but built chiefly by Seti I. This was the most imposing structure in the world's history, and is familiar to all travellers in modern Egypt. The hall measured 340 by 170 feet, its massive roof being carried by 134 columns in sixteen rows; the shafts of the two central rows, which supported the higher portion of the roof, were more than 60 feet high and almost 12 feet in diameter. "No language," writes Fergusson, "can convey an idea of its beauty, and no artist has yet been able to reproduce its form so as to convey to those who have not seen it an idea of its grandeur. The mass of its central piers, illumined by a flood of light from the clerestory, and the smaller pillars of the wings gradually fading into obscurity, are so arranged and lighted as to convey an idea of infinite space; at the same time the beauty and massiveness of the forms, and the brilliancy of their coloured decorations, all combine to stamp this as the greatest of man's architectural works, but such a one as it would be impossible to reproduce, except in such a climate and in that individual style in which, and for which, it was created."

This wonderful hall was almost entirely built during the reign of Seti I. Upon his death, it was completed by his son, Rameses II, better known to Bible-readers as the Pharaoh of the Oppression. He added the fifty-four columns on the south side. In the methods of construction there are distinct evidences

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of deterioration as compared with much of the work of the more ancient Egyptians. Where, at an earlier date, monolithic columns of red granite would have been used, we find at this period soft sandstone built up in drums. Thus, in order to insure the strength of the columns, it was necessary to make them excessively massive, and by this they lost more of grace than they gained in dignity.

It would have been impossible for the Egyptian monarchs to erect such stupendous structures but for the fact that they were able, through their victorious wars, to bring into the country vast numbers of captives, whose lives were spent in forced labour upon these public works. In a series of interesting tomb-drawings, referring to the building of this temple at Karnak, we find depicted the tasks upon which the prisoners were continually occupied. Some are busy kneading clay; others either make bricks in wooden moulds, or spread them in rows to bake; others carry on the building operations. By the side are explanations of the drawings; part of the inscription is worth quoting: "We see the captives who were carried away as prisoners in very great numbers; they work at the building with skilful fingers. Their overseers show themselves in sight: these attend with strictness, obeying the word of the great skilful lord of the works; . . . they are rewarded with wine and all kinds of good dishes; they perform their service with a mind full of love for the king; they build for Thothmes III a holy of holies. May it be rewarded to him through a number of many endless years! The overseer speaks thus to the labourers at the building:

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‘The stick is in my hand; be not idle.’” Such a picture enables us to realise the conditions under which these colossal buildings laboriously came into existence—the slave population toiling unceasingly at the point of the goad, while the task-masters, by their exacting severity, earned for themselves a share of the good things of this life.

After the period of the Exodus (*circa* 1300 B.C.), a change came over the land; the Egyptians lost a great number of their slaves, and, as a result or a coincidence, the era of temple-building practically ended with the reign of the great Rameses.

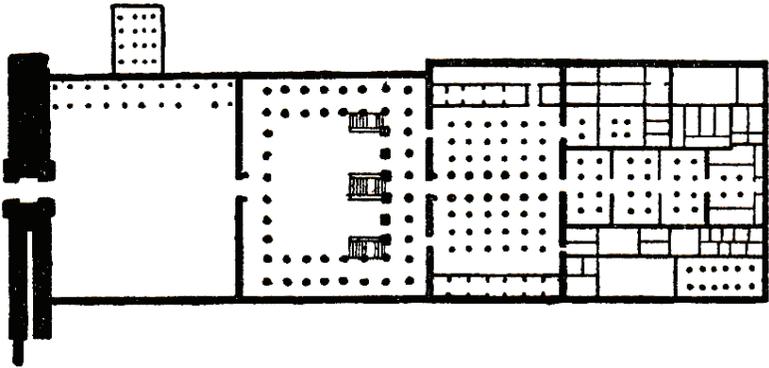


FIGURE 6 — *Plan of Ramessium*

At Karnak the chief object of each monarch was to surpass, in extent and magnificence, the buildings of his predecessors, without regard to congruity of plan. But in the Ramessium at Thebes, a temple wholly built by the great Rameses, we see the plan of a typical temple of the period. The façade was formed by two massive pyramidal towers (pylons), between which was the entrance doorway; in many cases this façade was

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situated obliquely with regard to the temple building. The doorway gave access to a great fore-court, flanked by colonnades, which in turn led to an inner court, smaller than the first, but more richly decorated with statuary. Both courts were open to the sky.

Beyond these we reach the Hypostyle Hall—the chief feature in the larger temples. In the centre of this, two rows of lofty columns supported the higher portion of the roof, the remainder of the space being occupied by ranges of smaller columns. The central portion of the roof was higher than that at the sides, an arrangement which allowed light to be admitted through perforated stone panels, fixed in the wall, which connected the upper portion of the roof with the lower, in the manner of the clerestory windows of Gothic architecture. Beyond this hall were several smaller chambers, which appear to have been set apart for use by the king or the priests.

The columns were brilliantly coloured, and their capitals were varied to suit the positions in which they were placed, with due regard to the light; those of the lofty and well-lighted central pillars were bell-shaped, but the columns at the side had bud-shaped capitals—wide at the base and tapering towards the top—a form which allowed the decoration, lighted from above, to be seen to advantage.

After the Exodus ensued a long period of decay and inactivity lasting for almost a thousand years, until the old glories of Egypt were, to some extent, revived by the Ptolemies. Under their rule and, later, under

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the Romans, the land enjoyed again a season of great prosperity. Temples were erected which vied in size and splendour with those of the great Theban age. Of these, none is more beautiful than the temple of Isis at Philæ, the plan of which is a striking illustration of the disregard of accuracy and of regularity which characterised many buildings of the Egyptians, The Greeks and the Romans were accustomed to set out their works with great accuracy; but at Philæ the Egyptians evidently worked to their own methods, for there are hardly two parallel walls, or a right angle, in the building. Imposing temples of this period are found also at Denderah and at Edfou—the latter the most perfectly preserved temple in Egypt. As evidence of the conservatism of this old nation of builders, it is interesting to note that the structures of this period bear no trace of Greek or Roman influence, either in the architectural details or in the decorations which covered the walls; so that, until their true place in history was assigned to them through the interpretation of the hieroglyphic inscriptions, some of the Ptolemaic buildings were considered to be anterior to those of the great Theban period.

Egyptian civilisation was, in fact, a matter of routine. During thousands of years there was no great intellectual awakening in the art and architecture of these mighty builders; there was little development or growth. “The civilisation that we find before us in the earliest known history,” writes Professor Petrie, “appears elaborate and perfect. Few discoveries of importance were made during the thousands of years which ensued.”

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But the buildings which remain to us are wonderfully impressive, and shed a vivid light upon the habits and lives, as well as upon the limitations, of these early Egyptians.

