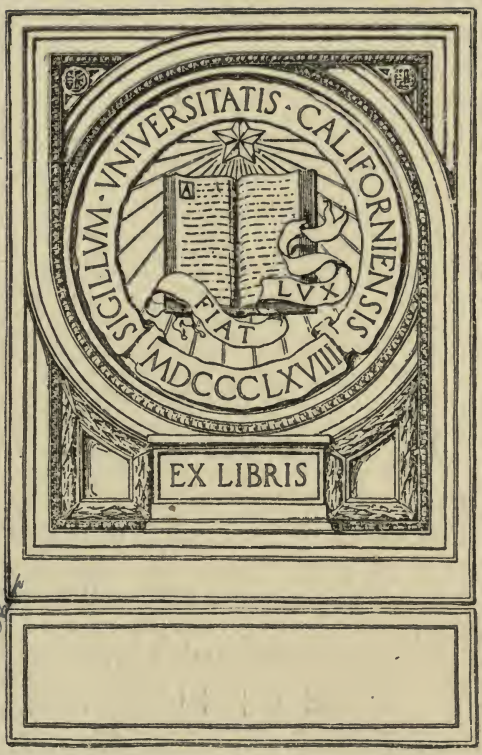
Architectures of European Religions: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AN INTRODUCTION TO THE ARCHITECTURES OF EUROPEAN RELIGIONS

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THIS LITTLE BOOK
IS DEDICATED VERY
AFFECTIONATELY TO
MRS. G. M. FREEMAN

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PREFACE

IN lecturing to students upon the subject of architecture, the author has been led to suppose that there is some need for the issue, at a moderate price, of an introductory survey of the development of European architecture. It has been suggested to him that his recent work upon the architectures of European religions would be acceptable in book form, as such an introduction, both for the student and the general reader.

Although civil and domestic work are of vast importance in the history of architecture, their omission makes it possible to reduce the size of the book, and yet give a tolerably complete view of the nature of the several styles. For it is true to say that in the case of architecture, as of everything else, man has generally given his best in the service of religion. Neither can it be gainsaid that this theme has its own peculiar interest.

For this reason Roman architecture scarcely takes the position that it deserves; yet it seemed desirable not to include in the present edition more additional matter than was necessary. In

the case of Ægean architecture an exception has been made, as otherwise this important style could hardly have been given a place at all.

In particular there seems to be a need for a more adequate account of Greek architecture in English than is given by any present text-book, and still more is this so with regard to Byzantine architecture. Within the limits at his disposal the author has made it his special endeavour to supply this.

In the case of Gothic architecture there are a few suggestions which, it is hoped, may even in their present abridged form be a small contribution to the subject.

The author has followed the growing tendency to use the Greek spelling wherever possible, although in a few very familiar words the Anglicized form has been retained, while in one or two cases the 'y' has been used even where the 'c' is rejected, so as not to make the word look too strange to English readers. The present action of the Board of Education will make things easier for the next generation. Absolute consistency is as yet impossible: even the most extreme adherents of the Anglicized systems (they cannot be called Latinized) never dared to talk about Athena Nice, or even Samus, or Eyripides, sarcastically suggested by Robert Browning, although the author once came across the gem *bulcuterium*.

It is hoped that the glossary will prove useful, the want of which, the author has found, is frequently a great handicap to the beginner.

EDINBURGH, *December* 1908.

CONTENTS

ILLUSTRATIONS

(THE COVER DESIGN AND ALL THE ILLUSTRATIONS EXCEPT THE FOUR HALF-TONE BLOCKS ARE BY THE AUTHOR.)

HALF-TONE BLOCKS

LINE DRAWINGS

CHAPTER I

ÆGEAN ARCHITECTURE

OF the architecture in Greek lands before the true Hellenic architecture appeared upon the scene we know comparatively little, but even that little is great compared with our almost entire ignorance of the subject a generation ago. The account of the great discoveries of Schliemann at Tiryns, Mykenai, and Troy, restoring to us the Homeric world, of whose very existence the greatest scholars were sceptical, reads like a fairy story. Since then a long series of excavations, carried out with greater and greater scientific precision throughout the whole Ægean area, has provided for us a mass of material which it will probably require the scholarship of many years to analyse and reduce to anything like systematic order. As yet no conclusions can be more than tentative.

PRE-HELLENIC ARCHITECTURE

This pre-Hellenic architecture can hardly be considered the parent of Greek architecture: its influence was on the whole smaller than might have been expected; indeed, the difference between them serves to emphasize the originality and independence of the Hellenic style that came

after. It is convenient to term this architecture and the civilizations to which it belonged 'Ægean,' as it flourished not only in Greece itself but throughout all the coasts and islands of the Ægean Sea. But, at the same time, although there is a certain continuity of development with no decided break, such as exists between itself and the architecture of the Hellenes, it is nevertheless marked by changes and new departures that seem to imply influences from without, if not political and racial upheavals. These are at present exceedingly obscure and open to controversy, and it is difficult to do more than glance at the main trend of development.

PRIMITIVE NEOLITHIC PERIOD.

During the neolithic age in the Ægean, at some time which may be put approximately 6000 years before the Christian era, there was a primitive but flourishing civilization, implying a highly developed commerce, extending as far as Egypt, with some powers of navigation. Its centre apparently was in Crete, and is marked by the exploitation of the obsidian in the island of Melos, which, some considerable time afterwards, developed its own resources during the flourishing epoch of the town, now known to archæologists, from the name of the neighbouring village, as Phylakopi. In this very remote era the neolithic remains at Knossos contain obsidian, and Melos is the only known source of obsidian anywhere near the Eastern end of the Mediterranean. Obsidian beads are found in Egypt in remains to which a rough date of the seventh millennium may be assigned, and obsidian flakes occur there some 600 years or so later. By the time of the foundation of the first city at Phylakopi the trade was very considerable. The architectural achievement of this age must have been of an exceedingly simple nature, probably merely wattle and daub huts, as the marked clay strata testify wherever

there have been settlements. Wooden or half-timber houses may conceivably have succeeded them, but they have left no remains, and we have nothing but an inference from a later mode of construction to point in this direction. Something, however, of the working of quarried stone is seen, at any rate towards the close of the neolithic period, in the cist graves found principally at Amorgos and at Pelos in Melos. It is therefore quite possible that a few of the more important buildings may have been of stone, but of these there is practically no evidence. At the very close of the neolithic period we seem to have stone-walled houses appearing at Purgos in Paros and also in S.W. Naxos, and these may represent an older tradition. It is also conceivable that sun-dried bricks may occasionally have been used, which, under certain conditions, can disappear, leaving practically no trace of their form.

PERIOD OF UNWALLED SETTLEMENTS.

A definite style of stone building begins to appear about the commencement of the fourth millennium. The settlements are marked by their unwalled and unfortified nature, and, as far as the slight evidence goes, seem to have been laid out almost as scattered groups of buildings, yet in the main preserving a certain parallelism of plan, although they do not seem to be arranged along definite street lines. The building is rough rubble work of comparatively small stones built with clay and mud, and plastered over with the same; lime mortar is not yet used. So far there are no signs of any religious buildings as such, and indeed throughout the whole of the Ægean development there seems to have been hardly anything of the nature of religious architecture. This is one of the essential contrasts between these peoples and the Greeks, whose religious buildings were of such marvellous excellence and occupied so prominent a place in their style. The

nature of the architecture, however, is of importance here, as it is necessary to grasp both the resemblances and the differences between the architectural principles of the two styles, in order fully to understand the position of Greek religious architecture in the history of the art.

MATURED STYLES.

A third architectural stage is reached roughly about B.C. 3000, when a closer system of town building, generally although not necessarily fortified, is adopted. It is marked by an elaborate system of street planning, with a distinct preference for rectangular rather than convergent systems. There is a very considerable advance in the art of building, with a regular drainage system beneath the streets. We find lime beginning to be used. There are great walls and fortifications, and the towns in the generality of cases are no longer open. The probable cause seems to have been pressure from the north, which rendered these fortifications necessary. They apparently first made their appearance upon the mainland, and worked their way southward, the cities of the maritime power of Crete remaining unwalled, probably on account of that very sea power. The great brick city of Troy, the second in the series, already shows this type completely developed, and its final destruction must have been at least as early as B.C. 2000. The second city at Phylakopi is of this type, and it was probably founded somewhere about B.C. 3000, reaching its prime about B.C. 2500.

Of the general character of building, it may be said that it passes from a comparatively rude to a highly developed style, and indeed might be divided into periods. But the variations of type are far greater in their local than in their chronological aspect, which latter is much more visible in the paintings and the minor arts of pottery. Architecturally, the second city of Troy is more akin to the great sixth city than either is to any

period of Knossian architecture. The architecture seems to reach its zenith somewhat earlier than the other arts, and begins to show signs of decadence while they are still in some ways advancing.

It may seem strange to sum up a period, running into many hundreds of years, as though there were a single style throughout. But in the present state of our knowledge, particularly in the extreme uncertainty of the chronology, some such simplification is necessary if lengthy controversial matter is to be excluded. Very approximately it may be said that the architecture was at its finest at a time ranging round the 17th century B.C. But certain broad general characteristics may be noticed.

MATERIAL AND WORKMANSHIP.

The materials and construction used seem to have differed very considerably locally, such intractable material as basalt appearing at Phylakopi, and limestone, gypsum, brick, schist, etc., in other places; and varying from the roughest blocks, hardly shaped at all, to the finest jointed masonry, such as we see at Phaistos or in the walls of the great megaron at Knossos. Even early in the period there is good sound work with headers and stretchers roughly shaped, as at Phylakopi. On the whole, work on the Greek mainland is rougher and less carefully finished, the so-called cyclopean masonry at Tiryns and elsewhere being typical. This would point to the civilizing influence proceeding from the south northward. Troy seems to be somewhat outside the main stream. Its architecture, particularly its fortifications, is very advanced, although in other particulars its civilization seems to be behind the rest of the Ægean.

WALLS.

There is a great tendency from the first to use rubble for interior walls and for less important structures. This is faced with plaster and frequently elaborately painted, as in the fresco of the Flower Gatherer at Knossos, or the absolutely delightful example of the Flying Fish at

Phylakopi. Another method is to build one or two courses with great blocks of ashlar masonry and raise the rubble walls upon the top. In outside work some such foundation is almost necessary. In the early second city of Troy, built mainly of sun-dried brick, there is a substructure of stone to protect the brick from the wet. Rubble tends to become more common in later work, and sometimes later rubble walls are found built upon older stone foundations. The system may be the origin of the orthostatai of later Greek architecture (*q.v.*). Sometimes there is also a projecting plinth, as in the case of the

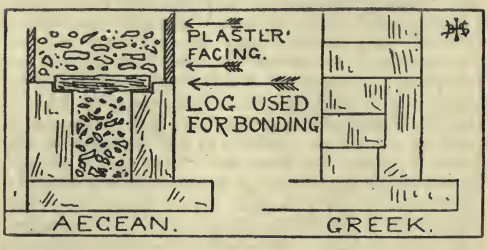


FIG. 1.— WALL-BASE SECTIONS.

limestone blocks below the gypsum in the West Court at Knossos, or the reverse arrangement, with the gypsum blocks below, on the southern terrace (fig. 1). This is quite possibly the origin of another Greek feature, the stylobate [v. cap. II.]. Another method, which on account of its material was not likely to survive to our day, seems to have been something of the nature of a half timber construction, in which courses of short lengths of timber set transversely in plaster across the wall were used at intervals in the ashlar, or plastered rubble, as the case might be (fig. 2). There are grounds for supposing that we have the remains

of such a course in the megaron at Knossos. In interiors the ends of these were masked by rosettes or medallions. In the last phase of Ægean architecture, the Mykenaian, there seems to have been an interesting survival of this technique executed in stone over the doorway of the so-called Treasury of Atreus [see p. 24 and figs. 3 and 17].

On the whole it may be said that there is a distinct architectural decadence which in Crete becomes obviously marked about the 14th century B.C. But in the north it seems to be otherwise,

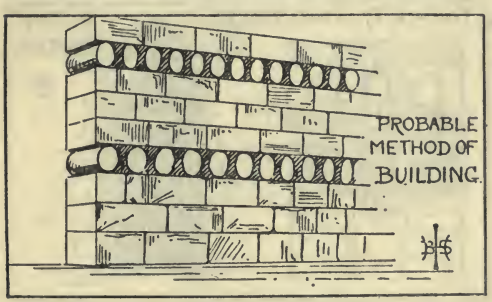


FIG. 2.—ÆGEAN WALL.

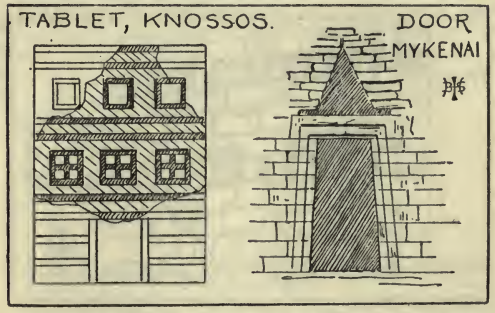
and the masonry continues to improve until a later date, as, for instance, in the very fine beehive tombs at Mykenai, which may be not much earlier than the 13th century. This may be accounted for by the fact that the artistic impulse spread from the south. Hence the north would be longer in developing; and, on the other hand, a northern subjugation of Crete, which seems to be probable, would have greatly arrested progress there.

OPENINGS.

The spanning of openings seems in most instances to have been with timber lintels, and in early work the stones are not even gathered over above.

Stone lintels, however, were sometimes used. The jambs of doors were very commonly of stone, and in northern work certainly an inward inclination was usual, which is very possibly the origin of the same feature in Greek doorways (fig. 3 below and fig. 26, cap. II.). Windows, as contrasted with Greek architecture, seem to have been of frequent occurrence. They appear to have had timber lintels, jambs, and sills, and we may notice a remarkable anticipation of the modern window in the division into 'panes,' of which we have clear

FIG. 3.—ÆGEAN WINDOWS AND DOORS.



evidence in tablets found at Knossos (fig. 3). The nature of the filling is unknown; it may have been oiled cloth or parchment, and is indicated in red colour on the tablets.

COLUMNS. Timber seems to have played a large part in the construction, especially in the columns, which were commonly of wood, although with bases of stone. The columns, and generally the bases, were circular in form, and it is noticeable that the columns tapered towards the lower end (figs. 4 and 12), the exact contrary of columns in Greek architecture. The taper, however, is generally exaggerated in

drawings. The charred remains of actual columns were found both at Knossos and at Phaistos. Stone examples of similar shape but of much later date occur at Eleusis and Mykenai. They were treated with different kinds of fluting as ornaments, sometimes vertical, sometimes diagonal (fig. 4), and this may even have suggested the Doric flute. The anta was used both in stone and in wood, and is possibly the prototype of that feature in Greek architecture. It is interesting to notice that when stone columns were used they were almost always

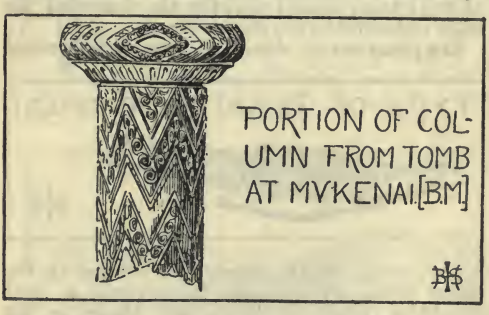


FIG. 4.

square in section, especially in early work, as in the case of the Northern Portico at Knossos, the so-called 'pillar rooms' at Phylakopi, and at Knossos both in the palace and in houses outside. They are also of rectangular shape in the court at Phaistos, and by the N. entrance at Knossos, and even in the megaron itself, although there they are recessed. This is important in view of the discussion regarding the origin of the Greek column [v. cap. II.]. The inter-columniations were wide, and the architrave apparently was a wooden beam upon which the upper masonry rested.

FLOORS AND CEILINGS.

In spite, however, of the use of wood, it does not seem to have been used for floors. The floor joists were of circular logs of wood, and above these was laid clay, and upon that a fine hard cement or a pavement. On the ground floor cement seems to have been the favourite material for exterior work, and is often laid over paving; but in interiors fine gypsum slabs are not uncommon. The ceilings, where there was no floor above, were in all probability of thick reeds covered with plaster. Remains of plaster have been found at Phylakopi, clearly showing the shapes of the reeds embedded in the plaster (fig. 5).

PLANS.

The plans are in almost all cases characterized

FIG. 5.—CEILING FRAGMENT.

by numerous offsets, angles, and returns in the outer walls, which must have given a most delightful effect of light and shade to the complete elevation, and which are carried out with a lofty indifference to the extra work that they must have entailed (figs. 6, 8, and 9). Where fortifications occur, an arrangement may also be noticed by which the entrance is guarded by a complicated and circuitous means of approach, as at Suros and Siphnos, and which attains its fullest development at Tiryns (fig. 8, E). This seems to have been due to northern mainland influence, and gradually to have spread southward.

The buildings of greatest importance were the palaces of the kings, which show in almost all cases

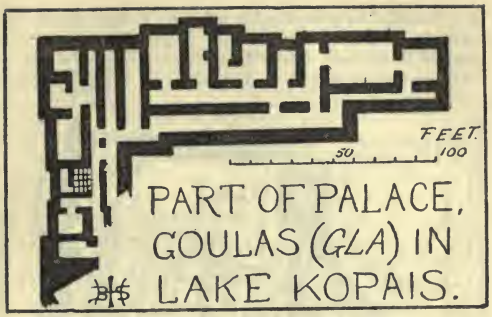

FEET
50
100
PART OF PALACE,
GOULAS (GLA) IN
LAKE KOPAIS.

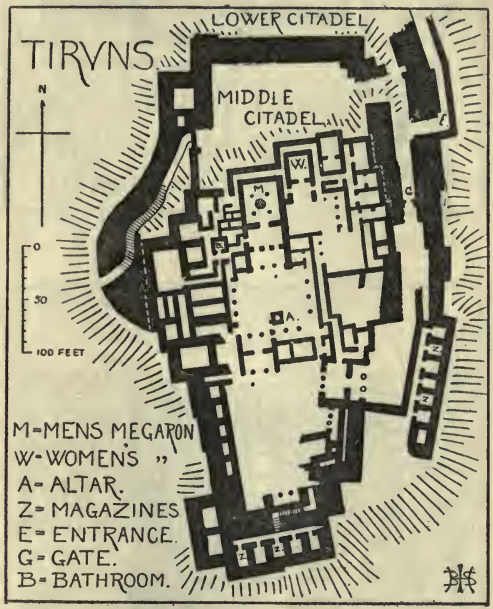
FIG. 6.


MAGAZINE
WITH
PITHOI,
& CISTS
IN FLOOR

FIG. 7.

a remarkable complexity of plan; but there are certain marked variations. Both in the north and in the south there is a distinct parallelism in the arrangement, but the Cretan plan is more

FIG. 8.



regular and conceived more definitely as an artistic whole. The equal balancing of the main masses about a central court is also a southern feature. In the north this is less obvious, and

the court partakes more of the nature of a fore-court, and is surrounded by a colonnade. The greater regularity is doubtless mainly because in the islands the question of fortification was of

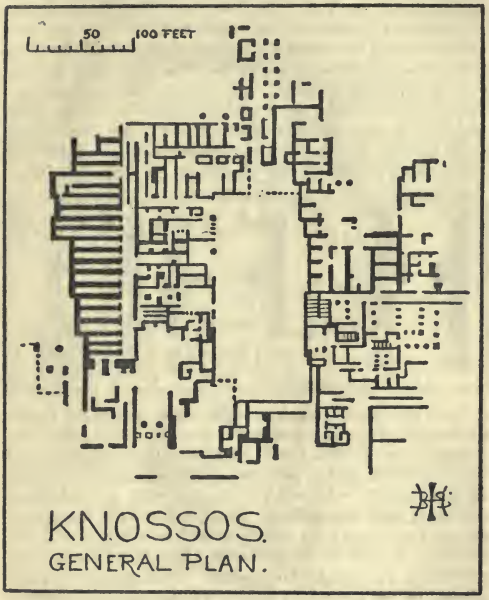


FIG. 9.

minor importance. In the north the buildings were castles as well as palaces.

But there is also a difference in the artistic *motif* that cannot thus be explained. The northern plan tends to rooms comparatively square in shape; the

NORTHERN AND SOUTHERN WORK.

Cretan type is long and narrow. The difference is most noticeable in the smaller chambers and magazines, which are very characteristic features of the style (figs. 7, 8, and left of fig. 9), but it holds good throughout, and is true even of the great halls. Tiryns and Knossos, the finest and best known examples, may be taken as typical (figs. 8 and 9). The fortress of Goulas or Gla in Bœotia, although northern in its main features, is to some extent an exception, and shows affinities with the southern type. Propulaia are common throughout, but here a northern type can be distinguished which is almost the exact counterpart of the later Greek examples (fig. 10).

FIG. 10. PROPULAIA.

THE MEGARON.

But the most marked difference between north and south is in the megaron itself. The northern megaron is a broad rectangular chamber with an antechamber and a portico, and contains the hearth in the centre. Above the hearth was probably an opening, and the sides of the opening were normally supported upon four columns which in all likelihood carried a sort of clerestory admitting light and allowing the smoke to escape. The typical Cretan megaron, on the other hand, has no central hearth, possibly on account of the warmer climate; but it has a feature peculiar to itself in the open chamber at the end of the hall, apparently open to the sky for the admission of light. This 'light-well' is found alike at Knossos, Phaistos, and Hagia Triada.

The southern type also contains columns which presumably supported the roof; but they are arranged in lines, as the square arrangement around the hearth is unnecessary. Moreover, whatever may have been the case in the north, where a second hall above the smoke outlet would be practically impossible, there is no doubt that

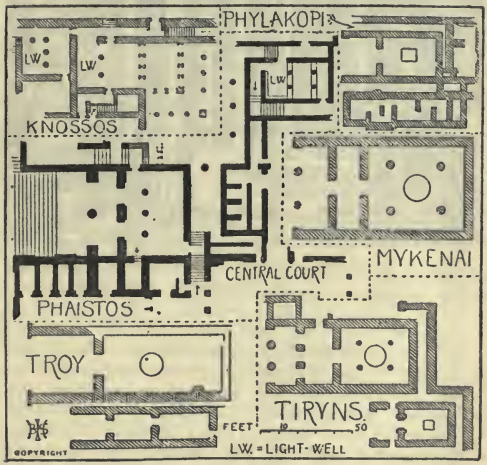


FIG. 11.—MEGARA DRAWN TO COMMON SCALE, SHOWING N. AND S. TYPES.

in Crete there were halls upon different storeys one above the other.

The northern type, although belonging to the ruder style, eventually supersedes the other, and we find it appearing in the south in the late third city at Phylakopi (compare the examples in fig. 11). In this northern type we see a plan closely resembling that of the classical Greek temple; and

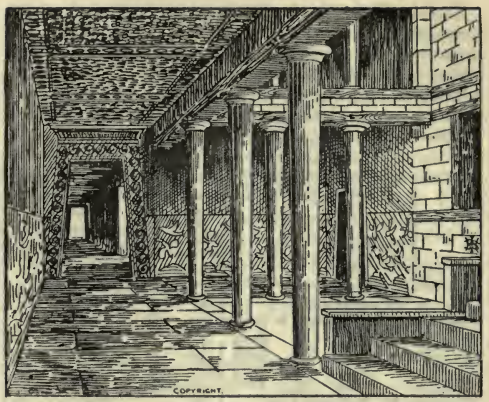


FIG. 12.—RESTORATION OF APPROXIMATE GENERAL EFFECT IN THE HALL OF COLONNADES: KNOSSOS.

if it is really the origin of the temple form, it may be considered the most important of the Ægean influences upon later Hellenic architecture.

ELEVATIONS.

It is, of course, natural that we should know a great deal more about the plans than the elevations, but we have a certain amount of valuable evidence about the latter. Probably there were upper storeys with minor rooms in the north. In the south there is no doubt that there were several storeys, and in each storey the column played an important part. As in Spanish work, the main architectural features were in the interior, and the deep wells, with their tiers of columns and great staircases, must have produced a fine effect (fig. 12. Plan of same, top of fig. 11). There is evidence that columns played a part in the external façade also.

On the whole, it may be said that the northern influence is much more marked in the temple architecture of Greece than any influence we can trace to the southern types.

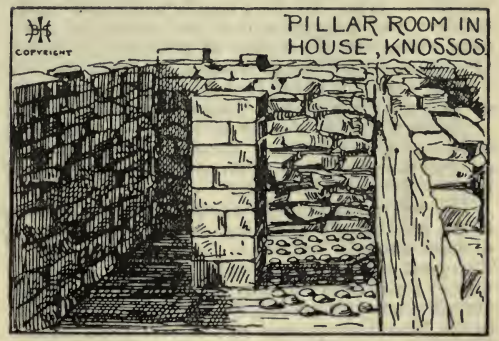
DRAINAGE SYSTEMS.

The columned storeys rising magnificently one above another are startling indeed, occurring at a date some 18 centuries before Christ, in a European civilization of which we had never previously heard; but the elaborate drainage system is almost equally surprising, finding its parallels only in the beautiful systems of the best work of the Middle Ages, and in those of modern times. Street drains were generally built of stone with large flat slabs above and below, but an open terra-cotta channel sometimes occurs. In small underground drains terra-cotta pipes with a collar were used

FIG. 13

(fig. 13), whereas in the great palace systems the main drains were well built passages large enough to allow of a man entering them for cleaning purposes. Sanitary conveniences were supplied; and if there was not the extensive accommodation that was demanded in the Middle Ages, where in many instances every room has its own separate arrangements, at least there is no reason to suppose that it was less than satisfied the last generation, or than is commonly found on the

FIG. 14.



Continent to-day. The same remarks apply to bath-rooms, which were plentiful, and often elaborately treated. Sometimes there was a sunk bath with steps, sometimes merely a moveable bath with a channel all round the floor to carry off any splashings.

RELIGIOUS ARCHITECTURE: THE PILLAR ROOMS.

Such is a very brief description, enough to indicate the highly developed character of the style. When we turn to consider religious architecture, it is obvious that there was little or none, and the main importance from that

point of view is the influence exerted upon succeeding styles. Yet there are just a few points that may be noted. We have in the 'pillar rooms' at Knossos and Phylakopi something of obvious religious significance. It does not seem to be necessary to suppose that the pillar was not purely structural in its function,—even a sacred sign upon the top does not preclude the possibility of its supporting other blocks. Many of the blocks of the palaces in Crete are marked with sacred signs, which may be paralleled by the numerous masons' marks upon our own mediæval buildings. But there does seem to

FIG. 15.

have been a special sacredness attaching to the pillar form, and in the case of a 'pillar room' in a house at Knossos, a great number, some 200, of little inverted cups were discovered, beneath which were found the charred remains of small vegetable offerings (fig. 14). If we cannot say that these rooms are examples of religious architecture, it can at least be said that some religious significance was attached to their architecture.

We have also a fresco, at Knossos mentioned above, which, in the light of the secular architectural discoveries of the palaces, admits of interpretation, and

seems to represent a temple or shrine (fig. 16). Below we have the great gypsum blocks that we have seen in the palace, and above half timber work with its frescoes on the plaster. The pillars, presumably of wood, are of the usual inverted form of Ægean architecture, and their sacredness is thought to be indicated by the horned cult object set before them. An interesting frieze, resembling that of porphyry-like stone found at Knossos

FIG. 16.

(fig. 15), or the alabaster example from Tiryns, occurs below the central opening. This seems to be the progenitor of the triglyph frieze of the Doric order. The triglyphs in this instance, judging by the colour, were apparently of wood. There is also indication of the blue glass paste or enamel which occurs at Tiryns — a delightful form of architectural decoration—the *κύανος* of Homer, so long a stumbling-block to the critics. In this

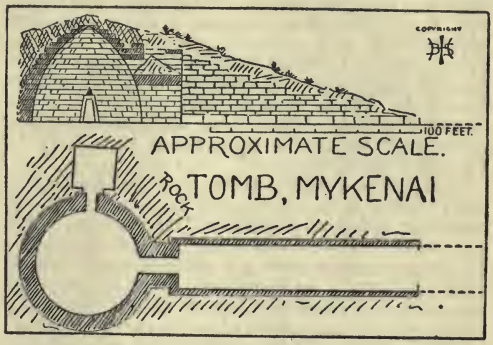
connexion may also be noticed some little gold ornaments found at Mykenai, which are also generally supposed to represent a shrine (fig. 16). The lower part is again of ashlar masonry, the upper part is apparently of timber. There are three timber-framed doorways through which appear columns; but it is difficult to say whether they are meant to be within the building or form part of the façade. In front of them are the same sacred horns. The most interesting point is that the central part is higher than the sides, and it certainly does suggest a nave and aisle construction with clerestory lighting. On the other hand, it might equally well represent a lantern rising above the hearth, which would, of course, be visible from a point of view a little distance in front of the shrine, and could therefore quite legitimately be represented pictorially in the plane elevation.

Lastly, there remain to be considered the tombs, TOMBS.
which were of a sacred and in some instances definitely religious character. The famous shaft graves of Mykenai—deep shafts sunk vertically in the rock—represent for us a stage of burial that can hardly be considered architectural. So also with the larnax burials of Crete, where the corpse was first skeletonized in the earth and afterwards deposited in an earthenware sarcophagus or larnax and buried. But in the chambered tombs and the still more elaborate domed structures we have something very different. They are found widely distributed over the Greek mainland, where the best specimens occur, but have been found at Phaistos, Palaikastro, Praisos, in Crete, and also in Melos.

The chambered form is that of a square DROMOS
chamber cut in the rock, with a gabled roof and TOMBS.
approached by a dromos, or passage. It seems probable that it is merely a development of the

shaft grave, and the dromos is simply a means of closer and more ready approach to the tomb itself for the worshippers of the shade of the deceased. This finally develops into the great domed chamber out of which in some cases the tomb itself opens, and which can hardly have served any other purpose than one connected with religious ceremonies in relation to the deceased. This development is borne out by the shaft-construction of the grave at Orchomenos, in some

FIG. 17.



respects the finest example of these beehive tombs. It is, however, not in as perfect a condition as the so-called Treasury of Atreus at Mykenai, which was a trifle larger than this example (fig. 17).

In both cases a large domed chamber, of beehive shape, about 47 feet in diameter, is cut out in the hill-side and lined with masonry of large blocks built on the corbelled system (fig. 17). Opening out of the central chamber is a smaller side chamber, which in the case of the Orchomenos example was, like the shaft graves, clearly

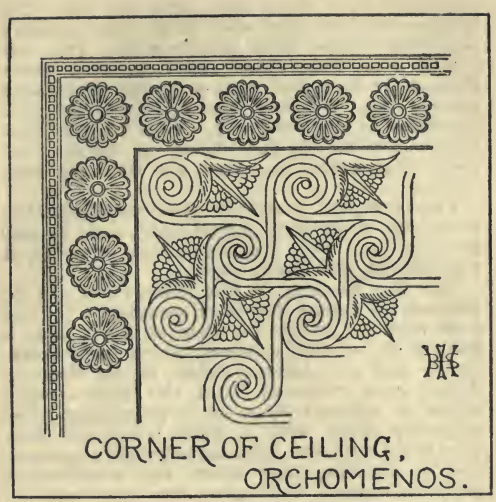


FIG. 18.—MYKENAIAN SPIRALS AND ROSETTES.

excavated by a shaft sunk from the top. The bottom was first lined with small stone masonry and then covered with marble slabs. This was roofed over with great slabs of green schist elaborately decorated with a typical Mykenaian pattern (fig. 18), and the marble walls were decorated in the same way. Above was another chamber to relieve the ceiling of weight, and above that again the shaft was filled up with débris.

The vault part is marked with numerous holes, some still containing bronze nails, and, as was also the case with the Mykenaian example, it was covered with bronze rosettes.

The fine doorway to the latter tomb can be restored with some degree of accuracy. A great door, narrower at the top than at the bottom, is flanked by two half columns, which taper downwards and are adorned with zigzag flutings. Above is an enormous lintel, the pressure upon which is relieved by a great triangular space originally filled with a light triangular slab. The architrave was ornamented with a pattern, clearly recalling the short log construction mentioned above, and below this was probably a series of lions' heads.

THE TEMPLE OF ATHENE
NIKE APTEROS, ATHENS.

CHAPTER II

GREEK ARCHITECTURE

THE subject of Greek architecture is one that has been curiously neglected in this country, and the student finds himself beset by an insufficiency of data and an atmosphere of uncertainty immediately he enters upon the study. This accounts for the vagueness and incompleteness of what little has been written upon the question. It is therefore especially necessary in dealing with the subject of origins to be upon one's guard against certain popular fallacies, particularly when those origins are lost in the obscurity of a remote antiquity. A mere resemblance between two forms is absolutely no evidence that one is derived from the other, and nothing is more harmful to true knowledge than the shallow kind of art criticism that makes such an assumption without a very careful weighing of the evidence. Art is in its essence creative, and, in a great art, even when it does borrow, the important element is always not what it takes, but what it gives of itself. At the same time, the higher the art the more subtle it is, and consequently by the inartistic

THE STUDY OF GREEK ARCHITECTURE.

observer the primitive borrowed element is absurdly over-emphasized.

A familiar parallel is seen in the case of faces. The shallow observer is always noticing 'likenesses'; the artist notes differences. The stranger notices the 'likeness' among members of a family; those who really know the faces note the differences. Twins at first sight are often almost indistinguishable; later, as knowledge grows, we wonder that we ever noted any marked resemblance. (An excellent instance of this is seen on p. 100.)

ORIGINALITY AND INDIVIDUALITY OF GREEK WORK.

The architecture of Greece, the most refined, the most subtle, and in some respects the most artistic, that the world has seen, is pre-eminently the natural architectural expression of the gifted race that produced it. The Hellenic peoples were marked both by an individuality and an independence in a most unusual degree, and therefore, except where there is real evidence, it is not unreasonable to give them credit for invention, when the forms are such as might be developed from the simplest elements by any people of intelligence; and it is unnecessary to seek for far-fetched resemblances to bolster up improbable theories. At the same time, of course, due weight must be given to the conditions of previous and contemporary art, whose influences doubtless made themselves felt.

Of these influences three possible sources may be briefly noted—Egypt, Assyria, and the Ægean civilizations. In each case the most striking fact is the extreme difference in purpose, sentiment, treatment, and detail that distinguishes them from Greek architecture.

(1) The earlier periods of architecture in Egypt—of pyramids and tombs—hardly need be considered; partly because they belong to a time that had long since ceased to exercise any influence in Egypt itself, partly because they are entirely foreign in intention to anything built by the Greeks, who were never a race of tomb builders at all. Of the later Egyptian architecture,

of the Theban period, it may be said that it was erected with more definitely religious intent than was that of Greece. The artists were, to some extent at least, under the thumb of a priestly caste, and although art itself is in essence free, the purposes of the buildings naturally influence to a certain degree the channels in which it moves. The effects after which the Egyptian artist strove were mainly internal rather than external. Throughout, the artistic motive is immensity and suggestion, as contrasted with the special grandeur of Greek art, which expresses itself in reserve, refinement, and grace. Like the Greek style, it is trabeated, but as this is the first and most obvious method that occurs to every builder, it certainly does not necessarily constitute an 'influence.' The stone construction is also a little too obvious an expedient to be interpreted as a sign of influence, and there remains the frequent use of columns as the only resemblance. But these are of so essentially different a character, and their gradual development in Greece is so easily explained, that there is no need to make reference to Egyptian practice at all.

(2) ASSYRIAN architecture offers even less resemblance. It was of brick construction, a non-trabeated style, characterized by the arch or the vault. It was primarily secular, and neither tombs nor temples played any important part, but, as far as remains attest, the architectural spirit expressed itself in palaces. The ornamental detail in some ways resembles that of Egypt, and it is here that Greek work seems to have certain affinities, although probably not more than can be accounted for by a perfectly natural process of development or suggestion from pre-historic work in Greek lands.

It may, however, be noted that the influence of minor ornament is always more wide-spread than that of major forms, from the fact of its occurring upon more portable objects. But it is a *petitio principii* to assume that the influence passed from Assyria to the Ægean any more than *vice versa*. The probabilities are rather that there was a certain amount of interaction between the early Ægean, Assyria, and Egypt.

In the case of PERSIAN architecture, which may at earliest be said to date from B.C. 558, although again entirely different in general intention from Greek architecture, there are certain minor features of detail which offer slight resemblances, particularly in the columns. But as the styles are contemporary—a fact invariably overlooked—it seems at least conceivable that we should assume a certain amount of interaction rather than definitely assert that the less original and less artistic race alone exerted influence. The great hall at Persepolis may be dated *c.* 485 B.C. Therefore, to suppose that it can have had any influence upon Greek Ionic architecture is absurd. The temple of Ephesos, for instance, whose perfected Ionic capitals can be seen in the British Museum, dates from the time of Kroisos, whose empire *ended* B.C. 546. The influence is almost certainly that of Greece upon Persia, and not the other way.

(3) In the third place, there are the great ÆGEAN CIVILIZATIONS of which little or nothing was known a generation ago, and of which our knowledge increases daily. Here on Greek soil most probably may be sought those influences which earlier writers have endeavoured to find in the afore-mentioned countries. Original as the Ægean work undoubtedly is, it is not to be understood that it was entirely untouched by the neighbouring art of Egypt. The most original art may adapt to its own purposes ingredients borrowed from its contemporaries, or even from the past, although this latter is a sign of a fully developed art—one, if it may so be phrased, that has become distinctly self-conscious. But the point to be noticed is that any Egyptian influence coming through such a channel to Greek art can, in any case, be only indirect.

Here, again, in the case of Ægean architecture, the entire spirit of the styles, which are those of palaces and tombs, and not the work of temple-building peoples at all, allows at most of a limited range of influence. The wholly different art character of the two peoples, if we may group the Ægean peoples as one and the Greeks as another, is, however, a far more fundamental line of cleavage. The earlier art is more luxurious and less restrained. It is less structural in its character, depending more for its effect upon applied surface ornament. Further, the earlier art seems to have been less definitely intellectual, and expressed itself largely by an arbitrary symbolism, whereas the Greek, even when rudimentary, is marked by an attempt at a rational and self-explanatory embodiment of its content—a characteristic that grows more obvious as Greek art reaches its prime.

There may, however, be a real though limited amount of influence in the case of Ægean art, even though such influence be denied to Egypt and the East. A point of architectural significance may be found in a method of building which inclines to the use of stone for the lower part of the work and of lighter sun-dried brick or rubble above, faced either with stucco or a veneer of ornamental stone. This method is characteristic of certain Ægean work, and seems actually to have been used by the Hellenes in early work, as, for instance, in the temple of Hera at Olympia. This, therefore, does point to an early dependence; but it is soon thrown off. The *orthostatai*, or facing-blocks, at the foot of the wall in later Greek work may point to this origin (p. 6, fig. 1). It has been suggested that the very plan of the Greek temple itself is derived from the megaron in a chief's house, as at Tiryns (p. 15, fig. 11). The plan of the Hera temple shows a very great advance upon this, which must have taken a considerable time to effect, implying several earlier stages. The temple has even been dated as early as B.C. 1100, in which case it would become doubtful whether it should be considered as originally an early Greek temple, or a late Ægean building, adapted and gradually altered to the Doric style. The remains certainly show gradual and continual alterations, whatever may be the explanation of them.

There are, however, questions of great import in this connexion. The Greek races as a whole, and the greatest of them all in particular, namely the Athenians, were in all probability a mixed race, descended partly from an Ægean stock (probably non-Aryan) and an Aryan-speaking people coming from the North. Therefore, although we cannot point to distinct borrowings and definite features, directly inherited from the indigenous stock, which for convenience is here called 'Ægean,' nevertheless it was the spirit of the Ægean peoples, combined with that of the Northern incomer, that produced the true Hellenic architecture. It may even be hazarded as a suggestion that the ultimate decadence of Greek work was due to the gradual re-assertion of the indigenous stock over that of the incomer, and that the glories of what we might term the crossed fruit ultimately succumbed to the characteristics of the original wild crab. In that case the decadence is not a simple decadence, such as we may trace in the history of the art of coinage in Northern Europe, from the stater of Philip of Macedon to the BODVOC coins of Britain, but the re-assertion of an older, more ornate, and less restrained style. If, as seems most likely, we are to regard Byzantine Greek work as the true descendant of Greek art, this view receives a certain amount of additional confirmation. [For an account of Ægean architecture, v. cap. I.]

GENERAL CHARACTERISTICS.

Of Hellenic architecture it may be remarked that it was a stone-built trabeated columnar style. It would be incorrect to say that its buildings were predominantly religious, although religious architecture played an important, perhaps the leading, part. It must always be remembered that a religious building is the most likely to survive, partly from the natural conservatism of religion and religious veneration, partly as belonging to a corporate body in contrast to all private property. We should always, therefore, expect, even in the case of an age where the building activity was evenly distributed, that remains of religious buildings would be the most numerous, of other public corporations next, and of domestic buildings last. The greater resources of a corporation, whether religious or otherwise, tend to a greater scale and possibility of survival; and, comparing religious and other public buildings, there is always the greater need for alteration and

change in the case of the latter. Even the change from one religion to another, as in the case of S. Sophia, the Pantheon, or the Parthenon, is of itself only a partially destructive tendency, and indeed to this we owe the preservation of many buildings that would otherwise have been destroyed. An interesting case in point is the small temple of the Ilissos, which survived changes of religion for 2000 years; yet directly the ægis of religion was withdrawn the temple disappeared.

The same is true of Gothic architecture, and it is a mistake for the student to assume, as is frequently done, that the predominating character of an architecture is religious, or that it owes its features and style to religious influences, simply because such remains are the most numerous. The greatness of scale in so many religious buildings doubtless had its results in influencing other buildings, but this is only one factor among many. In the case of Athens itself the Stoa Basileios, the Stoa Eleutherios, the Stoa Poikile, the Bouleuterion, and the Prutaneion must have ranked with the greatest religious buildings, and the greatest conception of all that has come down to us, judged from the purely architectural standpoint, is the Propulaia, which can hardly be classed as a religious building, actually having come into direct conflict with the religion of the day.

THE ORDERS.

Greek architecture is generally considered as divided into three 'orders'—the Doric, the Ionic, and the Korinthian—which are variations in the arrangement or order of the essential constituents. These constituent parts, the stylobate, the column, and the entablature, are found in all three orders.

With regard to the temples, at any rate, it may be said that every building rested upon a platform or stylobate, generally of three steps. In this it may be distinguished from all other styles, where, although a base-mold or plinth may be

found, nothing of this nature occurs. Upon this, as its name implies, stood the columns, and these in their turn supported the entablature or stone lintel which is the main characteristic of the style. This lintel, or trabeated, construction was used, not because the Greeks were unacquainted with the arch: apparently they deliberately rejected

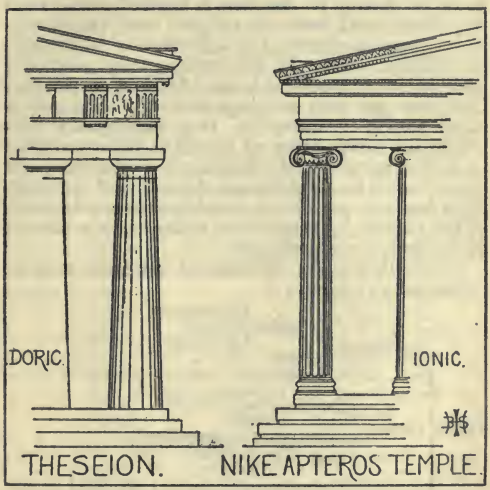


FIG. 19.—DORIC AND IONIC ORDERS.

it upon æsthetic grounds. They knew of the arch in the East, and quite early made use of it occasionally for purely structural purposes, as in the case of a water-drain at Athens, a barrel-vault at Sikuon, the passage to the stadion at Olympia, an arch in Akarnania, and in the lower storey of a stoa at Alinda. It is not altogether

improbable that the Tholos at Athens was covered by a small dome. The arches of the Ægean period are not, as a rule, built with radiating voussoirs, although an example occurs in Arcadia. The arch principle is really involved at Tiryns, perhaps unconsciously, but it is not truly the corbelled system. One may suggest that the reason is to be sought in the Greek type of mind, as it expresses itself both in religion and art, partly in its sense of reserve, the *μηδὲν ἄγαν* of the temple at Delphi, partly in its tendency to seek the highest in a completed and finished perfection that does not lead out beyond itself. Hence it is more readily satisfied in the rectangular self-contained composition of Greek architecture than in a style involving the distribution of thrusts and the æsthetic incompleteness of the line of the arch. This became one of the most expressive features of the essentially suggestive, rather than perfected or finished, mediæval style.

The further major divisions of the order may be tabulated as follows :—

- Order
  - Entablature
    - Cornice
      - Cymatium
      - Corona
      - Bed-mold
    - Frieze . . . . . .
    - Architrave . . . . . .
  - Column
    - Capital
      - Abacus
      - Ovolo
      - Neck
    - Shaft (including apophyges)
    - Base
      - Base moldings
      - (Plinth)
  - Stylobate or Krepis (the former term is strictly applicable only to the top step).

THE DORIC ORDER.

The Doric order has generally been considered the oldest; but there is no adequate reason for supposing so, although it is not unlikely. The pre-Persic remains from the Akropolis of Athens and the temples at Ephesos and Samos, Neandria and Naukratis, show Ionic work of very remote

date. Indeed, one might even suppose that they are cognate developments from a common beginning, rather than that the one is derived from the other or is a later invention. The Doric order is marked by somewhat massive proportions; for instance, the columns of the temple at Korinth are 4·47 diameters, and those of the Parthenon, 34 ft. high, are 6·025 diameters. The entablature is similarly heavy in proportion to the whole.

THE COLUMN.

The Doric column consists of a shaft and capital only; there is no base. It is conceivable that there was originally a plain square base, and that a series of these have coalesced to form the top step of the stylobate. The early columns at Korinth (*c.* 650 B.C.) are monoliths, but in other cases the columns are built up in drums, fitted together with the most marvellous accuracy. The shafts are invariably fluted, with a sharp arris between the flutes (fig. 20). These flutes are generally 20 in number, but other numbers are not so rare as is commonly supposed. Thus:—

8 Flutes, Troizen.
8 ,, Bolumnos.
12 ,, Assos.
16 ,, Sounion.
16 ,, Ægina.
16 ,, Shaft found at Olympia, probably Young Geloans' Porch.
16 ,, A shaft of the Heraion.
18 ,, Pronaos of Assos Temple.
20 ,, Megarian's treasury at Olympia, but only 11 facets fluted: the remainder at the back are flat.
24 Flutes, Temple of Poseidon at Pæstum.
25 ,, Isolated column *in situ* at Assos.
28 ,, Fallen fragment at Ephesos.
32 ,, Two drums from Samos.
32 ,, Epidaurian's house at Olympia (every alternate corner has a bead instead of a sharp arris).
44 Naxian's treasury at Delphi.

The flutes are probably a perfectly natural development from the square pillar—a form not unknown in Ægean art—and, moreover, the anta in Greek work is almost always square in section. At

first the corners would be cut, giving an octagon, as at Troizen, then these would again be cut, giving sixteen sides. This would be done, doubtless partly for utilitarian reasons, so as to admit more light and give easy ingress and egress. But that the main reason was æsthetic is shown, in the first place, by the fact that the columns never became plain circles in Greek work, and, in the second place, by the fluting or hollowing out of the sides of the polygon. These greatly accentuate the effect, and thereby give æsthetic emphasis to the verticality of the column, emphasizing the outline of the column, and making it tell, whether against a very dark or a very light background. The suggestion that it was derived from Egypt

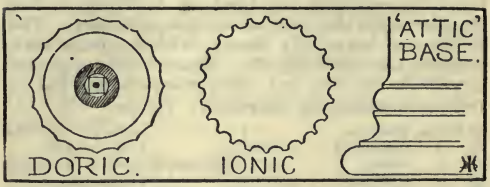


FIG. 20.—SECTIONS OF DORIC AND IONIC COLUMNS, ALSO ATTIC BASE.

may be dismissed as fanciful, as the supposed prototypes at Beni Hassan belong to an age too remote to have had any influence. The primitive artist is not an eclectic archæologist. In the second place, the Beni Hassan columns are not fluted, but flat-sided. The flute, on the whole, points to a stone rather than a wooden origin, as it seems pretty clearly to be derived from a square, and not from the round posts of a primitive wooden style. Other Egyptian polygonal types are even less likely.

THE CAPITAL.

The capital is composed of three parts. The abacus is a square flat block that takes the bearing of the architrave. Below this is the echinos or capital

itself—a bold molded member eminently suggestive of powerful support. Below this are three fillets to emphasize the neck. This gently curves into the shaft by means of the apophyges, and at the top of the shaft, immediately below the apophyges, are three sinkings which prepare the eye, as it ascends,

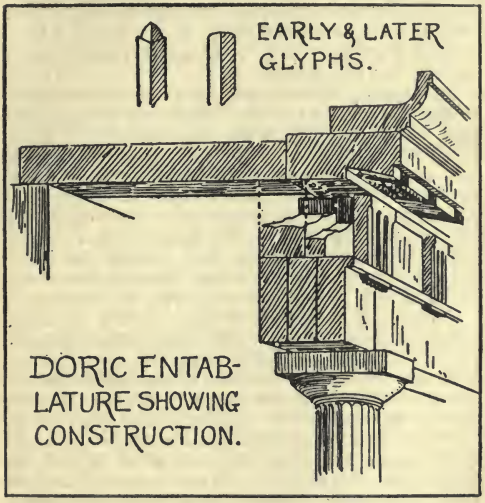


FIG. 21.

for the change from the vertical lines of the shaft to the horizontal lines of the capital.

THE ENTABLATURE.

The entablature is divided into three portions—the architrave or lintel proper, the frieze and the cornice. The architrave is quite plain—a single solid block. In very large examples it may be necessary to use more than one block, but they

are placed on their edges so as to present a single face to the front (fig. 21).

THE FRIEZE. The frieze is divided into spaces by upright blocks of stone (triglyphs) which support the real weight —a fact æsthetically emphasized by the upright channelling that gives them their name. These three glyphs, or channels, are arranged with two complete in the middle and one half on either side. The early form of the glyph seems to have been a sort of pointed arch but nearly round-headed (fig. 21, top of figure).

THE METOPE. The spaces between are filled with slabs which do not support anything. These are termed metopes. The metŏpē (*i.e.* the thing behind, or after, or at the back of the ope; cf. μετάφρενον) is the slab that goes behind the ope, hole or opening, in the frieze (fig. 21). This does perhaps imply that the interval was originally open. In a cella wall this would give light to the building (ὀπή in later writers means a window). In a peristyle an opening would be useless; and the introduction of the peristyle may have done away with the custom.

It does not throw much light on the beam-end theory, as the opening would be there in any case; but the method of fitting invariably used—which is to put the slab at the back of the hole—and the name—which does not mean 'between the triglyphs' but 'behind the opening'—if they point any way at all, suggest that the metope was always fitted as we find it, at the back of or behind the opening (fig. 21), which would not be possible if there were beam-ends. In rich examples the metopes are sculptured, particularly at the end of the building.

THE CORNICE. The cornice moldings need not be enumerated, but it might be observed that the uppermost member, the cymatium, is generally very similar to the ovolo molding of the echinos of the capital. This molding is carried up over the pediment at the ends of the building, and the corona or flat member

beneath it is repeated, occurring once over the triglyph frieze, and once, with slight modifications, under the cymatium of the pediment.