We have seen that in the temple-structures of the Egyptians one of the most important features was the column. Its constant use within the buildings was probably encouraged, as tending to add to the prevailing air of mystery which the priests made it their business to foster. To some extent it was necessitated by the constructive system employed, for the great stone slabs which formed the roof required strong support at frequent intervals. The column thus gradually became the chief medium for obtaining decorative effect.

Many varieties were used; they were invariably massive, and rarely exceeded six diameters in height. The shaft tapered towards the top, and was usually either circular or clustered; sometimes it was fluted, as at Beni-Hasan. In many examples the column was reduced in diameter at the base, the point where the greatest strength was required; this, and the use, above the capital, of an abacus of smaller dimensions than the shaft itself, tended to give it an overgrown, bulky appearance, making it look, as it were, weak through excess of strength. The chief forms of capitals in use were: (*a*) the bell-shaped capital (central columns, Karnak), which produced many graceful forms, and to which, as we shall see later, the early Corinthian capitals of the Greeks bore a striking resemblance; (*b*) the clustered lotus bud, representing a cluster of unopened buds of the lotus flower (with this capital a clustered

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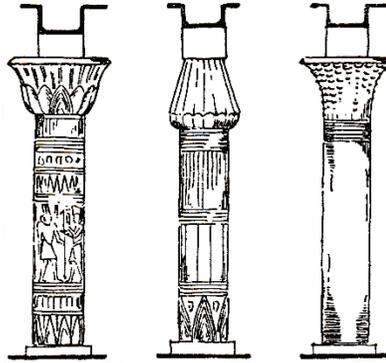


FIGURE 7 — *Egyptian Columns*

column was used); and (c) the palm capital. Most of these forms, were derived from plant life. In Egypt, at the present day, bundles of reed plastered with mud may frequently be seen in use as columns; several small bundles, each tightly bound, are banded together and form a shaft sufficiently rigid to support heavy weights. This primitive arrangement was copied, probably first in wood, and later in stone, and is undoubtedly the origin of the clustered and banded lotus column.

For the interior of the temples colour, rather than form, was relied upon for decorative effect. In the dim light of the columnar halls, mouldings and carving could not have been seen to advantage, and brilliant colouring was essential. The walls and columns were covered with a profusion of hieroglyphic inscriptions and of paintings, in which the designs were either outlined or cut in low relief before the colour was applied. Where coarse sandstone had been used in the erection of the building, a smooth surface for the colour was obtained by the use of stucco, with which the imperfections of the stone were filled up.

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Akin in antiquity to the civilisation of the Nile valley was that of the great Kingdom of Assyria, comprising the fertile plains of the Tigris and Euphrates, and the joyous Mesopotamia, which has become a familiar name in recent times. Here was Ur of the Chaldees, the old city of Abraham, where recent excavations have been yielding interesting results and have disclosed remains of mighty buildings of *circa* 2400 B.C. Of even greater antiquity are the remains of the temple at Tell El Obeid, near Ur, with its columns overlaid with copper and its mosaics. The discoveries on this site suggest a Babylonian civilisation as early as 5000 B.C., and show us possibly the oldest examples of buildings at present known.

Unlike the monumental structures of Egypt, the Assyrian remains have survived only in a fragmentary state, for little save the foundations is left of the enormous palaces of this once mighty kingdom. Excavations which have been carried on at Nineveh the capital, and at Khorsabad, have revealed almost complete plans of the royal dwellings, showing that they were of remarkable extent and magnificence. Portions of the great gateway of the palace of Khorsabad may be seen in the British Museum. The immense scale of this portal, with its human-headed winged bulls 19 feet high, enables us to form some opinion of the massive grandeur which characterised these vast buildings of the Assyrians. Owing to the extensive use of sun-dried bricks in lieu of harder materials, the structures lacked the durability of the Nile valley temples. So far as can

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be determined from the bas-reliefs and the structural remains, the architecture—apart from the applied ornamental forms—had comparatively little artistic merit.

That the Assyrians, like the Egyptians, understood the principles of the arch has been proved by a fine arched gateway, discovered by M. Place at Khorsabad, and by remains of arched drains and of brick vaulting. On existing bas-reliefs are found representations of domed buildings, from which it may be assumed that this form of roof was not unknown, though it is improbable that it was used to any extent.

The prominent feature in Egyptian temples—the column—did not occupy an important place in the architecture of the Assyrians; with the exception of the bas-reliefs, the existing remains reveal no trace of its use. On the sculptures a form of column, with small volutes, is represented, which may claim to be the prototype of the column of the Greek Ionic order. The interior walls of the palaces were lined, to the height of about 10 feet, with alabaster slabs, on which were represented, in low relief, battle and hunting scenes and mythological subjects. Many of these slabs are to be found in the chief museums of Europe.



FIGURE 8 —
Assyrian Column

With the Persians who, under Cyrus (536 B.C.), became masters of these older monarchies, another

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style of architecture was developed, which attained great magnificence under Darius and Xerxes. Before their period of conquest the Persians had been simple in their mode of life, with little architecture of their own. Under later monarchs, very different in character from the great conqueror Cyrus, they acquired luxurious habits, and soon surpassed even the Assyrians in the splendour and the extent of their palaces. Persian splendour and luxury culminated in the great capital at Persepolis, or Takht-i-Jamshyd (the Throne of Jamshyd), as it is still called by the inhabitants of the district, after its mythical founder and ruler. In the treasury of this great city it is said that Alexander, on his entry, found wealth to the amount of thirty millions sterling.

Here the chief buildings rested upon vast platforms and terraces carved out of the solid rock, which still remain, while almost every vestige of the mighty halls and palaces which covered them has disappeared. With the exception of a few ruins, hardly a monument remains to mark the desolate site of the old luxurious civilisation:

The Lion and the Lizard keep
The Courts where Jamshyd gloried and drank deep:
And Bahrà'm, that great Hunter—the Wild Ass
Stamps o'er his head, but cannot break his sleep.

The great Hall of Xerxes at Persepolis was undoubtedly one of the most extensive and imposing buildings of ancient times, having an area of 350 by 300 feet, or almost twice the area of the great Hypostyle Hall at Karnak. Its roof was supported by lofty columns, no less than 64 feet in height, 4 feet 6 inches in diameter,

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fluted and slightly tapering. Many of the capitals were of remarkable design, in the shape of a double bracket, formed by the forepart of two bulls placed back to back. Frequently between the bracket and the column, as in the illustration, a bell-shaped capital was introduced—very similar to one of the Egyptian forms—and, above this, a weak and clumsy feature consisting of a bundle of vertical scrolls. These scrolls are not unlike the volutes of the Greek Ionic Capital (p. 50), but set vertically instead of horizontally. The wooden beams which supported the roof appear to have rested in the hollow space between the necks of the bulls. These curious capitals may be seen in the rock-cut tomb of Darius, carved out of the foot of the mountain adjoining the terraces, in which is represented, on a small scale, a copy of one of these colossal halls.