The Doric order is the most severe and refined of the Greek orders, and this characteristic enables it the better to act as the frame of the glorious sculpture with which it was adorned. The tympanum, or triangular space in the pediment or gable, was generally filled with free sculpture, and some or all of the metopes were occupied by sculpture in very high relief. In rich examples, as, for instance, in the Parthenon, it would seem to have been permissible to introduce sculpture elsewhere.

In that example the famous Panathenaïc frieze runs round the upper part of the cella, within the outer range of columns.

It is generally said that sculpture is a speciality of the Doric order, and is not found in Ionic, but for absolutely no reason. The Erechtheion, the temple of Athene Nike Apteros, the temple of the Ilissos, the great temples of Artemis at Ephesos, the temple of Aphrodite at Aphrodisias, the Mausolleion, and the Ionic order in the interior of Phigaleia, were all richly decorated with sculpture.

THE IONIC ORDER: THE COLUMN.

The Ionic order is marked by several important characteristics. In the first place, it is a lighter style; its columns are of more slender proportions and more widely spaced. At the same time it should be noted that, in proportion to the weight that they carry in the lighter entablature, they are no lighter than the Doric. It is less severe, and in any hands but those of the Greeks might have become over-ornate. The columns have bases which show very considerable variety in their moldings. The so-called Attic base is not a widespread form, occurring only in a single instance in the north porch of the Erechtheion and not elsewhere even in that building (fig. 20). The Korinthian example of the monument of Lusikrates is,

however, but slightly different. The influence of this base upon the architecture of the world was extraordinary, but not more than its extreme simplicity and great beauty justify (p. 201, fig. 101, and context). The original form of Ionic base seems to have been a torus molding above a sort of plinth with several astragals. The scotia below the torus was first introduced, and then the second torus below.

The flutings are generally 24 in number, and much deeper than the Doric. They are separated by a fillet in place of the sharp arris, which gives a very different effect to the column (fig. 20). In early examples the flutings were more numerous—40 at Naukratis, 40 at Ephesos, 44 on a votive column at Delphi. The sharp arris is also found in these early instances. On the whole this points to the borrowing from the Doric of a feature incompletely understood. They are not nearly so effective as the smaller number.

THE IONIC CAPITAL.

The capital is lighter and the most distinctive feature of the order. It may be described as resembling a scroll upon two rollers, which form the well-known Ionic volutes (fig. 22). There is a very small circular abacus which has ornamental carving. The head of the capital, the echinos, immediately below and between the volutes, is also carved, and sometimes, as in the Erechtheion, the neck also is richly decorated. There seem to have been two early forms of the Ionic capital, that which may perhaps be termed Æolic and the Ionic form proper (Neandria and Heraion, fig. 22). It may also be noted that the egg and dart of the small echinos of the Ionic capital tend to diminish and become pushed up into the volute part of the capital. It is quite possible that this part is really the descendant of free overhanging leaves in an earlier form (fig. 22, Delphi).

THE IONIC ENTABLATURE.

The architrave is not simple but divided into three facias, each slightly projecting over the one below

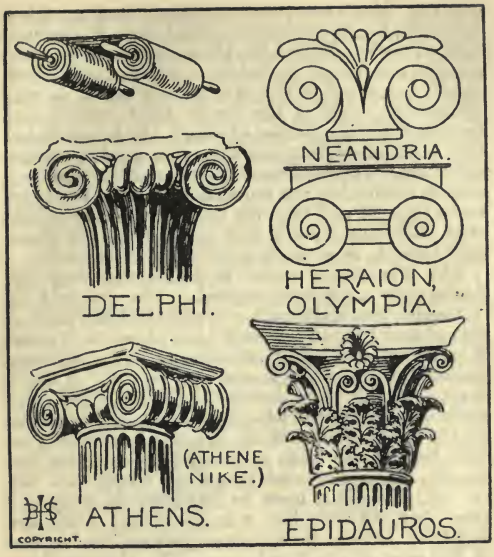


FIG. 22.—CAPITALS. IONIC AND KORINTHIAN.

(fig. 19). The frieze is a continuous band unbroken by triglyphs and frequently sculptured. The cornice is more elaborate than the Doric, and the lowermost member, as found in Asiatic examples, and afterwards borrowed in the Korinthian order, is very distinctive. This is the dentil band, which may be described as a series of small blocks set below the cornice, giving the appearance of a square serration. The uppermost member of the cornice is almost invariably the molding known as the cyma recta (figs. 27 and 19). On the whole it may be said that the Ionic style is less robust than the Doric, and depends more upon architectural ornament.

THE KORINTHIAN ORDER.

The Korinthian order is practically only the Ionic with a different capital. We are told by Vitruvius that Kallimachos saw an akanthos plant at Bassai near Phigaleia, which had twined itself about a basket of sepulchral offerings, and that this suggested the idea of the Korinthian capital. A single capital of this type occurred at the S. end of the main chamber of the temple of Apollo at Phigaleia, all the other capitals being of a peculiar Ionic type. This temple was built as a thank-offering for immunity during a great plague in either B.C. 430 or 420. It might even be hazarded as a suggestion that Kallimachos was associated with the architect Iktinos in this case, just as Phidias was in the case of the Parthenon. The ultra-restlessness of the design of the frieze, and an almost over-elaborate treatment of the drapery, carried out though it may have been by Peloponnesian workmen, would point to the influence of an extreme Attic tendency, such as we would associate with Kallimachos rather than with Phidias and his school. That Iktinos, the most famous Athenian architect, built the temple, and Phidias himself made the temple image, suggests some famous Athenian designing the sculptural decorations.

It is fairly clear that the Korinthian capital was

an individual invention, as it suddenly appears complete, late in the history of Greek architecture, with hardly any transitional forms. What more likely, then, than that in this single central capital, among a set of another kind, we have the original itself? This is strengthened by the fact that at Phigaleia we also get the first departure from the true Ionic capital, showing obvious experimental tendencies in new directions on the part of the

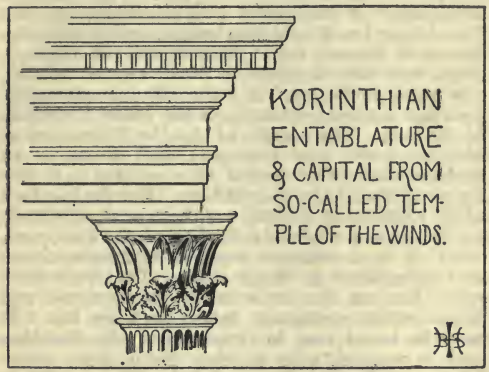


FIG. 23.

architect. Kallimachos himself was famous as a worker in metal, and there is something suggestive of metal in the design, with its free overhanging leaves. That the inventor may have been familiar with the upward springing tendency of Egyptian capitals is conceivable, but to suggest an Egyptian origin is merely to go out of one's way to find things utterly unlike. The capitals of the Horologion, or so-called 'Temple of the Winds' (fig. 23), have the lotus leaf, but so have those at Persepolis.

Vitruvius may very possibly be wrong, but to reject his evidence on the ground of his general unreliability is not of much assistance.

EXAMPLES OF KORINTHIAN WORK.

The capital is found in a considerable variety of forms, almost always including some small tendrils or spirals, totally unlike the Ionic volute, which is more of the nature of a thick scroll, or roll of cloth. Greek examples are not very common. Besides Phigalia, Pausanias informs us that it was used by Skopas in the interior of Tegea. The Choragic monument of Lusikrates is Korinthian, and the Horologion has Korinthian columns with akanthos leaves of Roman type. The temple of Olympic Zeus and the Korinthian Stoa, all in Athens, are other instances. A beautiful and somewhat peculiar example exists from the lesser Propulaia at Eleusis. The temple of Apollo Didumaios at Miletos shows fine examples, and there is an archaic Korinthian capital of uncertain date also found at Branchidai near Miletos. But the loveliest of all Korinthian capitals are those of the Thymele at Epidauros, obviously fairly early in date, and, with all their richness, marked by the chasteness and refinement of Greek work. The Korinthian order became the favourite of the Romans, and these subtle restrained delicacies were lost. It may be noted that in Greek work the akanthos leaf is worked with a crisp sharp edge, which becomes blunt and rounded in Roman hands (fig. 24).

THE SUGGESTED WOODEN ORIGIN.

This slight survey of the general characteristics of the orders prepares the way for the consideration of the commonly accepted theory of the wooden origin of Greek architecture. It is generally said that the Doric order is of unmistakably wooden origin, although it may be more doubtful in the case of Ionic. The grounds for suggesting this are the triglyphs, which are supposed to represent the beam ends, and the upward slope of the mutules,

which represent the ends of the rafters. These features do not occur in the Ionic order.

It should be noted, however, that stone or wood are not the only possible alternatives ; there is also the brick rubble and plaster erection, supplemented both by stone and wood, such as we see at Knossos, or in the archaic temple in the temenos of Artemis Orthia at Sparta.

Such a construction, however, is essentially of the same class as a stone construction, and unlike the framed half timber houses in our own country, which are also of wood and plaster.

There are two methods of building in wood : the log cabin method, which uses logs almost as though they were blocks of stone, and the true wooden method, which uses a wooden *framework* that is afterwards filled in. A ship is the most perfect example of wood building, and illustrates the quality that does not belong to a stone building, namely, of resistance to tension and cross strains, resulting in mobility. In theory a half timber house is of the same nature, which is not the case with these brick and rubble edifices.

In the first place, the general similarity in the main essentials of the two orders is far too marked for the principal source of origin and inspiration not to be the same. At the same time there are probably different contributory influences.

STONE STYLOBATE.

The stylobate can hardly be claimed as anything but a stone feature, even though the upper part were timber. In Doric architecture, as contrasted with Ionic, the columns have no base, and the base is one of the supposed signs of a wooden origin, either representing a metal shoe to prevent splitting—a feature hardly consonant with a primitive style—or a flat stone laid on the ground to distribute the weight. However, it might be remarked that the distribution of weight is æsthetically demanded in any case by the slender Ionic

column. The massive Doric column requires no base, and if it ever had one, as is possible, it was early seen to be unnecessary. Its proportions are obviously those of stone, as are the narrow intercolumniations. The more slender Ionic with its considerably longer lintel has a closer resemblance to wooden proportions. It should further be noticed that the oldest Doric columns are the most massive, and most obviously the outcome of their stone material. The tendency of development from a wooden origin would naturally be in the reverse direction. Pausanias says that one of the columns of the Heraion at Olympia was of oak. It has been suggested that this was the last of the original wooden set, which were gradually replaced. There are, however, difficulties with regard to the entablature, which would not fit equally well upon a set of stone Doric columns of more or less normal proportions and upon wooden ones. Nevertheless it is conceivable, and the intercolumniations are certainly wider than usual.

STONE DORIC CAPITAL.

The heavy Doric abacus projecting on all four sides is also obviously of stone; a wooden one would split off. To some extent the same might be said of the echinos, but its whole shape is essentially non-wooden.

In the Ionic capital, however, we find proportions that are not square and that would be eminently adapted to wood. The grain of the wood would run parallel with the line of the architrave. The spreading support is obtained, and at the same time the capital does not overhang at the front or the back, so there would be no danger of splitting off. Again, the spirals are a natural primitive incised ornament, equally applicable to stone and wood, although their final form is more suited to stone. Early incised and painted capitals have been found on the Akropolis of Athens. The Doric

echinos, however, though subtle in its curvature, is a natural primitive stone form, claiming kinship with such a form as the rude primitive cushion capital of the Normans (fig. 93, p. 75).

It is just possible that the different fluting points the same way in spite of a few early examples showing the sharp arris. A polygon when fluted can give only a sharp arris. It is a natural and simple expedient, in borrowing the idea of fluting from the stone Doric form and applying it to the circular form, to leave the plain fillet which we find in Ionic work. The surfaces of the fillets are on the circumference of a circle and are not flat. The circular form is the natural shape of the tree-trunk; the polygonal form is the natural development from the square block of quarried stone.

ORIGIN OF ENTABLATURE.

But it is in the Doric entablature that the wooden origin is supposed to be most conspicuous. The general proportions, which may be contrasted with the light entablature of the Ionic, are certainly true stone proportions as we find them. The massive architrave in a single block certainly does not suggest anything but the stone block which it is, whatever may be said for the three facias of Ionic work.

The triglyph frieze is generally said to represent the ends of the beams, and it is suggested that the guttæ represent the heads of the pins. What the regulæ are, from which the guttæ depend, is gracefully omitted from the theory. Now, in the first place, the actual position of the guttæ suggesting a vertical pin is quite impossible as at δ (fig. 24); but even if we try a diagonal position such as at γ (fig. 24), the pin would be absolutely useless, as it would draw, and this is really equally impossible. A pin might be placed at α or a huge pin directly underneath at β, but in neither place are the guttæ found. A true artist may have had the guttæ suggested to his mind by pin-heads, and then created

a genuine stone feature, but that has nothing to do with a wooden origin for architecture, any more than the akanthos leaf implies a haystack as an architectural prototype. The raindrops may equally well have suggested the idea and have spontaneously suggested rain-drops to children, who did not know the meaning of the word *gutta*.

But the most serious objection to the pin theory is that *guttæ* are not found in early work. They do not occur in the Bouleuterion at Olympia or the Selinuntine treasury, or in the newer, but still early, porch of the Geloans. They are not found

FIG. 24.

at Assos or in the early Athenian fragments, or in the temple of Demeter at Pæstum.

With regard to the triglyphs, they are in the first place needlessly enormous for any ceiling joists. They might be the right scale for tie beams, but they are then placed at impossibly close intervals. The dentils of the Ionic order would in many examples, although most of them late, approximate more nearly to a reasonable scantling. But the most pertinent question to ask is how one could have beam ends all round the building at the same level—which is a hopeless impossibility. Now, in the case of the Lycian tombs

at Xanthos (fig. 25), where we have actual copies of timber work in stone, we see, of course, where ends and sides of the building are visible, that the ends of the beams show only at the sides of the building. We also get a feature resembling purlin ends under the gable roof. It should be noticed that where we find timber construction reproduced in stone, as at

ACTUAL COPIES OF WOOD IN STONE.

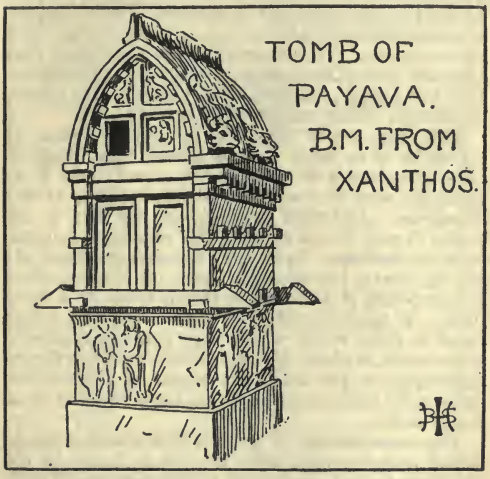


FIG. 25.

Xanthos, Beni Hassan (Egypt), or Naksh-i-Rustam (Persia), it is in no case a building, but simply a representation carved out of the solid, and is entirely non-structural, and, moreover, decadent rather than primitive. It is, in short, merely a pictorial representation. Every material demands its own methods of construction, and this is perhaps

particularly necessary in days of early development. Further, if they were beam ends, they would not occur at the corners, but a metope or a portion of the wall would finish the series. This again is, of course, the case in the Lycian tombs.

The difficulty of the metopes has already been noted, p. 36. But what are the vertical channels themselves? They seem to serve the same purpose as the vertical flutes of the column. But to emphasize the verticality of a horizontal beam is somewhat of a solecism. The suggestion has been made that they are timber markings—which is not merely untrue but foolish, for they could not resemble timber markings, which radiate from a centre.

The very early treasury of the Geloans at Olympia is so early that it is not even Doric in character, but it is undoubtedly stone; and if its influence may be considered at all, it points in this direction. Although probably of the 7th or 6th cent., it may be set against the supposed original wooden Heraion. In several features, particularly its stylobate, its columns,* and its characteristic waterspouts, it anticipates Greek work of a later date. It might further be noted that the dentil band in Ionic work, which may possibly represent beam ends, is above the continuous frieze, whereas the triglyphs are below the beams of the coffered ceilings in Doric work, making them impossible as beam ends.

The construction of the triglyph frieze, with rebated uprights and slabs behind, is found in the dados or friezes discovered at Knossos and Tiryns (fig. 15, p. 19). There it was obviously a stone construction from the outset, and was applied to the face of the wall. This is quite a conceivable origin for the triglyphs.

In early examples the triglyph and metope are

* There is some doubt about the assignment to this building of a column found at Olympia.

frequently worked in one piece, as in several of the treasuries at Olympia. This is also found in many of the stones of Libon's temple of Zeus (also at Olympia), and was the case on the sides of the Athenian Hekatompedon, thus pointing to the

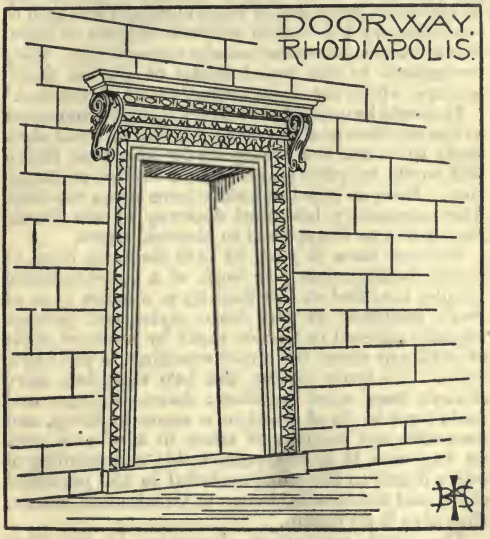


FIG. 26.

earlier form being less like the wooden prototype than the later. This of itself is enough to constitute a fatal objection to the whole theory.

The slope of the under side of the mutules would not coincide with the slope of rafters, and (like that of the under slope of the cornice itself) is sufficiently

explained as a slope to throw off the rain and prevent its running under and down the face of the frieze. This device is common in stone architecture of all styles. It occurs even in string courses of Gothic moldings. The mutules above and the regulæ below the triglyphs are a delightful way of softening the effect of these members and also of providing for the eye an æsthetic support or introduction to the frieze and cornice respectively. They correspond to the corbel tables of Gothic architecture, which are more æsthetic than structural.*

THE DOOR.

It should be noticed that Greek doors are narrower at the top than at the bottom (fig. 26). This is obviously to reduce the interspace for the stone lintel, and would be quite pointless in a wooden construction. Even as it is the lintels have often cracked. The exquisitely beautiful doorway of the Erechtheion had to be repaired in classical times.

SUMMARY OF STONE AND WOOD ARGUMENT.

Perhaps then it may be said that we have in Greek architecture the work of a stone-building people, modified in the East by a wooden type of work resulting in the Ionic style, and perhaps slightly affected in Greece itself by a mixed style of rubble or stone and wood resulting in the Doric style. To some extent the two materials have always been used together: doors, ceilings, and roofs tend to be of wood in a stone building, and door-sills and hearths of stone in a wooden one. In any case it is the remarkable adaptability of every detail to the stone material in the perfected style, and the inevitableness of Greek architecture, that give it its charm.

The main contention, however, is not that wooden features may not have helped in the sug-

* Several comparisons have been made here with features invented in Gothic architecture, which is unquestionably a stone evolved style, and it may be urged that they have at least as much weight as comparisons with a wooden style, that, however ingenious, is after all largely the product of the 'arm chair.'

gestion of the stone features that we find, but that the stone quality is the paramount ingredient in the style as known to us. It is another illustration of the principle with which this chapter started. Greek architecture is remarkable not for that which it shares with a wooden or brick or any other style, but for that wherein it differs from them. This is its origin and originality.

CHAPTER III

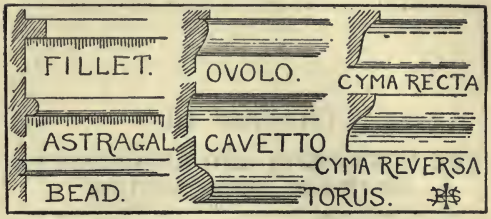
THE ORNAMENTS AND REFINEMENTS OF GREEK ARCHITECTURE

GREEK architectural ornament consisted in the first place of sculpture, either free, as in the case of the pedimental sculptures in the tympana, and the *akroteria* (figures placed on the summit of the pediment, and on little platforms at the lower extremities and standing out against the sky), or in reliefs, as in the case of the metopes and friezes. Sculpture also occurs upon the lowest drum of the column, as in both the archaic and later temples at Ephesos. Figures in the round are used as supports, as in the Telemones at Agrigentum or the Karuatides of the Erechtheion or at Delphi. In the second place, there are the exquisite moldings, which seem to be entirely original, and in any case the actual refinement in the forms used has no parallel in any other architecture in the world. The most important are the ovolo, *e.g.* in Doric capitals; the cyma recta, *e.g.* in the capital of the Doric anta; the cyma reversa, or ogee, used in string moldings; the torus, *e.g.* in the Ionic base; the scotia, a large hollow of parabolic curvature (in

SCULPTURE AND MOLDINGS.

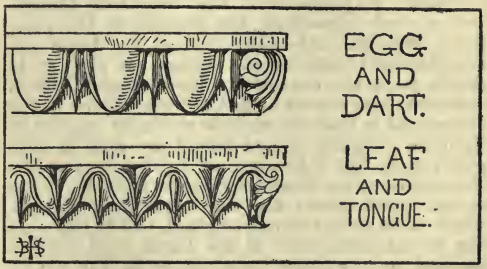
Roman work—of parts of two circles with a common tangent), also found as a base molding; the fillet, a small projecting square-edged mold; and the astragal, a small projecting round molding; this when sunk is termed a bead (fig. 27).

FIG. 27.—MOLDINGS.



A marked trait of Greek ornament is the adaptation of the surface design to the molding that it adorns, somewhat after the manner of Gothic moldings and their arches, v. p. 195. The outline

FIG. 28.—ORNAMENTED MOLDINGS.



of the design tends to repeat the molding-section. Thus the egg occurs on the ovolo, the honeysuckle on the cyma recta, the water-leaf on the reversa, the guilloche on the torus (fig. 28).

COLOUR. In the third place, the Greek architects made use

of colour, as for instance on the echinos molding of the Doric capital, and traces of it are not infrequent in many places. It is possible that more was used than would be pleasing to a modern eye, particularly in cases where marble stucco was applied to some inferior quality of stone such as poros. But we are not to imagine that the Greeks were not keenly alive to the beauty of their exquisite Parian, Pentelic, and other marbles, and the major portions of the surface of the buildings remained without colour. A very small amount of colour judiciously applied certainly enhances the effect of the marble, which looks almost staringly white without it, when new; and the comparison between buildings with and without colour may profitably be made in modern Athens to-day.

WORKMANSHIP.

The workmanship of Greek architecture has never been approached, although some of their methods of construction are not above criticism, particularly in early work, as, for instance, in the blocks placed on edge on the face of the foot of the wall, forming a course much higher than the other courses (*orthostatai*) (fig. 1, page 6).

Very little bond is used in Greek work, but the size of the blocks makes these things a matter of small moment. Mortar was never used, yet so accurately are the stones fitted that in some instances they have actually grown together, and survived the accident of a fall without coming apart. Dowels are very frequently used, however, and their different shapes are useful for the determination of dates.

METHODS OF WORKING.

The methods employed can largely be gathered from internal evidence, particularly in the case of unfinished buildings. The building was apparently completed before the final dressing of the stone, which was done from the top downwards as the scaffolding was removed. The fine dressings on the faces of the stones, worked only for a short distance from the joint, and the short flutings of an inch or

two at the top and bottom of columns, otherwise plain, are instances that may be cited of unfinished work, both of which have been ignorantly copied in Roman and modern times as though complete. Even in the finest work there is always a difference between the top joint of the column, which shows distinctly, and the others; as the flutings on the top block, which included the capital, were worked before it was placed in position. The rest of the fluting was worked when the joints had been made absolutely true by turning the blocks round and round after being placed in position. This seems to be the explanation both of their finer joints and of the wooden plugs and pins that have been found in the centre of the Parthenon drums (fig. 20, p. 33). The pin would be just strong enough to stand the turning of the drum but could not add any real strength to the building. The ankones, or projecting pieces found on unfinished drums and on other blocks, must have been used for this turning process. Doubtless they would also have been convenient for hoisting, but a quite unnecessary luxury, whereas the turning of a round drum would have been impossible without some such thing. The uppermost block could not be turned for fear of chipping the finished edge, hence the difference between that and the joints that were finished afterwards, which is always noticeable. The joints in the walls were probably made accurate by a similar process of pushing the blocks backwards and forwards, so as to grind the contiguous surfaces absolutely true, with the result that the finest knife blade could not be inserted anywhere between these mortarless joints. For this again the ankones would be useful. Every piece of carving, as for instance in the moldings of the Erechtheion, is executed with a minuteness of finish that one would naturally associate with ivory carving rather than with work in stone.

It is, however, the subtle curvatures in Greek architecture that are its most remarkable refinement, and the whole problem connected with them offers in itself a wide field for study. The following points may, however, be noted here. In the first place, it may be broadly stated that there are no straight lines in a Greek building of the finest class—a rather startling discovery to those who are accustomed to think of a Greek building as composed of nothing else.

THE SUBTLETIES OF GREEK ARCHITECTURE: CURVATURES.

Taking the principal lines of a building, the stylobate and the architrave, we find in each case a slight curve amounting to a rise of about $3\frac{1}{2}$ in. in the case of the long sides of the Parthenon, 228 ft. in length, and about 2 in. in the short sides, 101 ft. in breadth. These curves occur in the temple of Hephaistos and the Propulaia, but apparently not in the colonies or at Bassai or Ægina. The next most important curve is the entasis of the columns, which is a convex departure from the straight amounting in the Parthenon to $\frac{2}{3}$ of an inch at a point about $\frac{2}{5}$ of the height from the ground, the columns being 34 ft. in height. The entasis of the Erechtheion shafts is even more subtle, $\frac{1}{150}$ of the length of the shaft and $\frac{1}{134}$ of the lower diameter, against $\frac{1}{57}$ and $\frac{1}{110}$ in the Parthenon. It should be noticed that these curves are not segments of circles, but hyperbolic, or in some cases parabolic; but whether they were laid out mathematically or by eye seems to be uncertain. We may assume that the eye which would be sufficiently accurate to appreciate such a subtle distinction of curvature would probably be equal to the task of drawing the curve with a sufficient degree of precision. At the same time the question of instruments that would draw the different curves used not only here but in the volute and the anthemion ornament, etc., is one of great interest. In the case of the echinos of

the Parthenon, what appears at first glance to be a straight line, rounded off at the end, is found to be a subtle curve throughout, but the application of a 'straight-edge' to it reveals how minute this curvature is.

INWARD INCLINATIONS.

In addition to these refinements of curvature, others may be noticed. The columns that appear to the modern eye to be vertical really incline inwards towards the centre, so that the lines of the side columns in the Parthenon would meet at a point a mile and a quarter above the earth (fig. 29).

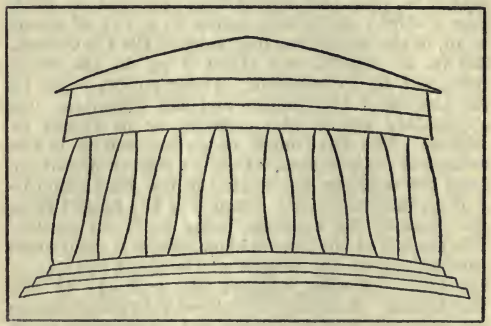


FIG. 29.—SUBTLE CURVES, ETC., OF PARTHENON EXAGGERATED.

The inclination of front to back is similar, and of course all the intermediate columns incline proportionately. It is also preserved in the faces of the entablature and the pediment and the steps of the stylobate. But here a counter subtlety is introduced, and the faces of the higher moldings are slightly inclined the reverse way, so as to counteract undue foreshortening, occasioned by the other process and by their actual height above the ground.

OTHER REFINEMENTS.

It might also be observed that the angle columns are an inch or so wider than the others. The

intercolumniations are slightly smaller, so as to bring the angle column under the triglyph. There is an exception in the temple of Demeter at Pæstum, where the last metope is made larger so as to attain the same result.

The extraordinary skill and refinement required may perhaps best be realized, as Professor E. Gardner suggests, by considering the case of the bottom corner drum. Here then what do we find? In the first place, the base of the drum has to be cut so as to allow for the curve of 3½ in. in 228 ft. But the mason has also to consider the curve, running at right angles to this, of 2 in. in 101 ft. This would be sufficiently puzzling if the axis of the column were vertical; but it is not. It has to be so inclined that it shall meet the axis of the corresponding column at the other end of the front, at a point 1½ miles above the earth, and a similar inclination has to be made in the other direction along the side. Added to this, the edge of the step from which he works is not vertical; and, further, he has to allow for the beginning of the entasis a curve of ⅜ in. in 34 ft. The curvature of the fluting also varies throughout the height. Those who are familiar with the extreme difficulty of cutting a voussoir for an arch in a curved wall —a comparatively simple process—will appreciate the work of the Greek mason. For not only did he conform to these requirements, but he executed it all with a nicety that would not admit a sheet of paper into the joint. The voussoirs of the arches in such a building as the circular nave of the Temple Church, London, are well cut, but it is mere child's play in comparison.

REASONS FOR SUBTLETIES: THE OPTICAL THEORY.

It may well be asked why all these things were done, and in any case the answer seems to throw light on the character of the Greek mind, confirming what might have been otherwise deduced. It has generally been said that these are optical

corrections, that the entasis of the column counteracts the tendency of two straight lines to appear hollow in the middle, that a straight architrave would appear to sag and a straight stylobate would appear to curve up at the ends, that the slope inwards is to correct a tendency of the columns to appear out of the vertical and overhang at the top.

It may be so.

OBJECTIONS TO THE OPTICAL THEORY.

But there are certain objections to the optical illusion theory.

In the first place, what does this theory mean? It means that the result of all the curves is to give lines that are optically straight and optically vertical as the case may be. If this is not the result, the optical illusion theory is ridiculous, as its only object is to avoid the appearance of curves and deviations from the vertical, which on this theory are *ex hypothesi* ugly. Now, it is quite true that in very early buildings, *e.g.* Korinth, there is no entasis. But when it first appears what do we find? An enormous swelling visible for miles, that no optical illusion could ever make look straight. The curve can be there for no conceivable object but that it should be seen. But, further, the parabolic curve with its maximum deviation at $\frac{2}{3}$ from the base would not be correct for the correction of an optical illusion, whatever the amount of the curvature. In the case of the echinos there is no possible suggestion of such a theory, but we find a similar curve; and what is most important is that, in the early examples, it is coarse, just as in the case of the entasis, and ultimately becomes refined. These curves, then, were obviously delighted in for their own sake, and, as the eye became more trained, it naturally demanded that they should become more subtle. There remain, then, the curves of the entablature and the stylobate. Now, if the sides of the building be viewed from some little distance, the optical

illusion caused by these lines would be the same as that caused by the lines of the column; in other words, the architrave would drop in the middle and the stylobate rise, in which case the correction for the stylobate should be the reverse of what it is. To one standing upon the stylobate or very near it and above it, this correction might be valuable, but in that case the architrave would be wrong in its turn. It is very doubtful whether there is any optical illusion at all in the case of a series of straight-sided columns. If there were

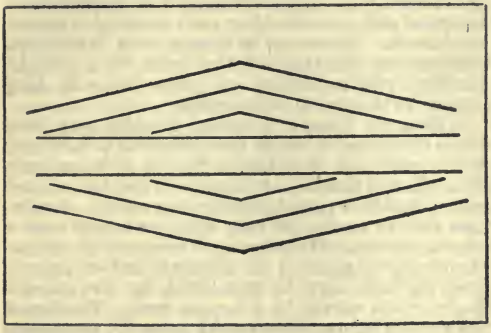


FIG. 30.—OPTICAL ILLUSION CAUSED BY ANGULAR LINES IN PROXIMITY TO PARALLEL LINES.

concave curves (or lines at an angle near them, as in the pediment and architrave) this might be the case. The case of the angle column against the light is not quite the same. The line of the architrave is a legitimate instance because of the triangular pediment, but the line of the stylobate is not, and would appear to curve down at the ends even though there is no curve or angle below it (see diagram and test with ruler).

As to the inclination inwards of the columns, the upholders of this theory urge in the same

breath that it is a correction of an illusion of the column not looking vertical, and that it gives a beautiful pyramidal appearance. If it does one, it cannot do the other.

Another instance of subtlety, obviously not for optical corrections, is the narrow intercolumniation at the angles to bring the column under the triglyph. The same end is attained in the Demeter Temple, Pæstum, by a wider metope.

That optical illusions were also considered, seems, however, certainly to be the case; the thickness of the angle columns in order to correct halation and several other such subtleties appear to show it. Moreover, at Priene is an interesting diagram on the faces of the antæ of a temple, showing the correction of proportions as they appear to the eye in perspective.

ÆSTHETIC QUALITIES.

Although, then, the optical illusion may have some influence, it seems more rational to fall back upon principles of æsthetik for the main reasons. It is clear in the case of the entasis and the echinos curve that it is pure delight in the curve. Doubtless this is associated with what we might term a mechanico-æsthetic reason. These curves are undoubtedly suggestive of strength and of organic growth, and may be paralleled by the exceedingly subtle curves in a human arm. The Greek love of the human form would naturally encourage such subtleties. The shape, indeed, would actually be stronger, although of course there is no practical need for it, as the margin of material to work done, allowed by the Greek, was very large, something like 3 to 2. In the case of the architrave and the stylobate there is the possibility of actual sagging in the centre upon soft ground, and therefore an appearance of greater strength is certainly given by the upward curve in the centre. In the case of the architrave the optical illusion would exaggerate the suggestion of weakness, and may

have been taken into account. Earthquakes and weather, and the great powder explosion in the Parthenon, have made it more difficult to determine the original nature of the architrave curve than of the stylobate.

But all these things are an interesting illustration of one of the most elementary of art principles carried out with exceptional subtlety. A thing must not only be right, but must look right. In this case, therefore, it must not only be strong, but look strong. A plate-glass shop front, however excellently built, could never be æsthetically beautiful unless the eye were in some way satisfied as to the support of the walls above. In the echinos we have not only this principle exemplified, but also the still more fundamental principle of organic unity of design; and the vertical lines of the columns and horizontal lines of the architrave become one whole by the intervention of the echinos. It is curious that the eye does not demand a base to the Doric column for the same reason. Indeed, some people have felt the want. But the side lines are diverging at the base, whereas they are converging at the top; the foot of the column, moreover, is so large as in some measure to dispense with such a necessity; it sits firmly without aid, so to speak. At the same time, it is a bold experiment, and is a feature that occupies æsthetically a somewhat peculiar position among great works of art.

THE ORGANIC ARTISTIC UNITY.

It seems not unreasonable to suppose that the 5th cent. Greek saw all these things and delighted in them, just as his ancestors had delighted in their ruder curves, their less subtly proportioned columns, and their exaggerated projection of capital, all exemplifying the same principles, but carried out with less refinement. The result must have given to his keenly sensitive eye an organic artistic unity that has never been surpassed.

Whatever be the interpretation of these subtleties, one inference at least is certain, namely, the accuracy and refinement of the Greek eye, coupled with an æsthetic demand for a completeness and thoroughness in even the minutest particulars that go to make up perfection in a work of art. The immense importance that these must have had for the Greek, to make him expend such extreme care upon them, can be paralleled in modern times only outside the field of art, as in the making of a modern rifle barrel or an observatory telescope. Even optical illusions we are practically content to leave alone. But alongside this minuteness is a breadth and majesty equally astonishing. The composition as a whole is simple in the extreme, and the dignity of its proportions is unsurpassable.

GENERAL ARTISTIC SPIRIT.

In these things we find the key to the interpretation of Greek art, and there are certain distinct advantages in approaching that art through its architecture. Much can here be demonstrated by rule and line which only the highly-trained eye can see in the sculpture. The whole artistic feeling, too, which inspired every detail of Greek architecture and art, has its corresponding parallels in the Greek conception of religion and in Greek intellectual investigations. Naturally it is necessary to beware of the error of the superficial inquirer, who would make one the mere result of the other, rather than go deep enough to find their common basis. This does not mean that the one had no influence upon the others, but that each, as it were, remained master in its own house with its own fundamental principles. In the case, however, of the plan and general arrangement of the Greek temple the æsthetic and religious factors are somewhat closely connected. The general design of the building is naturally largely determined by religious requirements. It is hardly necessary to point out that the Greek temple

was not a place of worship: the act of worship took place in the open air, generally in the temenos, or enclosure surrounding the temple; and here the altar was placed. The image within the temple was not the object of worship; the altar architecturally is therefore entirely unrelated to it. The temenos itself and the altar in it are supposed by some to represent the forecourt with its altar in the Mykenaian house. Small subordinate altars there seem to have been within the building; and doubtless there were always two tendencies at work—that which is essentially Greek, and culminates in the highest flights of Greek philosophy and art, and the grosser and more superstitious side which was shared with others. It is not always easy to disentangle these elements, but the essential Greek characteristic, that which distinguishes them, rather than that which they share with all mankind, is, of course, the main question. Doubtless it is easier to discern it in the time of its full growth, but the tendency is there from the outset; and it is this tendency that made the Greeks what they were, and that was their contribution to the world of humanity. Whatever may have been the origin of the temple image, which it would be out of place to discuss here, it may briefly be said that for the great minds of the golden age of Athens it was certainly not a fetish or an idol, in the sense of a spirit or spiritual quality embodied in a material object. Nor can it even be regarded as a symbol; it is rather the rational self-explanatory expression of a concept, viewed, it is true, from the æsthetic side, in which we may say Greek art preceded Greek philosophy. It was not an idol, for it was not regarded as possessing any power *per se*. It was not a symbol, for it rationally explained itself without interpretation. Least of all was it a portrait or likeness; it represented

no traditional appearance, and pretended to no inspired vision on the part of the artist. But it did express the outward beauty of certain inward qualities mentally conceived, and these qualities were the qualities of deity. It would perhaps seem a little strained to describe the temple image as the formulated creed of the Greek religion æsthetically expressed, yet it is hardly possible to look upon the later images of Phidias and Skopas in any other light. The natural superstition and conservatism of humanity among the masses were counteracting tendencies, but at the same time declining ones, and the essential Greek characteristic tends away from these. The *intellectual* expression in *art* of a *religious* and *ethical* position is an instance of the complete balance of the æsthetic, intellectual, and moral nature, tersely embodied in their motto, *γνῶθι σεαυτόν*, and its concomitant *μηδὲν ἄγαν*, implying a complete knowledge and development of all that makes man man, and yet excess in nothing. It is this that makes the Greeks unique among the peoples of the world.

CHAPTER IV

THE GREEK TEMPLE, ITS PLAN AND ARRANGEMENT

THE temple may be considered as the casket containing the image, and it is on this account that it is the outside, rather than the inside, which on the whole receives the first consideration. At the same time it is æsthetically the embodiment of the same general principles as are contained in the image itself. The idealism of Greek religion in its highest aspect had not to wait for Plato for its exposition, in the case of those who could understand. It is already æsthetically complete at the time of Phidias, and beginning to advance to what perhaps may best be termed a transcendentalism, culminating, as far as extant work can be taken as evidence, in Skopas. Probably it was closely approached by Praxiteles, whom we are apt to misjudge from the weakness of the copies of his work, read in conjunction with certain minor traits in the Hermes. It would be hard to say whether Greek philosophy ever reached the parallel to this second position ; and even architecture shows only the beginnings of it in buildings such as the Pro-

THE TEMPLE AS CASKET.

pulaia and the Erechtheion ; although in sculpture it is already making its appearance in the work on the Parthenon, particularly in the frieze.

It is therefore natural that the plan of the temple should be simple and remarkable for its perfection rather than its size—an appropriate casket for its treasure. This is all in marked contrast to the Egyptian temple, which is extensive and of many courts and chambers. The decoration of the Egyptian temple is almost entirely within, and it is dark, vast, and mysterious. The Greek temple is comparatively small, and the open-air worship in the temenos surrounding the temple is characteristic of the Greek nature, frank, free, and outspoken, fearless in inquiry, and anxious to bring the light to bear upon all things. The priestly caste and the artificial mystery of the Egyptian were entirely alien to the Greek mind. There was no priestly caste, and hardly anything that could be called a priestly order ; and we find this reflected in the popular character of their ceremonies and the open simplicity of their religious architecture. To say that the extraordinary progress of thought in the 5th and 4th centuries, the most rapid and far-reaching that the world has seen, was either the result of these things or their cause, would perhaps be an error, but the interrelation is unmistakable, and they are alike the product of the Greek mind. It should be said that one important religious building which survives, at least in plan, is to some extent an exception to the general rule—the Telesterion (so-called temple of Demeter) at Eleusis (fig. 39).

THE PLAN. To the simple primitive rectangular cella a second rectangular chamber is apparently an early addition ; but throughout Greek history there is hardly a departure from the general rectangular plan, although circular religious buildings do occur, such as the Thymele at Epidauros.

THE ANTA.

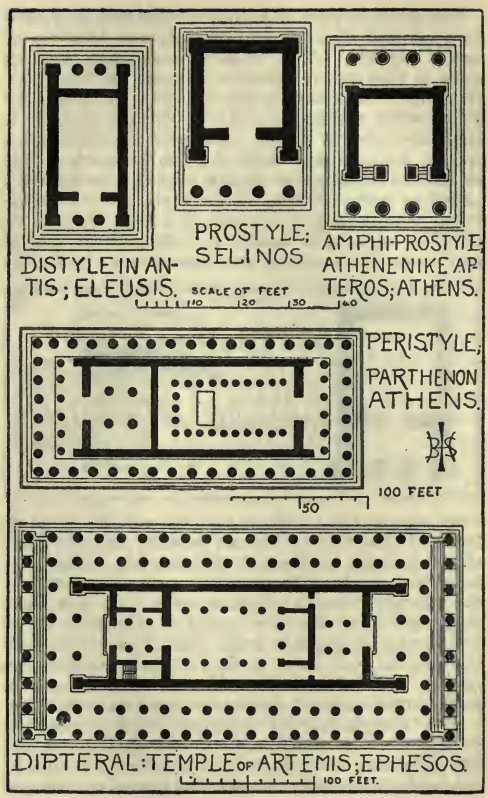
The simplest form is a three-walled building with an open end divided by two columns 'distyle in antis' (fig. 31). The trabs or architrave, resting upon a column, required a support at the other end that would satisfy the eye as well as merely subserve its utilitarian end. It was not sufficient, therefore, that it should rest upon the wall, but a special feature was built for its support, a flat column of rectangular section attached to the wall, called an anta. Hence, wherever we have an architrave passing from a column to a wall, there is invariably an anta to receive it with its own capital and base. This capital and base mark the double

FIG. 31.

character of the member, and are not the same as those of the column, but are in some respects more closely related to the flat wall (fig. 31). The anta with its clearly defined function degenerates into the Roman pilaster of later date. It has been suggested that the sole origin of the anta is an end-facing to a rubble wall. This does not explain the capital and base, or its frequent position not at the end of a wall. Moreover, the anta is never found where it does not support an architrave.

The 'distyle in antis' arrangement may be at one or both ends, as at Rhamnos or Eleusis (figs. 31 and 32). There is, however, no entrance to the temple at the back, the temple image being placed at that end

FIG. 32.—PLANS OF GREEK TEMPLES.



of the temple with its back to the wall—an arrangement occasionally modified in the larger examples. The next development that may be noticed is a portico in front, 'prostyle' (fig. 32); or one in front and one behind, which is by far the more common arrangement, 'amphiprostyle,' as in the charming

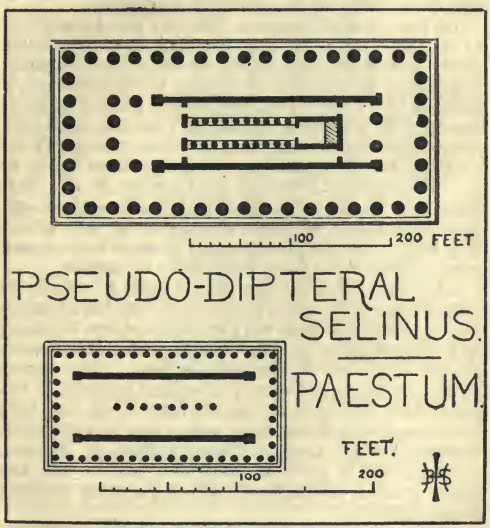


FIG. 33.—GREAT TEMPLE, SELINUS: AND ENNEASTYLE, PÆSTUM.

little temple of Athene Nike Apteros at Athens (v. Plate) and the one by the Ilissos, both destroyed in comparatively modern times, although the former has been re-built. In the largest examples a range of columns is carried right round the building, 'peristyle'; and sometimes there is a double

row of columns, 'dipteral' (fig. 32), as in the temple of Olympic Zeus in Athens. A single line of columns at a considerable distance from the central building, or naos, is termed 'pseudo-dipteral,' as at Selinus (fig. 33). A temple is also sometimes described according to the number of columns at the ends—hexastyle, octostyle, and so on.

THE ROOF.

In the smaller temples the roof was apparently of a single span, leaving the floor space perfectly free. But in larger temples we find columns inside. They may be central, as in the Doric Enneastyle temple at Pæstum (fig. 33), or the Ionic temple at Locri. The temple of Apollo at Thermon in Ætolia shows the same arrangement. More commonly we find two ranges of columns, forming three aisles, as in the temple of Poseidon at Pæstum or the Parthenon. These were apparently in two tiers, one above the other, as those remaining *in situ* attest (fig. 34). The roof, presumably, was of timber, and was covered with tiles, frequently of marble.

INTERIOR ARRANGEMENTS.

The columns down the centre seem obviously to support the ridge piece of the roof; but the arrangement must have been very unsatisfactory, blocking the central view of the building, and the temple image if placed in the middle line. The three-aisled arrangement would also lend support to the roof; but clearly that cannot have been the only function, for in the case of one of the largest Doric temples known, that of Olympic Zeus at Athens, a considerable part of the roof, which was the same breadth throughout, was apparently without these supports.

In the temple of Zeus at Olympia the lower tier supported a gallery, which was approached by stairs at the east end. There seem also to have been stairs in other instances, as in the great Ionic temple of Artemis at Ephesos, which may have served the same purpose (fig. 32). But they also occur where there were no interior columns, as in

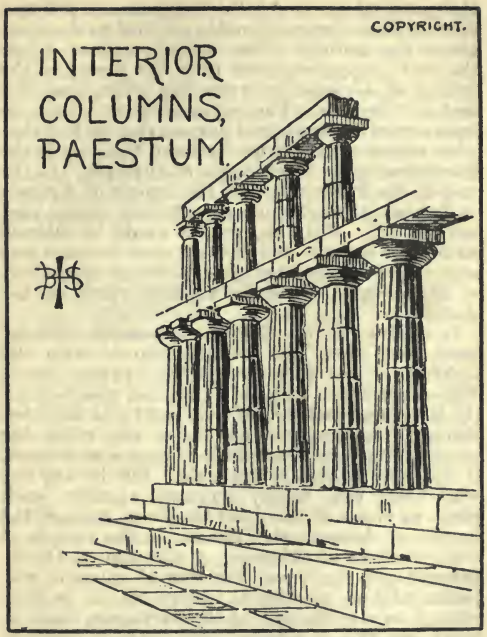


FIG. 34.—DORIC COLUMNS.
TEMPLE OF POSEIDON.

the great temple of Apollo Didumaios at Miletos, in which case they presumably only led to the space above the ceiling. That ceilings existed below the roof proper, we know from the record of the finding of a corpse between the ceiling and the roof at Olympia. The columns seem partly to have served a *quasi*-ritual purpose, for we find that a low screen often existed between them, as in the Parthenon or the Zeus-temple at Olympia. In the case of the Parthenon and the temple of Artemis at Ephesos the columns are returned at the west end (fig. 32). Only the priests would be allowed within the screens, and possibly only favoured persons would be admitted to walk round the gallery or aisles, and so obtain varying views of the statue.

THE LIGHTING OF THE TEMPLE.

It is also possible that the two-aisled arrangement may have had something to do with the lighting of the cella, which has always been a difficult problem. There are several possibilities.

1. SUGGESTED FROM DOORS ONLY.

(1) It is suggested that all the light was admitted through the great temple doors, and when the great brilliancy of the light in Greece is considered, it does become just conceivable. But let any one who holds this theory seriously examine such plans as those of the great temple at Selinos, the temple of Artemis at Ephesos, or the temple of Olympic Zeus at Athens. A distance of 115 ft. through two doors and five sets of columns will bedim almost any light. After all, it is hard enough to see the part of the Parthenon frieze *in situ*; and this is outside. The interior frieze at Phigaleia would be absolutely invisible.

2. ARTIFICIAL LIGHT THEORY.

(2) A second suggestion is that of artificial light, which doubtless would produce a certain richness of effect with a statue made of such materials as gold and ivory. Of course one cannot disprove such a theory, but it is a strange and unsatisfactory arrangement.

(3) It is suggested that the light was largely given by what filtered through the marble tiles. This almost precludes the possibility of a ceiling, as, even if spaces were left in it, such a comparatively dim light would by this additional screen be still further reduced. In this connexion, however, it seems worth noticing that in Byzantine architecture, which may even represent a Greek tradition, thin slabs of marble, deeply carved, so as to become still more translucent, were actually used as windows.

3. THEORY OF TRANSLUCENT TILES.

FIG. 35.

(4) Some sort of opening in the roof is suggested, which may be of two kinds. There might be one or more comparatively small openings in the tiles, or one single great hypæthral opening. The former receives some support from tiles found by Professor Cockerell at Bassai Phigaleia (fig. 35), and the latter from sarcophagi found in the form of little model temples (fig. 35). We are told that the temple at Miletos was open, and had shrubs growing inside—the temple image being in a small shrine within the temple. Strabo, however, mentions it as peculiar and not intentional, but due

4. THEORY OF ROOF OPENINGS.

to the fact that it was found to be too big to roof. Vitruvius says that the temple of Olympic Zeus at Athens was hypæthral, but the temple was not completed until long after Vitruvius' death, so that this statement is valueless. We may therefore assume, first, that these temples were exceptional, and secondly, that they were merely unfinished buildings. A hypæthral opening would certainly sadly mar the line of the roof, and would admit rain and moisture that would have been very destructive. However, it is generally forgotten that we have an actually existing instance in the Pantheon at Rome, and what was possible in the one place is conceivable in the other. There seems, in some cases at least, to have been a *parapetasma*, or curtain, before the image, which may have been to protect it from the weather. It has to be admitted that this theory, although in some ways the least pleasing, has a certain amount of real evidence in its support.

5. THEORY OF MOVABLE COFFER-LIDS.

(5) The fact that the covers of the coffers in the ceiling of the peristyle of the Theseion are movable, and marked with letters, has been used as evidence that light was obtained thus by reflexion from the pavement below, and then presumably reflected a second time from the roof. The amount of light thus obtained would be exceedingly small, and to reduce it under any circumstances by putting the covers on would seem to be quite unnecessary. The markings were probably simply for the convenience of the builders, just as a mediæval or modern mason marks a stone cut for a special position.