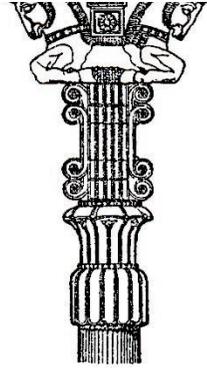


FIGURE 9 —
*Capital from
Persepolis*

But although the vast empire of Persia, stretching from the Indus on the east to Thrace and Egypt on the west, absorbed almost every kingdom with which its hosts came into conflict, its architecture had little influence upon succeeding styles, or upon that of Europe. Far different might have been the result had the invading hordes overflowed Europe, and not been successfully resisted by those brave Greeks who

Breasted, beat Barbarians, stemmed Persia rolling on,
Did the deed, and saved the world, for the day was Marathon!

CHAPTER II

CRETAN AND GREEK ARCHITECTURE

UNTIL recent years it was generally accepted as a fact that while Egypt, by its imposing architectural monuments, revealed to us a civilisation dating back thousands of years before our era, Europe was, by contrast, the real “Dark Continent,” which had not at that time emerged from its primitive conditions. The discoveries in Crete have, however, opened out a new horizon and have given us a new standpoint from which to survey early European history. In the remains of the mighty palaces of Knossos and elsewhere in Crete it has been possible to trace a European civilisation co-equal with that of Egypt, and in some respects surpassing in its achievements the works of the early Egyptian builders.

Sir Arthur Evans, who has been so successful in his Cretan excavations, has made this subject peculiarly his own, so that we may be allowed to use his own words to illustrate the importance of the discoveries made by himself and his fellow-explorers. To this early civilisation he applied the name of “Minoan,” from Minos, the legendary king and law-giver of Crete, and this term has been generally accepted.

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“The marvellous Minoan civilisation,” he writes, “that has there come to light shows that Crete of four thousand years ago must unquestionably be regarded as the birthplace of our European civilisation in its higher form. . . . Moreover, most recent investigations have more and more brought home the all pervading community between Minoan Crete and the land of the Pharaohs. When we realise the great indebtedness of the succeeding classical culture of Greece to its Minoan predecessor, the full significance of this conclusion will be understood. Ancient Egypt can no longer be regarded as something apart from general human history.”

This high early culture, the equal rival of Egypt and Babylonia, which thus began to take its rise in Crete in the fourth millennium before our era, flourished for some two thousand years, eventually dominating the Aegean and a large part of the Mediterranean basin.

It is difficult in a few words to do adequate justice to this earliest of European civilisations. Its achievements are too manifold. The many-storied palaces of the Minoan priest-kings in their great days, by their ingenious planning, their successful combination of the useful with the beautiful and stately, and last but not least, by their scientific sanitary arrangements, far outdid the similar works, on however vast a scale, of Egyptian or Babylonian builders.

“The modernness of much of the life here revealed is astonishing. The elaboration of the domestic arrangements, the staircases storey above storey, the front places given to ladies at the shows, their fashionable flounced robes and jackets, the gloves sometimes seen

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on their hands or hanging from their folding chairs, their very mannerisms as seen on the frescoes . . . how strangely out of place would it all appear in a classical design.

Nowhere, not even at Pompeii, have more living pictures of ancient life been called up for us than in the Minoan palace of Knossos.”¹

The chief sites excavated in Crete are Knossos, Phæstos and Gournia. Of these Knossos is the most famous and the most accessible; its palace was a “town in itself,” standing four storeys high, with two great courts, a theatre area, audience chambers, bath rooms, and a “drainage system not equalled in Europe between that day and the nineteenth century.”²

This world-famous piece of territory, including the site of the Great Palace, has been throughout this century the property of Sir Arthur Evans, who, in the generous spirit in which he has carried out the whole of his archæological work, has recently made over his rights, as owner and excavator, to the British School at Athens.

The palace was twice destroyed and was remodelled on a greater scale than ever in the “golden age of Crete” (*circa* 1500 B.C.), but within half a century it fell to the destroyer, and with it the era of splendour at Knossos came to an end. Meanwhile Mycenæ and Tiryns were becoming important centres on the mainland, and with

¹ Evans, “New Archæological Lights, etc.”

² Hawes, “Crete: the Forerunner of Greece.”

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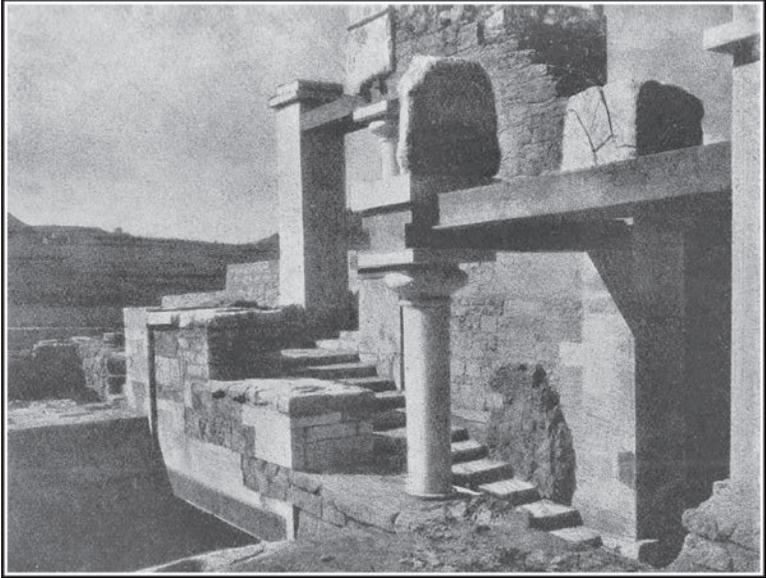


PLATE IV — Staircase to the Upper Storeys,
Great Palace at Knossos

the steady decline in prosperity and in art which ensued at Crete the supremacy was gradually transferred to these capitals.

The earliest traces of civilisation and architecture on the mainland of Europe date back little further than the age of Homer and of Troy; of Atreus, Agamemnon and the other heroes of the Trojan war (*circa* 1180 B.C.). This architecture was an offshoot from Minoan Crete. The most important of the remains are found at Tiryns, the mythical city of Perseus, and at Mycenæ, the capital, according to Homer, of Atreus and Agamemnon. Of the men who lived there before these times, and of their civilisation, we know nothing; they have all, as Horace tells us, passed into oblivion:

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Brave men have lived in times of old,
'Ere Agamemnon first drew breath;
But ah! no bard their praises told,
And all are lost in nameless death.

They lacked, however, not only the sacred bard, but also that more trustworthy historian of antiquity—the



PLATE V — *Head of Ivory
Statuette, Mid-Minoan Period
circa 1700-1550 B.C.*

architect. The brave men who lived before Agamemnon left no enduring architecture behind them, and their history—unlike that of the old Egyptians—is a sealed book to us. A few monuments of Agamemnon's period still exist, and supply the only reliable information which we possess of the history of that time; but our knowledge of them must ever remain scanty.

Homer, indeed, sang bravely of the deeds of these men, but in the writings of the old poets it is impossible to separate facts from fiction. "The age of Homer," as Ruskin tells us, "is surrounded with darkness, his very personality with doubt. Not so that of Pericles; and the day is coming when we shall confess that we have learnt more of Greece out of the crumbled fragments of her sculpture than even from her sweet singers or soldier historians."

The Golden Age of Crete, it has been well said, was

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the precursor of the Golden Age of Greece, but we have little authentic Grecian history before the date of the first Olympiad (776 B.C.). The few remains of an earlier date than this are therefore of great interest. These early structures consist chiefly of fortifications, tombs and walls.

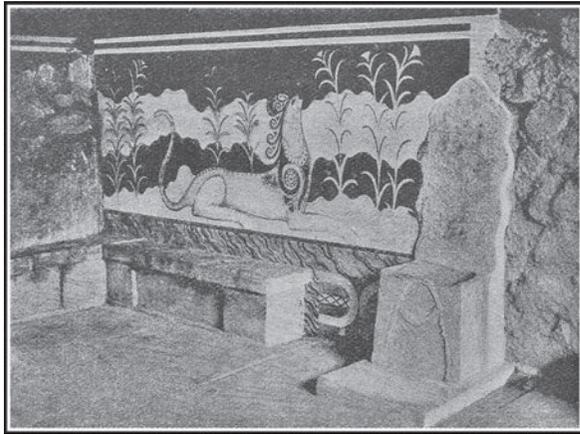


PLATE V — *Griffin Fresco in so-called Throne Room, Knossos
Late Minoan Period circa 1500 B.C.*

Remains of walls are found in many parts of the country—Cyclopean masonry, as it is called, for the method of construction was suggestive of the work of giants, and tradition ascribed its origin to the Cyclopes. The chief feature of the work is the employment of enormous blocks of stone, sometimes irregularly shaped, but usually coursed and fitted together without mortar. At Tiryns the acropolis is surrounded by a wall of this character; a similar wall at Mycenæ contains the great Gate of Lions, probably the most ancient example extant of Greek sculpture. This gateway consists of two monolithic piers and a massive lintel; the wall was

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“corbelled” over in such a way that the lintel was relieved from its weight, the triangular space thus formed being filled in with a sculptured group representing two lions supporting a column which tapers from the top towards the base.

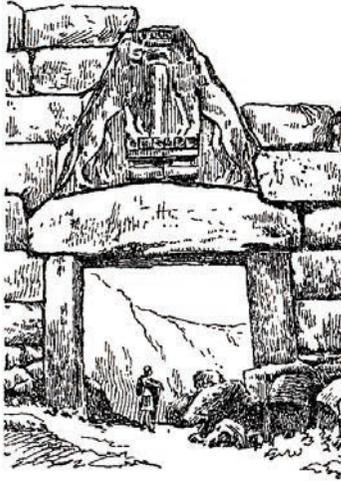


FIGURE 10 — *Lion Gate, Mycenæ*

The earliest existing structure in Greece, possessing architectural merit, and of regular form, is the so-called Treasury of Atreus at Mycenæ. This is in reality a tomb, consisting of two subterranean chambers in communication with one another. The larger chamber

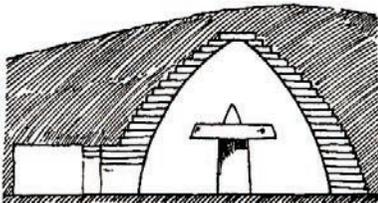


FIGURE 11 — *Section through the Treasury of Atreus*

is shaped like a beehive, roofed over with a kind of dome, composed of massive blocks of stone laid without mortar. The builders appear to have been unacquainted with the use of the arch, for

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although the roof is domical in form, as seen from the interior, the structural method adopted differs from arched, or true domical construction in a most material point. The stones—as in the Lion Gate and other openings in the old walls of the acropolis—are not built in the radiating form of a true arch, but are laid in a series of horizontal courses, so that each course overhangs the one below it; the space is thus gradually narrowed until the projecting courses meet at the top—an arrangement similar to the roofs over the galleries in the Pyramids. Immense blocks of stone are used in the structure; the lintel over the inner doorway is a single block 27 feet long and 16 feet deep, weighing not less than 120 tons. The chief architectural feature of the building was the entrance doorway flanked by shafts entirely covered with elaborate zig-zag ornamentation, showing a fairly developed style. The largest portions of these shafts, after having been lost, were re-discovered and are now set up in a restored form in the British Museum.

These earlier works in Greece differ entirely in form and construction from the later development of true Greek architecture. Hellenic civilisation resulted from a mingling of various races who migrated into Greece. Achæans came first, then Æolians and Dorians, the last of whom over-ran Crete also, and overwhelmed the Minoan dynasty there about 1000 B.C. The resulting Hellenes were never united as one people, but formed a series of states, which developed a great civilisation; and it was the art which they evolved—the “classical architecture” of Greece, as it is called—which has

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been the parent of all the styles throughout Europe in succeeding centuries.

The period during which this architecture flourished was a comparatively short one, for the date of the oldest known building—a temple of the Doric order at Corinth—is not earlier than 650 B.C. For two centuries after this, art progressed until, after the defeat of the Persians, it reached its culmination at Athens during the great Periclean age (460–400 B.C.). A period of reaction then ensued, followed by a short-lived but splendid revival under Alexander the Great, and, on his death (323 B.C.), by a decline from which it never recovered.

The buildings throughout these periods upon which the ancient Greeks lavished their genius were the temples. These differed from the temples of the old Egyptians in almost all points save one—the frequent use of the column as the dominant feature of the design. But the Egyptians built their temples with a view to impress the worshipper by the mystery, the richness, and the grandeur of the interior; for this reason, and for constructive purposes, the columns were placed *inside* the building. With the Greeks, on the other hand, the temples were comparatively small; they were not built as vast memorials of the greatness of despotic monarchs, nor were they required for the accommodation of crowds of worshippers. The roofs had not the massive solidity of the Egyptian structures, and few supports were necessary; moreover, the buildings were designed for external effect. In the Greek temples, therefore, the principal columns were ranged on the *outside*.