6. CLERESTORY THEORY.

(6) The presence of the internal columns, as pointed out above, suggests the most ingenious and beautiful theory of all, if not the most probable. It is the theory of Fergusson, who suggested a kind of clerestory somewhat after the Egyptian manner (fig. 36). It is a tempting theory,

but there is nothing to support it, save the bare fact that Fergusson anticipated so many of the so-called discoveries of other people, more particularly upon Gothic architecture, and has shown the keenest insight of the writers that have ever

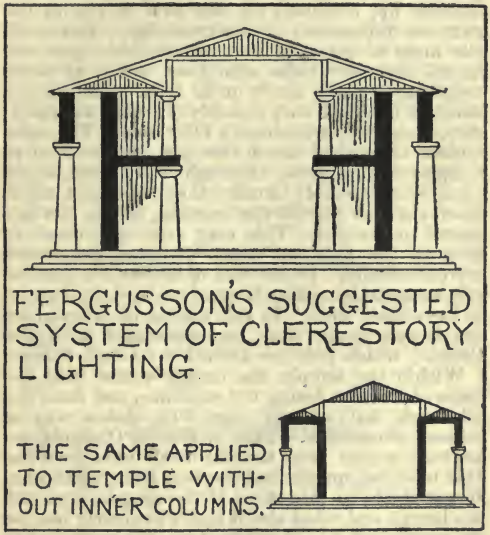


FIG. 36.

written upon the subject. It may be noted that the system is possible without interior columns, although the windows can be made much larger when they are present. The theory receives some measure of support from the fact that the columns certainly were not used solely to decrease the

span, as shown above, nor were there generally galleries.

Unless new evidence be found, the problem is likely to remain unsolved.

SIZE AND ORIENTATION.

In size the Greek temples corresponded to our parish churches rather than to our cathedrals, making up, however, for the lack of size in the extreme refinement of workmanship. Moreover, the mass of material was considerable, and the actual size of blocks enormous, many of them weighing as much as 20 or 30 tons. The largest stone at Baalbek, very possibly of Greek workmanship, weighs approximately 1100 tons. The cella almost invariably faced the east in the case of temples of the gods, although there were slight variations, probably in order that the image might catch the first rays of the morning sun on the day sacred to the god. This may even be trusted to give us the dates of their erection, calculated astronomically. In the case of heroes, the general rule seems to have been the reverse, and the temple to have faced west. In this matter of orientation the Greek usage may be contrasted with the Roman, which paid no attention to such things.

OBJECTS WITHIN THE TEMPLE.

Within the temple, the temple statue held the place of honour, facing the entrance, and from the 5th cent. B.C., at any rate, this statue was of colossal dimensions. That of Zeus at Olympia, we are told, was so large that he would have been unable to stand upright had he risen from his throne. It would add to this effect if the temple were not too large; and what size it had was clearly not for the accommodation of worshippers, but simply what was necessary for the display of the statue. Indeed, one must clearly grasp that the temple and its image were a unity, and cannot be considered apart.

Within the temple there would be a minor altar to the deity, upon which offerings of cakes, or

things of vegetable nature, would be made; and there seem also in some other cases to have been altars to other than the principal deity of the place, as, for instance, to the hero Butes in the Erechtheion. In addition to the altars, there would be numberless votive offerings dedicated to the deity by the State, as in the case of spoils of war, or by private individuals. These would have a tendency to accumulate, and yet, from their nature, it would doubtless have been sacrilege to throw them away. There would be small portable objects too, that would not be suitable for public display, particularly when of great value. Moreover, the deity, especially in the case of Athene Polias, represented the city herself, and the wealth of the city and the wealth of the goddess were, in a sense, one. These circumstances combined to make it necessary that, attached to the temple, there should be some place for the storing of treasure. Hence, in the larger temples we fre-

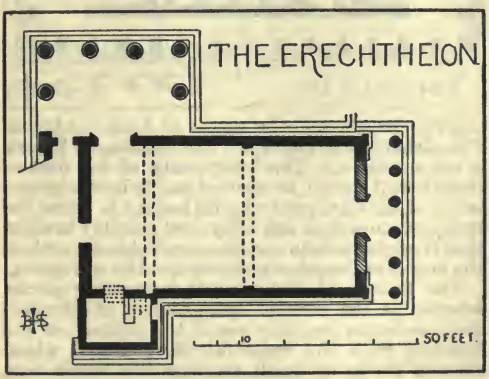


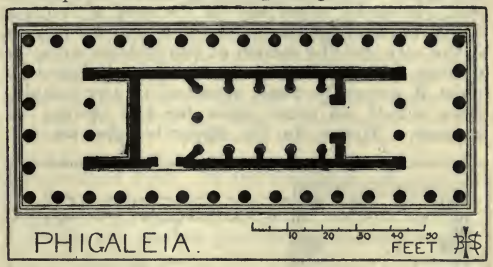
FIG. 37.

quently find at the back of the cella (*ναός*, or temple proper) another chamber prolonging the rectangular plan, and used for the above purposes. Indeed, the treasure chambers of the temples may in some senses be regarded as the State banks. The porticoes themselves were not infrequently closed in by railings between the columns.

VARIATIONS OF THE TEMPLE PLAN.

In considering the plans of the larger Greek temples, we must not suppose that they were built upon any one pattern. Quite the contrary is the case, and it would be truer to say that there are almost as many different arrangements as temples. Perhaps the two most irregular plans are those of

FIG. 38.



the Erechtheion and the temple of Apollo at Bassai Phigaleia (figs. 37 and 38). [The building at Eleusis is not a temple.] The irregularity of the first of these is well known, occasioned partly by the irregularity of the site, partly by its having to house the image of more than one deity, and possibly in order that it might include certain sacred objects, such as the marks of Poseidon's trident and the salt spring.

PHIGALEIA.

The temple at Phigaleia is interesting partly because of the curious arrangement of attached Ionic columns running round the interior of the building with the beautiful frieze above, which form a series of small recesses the whole way

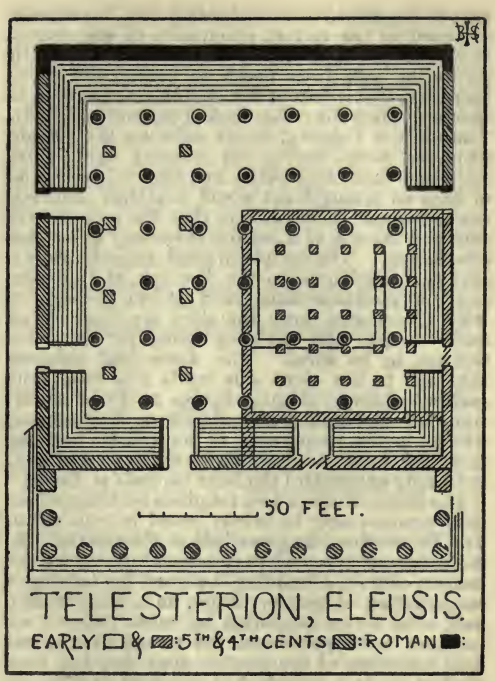
round, but even more as showing the importance attached to the correct orientation of the statue. It was more convenient to build the temple with its longer axis from north to south; the cella, therefore, had a door in the east side of the temple through which the statue looked eastward (fig. 38). The effect of lighting, to one entering the temple from the north during the morning light, must have been most impressive, and the æsthetic value of such an arrangement would doubtless influence the architect. It is possible that the actual cella occupied the site of a smaller sanctuary of normal orientation. The temple in some respects bears a curious resemblance to the Heraion at Olympia. It is a hexastyle building, and its long proportions with 15 columns down the sides are those of an early temple, the tendency being for the later temples to be wider. The Ionic half columns attached to the short side walls also recall the earlier building. Richter figures an Ionic capital from the Heraion, presumably from the interior, which, in the proportions of its volutes and the arrangement of the continuation of the volute-bead, strikingly anticipates the later capitals at Bassai.*

The plans of one or two religious buildings other than temples may be briefly noted in conclusion. The Telesterion, the great hall at Eleusis (fig. 39), is the nearest approach in Greek architecture to the modern church, a building designed for holding a congregation of people. Here, in a large square hall, with a roof supported by seven rows of six columns, were performed the sacred drama and final initiation of the *mustai*, after they had been worked up to a condition of religious excitement by fasting and wandering in the dark. The whole hall was surrounded by tiers of seats as in a theatre, and it seems probable that there was a

TELESTERION AT ELEUSIS.

* The present writer has not been able to see this capital, and does not know where Richter saw it (fig. 22).

FIG. 39.



gallery above these. The building was erected against a hillside, and there were six entrances, two on each of the free sides. The plan is traditional, and takes the place of a much earlier and smaller building of similar design, whose foundations can be traced. Below this are the foundations of a third, smaller still. This building was begun by Iktinos, *c.* 425 B.C., and was not completed until *c.* 315 B.C., when Philon built the porch. We know that the temple had windows and shutters above, for the admission or exclusion of light during the ceremonies. This could have been admirably arranged by a clerestory system such as Fergusson suggests (fig. 40). Fergusson,

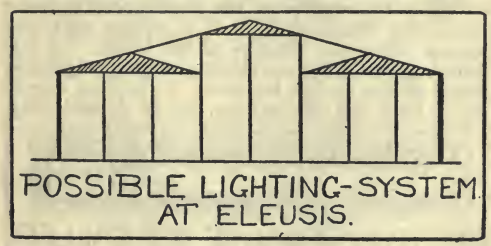


FIG. 40.

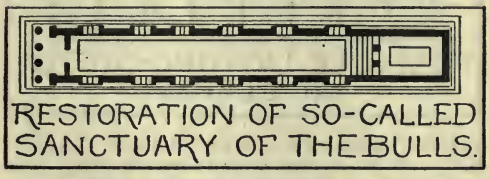
however, makes the ridge of the roof run from N.E. to S.W., so that Philon's portico would have no pediment, which, though quite possible, particularly as it was intended to carry the portico round as a sort of stoa, may not have been the case. But the roof might have been as in fig. 40. In his restoration, all but the end column of the central row are omitted; but although this would provide a wider open space and better lighting, and account for the curious disposition of the columns, six on the sides and seven on the end, nevertheless it is not necessary. If most of Philon's interior

columns were Doric, as those of his portico undoubtedly were, there might have been a single range of the more slender Ionic columns down the centre instead of the two-storey arrangement, a device used where columns of two heights were required. Those in the so-called Parthenon-chamber of the Parthenon were possibly Ionic columns of the height of the two tiers of Doric columns in the cella. Unfortunately, little exists but the ground plan, and there are practically no architectural remains from which to deduce the character of the building. The existing remains are mainly of Roman date.

'SANCTUARY OF THE BULLS.'

In the island of Delos are the remains of the so-called 'sanctuary of the bulls,' the building containing the horned altar of Apollo, reckoned among the seven wonders of the world. In this building is said to have taken place the celebrated dance of the Delian maidens. It was extraordinarily long and very narrow, 219 ft. by 19 ft. (fig.

FIG. 41.



RESTORATION OF SO-CALLED SANCTUARY OF THE BULLS.

41). It was built upon a granite base with marble steps. The building was divided into three parts, a long central hall, with a sunken area, in which presumably the dances took place, and at the southern end a Doric portico, possibly tetrastyle, possibly 'distyle in antis.' At the north end of the long hall was the chamber containing the altar. It was entered between two composite piers, formed by a half Doric column on the one side, and an anta with two recumbent bulls as a capital on the other

side. Above was a frieze with bulls' heads upon the triglyphs. It is these bulls that give the name to the building.

THE THYMELE EPIDAUROS.

The Thymele (*i.e.* 'place of sacrifice'), the so-called Tholos, at Epidauros (fig. 42) is one of the few round buildings, used for religious purposes, that have come down to us. Others were the Arsinoeion at Samothrace sacred to the Great Gods, the very

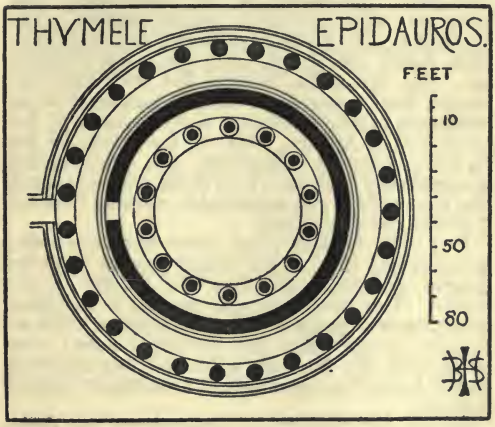


FIG. 42.

small building, if so it may be called, whose circular foundations may be found in the Asklepieion at Athens, and the *quasi*-religious Philippeion at Olympia, which may be regarded as a sort of Heroön of Philip. It seems to have been one of the loveliest buildings of antiquity. The foundations are probably of older date, but the principal remains date from the end of the 4th cent. B.C., when it was built by the architect Poluklitos (possibly

a grandson of the famous sculptor). It was 107 ft. in diameter, and stood upon ring walls 4 in number. Upon the outermost and widest were two circles of columns, the outer Doric circle containing 26, and the inner Korinthian, 14. The inner rings are divided by openings and connected by cross walls in a rather curious way. The Doric entablature had large richly sculptural rosettes upon the metopes. The ceiling of the ambulatory was executed with beautiful marble coffers. The capitals of the Korinthian order, as has already been noted, are in their way the acme of Greek art. The use of the building has been much discussed, but its name, and its correspondence to its miniature prototype or copy in the temenos of the same god at Athens, point on the whole to the building covering a sacrificial pit. That sacred serpents may have been kept in the spaces between the ring walls is also conceivable, without interfering with the first theory.

One thing is clear about these maze-like walls, namely, that they would compel anyone to go the longest possible route from the outside to the centre. One could perhaps imagine a suppliant being made to grope his way in darkness while all manner of rumblings and terrifying noises were made upon the floor overhead, and then suddenly to find himself in the middle of a brilliantly lighted interior.

THE PLACE OF GREEK ARCHITECTURE.

In its own way Greek architecture has never been surpassed, and probably never will be. It has said the last word upon such problems as nicety of construction and proportion, and has carried the delicacy of ornamental treatment to the furthest limits that are visible to the most highly trained human eye. The Greeks may be said to have set out to achieve perfection, and they have achieved it. Their style was original and practically entirely self-created. It is not until we reach the

architecture of the Gothic architects that we again find an entirely original creation. The Gothic architects, however, did not aim at perfection, but at something different, and they, too, in their way were unsurpassed. In order fully to comprehend even the general spirit of Greek architecture, it would be necessary to have some knowledge of other than religious buildings, which alone come properly within the scope of this book. But in the main it is an extension of the same principles, showing, however, more variety and power of practical adaptation than is perhaps evident in the sacred buildings here considered.

CHAPTER V

ROMAN ARCHITECTURE

GENERAL CHARACTERISTICS.

THOUGH it was certainly necessary in the case of Greece to point out that religious buildings were but a part of the architectural activity of the people, it is still more necessary in the case of Rome. Roman religious architecture plays a very small and comparatively unimportant rôle. Her baths, her palaces, her amphitheatres, and other public buildings were all upon a grander scale than her temples.

When Rome became mistress of the world, although she had at that time no architecture of her own, she made use of artists from all nations, and thus arose a composite style of the architectures of the world, in which Greece played by far the largest part. The origin of the Roman temples seems to have been partly Etruscan, partly Greek; but whatever part Etruscan architecture played in other branches of Roman architecture, the Roman temple in its final form was almost wholly Greek. The fact is that the great development of Roman architecture was almost entirely in the hands of Greek artists, and

it is by no means easy to determine how much can really be considered Roman at all.

THE USE OF THE ARCH.

The true Greek style was trabeated, the arch, as has been shown, being only occasionally used. The style of the Romans, however, was a hybrid, partly arcuated and partly trabeated, and in their hands the fusion of the two elements never became complete. It is generally said that the arch in Roman architecture is the arch of the Etruscans: it is, however, doubtful whether it was not an introduction of the Greek artists of the East and Alexandria. In any case both the arch and the barrel vault date back to remote ages in the East, and the later Greek architects were more likely to be influenced by these traditions than by the comparatively obscure work of Etruria. At the same time, fine arches with large voussoirs were built by the Etruscans, as in the canal on the Marta at Graviscæ, supposed to date from the beginning of the 7th cent. B.C., or the Cloaca Maxima at Rome of the 6th. If, however, the Romans themselves had continued the tradition and built in a fine stone arched style, it at least seems probable that some remains, however scanty, would have come down to us. Indeed, we know that early Roman architecture was of brick, and brick vaulting with voussoirs occurs in Egypt as far back as B.C. 3500. Even the intersecting vault is found in a Greek example at Pergamos dating from the 2nd cent. B.C. The earliest surviving Roman building that had arches is the Tabularium, and it dates only from B.C. 78, long after the sack of Korinth, when Rome passed under the rule of Greece intellectually and artistically. Arches were in common everyday use in Greece, at any rate for structural purposes, as early as the time of Eumenes I. (B.C. 263–241), so there is no reason to suppose that Greek architects working for Rome were in any way necessarily indebted

to the Etruscans for their conceptions. Even the triumphal arch—that ornamental form which we are wont to consider typically Roman—was built in Athens in B.C. 318. The earliest instance of such an arch in Rome is that of Scipio Africanus (B.C. 190), of which we have the record, but no remains. The most that can be said, then, is that it is not impossible that the Romans may have had a developed arcuated style derived from the Etruscans before they fell under the dominion of Greece; but there is no evidence of any kind, and, as far as existing remains are concerned, there are no new developments that precede Greek work. The attached column, for instance, sometimes spoken of as a Roman invention, occurs in the Arsinoeion in but slightly modified form, in the monument of Lusikrates in Athens, and at Phigaleia, even if those of the Erechtheion were of Roman date.

ENGINEERING QUALITIES.

With regard to their brick and concrete construction it is otherwise. The Romans were certainly great engineers. There is, however, not the same intellectual nicety about Roman work that there is in Greek work, and this was never acquired. When the Roman Empire was finally divided, the Greek or Byzantine portion at once began to develop a more scientific style, in marked contrast with the ruder work of the West. Roman work was practical, rough and ready, often grandiose, but lacking in the finer artistic sense.

THE ORDERS: DORIC.

It is likely that we shall never be able to say what elements are Roman and what are Hellenistic, but it is possibly in the general planning that the Roman influence is strongest.

The Romans borrowed the Greek orders; or perhaps a more correct way of putting it is to say that the Greek architects working for Rome used their own orders, and by slow degrees trained a native school. The Doric order became very de-

based, and is found in a great variety of forms. The simpler of these forms are commonly grouped together as Tuscan, but they differ very much among themselves, and there is no historical evidence for any Tuscan origin. Vitruvius uses the term, but it is impossible to draw any clear dividing line between Tuscan and the debased Doric. The cause of the common error is that the Renaissance architects did make such a hard and fast division. The term as applied to Renaissance work has a definite meaning, but has no relation to anything in Rome. There was a Roman tendency to dispense with the fluting of Greek work both in Doric and Ionic, and occasionally in the Korinthian order, which greatly detracts from the strong refined vertical character of the shaft. Flutings were expensive to work, and were not showy enough to please Roman taste, which preferred monolithic shafts in hard brightly-coloured marbles in which flutings would have little effect. The column loses the sturdy proportions of Greek Doric, and tends to assimilate itself to the proportions of the other orders. In most of the existing examples of Roman Doric there is a base, but this is absent in early examples such as those at Pompeii, which are much more Greek in feeling. It has been suggested that the origin of the base is Etruscan, but its absence in early work is against this theory; and the part that Vitruvius would assign to Etruscan influence in architecture is not much more of a reality than the part assigned by Virgil to Æneas in history. The moldings and contours gradually deteriorate, and the echinos of the Doric capital speedily becomes a simple quarter round. In the almost unique early example of the Temple of Hercules at Cora (fig. 43) the hyperbolic curve is found, and is obviously executed by Greeks. The architrave shrinks in importance, and the whole entablature is much shallower. There is

a marked tendency for the intercolumniations to become wider. This is mainly the result of the fact that the order as such is not an essential part

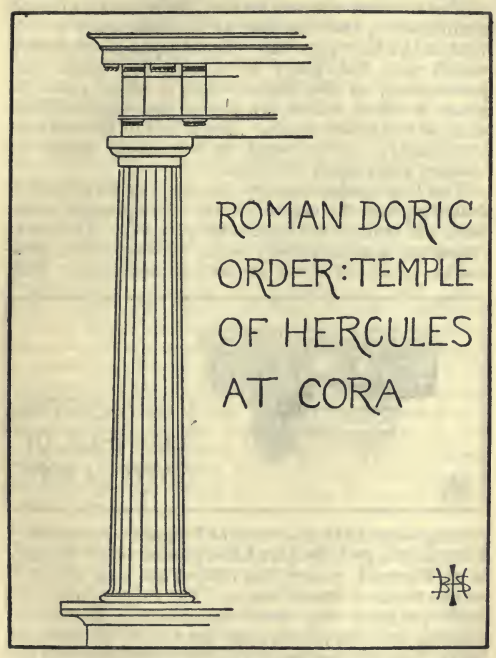


FIG. 43.

of the construction in Roman work. It does not govern the building, but is merely something applied afterwards, and has to suit its proportions to

the available space. It is to this that we owe the introduction of the pedestal as a regular feature, which occurs only occasionally in Greek work.

The architrave is set farther back than in Greek architecture, and the line of its face tends to fall within the base (fig. 43). The beautiful sculpture which was the glory of Greek buildings, and particularly of the Doric order, is absent, and its place is often taken by trivial conventionalities, such as wreathed skulls. The origin of this feature is probably to be found in the actual skulls of victims hung upon the altars.

THE IONIC ORDER.

The Ionic order remains the same in its principal features, but the capital is not infrequently found with the volutes set anglewise (fig. 44). They are, however, comparatively rare, although the text-books speak of them as almost universal. This

FIG. 44.

arrangement in Greek work at Phigaleia has already been noted, and its first known occurrence in Italy is at Pompeii, where the refined carving marks it as the work of Greek hands. The volute in Roman Ionic projects very much less than in Greek examples, and the proportions are not at all satisfactory. There is generally a dentil course beneath the cornice as in Asiatic Greek examples : this occurs even in Roman Doric in the Theatre of Marcellus. The Roman dentils, however, are set much closer

together and are shallower than in Greek work, generally with a fillet underneath.

THE KORINTHIAN ORDER.

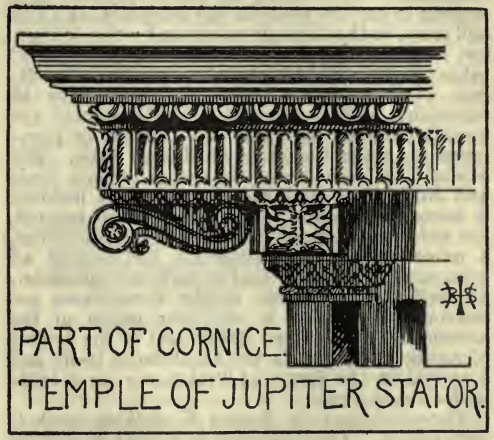
The tendency throughout is towards greater enrichment, clearly seen in the choice of the Korinthian as the favourite Roman order. In Greek hands, as at Epidauros, or the choragic monument of Lusikrates, this order, in spite of its richness, is yet restrained and most delicate in its refinement. In Roman work this is lost, and mere carving takes the place of the sculpture which is still found in the choragic monument. The foliage, too, loses its crispness, and the 'acanthus mollis' takes the place of the 'acanthus spinosus' (fig. 24, cap. II.). In some instances, particularly in triumphal arches, the small angle volutes are greatly enlarged, and may have helped to popularize the angle treatment of Roman Ionic. The capital then partakes of the nature of both Ionic and Korinthian, and the egg and dart molding is introduced above the akanthos. Thus treated, the order is sometimes called the Composite order, a name unknown to Vitruvius, and not at all necessary: it is in no true sense a distinct order, although the architects of the Renaissance endeavoured to make it so. The origin of the arrangement is as usual Greek, and in the temple of Apollo at Naukratis, the Erechtheion itself, and a capital in the forum of Trajan, we see it in its undeveloped form.

The entablature in Roman Korinthian work is very ornate. The architrave is divided by several moldings more or less enriched. The frieze is often decorated with continuous scroll work founded on the akanthos leaf, which is beautiful in itself although giving a restless effect as the result of over-ornamentation. Below the corona a new feature is introduced in the modillions—ornamental brackets which give an æsthetic sense of support (fig. 45).

RELIGIOUS BUILDINGS.

Of course in most of the great secular work the arch plays an important part, and the orders are placed as ornaments in front of the real arched construction; but except in the case of the propulaia in the East, before the sacred temenos, the arch practically plays no part in religious work. The vault, however, does occur (see p. 99). The religious buildings of the Romans were of

FIG. 45.



comparatively small importance, and the great *thermæ* are far more typical of Roman work than the temples. The temples, too, were used for many other besides religious purposes, just as was the case with the great mediæval cathedrals. The temple of Concord was not only an art museum of the spoils of the world, but was often used for meetings of the senate, as also was the temple of

Mars Ultor. The public weights and measures office was in the temple of Castor. But the Roman temples, although in their main features simply modifications of the Greek, have certain distinctive marks of their own.

EARLY TEMPLES.

It seems probable that the early Etruscan temples were often of three cellæ placed side by side, and, moreover, that it was the custom to erect them upon a lofty base, or podium. The Etruscan architecture apparently was largely of wood, and terra-cotta ornaments played a very important part, noticeably in a peculiar fringe of ornamented terra-cotta tiles hanging from under the eaves and apparently also from the main beam of the portico. These features can be traced in Roman work—the lofty podium with a great flight of steps approaching the main portico, the wide intercolumniations, and the use of terra-cotta ornaments—and even the three-celled temple may have had its influence in the great breadth of the Roman temple, or in the case of a triple temple such as occurs at Sbeitla in N. Africa.

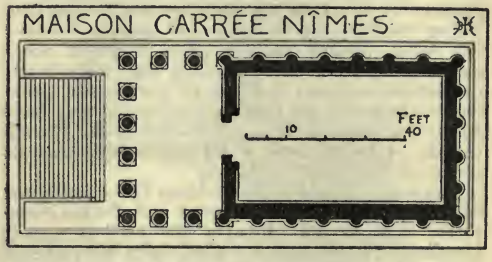
The ruins of the temple of Mars Ultor and three columns of the temple of Castor and Pollux (completed A.D. 6) are probably the earliest extant remains. There may, however, have been earlier examples, as Greece can be said to have begun its dominion over Rome in B.C. 146. The temple of Jupiter Capitolinus was possibly largely Etruscan. Generally speaking, the earlier the date the purer the work and the more marked the Greek influence. It has been observed that the Greek temple was orientated; but this was not the case with Roman temples, and we find them facing in all directions, generally planned in relation to their architectural surroundings. We find them all round the Forum Romanum, for instance, each facing into the forum. As in the case of Greece, the altar was not in the temple but outside, and the exact *raison*

d'être of the temple itself is by no means so clearly defined.