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As a rule, the building occupied a conspicuous position, that it might be visible from all points and be admired by all. The Greeks' form of worship was not congregational; it consisted chiefly in prayers offered up outside the sanctuary—from any point within view of the temple—to the deity whose image was enshrined in it. To provide shelter for this image was, in fact, the chief purpose of the temple. Thus the plan was invariably simple. In the smaller buildings, four walls formed an oblong chamber, the *naos*, in which was placed the statue of the deity. A portico with columns, the *pronaos*, gave access to this

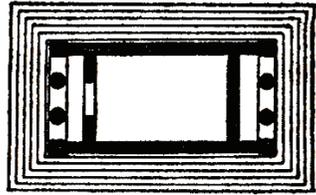


FIGURE 12 — Plan of
Small Greek Temple

chamber; the whole stood upon a platform, and was covered by a simple roof terminating in a gable at each end. In the larger temples, as we shall see later in the Parthenon, columns were ranged all round, forming a peristyle, and at the back of the sacred cell a second chamber was sometimes added, to serve probably as a treasury in which to deposit the votive offerings. Stone, frequently marble, was the material used in the construction throughout, except in the roofs, which were of wood covered with marble tiles. The perishable roofs have all disappeared, and with them has been lost all evidence regarding the method adopted by the Greeks for the lighting of the temples; for with one exception—the great temple at Agrigentum—the walls of all known buildings of this kind were windowless. The question of the lighting of the Greek temple has given rise to much speculation, the most acceptable

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theory being that the light was admitted through a row of windows high up over the internal colonnades.

Reference has already been made to the “Doric order” of Greek architecture, and throughout this story we shall constantly have to refer to the “classical orders.” The term requires a few words of explanation.

To the casual observer, Greek temples would all bear a striking resemblance to one another; yet among the designs there existed three quite distinct styles. Each style was marked by the use of its peculiar form of column, and, accompanying this, was a series of mouldings and proportions, found only in conjunction with that column. Among the Greeks the “three orders” were called the Doric, the Ionic and the Corinthian. The Doric order, the earliest of the three, was marked by simplicity, strength, severity; the Ionic was more graceful and ornate; and the Corinthian, the last to make its appearance, still more rich and exuberant in detail. The Corinthian order had hardly established itself before Greece came under the sway of Rome; but with the Romans, who adopted and remodelled the architecture of Greece, it became the most popular, as well as the most beautiful, of the orders.

The earliest example of the Doric order in Greece is the temple at Corinth (650 B.C.), the oldest Greek temple of which we have any record. Several columns of this building, carrying a portion of the entablature, still stand, and show the design to be somewhat crude, yet with all the characteristic features of the order; the columns are monolithic, stumpy and massive. Later

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examples show marked improvement in proportion and workmanship. In the Theseum, or so-called temple of Theseus, at Athens (465 B.C.), for example, the shafts are more slender and the mouldings more refined. But it was not until the time of the Persian wars that the noblest architecture of Greece was developed, when the Athenians gave vent to their enthusiasm, after the invaders had been defeated, by the rebuilding of the national monuments.

Under the wise rule of Pericles (445–431 B.C.), a glorious period of activity ensued, when architecture in Greece culminated, and the unrivalled group of national buildings sprang up on the Acropolis at Athens. Foremost among these was the Doric temple of the virgin goddess Athene, the world-renowned Parthenon (Gr. *parthenos*, a virgin), a building which, for beauty of design and for delicacy of workmanship, must be regarded as the nearest approach to perfection of all works ever erected by man.

The Parthenon reveals to us all the leading features of a fully developed Doric temple. The plan, as we see,

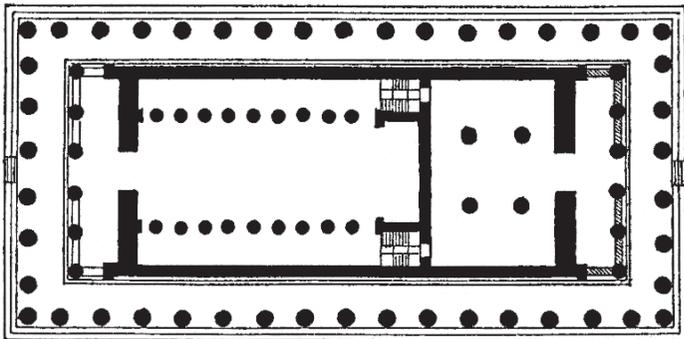


FIGURE 13 — *Plan of the Parthenon*

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was simple and regular, consisting of two cells—the sacred chamber and a small treasury behind it. Round these was ranged a peristyle, or series of columns, eight of which formed a portico at each end; each portico contained an inner row of six columns. The whole structure stood upon a “stylobate,” or raised pavement, three steps in height.

In conjunction with this plan, let us consider the features which constitute a design of the Doric order. The column of this order, as the illustration shows, has

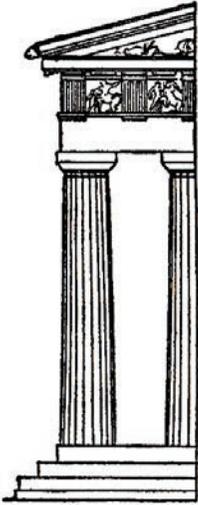


FIGURE 14 —
The Doric Order

no base, but is set directly upon the stone floor or platform; its diameter is greatest at the foot, and from this point it tapers towards the top not in a straight line, but with a subtle convex curve, or swelling, called the “entasis.” Around the shaft are flutes, or shallow channels, twenty, or sometimes sixteen in number, with a sharp edge between them. Surmounting the shaft is a plain, sturdy capital, made up of a square slab, or “abacus,” upon which the superstructure rests, with a circular cushion called the “echinus,” spreading out from the top of the shaft to receive the weight from the abacus. The grooves on the face of the column are carried up until they are checked by a band of fillets just below the capital.

The upper portion of the design, supported by the columns, is called the entablature. This consists, first of a horizontal marble beam, or “architrave,” upon

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which the weight rests, and by which it is distributed to the columns. Being the *supporting* member of the entablature, the architrave was almost invariably left plain, lest ornamentation of its surface should detract from its appearance of strength. Above the architrave runs the frieze, which, in the Doric order, was divided into square panels, or “metopes,” separated by slightly projecting blocks, called “triglyphs” (three channels), on the face of which are cut vertical grooves. As will be seen from the sketch, a triglyph occurs over each column, and one between each pair of columns. In many cases the metopes were filled in with sculpture in relief. The remaining portion of the entablature, above the frieze, is the “cornice.”

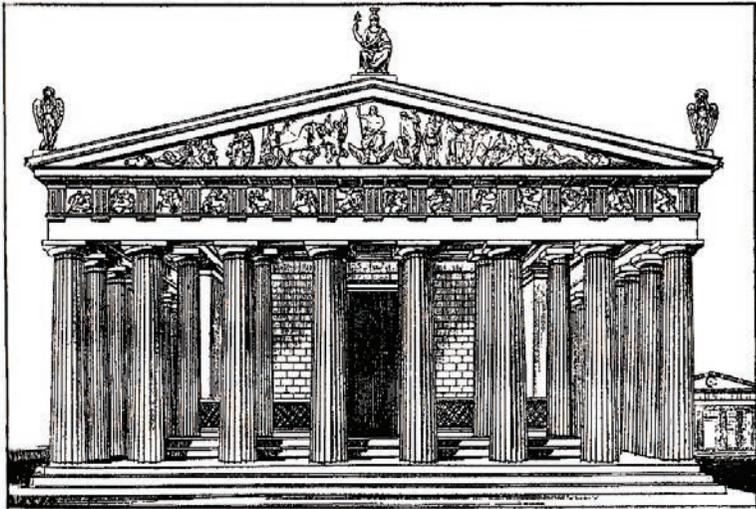


FIGURE 15 — *The Parthenon Restored*

We see, then, that the leading features of the order are the column and its entablature, the latter consisting of three parts—the plain architrave, the frieze, with its metopes and triglyphs, and the cornice. On the

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underside of the cornice will be noticed a series of marble slabs (*mutules*), each having a number of small projections resembling wooden pins, or nail heads.