TYPICAL ROMAN TEMPLE.

The typical Roman temple, then, is a rectangular building with a cella very much wider than was usual in Greece. In the temple of Concord the width was greater than the depth. This may possibly have been the result of the earlier three-celled temple or of the many uses to which the Roman temple was put. The architectural effect was always concentrated upon the front, and the back of the temple was often absolutely plain. As part of the same tendency we may notice that the

FIG. 46.



temples were generally only *pseudo*-peripteral, with attached columns round three sides of the cella and an abnormally large front portico. The temple of Fortuna Virilis is a good early example; there is a very fine later temple known as the Maison Carrée at Nîmes (fig. 46).

The Roman temples within were apparently rarely divided into nave and aisles, so that a greater floor space was obtained, but the span was sometimes reduced by internal columns close against the wall, after the manner of the Greek temple at Phigaleia. Occasionally there was an apse, as in the temple of Mars Ultor; and in the

temple of Venus and Rome there was an interesting arrangement of a double temple with two cellæ and apses back to back (fig. 47). The whole in this case was surrounded by a court and stoa.

The roof appears to have been normally of wood, but certainly in a few instances a concrete or stone vault was employed, as in the above-mentioned temple of Venus and Rome, the temple of Neptune, the temple of Ceres and Proserpine, and the temple at Nîmes known as the Nymphæum or the Baths of

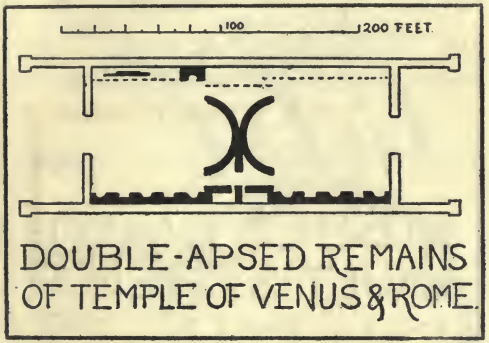


FIG. 47.

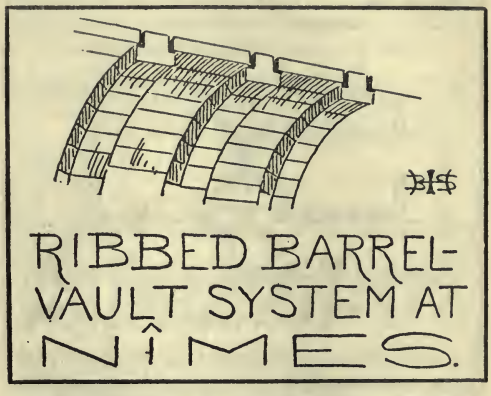
Diana, which has a stone barrel-vault supported on stone arches which rested upon attached columns (fig. 48).

In front of the temple was a great flight of steps generally flanked by two projecting portions of the podium, the steps not extending the entire width of the building (fig. 46). In the temple of Minerva at Assisi the steps are carried between the columns which are raised on pedestals. This was probably from want of space.

A favourite form of temple with the Romans CIRCULAR TEMPLES.

was the circular building which had become popular in Greece during the 4th and 3rd centuries B.C. It has been suggested that the Roman circular temple had an independent Etruscan origin. Even if this be the case with regard to the mere fact of the plan being circular, it has certainly nothing whatever to do with the actual form, which is simply a copy of Greek work. The lofty podium is generally found in Roman examples; but this,

FIG. 48.



too, occurs in Greek examples of much earlier date. The picturesquely situate temple of Vesta at Tivoli is a fine example, of which the cella itself may even date back to the close of the 1st cent. B.C., although the Korinthian peristyle is later (fig. 49).

THE PANTHEON.

By far the most remarkable of the circular temples, and indeed of all the Roman temples, is the celebrated Pantheon (fig. 50)—a great building 142 ft. 6 in. in diameter, 2 ft. in excess of the domed reading-room of the British Museum. The exterior

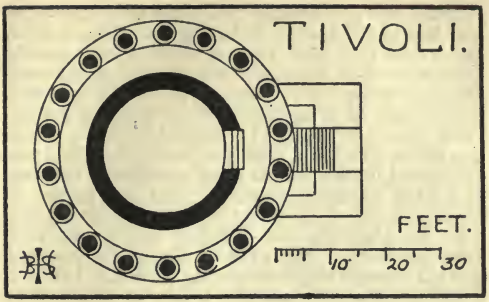


FIG. 49.

FIG. 50.

is plain, not to say ugly; but originally the brick was faced with marble up to the first string course, and above this with stucco, which may possibly have somewhat improved the general appearance although not actually affecting the building architecturally. It is approached by a great portico built from the spoils of Agrippa's temple, which was taken down for that purpose. This fact was discovered in 1892, and is some consolation to those who have always maintained that the portico is hopelessly out of place, and ruins the severe dignity that the plain circular building might otherwise have possessed. The date of the main building also has conclusively been proved to be A.D. 120–124, from the stamps upon the bricks of which it is constructed. This is a most important fact, as the assignment of the building to Agrippa has led to many wrong inferences with regard to the history of dome construction.

The building occupies the site of what was once an open circular piazza, the pavement of which has been found some 7 or 8 ft. below the floor of the present building. The walls are 20 ft. in thickness, containing eight great recesses three of which are apses: the highest faces the entrance on the main axis, and the other two are at the extremities of the diameter, at right angles to the main axis. The entrance itself is a great rectangular recess covered by a barrel-vault, and between these four recesses are four others, all of rectangular form. Except in the case of the entrance and the main apse opposite to it, all the recesses have two columns *in antis* in front. The dome is divided in its lower part by vertical and horizontal ribs into five ranges of thirty-two coffers. Above this it is plain, and the whole building is lit by a huge circular hypæthral opening 30 ft. across. Altogether the interior effect ranks very high among the great buildings of the world.

BUILDINGS OUTSIDE ITALY.

Under Roman rule many great temples were built in many other countries than Italy, but, save in those countries that had no architectural styles of their own, it is misleading to call them Roman. Particularly in the East we find many buildings that are practically simply a development of Hellenistic architecture. The great temples of Syria, for instance, are not placed at the end of the fora as in Rome, but in a temenos of their own as in Greece, with propulaia leading into them. With one exception too (Baalbek) they are orientated in the Greek manner. Of this type is the great temenos of the temple of the Sun at Palmyra. In most instances, just as at Athens, the propulaia have a wider intercolumnia-

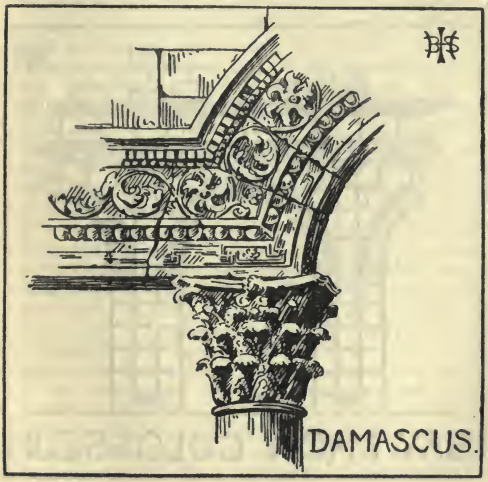
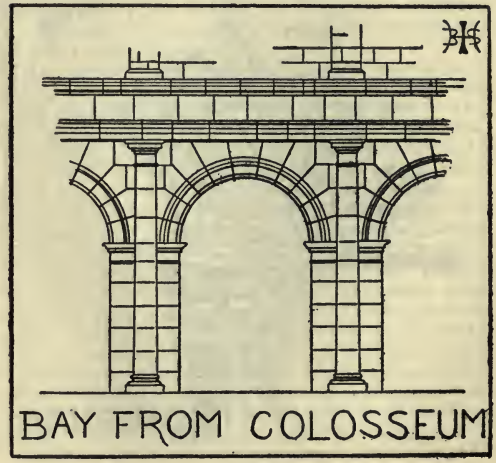


FIG. 51.—FROM PROPULAIA DAMASCUS.

tion in the centre, but it was spanned by an arch, round which the entablature is carried. The propulaia of Damascus (fig. 51), which may be dated *c.* 110 A.D., or not much later, are probably the first instance, and a similar dated example occurs in the temple of Atil (A.D. 151). Baalbek (A.D. 160) and probably Palmyra were the same. The invention—if so it may be termed—appears to be that of Apollodoros, a Greek of Damascus, and seems a natural development of the arches of later Greek tradition already noted. It afterwards appears in Diocletian's Palace at Spalato, on the north-east coast of the Adriatic (*c.* 305 A.D.). It marks an important step, because hitherto the arch had always been carried by portions of walls

FIG. 52.



or piers. On the other hand, the columns had never before carried anything but a horizontal entablature; and the piers and arches behind, with the columns and entablature in front, always remained two distinct and irreconcilable elements (fig. 52). Indeed, it was left for the Byzantine and Gothic architects to work out truly homogeneous styles of column and arch.

Of these Syrian examples the finest is that at Baalbek, which is built upon a great platform forming an akropolis. The general setting out is probably not Roman, and some of the substructure is pre-Roman in date. It was approached by great propulaia of Roman times, the restoration of which is largely conjectural. An interesting feature is the hexagonal court, surrounded by a double peristyle upon which the propulaia opened. The hexagonal court leads in its turn to a great square court, at the end of which, somewhat in the Roman manner, is the larger of the two temples. Apparently it was never completed. The other temple to the south, the temple of Jupiter, is a very fine piece of work. In some ways the building was a compound of Greek and Roman feeling. It was peripteral, with two ranges of columns in the front, but the portico was very deep, and the central intercolumniation was wider than the rest. The interior had attached columns after the manner of the temple at Phigaleia, except that the entablature was broken and carried round and back between the columns. It probably had a flat roof, except at the far end, where there was a small vaulted recess, about half the total width, approached by a flight of steps. A curious feature is a two-storey division into shallow niches between the columns, which has a very unpleasing effect. The lower one is arched, with a horizontal cornice, and the upper has only the cornice, but is surmounted by a pediment. The carving is

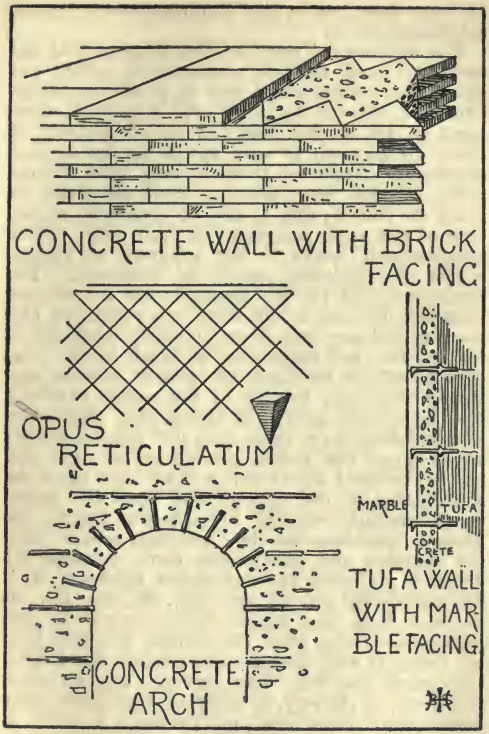
bold and good, and shows the influence of Greek tradition.

CONSTRUCTION.

The Roman method of construction was very different from that of Greece. Whereas the Greeks generally built in large stone blocks bonding right through the wall, the Romans built mainly in brick and concrete, and the finer materials were used only for facing. In Rome itself even brick was never used throughout, although in the provinces brick walls or courses of stone and brick alternately are not uncommon. Whether brick or stone was used in the core of the wall or not, the outer face was invariably covered with stucco or some finer material. When brick or stone occurs, its use is not easy to determine, as it would neither add to the strength of the wall, nor admit of its being built without planking to keep the concrete in position while setting. Bricks were of flat triangular shape, and stones pyramidal. 'Opus incertum' was work where the stones were more or less irregular in shape, and 'opus reticulatum' where they were dressed to a true square, and set diagonal-wise in the wall (fig. 53). In either case occasional courses of large flat bricks, 1 ft. 11 in. long, bonding through the wall, were used. A similar method was adopted with arches to prevent the concrete from spreading and settling down before it had set (fig. 53). The marble or other facings were secured to the wall by iron or bronze cramps running into the body of the wall (fig. 53).

In vaults and domes, arches or ribs of brick were built upon light wooden centering, and cross bonding bricks dividing the whole into compartments were inserted at intervals. The concrete was then poured into these, and the whole set into one solid mass, exerting no outward thrust whatever. Stone vaults, instead of concrete, were occasionally built

FIG. 53.


CONCRETE WALL WITH BRICK FACING
OPUS RETICULATUM
MARBLE
TUFA
CONCRETE
TUFA WALL WITH MARBLE FACING
CONCRETE ARCH

in later days, as in the Nymphæum at Nîmes, mentioned above.

ORNAMENTATION.

The ornamental work of the Romans was not nearly so good as their construction, which was sound and workmanlike, and of great durability. One even regrets that they ever attempted ornament at all, as the bold and simple majesty of their great work is only spoilt by the applied ornament. After all there is very little Roman work, if any, more pleasing than the Pont du Gard at Nîmes; and it has no ornament at all. One of the most delightful of their more purely architectural works is the gateway at Trèves, which is practically devoid of ornament. The ornament used by the Romans was all derived from Greek sources, but there is a roughness and want of delicacy that shows an entire ignorance of the subtlety and refinement of Greek work. The profiles of the moldings are nearly always segments of circles, instead of the subtle parabolic and hyperbolic curves of Greek art. Moreover, the molding, as a rule, does not depend for its effect upon the subtle gradations of light and shade produced by its own contour, but upon the elaboration of the carving cut upon it. Somewhat similarly we find a preference among the Roman architects for the 'acanthus mollis' with its rounded and less precise form, whereas the Greeks preferred the 'acanthus spinosus' with its more crisp refined lines (fig. 24, cap. II). It is true that the latter badly drawn is less satisfactory even than the former, but this kind of thing is well known—the greater the height, the worse the fall. The carving, too, although vigorous in its way, is rougher and much more mechanical than that of Greece. Instead of the fine sculpture that adorned the temples of Greece, we frequently find endless repetitions of ox-skulls and hanging festoons of fruit and flowers

between. There was a great tendency to use the ornament in such profusion that it stultified itself. Such an example, for instance, as the arch at Beneventum is so overloaded that there are practically no plain surfaces at all, and the whole effect is worried and unsatisfying.

Colour was used in their buildings by the Romans as by the Greeks, and the great fondness of the Romans for marbles of many colours gave their buildings an opulence in effect that was one of their most marked characteristics.

One of the most important adjuncts of Roman ornament was the mosaic, which, however difficult to work satisfactorily, is undoubtedly more in consonance with architectonic feeling than any mere surface pigment.

INTERIOR EFFECTS

Adequately to appreciate Roman work, it would be necessary to study much more than the religious architecture. Rome's finest achievements were in the *thermæ*—the great baths, which were the centres of Roman life, where literature was read and discussed, and politics debated. In these magnificent buildings it was the interior that was the greatest achievement. It was in interior effects that the Roman architects made the real architectural advance, giving to them a magnificence hitherto undreamed of. Magnificence was the aim and end of Roman art; subtlety and refinement were beyond its comprehension. However, of existing remains, it is a religious building—the Pantheon—that gives us the clearest conception of what this interior magnificence was; and for us to-day the Pantheon, with its fine interior and poor exterior, is the great typical example of Roman achievement, as the Parthenon, with its delicate subtleties and sculpture of unsurpassable loveliness, is of Greek.

CHAPTER VI

LATIN ARCHITECTURE

ALTHOUGH it is possible to discuss the different edifices erected by Christians in divers times and places, it is most important, at the outset, to dispel any of those misconceptions which would suppose that there ever was any Christian style as such. The Gothic architecture of the Middle Ages has often been spoken of as Christian architecture *par excellence*, and undoubtedly it is the most important of the styles in which Christians have erected their buildings, and, being the style of our own country, it naturally demands the largest share of our attention. But Christianity, as such, never has created, and never could create, a style of architecture, any more than it could create a style of mathematics, or science, although it may make use of all of them. It has used buildings of the Latin, Byzantine, Moorish, Gothic, Renaissance, and even the Greek styles, which differ from each other as much as one style of architecture can differ from another; and the differences are due to differences in the æsthetic expression of the people. These may be associated with other differences of character which may affect the forms of Christianity itself, but they are both the outcome of causes behind; the one is not the

ARCHITECTURES OF THE CHRISTIANS.

cause of the other. The one is cognate with the other, not derived from it. A certain type of man will produce a certain type of art and a certain type of Christianity, but the type of Christianity does not make the type of art, any more than the type of art makes the type of Christianity. Even schools of science or philosophy may be coloured in the same way. The failure to grasp this very simple fundamental principle has led to much absurd criticism and a complete misunderstanding of art and architecture. Doubtless the cause is to be sought in the fact that to be a Christian it is not necessary to be an artist, and many a good Christian, quite innocent of any knowledge of art, has endeavoured, in the light of what he did understand, to interpret things which he did not understand.

All this does not alter the fact that a church is a definitely Christian building erected for Christian purposes, and as such it will in many ways reveal this fact; but, at the same time, its principal architectural qualities are æsthetic rather than religious, and a building such as St. Paul's is architecturally more akin to Castle Howard than to Westminster Abbey, which, in its turn, claims a closer kinship with Westminster Hall or the town halls of Belgium. The architecture of the Middle Ages was as much an architecture of castle and hall as of cathedral and church, and is as closely related to the spirit of chivalry and romance as to Christianity. Mediæval Christianity, chivalry, romance, and architecture are alike the outcome of the mediæval man; one is not the cause of the other, even although there is a certain amount of interaction. To speak of Christian architecture, then, as a parallel term with Greek architecture, is entirely illogical. We can therefore examine Christian buildings in various styles of architecture, although we cannot strictly speak of Christian architecture as such. It may, however,

be possible to show how Christian building doubtless left some impress upon the several styles of which it made use.

After the decline of the Roman empire there was evolved in Italy a style which is best termed the Latin style, although English archæologists have been accustomed to give it the unfortunate, illogical, and misleading name of basilican. One might equally well speak of a town-hall style or a chapter-house style; and the term basilican, as will be seen, can only be applied to a particular class of building, and not to a style of architecture. LATIN STYLE.

Briefly, its characteristics may be summed up as follows. In construction the tendency is to pass away from the solid concrete of the Roman style to an articulated method. The wall is slight and commonly built of brick, and merely supports a light timber roof. CHARACTERISTICS.

The plan may be circular, octagonal, rectangular, or, indeed, of any shape, but the building is characterized by internal columns of more or less classical form, carrying a wall in which are the windows, thus providing a clerestory lighting. Outside these there may be one or more aisles, but the lower roof is a lean-to, and the upper coniform, pyramidal, or gabled according to the plan of the building. A ceiling was not an essential feature, although it occurred.

The columns were of classical form; and when actual old columns were not used the work was, in comparison, rude and poor, although better at Ravenna than in Rome.

There was a growing preference for the arch form, and even when the entablature was used in the main arcade the arch appeared in the windows of the clerestory: door-heads, however, remained square.

The interior, if not the exterior, was veneered after the Roman manner with marble and mosaic.

Carving was very sparingly used, appearing in the capitals and in minor accessories such as the ambones or the bishop's chair.

It is natural that from the lack of sacred association, buildings other than those for religious purposes should have almost entirely perished, which therefore gives a somewhat undue importance to this class of building. Indeed, if buildings of other classes had survived in any appreciable number, we should almost certainly find a considerable amount of action and interaction between them, and our conception of the style as a whole would probably require much modification.

THE CHRISTIAN BASILICA.

The earliest form of church with which we have any intimate acquaintance is the so-called Christian basilica, and its origin is exceedingly difficult to trace. One thing at least is clear: it is not directly derived from the Roman basilica, as was absurdly suggested in an uncritical and unhistorical age. The Christian church naturally developed from humble beginnings, where two or three might gather together; and such a lordly prototype is impossible. It used even to be suggested that the actual basilicas were the first Christian churches. But, as Christianity was some 300 years old before the conversion of Constantine, the Christians could not have had the remotest chance of using these buildings. Moreover, even after A.D. 312 (the date of Constantine's conversion), the basilicas were still required for their original purpose, and could not have been handed over to what, even at that time, was but a minority of the people. During all these three hundred years the Christians had required places of worship, and undoubtedly a more or less definite arrangement of their buildings by that time had become crystallized.

As an instance of the feebleness of the argument, not to say the gross perversion of the contexts, we

may note the following—one of the main passages quoted in favour of this theory. In a laudatory piece of writing by Ausonius addressed to the Emperor Gratian thanking him for the consulship, we find the following passage: 'Quis, inquam, locus est, qui non beneficiis tuis agitet, inflammet? Nullus, inquam, Imperator Auguste, quin admirandum speciem tuæ venerationis incutiat: non palatium, quod tu, cum terribile acceperis, amabile præstitisti: non forum, et basilica olim negotiis plena, nunc votis, votisque pro tua salute susceptis.' The passage is given by Professor Baldwin Brown in his admirably suggestive work, *From Schola to Cathedral* (1886), and, as he points out, vows for an Emperor's welfare in palace, forum, basilica, or senate house (mentioned later), are scant evidence that any one of these places was turned into a church, and why the basilica should be singled out from the others with which it is coupled remains a mystery.

Leaving such puerilities, it remains perfectly true that the Christian basilica in the 4th cent. A.D. bore *some* resemblance to the Roman basilica, although it has never been proved that the Roman basilica was even roofed in; but one might as well argue from a modern fleet as to the appearance of the Spanish Armada, the interval of time being the same, and the development of Christianity rapid, as is that of our fleets. What was the case in A.D. 350 is of little value as evidence for what was the case at the beginning of the Christian era, in architecture just as in anything else.

ORIGINS OF THE CHURCH.

The earliest Christian services were held in the Jewish synagogues, and in private houses; and in comparatively early times we find the Christians legally occupying the position of the *sodalicia*, which correspond to our Friendly and Burial Societies. These Societies often possessed a *schola*,

or lodge-room, where they held their banquets in honour of the deceased.

These three forms of building may all have influenced the early form of the Christian church, although it should be noted that the *schola*, with its apse, was probably itself derived from the large private hall, which sometimes had an apsidal termination.

THE ATRIUM.

On the whole, the largest influence may be assigned to the private house (fig. 54). Certainly such houses were made over to the Christians for their use, and it may be even more than a coincidence that we find in the atrium of the early church the atrium of the Græco-Roman house, in the cloisters the peristyle of the house, and in the church itself the hall, *œcus*, or principal chamber, as at S. Ambrogio, Milan (fig. 55), or the Church of the Nativity at Bethlehem, where the atrium is reduced to a simple narthex.

THE NARTHEX.

The narthex, which gradually disappears from the Christian church, was the outer vestibule into which catechumens and penitents were permitted to enter, who were not admitted into the church itself. It is probable that the atrium originally served a similar purpose, and the idea may be derived from the Court of the Gentiles in the Jewish Temple.

CHAPEL IN CATACOMB.

Some of the earliest actual places of meeting that still exist are the little chapels such as that in the catacomb of S. Agnese (fig. 56); but their value as evidence is slight, as the conditions were peculiar, and the form caused by throwing two or three cells together was the result of necessity rather than choice. The several cells may suggest divisions between the sexes or simply between clergy and laity, the clergy fairly obviously occupying the end cell and the bishop the seat at the end. The altar must have been somewhere in the body of the chapel, and as there is no trace

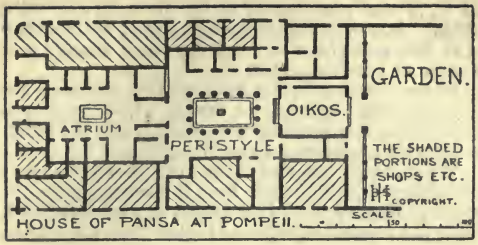


FIG. 54.

FIG. 55.

FIG. 56.

of it, it was presumably in the form of a wooden table. But even this cannot be dated earlier than A.D. 250, and there is room for much change in a couple of hundred years.

THE CRYPT. In the catacombs we may see the origin of the church with confessio or crypt, whose prototype is found in the tombs of the martyrs and the buildings in the cemeteries above the graves of the saints.

THE DEVELOPED BASILICA. What, then, are the characteristics of the early Christian basilica when first it emerges into the light of history? It is a three- or five-aisled hall, with the central aisle rising higher than the others,

FIG. 57.

and lit by a clerestory. At the end of the central aisle, generally the west end, is an apse containing the seats of the clergy. The entrance is at the opposite end, and beyond that is a narthex, and sometimes a complete atrium. The baptistery, commonly of circular or octagonal form, is usually in a separate building, on the other side of the atrium, or of the narthex, as at Parenzo (fig. 57). In the latter arrangement we may possibly see the origin of the German two-apsed church.

Occasionally, particularly in Rome, there is a space in front of the apse, and a great arch is thrown across the last pair of columns, known as the trium-

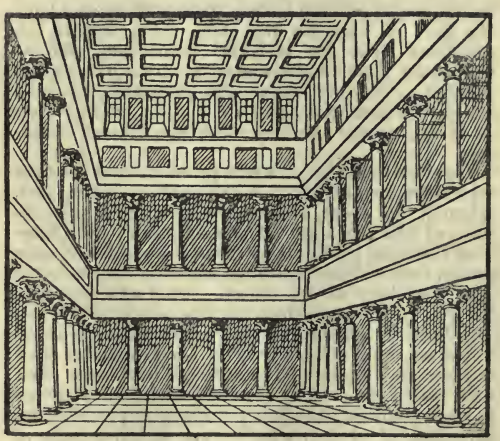
phal arch, as in Santa Maria in Trastevere (figs. 58, 60, and 63).