At the ends of the building the upper members of the cornice are made to follow the lines of the sloping roof until they meet in the centre at the top, while the lower portion is carried along horizontally above the frieze. The triangular space thus formed is called the *pediment*; and, as the most prominent part of the design, contained the finest of the sculpture with which the temples were frequently adorned.

The main details of the Doric order appear to have been derived from early forms of construction in timber. The *architrave* represents the beam which would be found in a similar position in a wooden building; the *triglyphs* correspond to the ends of cross-beams, made up of three planks, or perhaps grooved for decorative



PLATE VIII — *Doric Temple of Concord at Girgenti (Agrigutum)*

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effect; and there seems little reason to doubt that the mutules are reminiscences of the sloping ends of rafters studded with nails. The other feature, however—the column—does not suggest a wooden prototype; as we have before noticed, it is possible that the tombs of Beni-Hasan, or the temples of the Nile valley—or more probably the temple buildings of Crete—furnished the rough models from which the Greeks evolved this, the most dignified feature of their architecture.

We have mentioned the Parthenon as the noblest



PLATE VII — *North-East Angle of the Parthenon*

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example of a temple of the Doric order. Careful measurements of this building have revealed the existence of a number of refinements in its construction—with a view to the correction of optical illusions—which help us to appreciate the extraordinary thought and care which the Greeks bestowed on their designs. The best known of these refinements is the “entasis,” or swelling of the outlines of the columns. The bounding lines of the shaft, which appear straight, are in reality convex—curved outwards from the straight line—to the extent only of three-quarters of an inch in a height of more than 31 feet. This curve is not noticeable to the eye, but is just sufficient to counteract the tendency which exists in a straight-sided column to look hollow in the middle.

Again, the underside of the architrave appears to be perfectly straight. Now a long, horizontal line, which is perfectly straight, tends to look as though it “sags” or droops in the centre. To compensate for this, the horizontal lines of the entablature are all slightly curved upwards towards the centre, deviating from a straight line to the extent of about 3 inches. The lines of the steps are curved in a similar way.

Another subtle correction is applied to the vertical lines, to counteract the apparent tendency of the building to spread outwards at the top. The columns are not truly vertical, but are set with an inclination, so that they all converge slightly towards the top. The slope could not be detected by the eye; but it was considered that, by affecting the beholder insensibly, it helped to give the building the appearance of repose

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and of solidity. So slight is the inclination that columns at opposite ends of the temple deviate from the vertical to the extent of not more than 2 inches; so that their axes, if produced, would meet at a point more than a mile above the ground!

The Parthenon is built of Pentelic marble from the neighbouring quarries. All the marble blocks were laid without mortar, and were worked—probably ground together—so carefully that the joints were only visible by occasional differences of colour. The columns were built up of cylindrical “drums,” which appear to have been first rough-hewn, and then finished and fluted after they had been fixed in position.

Of the sculptures which adorned this wonderful building, many fine examples are now in the British Museum, where they form the chief portion of the collection known as the Elgin marbles. When Lord Elgin was ambassador to Turkey, in 1800, Athens was in the hands of the Turks, who were busily engaged in dilapidating the buildings on the Acropolis, in order to dispose of fragments to travellers. Seeing that the works of art were receiving daily injury, Lord Elgin was induced to consent to the removal of whole pieces of sculpture, which were thus saved from destruction, and eventually found a resting-place in our national museum.

The bas-reliefs in the metopes of the frieze—executed with remarkable vigour—represented the battle of the Centaurs and the Lapithæ; many of these, as well as the colossal groups of statuary which filled

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the pediments, were doubtless the work of Pheidias himself. Among the pediment sculptures is a noble statue of Theseus reclining. "I should say," said one of our most eminent sculptors, when giving evidence before a Committee of the House of Commons, "that the back of the Theseus was the finest thing in the world." In connection with this remark, let us remember that the statue was executed for a position some 50 or 60 feet above the eye, so that it could not be examined closely by any spectator. Moreover, the back of the statue was turned towards the wall of the building and away from the spectator; it could not, therefore, be seen by any one. This example serves to illustrate the surpassing excellence and the thoroughness which marked the work of the Greeks at their best period. Truly:

In the elder days of art
Builders wrought with greatest care
Each minute and unseen part—

for we find in the Parthenon that all the work which was invisible to the spectator was as carefully and as religiously finished as that which was immediately in sight!

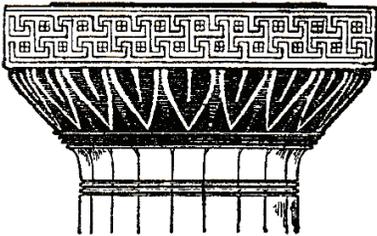


FIGURE 16 — *Doric Capital,*
showing Colour Decoration

Colour decoration was an essential part of the Doric temple design. The Parthenon, at the time of Pericles, did not present a front of dazzling white marble, for the entire building, on the exterior as well as

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on the internal walls, was richly decorated with colour. The frieze, with its metopes and triglyphs, was brilliant with blue and red, the glare of the walls and columns was toned down to a pale yellow tint, and the mouldings and capitals were decorated with frets, egg and dart, and other ornaments in dark colours, so that the whole design presented an appearance of richness and gaiety, rather than of simple dignity.



PLATE VI — *The Theseum, Athens*

Time would have dealt gently with the Parthenon, if man had been more merciful. Until the seventeenth century it suffered chiefly from neglect; but in 1687 a terrible calamity overtook it, while the city was being besieged by the Venetians. Athens at that time was in possession of the Turks, who converted the Acropolis into a citadel, and stored the greater portion of their ammunition in the Parthenon. During the bombardment a Venetian shell, falling into the temple, exploded the gunpowder and wrecked a great part of

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the building. The Venetian commander followed up his work of destruction by breaking up, in a careless effort to remove it, a large portion of the statuary from the west front. Few attempts were then made to restore the structure, or to protect it from the damaging effects of exposure to rain and weather, and the work of decay went on speedily.

Goodly buildings left without a roof
Soon fall to ruin;

the unprotected parts soon began to suffer from the wet, and the iron cramps and dowels, which were largely used in the construction, rusted and caused the marble to crack and fall to pieces.

A century later, as we have seen, Lord Elgin prevented the complete destruction of many of the sculptures by removing them. This action has been keenly criticised; but if ever the end may be said to justify the means, Lord Elgin's action has been justified, for, since the removal of the most precious of the sculptures, the Acropolis has been twice bombarded (1826–1827), by the Greeks and by the Turks, with the result that the Parthenon bears the marks and scars of cannon-shot on all its faces.

Ictinus and Callicrates were the architects of this wonderful building, and to their genius was added that of the great sculptor Pheidias. The temple was in reality a stately shrine for the colossal statue of Athene, 40 feet high, of ivory and gold, the work of this artist. Much of the sculpture was also probably from his hand.

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Remains of many Doric temples are to be found in different parts of Greece and of her colonies. Among these the most important are the Theseum—the best preserved of all Greek temples, in a sheltered spot below the Acropolis—the temples at Selinus and Agrigentum in Sicily, and at Paestum in Magna Græcia (South Italy), the temple of Zeus at Olympia, and of Segesta in Sicily, and that of Apollo Epicurius at Bassæ in Arcadia.

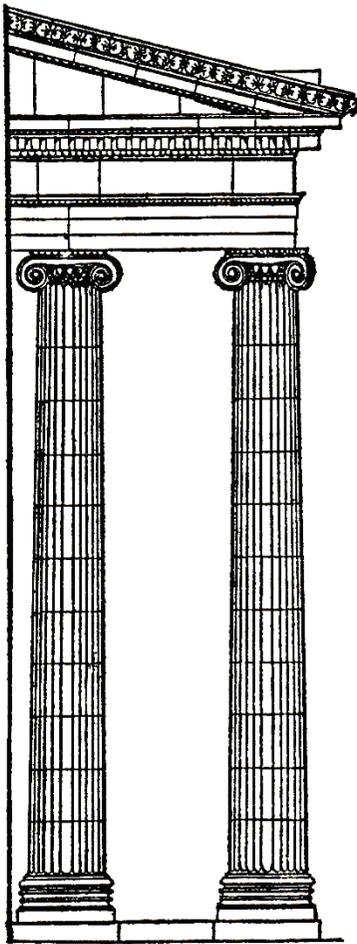


FIGURE 18 — *Ionic Order*

The Ionic order—the second of the three orders in date and importance—was developed by the Ionians or Asiatic Hellenes, who had migrated from Asia Minor. Rock-cut tombs which are found there, and the architectural remains at Persepolis, of the sixth century, B.C., possess features very similar to those which characterise the Ionic order in Greece. Some curious tombs in Lycia—accurate restorations of which may be seen in the British Museum—show the earliest works in stone of a people who had been accustomed to the use of wood, especially

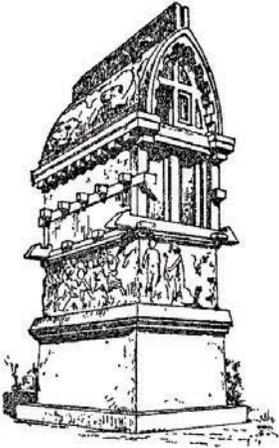


FIGURE 17 — *Stone Tomb, Lycia*

boat-building. The tombs take the form of a boat turned upside down, beams, planks and even the keel being laboriously reproduced in the stone. With such evidence before us, it is easy to understand how reminiscences of timber construction have survived in the designs of those early builders of Greece who drew their inspiration from these sources.

The Ionic order consists of a column and entablature, made up in the same way as the Doric, but differing in the details and in the general proportions. The shaft is more slender—from eight to ten diameters in height—and is surmounted by a peculiar capital which forms the most striking feature of the style. It will be noticed that the abacus is small, and that the cushion upon which it rests terminates on each side in a feature like a scroll, which is known as the “Ionic volute.”

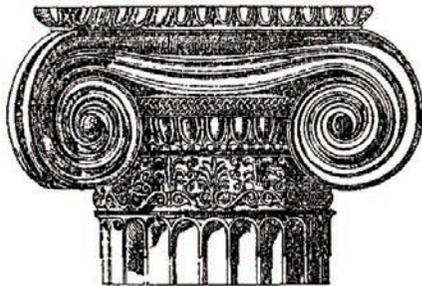


FIGURE 19 — *Ionic Capital from the Erechtheum*

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The column does not spring directly from the pavement, like the Doric shaft, but stands upon a moulded base. Upon the surface of the shaft are twenty-four grooves, or flutes, rather deeper than those of the Doric order, and separated from each other by a fillet. The architrave is plain, generally with three facias; the frieze has no triglyphs, but is either plain or enriched with an uninterrupted design carved in relief. A characteristic feature in the cornice is the “dentil” course, a row of narrow blocks or tooth-like projections, which—like the Doric triglyphs—are probably reminiscences of primitive forms of construction in wood. The crowning member of the cornice was frequently enriched with carving, which took the place of the colour decoration of the Doric order.

The Ionic capital was richer and more elaborate, though less vigorous, than the Doric; it possessed, however, an awkward feature in that it was not four-sided: the front differed from the side, and at the angle of a colonnade the two-sided capital was very noticeable. It was usual, therefore, to treat the corner capital with volutes on the two exterior faces, the scrolls at the outer angle meeting one another at an angle of 45° , as shewn in the illustrations.

More numerous remains of buildings of the Ionic order exist in Asia Minor than elsewhere; but the finest and most notable example of the developed style is the Erechtheum, on the Acropolis at Athens. This building shows much variety of detail of the most refined order, and—an unusual feature in the temple designs of the Greeks—considerable irregularity of plan. This is due

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partly to the difference of levels, rendered necessary by the uneven site; but it is chiefly accounted for by the fact that in the one design were included shrines of several deities—Athene, Pandrosus and Erechtheus.

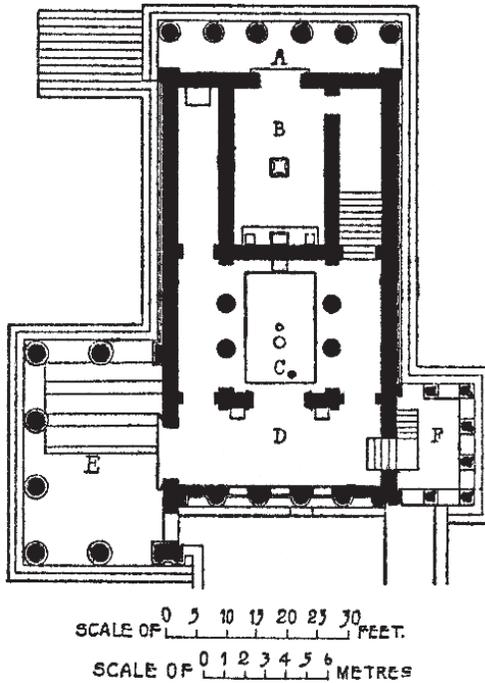


FIGURE 20 — *Plan of the Erechtheum*

The Erechtheum was begun in 479 B.C., and was not completed until seventy years later, so that it was in course of erection throughout the whole of the Periclean period. A feature of the design is the little south porch, the entablature of which is supported by female figures (caryatids) in the place of columns. One of the caryatids and some examples of the carved ornament, borrowed from the Assyrian honeysuckle may be seen among the other treasures of ancient Greece in the British Museum.