In this space is seen by some the origin of the later transept, but it does not occur in the Ravenna churches, and the later transept probably has a double origin; and this is, at any rate, not the only factor. The building was apparently roofed with a simple open timber roof. The flat ceilings that occur in some Roman examples are late Renaissance, although they may possibly represent something older. They are rarely found elsewhere, but are supposed by some to have been a feature of the Roman public basilica (fig. 59). The walls were generally of brick, and comparatively thin, as there was only the wooden roof to support. Unlike the Roman basilica, it had no galleries, and consequently we find a very large wall space above the line of columns (fig. 60). This formed an excellent field for pictorial decoration, and at the same time distinguished it from the public basilica. Neither were the columns returned across the end opposite to the apse, at any rate in Italy, as was the case with the Roman building.

On the whole, also, it seems probable that the apse was not a usual feature of the public basilica, and, when it did occur, it was practically in a separate part of the building. The columns in the Christian basilicas, particularly in the case of Rome, were stolen from earlier buildings, and it is very usual to find that they do not match. This also accounts for the poor proportions of the earlier Christian buildings in Rome, as compared with those in Ravenna, where there was no such available spoil to hand, and the builders had to fall back upon their own resources. At first the horizontal entablature is more common, but it is gradually superseded by an arcade of arches, which gives an appearance of greater height to the building, although the neces-

FIG. 58.

FIG. 58.—CLASSICAL BASILICA.



sarily wider intercolumniations detract somewhat from the effect of length.

The principal entrance was perhaps more often at the east end, following the arrangement of the temples of Greece. But the question of orientation was of little moment, and churches faced in any direction. After the custom of having the entrance at the west, and the altar or table at the east, came into vogue, as in England to-day, it was hardly ever more than a Northern fashion. Moreover, the first fashion was exactly the reverse way, with the altar at the west. The first church that we know to have had an altar at the east end was built in A.D. 470 (S. Agatha, Ravenna). Of the early churches in Rome 40 out of 50 have not their altars at the east.

ORIENTATION: POSITION OF ALTAR.

The altar or table in the 5th cent. was at the

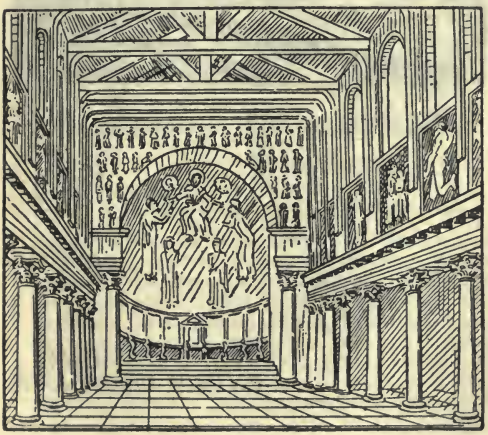


FIG. 60.—CHRISTIAN BASILICA.

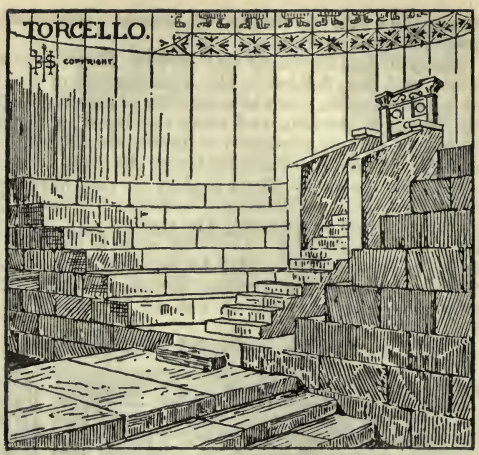


FIG. 61.—HEMI-CYCLE OF SEATS.

opposite end from the main entrance, but in the body of the church in front of the apse, so arranged that the faithful sat round it, the clergy on one side and the laity on the other. Of course, this arrangement in most instances has been altered, but the following churches in Italy show the old plan more or less undisturbed :—Torcello Cathedral (fig. 61), S. Apollinare in Classe, Ravenna, and Parenzo

SEATS ROUND TABLE OR ALTAR.

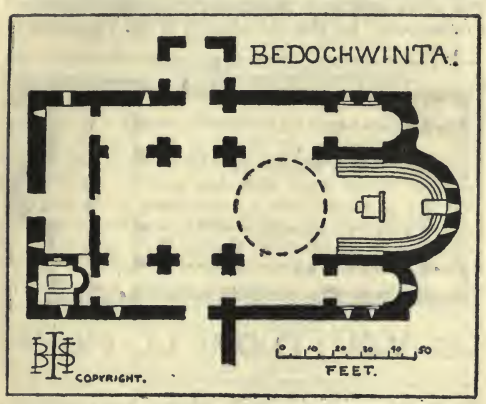


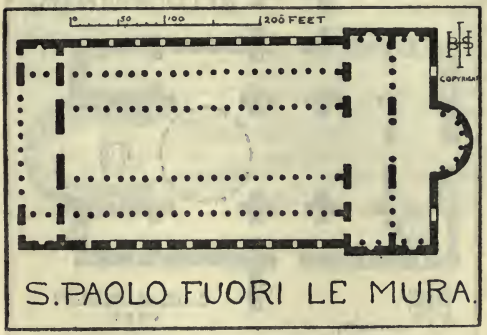
FIG. 62.

Cathedral (figs. 62, 64, and 57). (The bishop presided in a raised seat in the centre of the apse, very much as did the president at the table in the early *scholæ*.) Outside Italy, in the East, where there has been less change and alteration, such churches are quite numerous, but the following instances will suffice :—Ezra, Pitzounda, Mochwi, Bedochwinta, in Armenia, Abu Sargah (fig. 67), Dair-as-Suriani. Bedochwinta, as late as the 12th century, has the seats at the back and

down both sides, advancing even beyond the altar (fig. 62).

Churches with the altar in the body of the church, and the bishop's seat behind, but without the other seats, are familiar in Italy. There seems also to have been an arrangement, at any rate sometimes, for the lesser clergy and choir, whereby they occupied all the space immediately in front of the altar and were separated from the laity by a low screen. In the old church of St. Clemente in

FIG. 63.



Rome, this screen, part of which is built from the actual pre-existing screen, may be taken to represent the original arrangement.

FLOORS. The floors of the churches were of ordinary marble mosaic, but this has often been altered in later times, and we see the so-called Cosmati work made with large pieces of coloured marble, surrounded by small mosaic, and this, again, by bands of white marble.

S. PAOLO FUORI LE MURA. A good example of the basilican church is S. Paolo fuori le mura, Rome (fig. 63). This, although almost entirely a modern restoration after

the fire of 1823, is still the best representative of a great five-aisled basilica that has come down to us. It is 400 ft. long and 200 ft. wide, with a central aisle of 78 ft. The complete atrium of Old St. Peter's is here represented only by a narthex. The bema hardly projects beyond the aisle walls, and is peculiar in being double. It is in area among the largest churches in Christendom; but it is quite a simple thing to build these comparatively low buildings, with their light wooden roofs. There are 19 columns with pseudo-Corinthian capitals and a sort of Attic base. They are without flutings, and carry a series of simple, round arches. Above is a cornice, and where there would be the gallery in a Roman basilica, or the triforium in a Gothic church, is a series of medallions. The triumphal arch is carried upon a pair of columns on plinths. These columns have Ionic capitals, and the whole arch forms a very imposing feature, although not comparable with the great arches of the crossing in a Gothic cathedral. The general vista is fine, although, partly from excessive breadth, and still more from an inadequate marking of the bay divisions, which is so well managed in a Gothic cathedral, the length here is not felt. The church at present has a rich coffered ceiling, but it is doubtful whether this would have been the case with the original church of the 4th century.

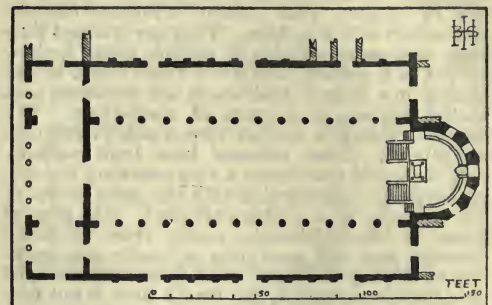
S. APPOLLINARE IN CLASSE.

In Ravenna perhaps the noblest example is S. Apollinare in Classe. It illustrates the characteristics of the place, which on the whole shows the indebtedness to Greek work even more than to Rome. As a result, the work forms a far more complete artistic unity. Everything is designed for the position that it occupies, and is not the spoil from other days. The church is a three-aisled basilica and has no transeptal space before the apse, this, as already stated, being what we should expect in Ravenna. In the dosseret above

the capitals, as at S. Vitale (fig. 65), and the polygonal exterior to the apse, we see Byzantine features.

The capitals are carved for their place. Above the nave arcade is a series of medallions, as in S. Paolo fuori le mura. The apse is raised, with a small crypt below it, and it retains the seats round the altar on the side opposite the entrance. The brick exterior is bald to hideousness.

FIG. 64.



ST APOLLINARE IN CLASSE, RAVENNA.

S. DEMETRIUS SALONICA.

In the Eastern Empire one of the best examples of the Latin style is S. Demetrius at Salonika (fig. 66). It has certain features, more or less characteristic of the East, which should be noted. The columns are returned across the building at the entrance end, which in this case is the west, and so form a sort of inner narthex. Over the aisles are galleries for the women—another arrangement common in the East. The capitals are finely carved, as we have here the still living Greek influence. This, as already indicated, was felt in

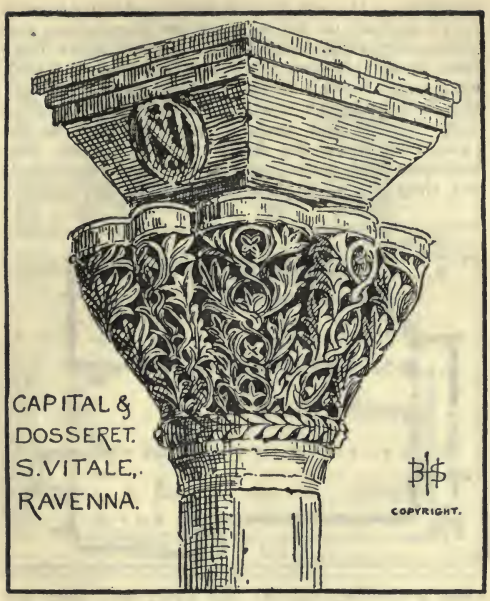
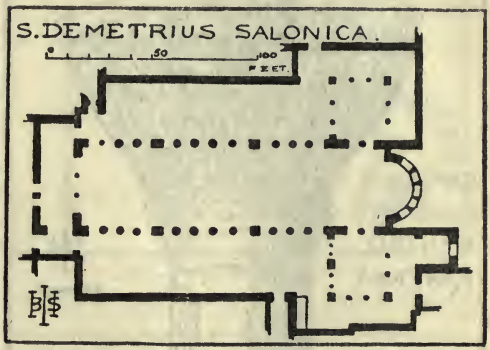


FIG. 65.—BYZANTINE CAPITAL.

the West. It was long before the Italians could carve capitals or lay mosaics for themselves, and either they made use of the old work, as we have seen, or else the new work was executed by Greek workmen. Even in the 8th and 9th centuries, when the Italians began to copy the old work, theirs is very inferior and rude in comparison. In St. Demetrius there are fairly clearly defined projections which perhaps may be termed transeptal, but they are at the extreme end of the church,

FIG. 66.



even projecting beyond the apse, and they are cut across by the main arcade of the church which makes them more or less invisible, and, in short, they are side chambers rather than a transept. Consequently there is no triumphal arch.

EGYPT AND SYRIA.

Other modified forms of the basilican church are found in Egypt and in Syria. In both cases there seems to be a tendency to keep the form of the apse only on the inside and to make the outside of the building square. The COPTIC churches in Egypt

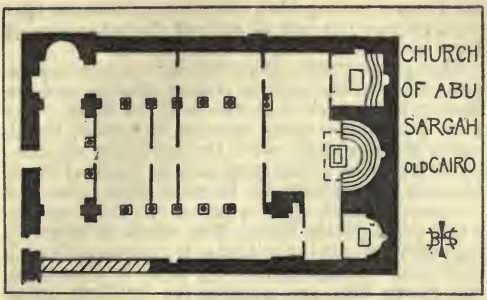


FIG. 67.

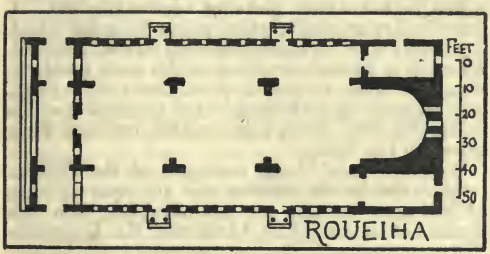


FIG. 68.

FIG. 69.

are generally triapsidal with three altars, an apse occurring at the end of each of the side aisles—a form we shall meet again later (fig. 67).

SYRIAN churches generally show a marked reminiscence of the style of Ancient Greece, and are finer in their work than those of the West. Not only were there many remains of ancient Greek work, but doubtless after the conquests of Alexander there was a certain admixture of actual Greek blood in the population. In many cases piers, and columns, are used, and the church is divided up into a few great square bays. The result is curiously suggestive of some of the later Romanesque Gothic churches. Almost invariably there is a narthex, and above this, and outside the building, often a gallery with columns, forming a sort of loggia which makes a very pleasing feature (fig. 68). A point in Syrian construction might be noted which is possibly another reminiscence of Greek tradition. There is a distinct aversion to the arch construction, and often an arch is merely an arch in form, or is reduced by corbelling to the smallest possible limits (fig. 69). Note also another common form shown in the figure.

Both Syria and Egypt were part of the Eastern empire, and in the narthex and the squared form of the apse outside we see affinities with the Byzantine style. The Latin and the Byzantine styles were practically contemporary, and, besides having certain common elements in their origin, they meet each other geographically. It is therefore quite natural that in the north of the Adriatic and other places we should find examples which it is perhaps difficult to classify either as one or the other.

BASILICA: A BUILDING, NOT A STYLE.

The Christian basilica, then, may be considered as a type of building, but hardly a style of architecture; and although we have seen that it was erected in various styles, they are all more or less a

continuation of the later Roman manner, affected nevertheless by different influences, as in Ravenna or Syria. It is perhaps convenient to group the whole together as the Latin style, and remember that other buildings than churches were built in it, but, as is natural from the lack of sacred association, they have very largely perished.

CIRCULAR BUILDINGS, TOMBS, BAPTISTERIES, ETC.

Besides the basilican churches there are two other types of buildings connected with the Latin style that still survive in sufficient numbers to give us some conception of their character.

They are both of them circular or polygonal, and their origin is even more closely connected with the tomb than is that of the basilica.

The Roman tomb was frequently of circular shape, and it is possible that for this reason the Church of the Holy Sepulchre at Jerusalem, which exercised so considerable an influence upon later architecture, was so constructed.

The tombs of some of the early saints and dignitaries of the Church were certainly so built, such as that of Sta. Costanza; and buildings of the same character, whether originally built as tombs or not, form a distinct type.

They are characterized by a close adherence to Roman tradition, with very thick walls and a dome, and consequently are not true examples of the Latin style, but must be looked upon as survivals. They may or may not have an inner circle of columns, but the resulting thrust is ultimately met by the thick wall.

There is an example at Nocera, not far from Naples, but the best known is the tomb of Theodoric at Ravenna, where the solid concrete dome of the Romans is replaced by the still more solid and extraordinary expedient of a flat, saucer-shaped dome cut out of a single block of stone.

The other form, though quite different in principle, was very likely suggested by this.

It seems mainly to have been used for baptisteries, where the circular form was peculiarly suitable, and was probably adopted for reasons of expense.

This type is a building of light construction, with a central circle of columns, and one or more aisles around. The normal form of roof seems to have been a conical timber construction with a lean-to roof over the aisles, and apparently generally a flat ceiling below.

The building was lit by a clerestory, and is of the true Latin style, of which the Christian basilica is merely another variant. Constantine's baptistery at Rome and S. Stephano Rotundo are good examples.

CHAPTER VII

BYZANTINE ARCHITECTURE

WHEN Constantine removed his capital (A.D. 330) he naturally wanted to make the new capital as glorious as the old, but he speedily found insuperable difficulties. CONSTANTINE AND THE REVIVAL OF BUILDING.

The art of building had sadly declined. Architects and artists were not to be found. When he built his arch in Rome it was necessary to strip the earlier buildings of their sculpture in order to adorn it, as none then living were competent to undertake such work.

Even in A.D. 297, Oelius Spartianus tells us that the architects of that day actually confessed that with the copy before them they were unable to rival the 'Solar cell' of Caracalla's baths.

Constantine realized the gravity of the situation, and by his action saved the civilization of the Eastern empire for another thousand years, thus indirectly making the Renaissance and modern civilization possible.

He offered freedom from taxes to thirty-five master artificers if they would come to Constantinople and teach their sons to follow in their call-

ing. The magistrates of the most distant provinces were directed to institute schools of art and to offer rewards and privileges to those students of liberal education who would make art their study. The students were even paid a salary.

All this was destined to have great results. In the first place, it may be noticed that a real impetus was given, yet at the same time it should be observed that the somewhat mechanical origin of Byzantine art left its impress upon it to the last. This is of practical importance to us to-day, in warning us in which direction to look for danger in the attempts to revive art in our own country.

INDEPENDENCE OF STYLE.

Secondly, it should be noticed that it was quite natural that the greater proportion of Constantine's workmen, as well as his architects, should come from Greek lands. Even in Rome the architects themselves had been Greek. But the result is that from the outset we get a definite break with Roman influence, and Byzantine architecture may be regarded not as a continuation of the Roman style, but as starting almost *de novo*.

This is confirmed by the extraordinarily experimental nature of the work. We are told that the great bulk of the earlier buildings were so faulty in construction that they afterwards had to be taken down again. Further, we know that the absolutely astonishing number of over eighty domes fell down during the reign of Constantine himself, demonstrating alike the enormous activity, the tentative nature of the style, and its independence of Roman tradition, which indeed we should gather from the totally different character of the Byzantine dome in its developed form.

We may further conclude that from the very outset the Byzantine style was domed. If eighty domes fell, some at least must have survived, at least for a time; and even if we put the total only

at a hundred, this would make the dome-buildings a very large percentage even in a great building age. During this period men were trained, art schools advanced, and the Byzantine style was forged, although it may be said that practically none of its remains have come down to us.

In Italy, although Greeks to a great extent executed the work, they were trammelled by the traditions on an alien soil, and by the masters they served; but when the seat of the Empire passed to Byzantium, they were able to build more freely on their own lines, in their own country, and among their own traditions. The result was marvellous, and we find the speedy growth of one of the greatest styles of the world, culminating under Justinian, which itself gave birth to descendent styles, and is still a living influence.

THE DOME.

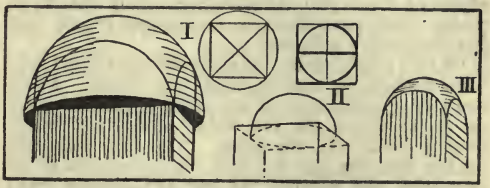
Of this great Byzantine style the most characteristic feature is undoubtedly the dome. There are two great ways of covering a square space so as to leave all the sides open—the intersecting vault and the dome. The first was used by the Romans, yet the full comprehension of its principles and possibilities was not grasped until the Gothic architects invented the true rib. The Romans had used the dome upon the circular building, as, for instance, in the magnificent example of the Pantheon; but the Byzantines used the dome over the square, and although they cannot exactly be said to be the inventors, they perfected the system, and herein lies the great achievement of the style. The problem involved is the fitting of a hemisphere upon a square.

Now, the circle may be made to touch either at the corners or at the centres of the sides. In the one case it is too big; in the other it is too small (fig. 70, I and II). In the former case we may carry up the sides of the square, so to speak, cutting off the overhanging portion of the hemisphere,

and the dome then rests upon the points of the square, and, provided abutment is brought to resist the outward thrust upon the arches formed by this process, the dome is stable (fig. 70, I and III).

Now, it is interesting to notice that these arches, formed by the intersection of the planes of the sides of the cube below the dome, are semicircular, and, further, the intersection of a sphere by a plane always gives a circle, and therefore it is always possible to raise such a dome upon semicircular arches; moreover, it is always possible to place one such dome up against another, and *it is not necessary for the two domes to be of the same size.* It is only

FIG. 70.



necessary that the chords upon which the arches rest should be of the same length; the arches themselves will always be semicircles. It may also be put conversely that the intersection of two spheres is always in a *plane* circle, and therefore the intersection of two domes always allows of the building of a plane arch; and thereby the Byzantine architect escaped the greatest difficulty of the Gothic builders, who found that the intersections of their vaults were not in planes. This was perhaps the principal peculiarity or most individual characteristic of the Byzantine style, which, in certain of its aspects, can be described as a congeries of globular forms growing out of one another, as in the case of a mass of soap bubbles,

which perfectly illustrates the system (fig. 71, S. Sophia).

But although such a dome, in its simple form as thus described, occurs in Byzantine architecture, it is open to certain objections. The apparent height is given only by the part above the arches, and the resulting effect is comparatively low and flat. In order to remedy this, the dome is raised in one of

THE PENDENTIVE.

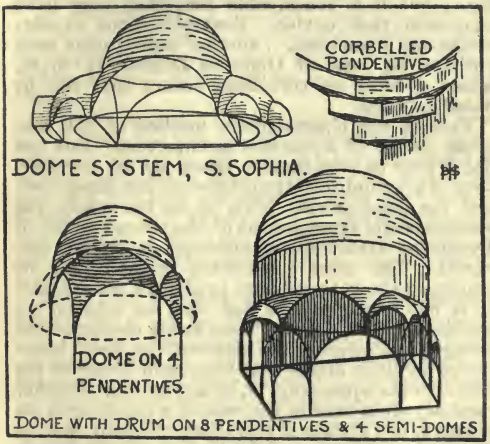


FIG. 71.

two ways. The first is another instance of the intersecting spheres. A dome (as in fig. 70, II) with diameter equal to the diameter of the square, intersects, and rests upon, a dome (as in fig. 70, I) with diameter equal to the diagonal of the square. Of the lower, nothing is left, save the ring upon which the upper hemisphere rests, and the four triangular portions that remain after the four sides

of the square have been raised in the manner indicated above. These triangular portions are termed pendentives (fig. 71, Dome on 4 pendentives).

The pendentives have been found in Persian buildings which M. Choisy attributes to the Achæmenids (8th to 4th cent. B.C.). Hitherto they have been attributed to the Sassanids. They are, however, rather squinches than true pendentives, but it is conceivable that they may have suggested that device. Examples occur at Sarvistan and Ferachbad. Another anticipation may perhaps be seen at Omm es Zeitoun in Syria, where a dome on corbelling occurs that can be dated A.D. 285.

This is the characteristic method of the first great period of Byzantine architecture. But the dome may be even further raised by the introduction of a cylindrical drum between the dome itself and the pendentives. This is, on the whole, the characteristic arrangement of the second period of Byzantine architecture, although it is not universal. The same pendentive method may be employed above an octagon as above a square, and it is not uncommon to find such an octagon set within a square, and the lower dome, resting on the octagon and forming the pendentives, itself intersected by little domes that form semi-domes in the corner of the square (fig. 71, lowest figure). Another method, often used in the case of a dome upon an octagon, is a system of corbelling, wherein squared stones are set horizontally, instead of radiating to the required curve of the dome. It is really the same system as the domed chambers of the Mykenaian civilization, but in this case the surface of the stones is not rounded off to the curved surface of the vault (fig. 71, Corbelled Pendentive).

PERIODS OF BYZANTINE ARCHITECTURE.

The first great period of Byzantine architecture may be said to be from A.D. 500 to 600, but its principal achievements were all accomplished in

the first 50 years. Its crowning glory is S. Sophia, completed in A.D. 537. Then follows a blank interval during the Persian and Saracenic wars, until we come to the second great period, which lasted from the middle of the 9th cent. to the end of the 12th. In this period the great masterpiece is St. Mark's at Venice. After this follows a long period of decline, lasting till about the end of the 16th century.

FIRST PERIOD.

In the first period the plan generally approximates to a square, or occasionally an octagon, as at S. Vitale, Ravenna, and there is almost invariably a narthex, and often an exo-narthex beyond that.

ATRIUM AND NARTHEX.

There is an atrium at S. Sophia, and we may take it that that was the normal arrangement for some time. It was used not only for catechumens, but also for ablution. When, however, it was found that the Moslems practised ablution the rite was abandoned, and filthiness and holiness became synonymous. We hear of monks who were so holy that they had never washed themselves all over since baptism.

The atrium therefore disappears, but the narthex continued in use for catechumens and penitents. The narthex, too, disappeared after a time in the Western Church, but remained an invariable accompaniment of the Eastern Church throughout both periods of Byzantine architecture.

It is interesting to notice the survival of the narthex in our own country in the great spreading west fronts that are the glory of the English style, although often misunderstood. The marble cross upon the floor of Durham still marks the termination of the old narthex.

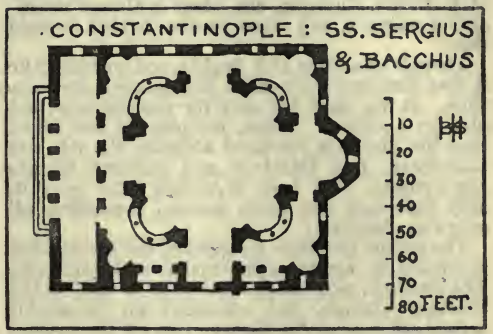
PLAN.