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The plan of this building underwent alterations in the early days of Christianity, when it was in use as a Christian church; but the wars of the seventeenth century are chiefly responsible for the mutilated condition of the temple at the present day. When Lord Elgin was in Athens at the beginning of last century, the vestibule was being used as a powder magazine, to which access could be obtained only through an opening in the wall which had been built up between the columns.



PLATE IX — *The Erechtheum, on the Acropolis, Athens*

The first building to be completed of all those now on the Acropolis was the small Ionic temple of Niké Apteros—“Wingless Victory”—which was erected about 440 B.C. This consists of a square cella with a front portico of four columns. The building appears now to be in a fair state of preservation; at one time, however, it had been completely pulled down, and its

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details built into a Turkish fortress or powder magazine, some of the sculptures being fixed upside down. It was rebuilt in A.D. 1836 from the old materials.

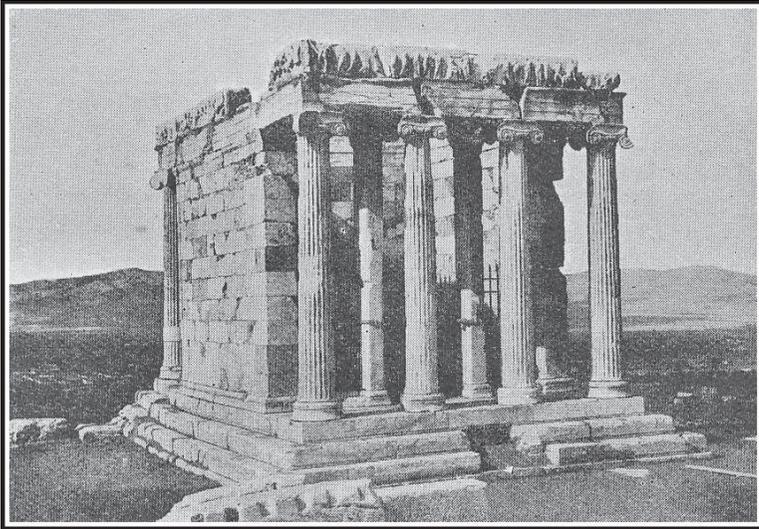


PLATE IX — *Ionic Temple of "Wingless Victory"*

Perhaps the most magnificent of all the structures ever erected by the Greeks was the Ionic temple at Ephesus, dedicated to the great "Diana of the Ephesians." This building was almost totally destroyed, possibly by an earthquake, so that the very site of it was unknown until it was discovered by an English architect, Mr. Wood, in 1871. The British Museum possesses the sculptured drum of one of the "*columnæ celatæ*," referred to by Pliny, from whom we know that there were thirty-six of these sculptured columns, and that one of them was by a renowned artist named Scopas. The beauty of the work seems to justify the high opinion of the Greeks, who included the great temple of Ephesus among the seven wonders of the world.

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Although the Doric and Ionic orders were quite distinct in their respective proportions and features, they were occasionally combined in the same building, as in the Propylæa, the noble gateway which gave access to the Acropolis at Athens. In the temple of Apollo Epicurius at Bassæ in Arcadia, designed by Ictinus, one of the architects of the Parthenon, the exterior columns were Doric, but a row of piers on each side of the interior was treated with Ionic capitals and details.

The third order—the Corinthian—was of little importance in pure Greek architecture; it appears to have been used, before the time of the Roman conquest, for comparatively small monuments. As used by the Greeks, the order resembled the Ionic in all its features, with the exception of the capital. The most graceful example is the choragic monument erected at Athens (335 B.C.), by Lysicrates, in commemoration of his victory in the choral competitions; a capital from this monument is shown in the illustration.



FIGURE 21 —
Corinthian Capital

The Corinthian capital was the great creation of the later period of Greek architecture. Possibly the first suggestions of the form were taken from the temples of the Egyptians, for there exists a striking resemblance between some of the bell-shaped capitals of Egypt and the earliest Greek examples of the Corinthian order; but

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to the Greek artists is due the introduction of the angle volutes and of the acanthus decoration, which combine to make the capital such an exquisite work of art.

Although the Alexandrian age was an era of great magnificence, it was, in reality, a decadent period so far as art was concerned; and after the death of Alexander (323 B.C.) architecture, never recovered its lost ground. It must be remembered that true Greek architecture ceased almost immediately after the country had come under the baneful influence of conquering Rome — *i.e.*, about the beginning of the second century B.C. Among the vast undertakings of this Roman period was the temple of the Olympian Zeus at Athens, a magnificent building of the Corinthian order, begun about 170 B.C., but not completed until 300 years later. When Sulla entered Athens with his army, he carried off several of the capitals and other portions of this temple to Rome, where they probably served the Romans as models of the Corinthian order.

Before leaving Greece, mention must be made of some buildings of which remains exist, other than temples. The largest structures were the theatres for dramatic representations, which were built frequently

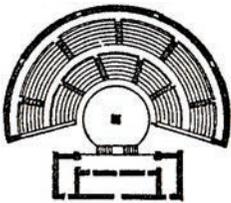


FIGURE 22 — *Plan of Greek Theatre*

in an excavation of the sloping hillside, in the form shown. In the centre was an altar to Dionysus, the space around—the orchestra—being occupied by the chorus; the actors appeared on a small stage, while the audience occupied stone or marble

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seats, ranged in semi-circular tiers. In the theatre of Dionysus at Athens accommodation was provided for about 30,000 spectators.

The Greeks built few important tombs. The most celebrated was the mausoleum at Halicarnassus in Caria—another of the seven wonders of the world—which received its name from Mausolus, to whose memory it was erected by his wife Artemesia (*circa* 350 B.C.). This tomb was a splendid structure in the Ionic style, richly decorated with sculpture. Portions of the colossal chariot and horses which surmounted the pyramidal roof may be seen in the “Mausoleum Room” of the British Museum.

Some of the memorial stones (steles) used by the Greeks were beautifully carved, and it is interesting to notice that on many of them are found sculptured representations of the arch. Although the Greek builders were undoubtedly acquainted with the arch, they appear, so far as our knowledge goes, never to have made any practical use of it. “An arch never sleeps,” says the Hindoo proverb; and the Greeks, perhaps rightly, felt that its use would detract from the simplicity and the feeling of repose to which they endeavoured to give expression in their designs.

Our knowledge of the domestic architecture of Greece is derived almost entirely from descriptions by contemporary writers, for no remains of importance have survived. The architecture and art of Pompeii savoured much of Greek influence, and the Pompeian house, described later, probably resembled in many particulars the houses of the Greeks of the earlier period.