The church is commonly entered by three doors, and a great dome covers the central area of the church, which contains the principal available open space. This area around the central dome space is practically a necessity, as some abutment must

be provided for the dome: otherwise immensely thick walls, as in the Pantheon, would be necessary. The vault, however, of this surrounding area gives the necessary counter thrust. The dome rests upon piers, generally eight in number, between which are columns forming, in the alternate intervals, semicircular niches which extend the central area toward the corners of the square (fig. 72).

APSE. There is an apse behind the altar containing the seats of the clergy. The altar or table was of

FIG. 72.



wood, as it still is to-day in the 'Orthodox' or Greek Church, and around it the clergy sat. It may be contrasted with the later arrangement of the Western Church, where a stone martyrium (martyr's tomb) gradually took the place of the table, and finally the sitting round it in the consistorium was abandoned. However, even in the West a number of examples of the old arrangement remain (Figs. 57, 61, and 64). The outside of the apse is polygonal, and should be contrasted with the Western treatment.

The central apse in which the altar stands is shut off from the church by an ikonostasis, and where there are two side apses there are generally two more of these screens. The side apses, except in the rarest instances, of late date, do not contain altars. The origin of the ikonostasis was to keep away persons from rushing to the altar to obtain sanctuary. The priest was thus able first to satisfy himself that the claimants were worthy. We may also conjecture that the rail would be useful to prevent any possibility of sacrilege in the case of some hot-headed avenger of blood. IKONOSTASIS.

The Byzantine builders made very large use of brick as well as of stone, and the masonry of Byzantine work often shows an interesting peculiarity, courses of brick being inserted between those of marble or stone with very wide joints, almost as wide as the bricks themselves. This is particularly common in the second period, and sometimes the vertical joints are treated in the same manner. But it occurs in the first period also, as in the so-called palace of Belisarius at Constantinople, where bands of several courses of brick and then of stone are used above each other. In the walls and towers of Constantinople of the 5th cent. about five or ten courses of stone are used to five of brick. In S. Irene one course of stone is used to two or three of brick. CONSTRUCTION MATERIALS AND DECORATION.

The great use of brick in all Byzantine work, which is more general than either stone or the admixture of the two, tended to make it wonderfully fire-proof. It is a pity that brick is inferior to stone in appearance and does not lend itself to carving or sculpture, as all the ornament has to be superadded in another material, whereby the advantages of brick over stone in its fire-resisting properties are lost.

Byzantine architecture, like that of the Romans, was a veneered style, and any veneer suffers badly in a fire. The veneer was generally confined to the

interior, although it is possible that more was used upon the exterior than is generally imagined. As in the case of the Pantheon, much may have disappeared. A fifteenth century writer describes one of the Constantinople churches as still covered with gold and colour—probably mosaic. It remains true, however, that with the Byzantine architects the interior was the primary consideration, and of the exterior little account was taken. In the larger churches the lower portions of the walls were covered with slabs of coloured marbles set in a framework of plainer marble, and the upper part of the building was decorated with mosaic. In the smaller churches the less costly method of painting was used; but, putting aside its lack of durability, it is doubtful whether it would not really be the more beautiful of the two methods.

THE COLUMN.

The whole style is much lighter and more skilful than that of the Romans, and the Byzantine builders made their domes generally of brick, using no concrete. Consequently the supporting piers were much less massive. As in Gothic architecture, we have a style that essentially is dependent upon piers rather than columns, and there is not even the columnar treatment of the pier with its composite shafts that we associate with Gothic work. At the same time actual single columns were used, which is only the case in arcades and very minor features in Gothic architecture. It is important to notice that they were used not as an essential feature of construction, but rather as screens, and to break up the building. Thus, by this slight use of the principle of multiplicity, they produce an effect of scale that the open, undivided building would lack. The columns have bases with a few simple moldings.* The shafts are commonly monoliths of coloured marble, generally with an entasis but no flutes. Occasionally the shafts

* This is the correct mediæval spelling now generally adopted.

were oval in plan, as in a little church at Olympia and a small tomb at Messina. Above is a capital, generally most elaborate in execution.

The general mass of the typical Byzantine capital (fig. 74) is not bell-shaped but convex, and is not unlike the 'cushion' capital of Norman work (fig. 93). It resembles, although in a lesser degree, a rude Doric form. The Doric capital, however, is round in section throughout up to the abacus, whereas both the Byzantine and the Norman pass from the round section below to the square section above. Sometimes they show a scalloped form in the horizontal section, as in fig. 65. Occasionally capitals of quasi-classical form are used, and even in the typical Byzantine capital a small volute is not infrequent (fig. 74). A rare and peculiar treatment occurs where the volutes are placed at the bottom of the capital instead of the top, which produces a very strange effect. THE CAPITAL.

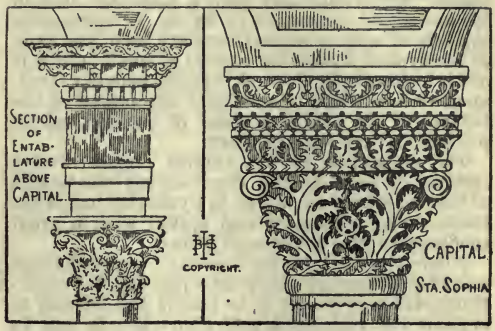
The decoration of the capital almost always consists of some of the ever-varying treatments of the akanthos leaf, which in Byzantine hands has become very elongated and spiky, with a great tendency toward convoluted forms.

Above the capital is the dosseret—one of the sign marks of Byzantine architecture (fig. 65). It is sometimes said that its use is to enable the column to support the very thick wall above it. It may be so, but the upper section of the dosseret is generally about the same area as that of the capital itself, and, in any case, there is no advantage in diminishing to the bottom of the dosseret, and then starting with a large top to the capital, so as to diminish again. The very function of a capital is to do this work, and there is no reason why, if necessary, its total height and the slope of its sides should not be readjusted. A capital that cannot do its work is a solecism. It seems, perhaps, more likely that the dosseret is a curious survival of the THE DOSSERET.

entablature (fig. 73). In any case it is not a pleasing feature. When it is so reduced as to make merely a sort of double abacus, there is not the same objection, as the diminution in the upper one, or dosseret, makes it a mere molding, emphasizing the horizontal nature of the abacus, as in some examples in S. Sophia (fig. 74).

In some cases there is a real reason for the dosseret, and this may be the true origin, although probably there were contributory causes. Old classical capitals were frequently used again, and

FIGS. 73 AND 74.



the corners of the Korinthian capital would not be strong enough to stand the weight. Hence a dosseret, not necessarily of any larger area, but of mechanically stronger form, might be used above to enable the Korinthian capital to bear the weight. This does not preclude the possibility of the section of entablature having suggested the device. The dosseret was not popular at Constantinople, but at Salonika, Ravenna, and Rome. It was most often plain, but not infrequently carved as elaborately as the capital itself.

THE ARCH.

The arch springs directly from the column without the intervention of an entablature save the survival in the dosseret. The form of arch used was semicircular, and in the main it is true to say that this remains a distinguishing feature to the last, marking off the style, alike from Gothic or Moresco or the trabeated style of Greece. There was, however, a tendency toward stilting and even horse-shoe shapes, which were possibly the result of the dosseret. The derived styles take up this form, and make great use thereof.

THE DOME.

In the case of domes we do not always find hemispheres, for sometimes the four centred arch

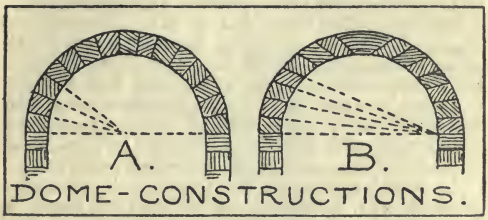


FIG. 75.

is used. This is stronger than the hemisphere, and makes the upper part much easier to build. It would require a very much lighter centering, a matter of enormous importance in the erection of a dome. This form may be added to those of the other claimants that claim to be the origin of the pointed arch, a form probably independently invented several times over. The early Church at Ezra has a pointed dome.

The dome was generally built so that the voussoirs radiated not from the centre of the hemisphere (fig. 75, A.), but from the point of springing upon the opposite side (fig. 75, B.). This required a certain amount of coaxing at the top of the dome,

but occasioned no real difficulty, and allowed of a flatter bed throughout.

Although brick is commonly used, stone was occasionally employed, and in small stone domes it seems likely that no centering was used save a revolving post, and each course was allowed to set before the next was built. Even with quick-setting cement, which was probably employed, this would only be a suitable method where time was of very little object.

In S. Vitale, and in the Baptistery at Ravenna, earthen pots were used instead of brick, a very light and scientific form of construction, although in these cases not very perfectly carried out.

The Byzantine dome has no false inner shell or wooden and lead covering, but the dome visible upon the outside of the building is the same as that seen within. The tiles were laid directly upon the extrados not only in the case of the dome, but in the case of the barrel and intersecting vaults, which were both used in the style. In some cases these have been covered by roofs of a later date.

THE VAULT.

In vaults, as distinct from domes, the Sassanian method was employed which is also found in Egyptian work. The first few courses were laid horizontally, then the rest were laid with bricks on edge, often skewed back in the Assyrian manner to a strong wall, against which the vault may be said to lean.

THE DOOR AND THE WINDOW.

Doors are square-headed, although usually with an arch and tympanum above. Windows are generally simple semicircular-headed openings, but sometimes two or three lights, with semicircular heads, are placed together with shafts, or plain unmolded mullions, between. These mullions, often plain unmolded strips, are very thin, being only three or four inches in width, but a foot or a foot and a half in depth.

The mullion capitals are often carved, and, in

their great depth right through the wall, remind one of the Kelto-Saxon treatment (St Benets, fig. 84). They are generally rectangular in plan, chamfered slightly on the sides and very boldly on the ends. Professor Aitchison notices that they vary very much in their degree of projection from the face of the bottom voussoir. Sometimes they are flush, and sometimes they project as much as the whole depth of the splay; and he suggests that the

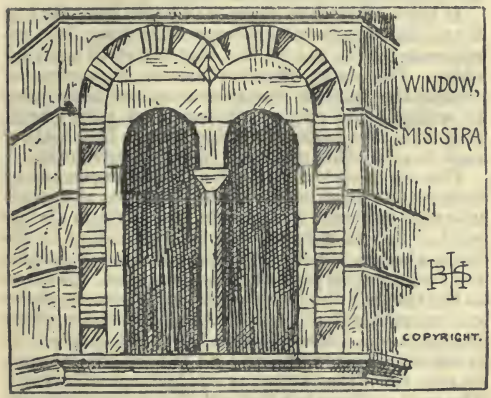


FIG. 76.

cause was the use of stock sizes. This may be so, at any rate in the second period. It should be noticed that the head of the window is almost invariably stilted, particularly in the second period. This is specially obvious in the case of windows of more than one light, but holds good in the single lights also. The head is generally constructed of bricks in two rings, and these form a stilted arch.

Large semicircular windows are occasionally divided up by shafts, and even by a sort of transom bar, as at S. Sophia. The result is not beautiful. A more beautiful device is the thin slab of marble, often carved with the most exquisite patterns, which frequently fills the smaller windows. These patterns are cut deeply into the marble, which is sufficiently translucent to allow the light to come through. It is conceivable that this represents a Greek tradition.

It is possible that glass may have been used in Byzantine windows from very early times, but the evidence for its use in the first period is not reliable. The later Eastern device, however, of setting the glass in plaster or wood seems to point to a Byzantine origin. It seems an easy transition from the pierced marble slab. The leading used in all Gothic glass is a Northern invention.

COLOUR AND GENERAL QUALITIES.

The whole style depends for its effect upon colour rather than upon solid forms. Colour, of course, was used in Greek and Roman and again in Gothic work. But in these cases it was secondary to the form, whereas here the forms that are used depend for their value upon pattern, not upon mass, doubtless as the result of the same æsthetic preferences where surface rather than solidity is used as the medium of expression. Hence we find no great cornices, as in classic architecture, and no subdivided columns or ribs upon the vaults, as in Gothic architecture. The wall surfaces are flat and the decorations are flat. There are practically no moldings, and the arches have plain soffits. Plinths or basemolds to the wall, and string courses, are insignificant or altogether absent. The very corners, even, are rounded off to allow of mosaics being carried round them. Hence the carving is all surface carving, and does not stand out from the background. The drill plays an important part, and there is but little modelling; the effects are those of patterns with a

dark background formed by deep drilling, which is sometimes undercut, so that the pattern is detached from the stone behind. Even the capitals have the same character; projecting masses are rarely found. As wholes they are comparatively formless, although covered with the most intricate surface work.

The total result is a style easily grasped as far as its main architectural features are concerned. The variety which actually exists is perhaps surprising, considering that it is achieved within such comparatively narrow limits. Of course it cannot amount to the variety found in the Gothic style, which depends for its æsthetic expression largely upon complexity, whereas the Byzantine style, in its purely architectural character, is wholly simple. Complexity, with a touch of Eastern barbarism, makes its appearance only in the surface ornament.

S. SOPHIA.

The glory of Byzantine architecture of the first period—indeed of the whole style—is S. Sophia. This church was begun under Justinian in A.D. 532, the previous building having been burned down in a riot between the 'Blues' and the 'Greens.' The architects were Anthemios of Tralles, who prepared the model in the short space of forty days, and Isodoros of Miletos. It cost about a million, and was completed by 10,000 workmen in the extraordinary short period of six years. This time can apply only to the architecture, and much of the interior decoration must have been added afterwards. In the centre is a great dome, a trifle over 100 feet in diameter, and nearly as large as the dome of S. Paul's, London. It rests on pendentives raised upon four immense piers. The great feature is the extension of this central space by two huge semi-domes of the same diameter as the principal dome, abutting against the arches of the pendentives. These semi-domes, together with

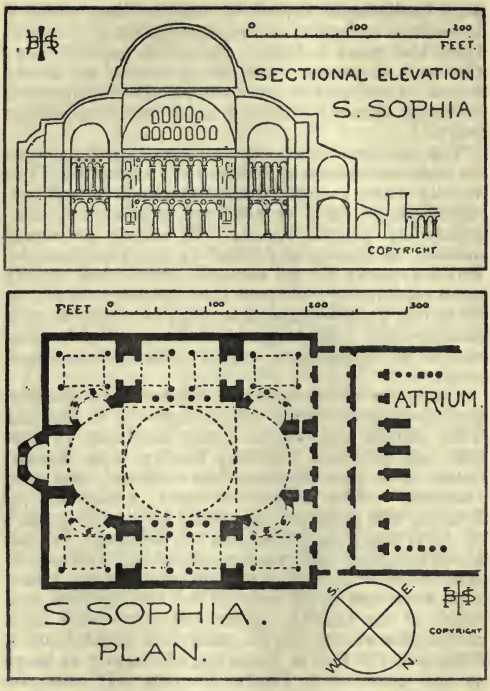


FIG. 77.—SECTION AND PLAN OF S. SOPHIA.

the great masses of the piers in the direction of the length of the church, resist the thrust of the great dome in that direction. But the thrust in the direction across the church is met by enormous masses of masonry carried by arches over the aisles, and forming a bold, if somewhat extraordinary, feature upon the outside of the building. The result is the most spacious interior in the world. In order, however, to preserve the apparent as well as the actual size, there is a skilful arrangement of columns, in two storeys, in the great arches at the S.E. and N.W. sides, and in the semicircular niches that we have already seen as characteristic of the first period of Byzantine architecture. These columns give something of the principle of multiplicity, and provide a unity of measurement, without destroying the majestic simplicity of the whole.

The central area is surrounded by aisles covered with intersecting groined vaults, after the Roman manner, and at the lowest end is a fine narthex 205 ft. long. Over it is a gallery for the women, which is continued on either side over the aisles. A gallery for the women is the usual arrangement in Byzantine churches, and may be contrasted with the curious arrangement in the Basque provinces, where there are two or three galleries, one above the other, for the men and the boys. The lighting is effected by forty windows round the central dome and five in each of the semi-domes and the minor domes. Above the two tiers of columns on the sides are two tiers of windows (fig. 77). There are also large windows in the aisles. But in no case is the window arrangement satisfactory, and this is the weakest feature in the church.

S. Sophia was by far the most important church in Christendom built in this epoch, and it is interesting to notice that there is no attempt made to orientate it: the axis is one degree south of S.W.

The majesty and simplicity of the interior of S.

Sophia, with the richness of its colouring, make it by far the finest interior of its kind in the world. It is difficult to compare things that are so utterly unlike as a Gothic cathedral and this building; each is wonderful in its own way; but certainly there is nothing in S. Sophia that warrants us in ranking it after any interior whatever. The exterior is different. One may work up a qualified admiration for it; but, in spite of a certain dignity of mass which it shares with all great engineering works, it is hardly architectural, and finds its compeers rather in the pyramids or in a modern railway station.

ST. MARKS',
VENICE.

CHAPTER VIII

BYZANTINE ARCHITECTURE: SECOND PERIOD

THE churches of the second period are smaller than those of the first, and have several characteristics of their own, although in the main they follow the earlier work. The lighting of the dome had always been a difficulty. The smallness of the churches is partly due to the diminished resources of the empire, so that men would only build what was necessary and not for display. Since in the 'Orthodox' Church the congregation stand and do not sit or kneel, the same amount of room is not required as in the West, and this made the small size possible. The existing churches of this period average smaller than our parish churches, but it is quite possible that many of the largest churches have disappeared.

SMALLNESS OF CHURCHES.

Windows in a dome are, of course, not vertical, and the effect is always unpleasant. The difficulty can be met on the exterior by raising a vertical wall, which at the same time is helpful in resisting the thrust, acting as a pinnacle would in Gothic architecture. The outside of the dome is then generally treated with a double curve (fig. 78).

THE DRUM.

Viewed from the exterior, this naturally suggests the drum, which we find as the characteristic feature of the second period, even if it made its first appearance earlier. It is, however, not invariable. The effect of the drum is on the whole pleasing, forming an effective lantern in the interior, and giving altitude and architectural character to the exterior (fig. 81), which latter is so much needed at S. Sophia. The central dome is still the leading feature of the design, but subsidiary

FIG. 78.

domes are frequently grouped round it. In St. Mark's, Venice, there are five domes. The dome is almost invariably, in this period, placed upon four supports only, instead of the eight common in the earlier period; and the semicircles, as in fig. 72, do not occur. The general proportions of the building show more variety than the practically square outline of the previous period. Sometimes we find an elongated rectangle or an approximation to the cruciform plan.

CRUCIFORM PLAN.

With regard to the cruciform plan, the church of the Holy Apostles at Constantinople of the first

period, built by Justinian, seems to have been the inspiring influence. According to Procopius it had five domes, and we gather from a poem upon the subject by Constantine of Rhodes, *c.* 900 A.D., that its general disposition must have been very similar to that of St. Mark's or St. Front Perigeux. It was destroyed by Mahomet II. in 1464. This would therefore suggest the probability that what the builders of the second period did was rather to take up and develop forms invented in the first period than to invent new forms of their own.

S. Sophia, Salonika, is also ascribed by some to the 6th cent.; and if it is so, it still further strengthens the above position. Its details are early, but it may have been a rebuilding of later date. In any case its drum dome, its triple apse, its three-armed narthex, and its bema and apse successively diminishing in width, all become common features in the second period.

The separateness of its side apses, as is also the case with the side chambers at S. Irene, Constantinople, points rather to a first introduction of these as vestries or the like.

THE NARTHEX.

The narthex in the churches in Greece is frequently enclosed so as to form part of the church. In this case there is not infrequently an exo-narthex in addition. The arrangement of a narthex or exo-narthex carried round three sides of the church seems to be characteristic of the second period, and is found, besides at Salonika, at St. Mark's, Venice (fig. 82), at S. Theodore, or Ch. of Theotokos, Constantinople (fig. 79), at Sta. Fosca, Torcello, which is octagonal in plan, at Ancyra and at Myra. The form at St. Luke in Stiris is more or less akin.

In some of the churches, particularly those in Greece, as at that of Daphni, near Athens (fig. 80), or St. Luke in Stiris, the side walls of the bema are slightly hollowed so as to form a sort of very

FIG. 79.

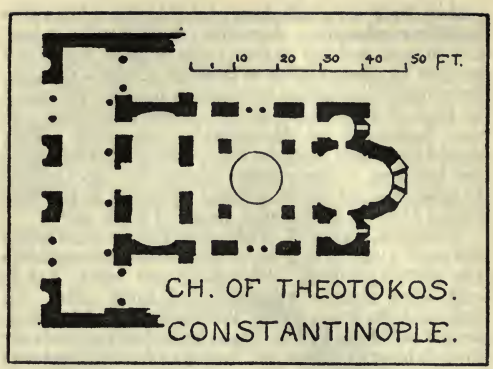
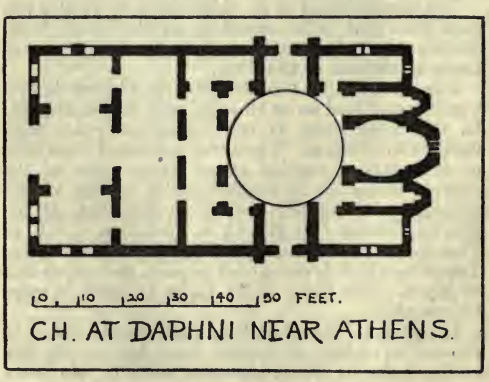

10 20 30 40 50 FT.
CH. OF THEOTOKOS.
CONSTANTINOPLE.

FIG. 80.


0 10 20 30 40 50 FEET.
CH. AT DAPHNI NEAR ATHENS.

shallow apse covered with the segment of a dome. (See plans of church of Theotokos and church at Daphni (figs. 79 and 80).

In Greece in the second period there are two distinct types of plan, the first with a wide low dome equal in width to the bema plus the two side apses, the second with a lofty drum and high dome equal in width to the bema only, as in figs. 80 and 79. TYPES OF PLAN.

In each case the interior has intersecting arms of equal length forming a Greek cross to which the apse is an addition. The roofs over the cross arms are higher than those over the corners that fill up the rectangle, which are of low pitch. Hence the building is in essence cruciform, and shows this upon the exterior (fig. 81), and is not altogether unlike Wren's arrangement at S. Stephen's, Walbrook.

The arms are generally covered by barrel vaults, and there is a square of wall in the centre that carries the drum and against which these abut (fig. 81). This square of wall is exceedingly interesting, and is really a low central tower. It is practically a development of the form of S. Sophia (*v.* Gothic Architecture, p. 174).

Another plan that occurs in the second period may be traced to early times, although not apparently to Byzantine forms, is that of the transeptal apses. It occurs in an early church at Dodona, and in the White and Red Monasteries in Egypt of the 5th century, and in the basilica at Bethlehem. Its origin may possibly be sought in the plans of some of the early scuolæ or lodge-rooms of Roman days.

In the 11th century Byzantine examples occur, as at St. Elias, Salonika, or on Mt. Athos, or again in the interesting example at Ala-Werdi in Georgia, which shows the transeptal apses internally but is rectangular on the outside.

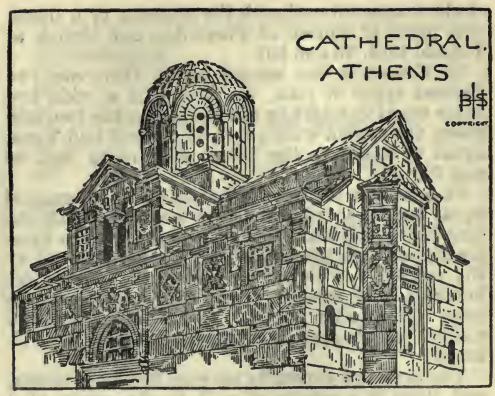


FIG. 81.—DRUM-DOME OF THE SECOND EPOCH.

The triple apse is almost universal in this period, with the altar in the bema before the central apse. The apses are polygonal on the exterior as in the previous period, and a common arrangement is, as it were, to sink or recess the side apses on the exterior, so that their outermost limit is flush with the main wall and the whole is brought under one roof. (See fig. 79 of the church of Theotokos (St. Theodore) Constantinople.)

GENERAL QUALITIES.

On the whole, the tendency of the second period is toward a greater appreciation of form. Both in Armenia, which may perhaps be considered the centre of the building activity of this period, and in Greece there seems to have been something of a revival of the Greek spirit, a revival of the love for form as such, and not any attempt to copy classical work. In Armenia we may notice the appearance of the compound pier and the logical distribution of its parts to a compound load. In Constantinople there is a tendency to bolder relief and in Greece a distinct suggestion of classical form. Such a front as that of the little cathedral at Athens, with its dentil band, classical pilaster capitals, the round quasi-classical relieving arch over the doorway, and its sculptured panels, stolen as many of these features may have been, yet shows a love of form for form's sake that does not appear in S. Sophia.

The charming compositions of the exteriors of some of these little buildings is also perhaps a sign of the same tendency.

In most features the two great Byzantine periods are not markedly different, but a small point partly connected with the above may be noted. There is a slightly greater fondness for bands of molding, if so they may be termed. A favourite device is to set bricks diagonally in the wall with a corner projecting to the front between two courses of very thin bricks or tiles. This gives something of the effect of a string course, and relieves the monotony

of the flat surface. They are not infrequently carried thus in a band round the windows.

ST. MARK'S, VENICE.

Of this period the greatest church is undoubtedly St. Mark's at Venice, which, in spite of numerous later alterations, still preserves in its interior its principal Byzantine features. The Byzantine parts of the church of St. Mark's, as we now see it, are the result of extensive alterations, amounting nearly to a re-building, in the middle of the 11th century, of an earlier basilican church of A.D. 976, itself containing parts of a still earlier building. The western narthex, the walls and arcade of the nave, and portions of the east end, are practically all that remains of the basilican church. The columns in the eastern part of the church were removed, and six great piers were introduced—two at the west end and four in the centre of the building. These are themselves pierced by arches of the same height as the nave arcade. Two transepts were added, the east end was lengthened, and the narthex was continued round the two sides of the building. Above the nave and the crossing were erected two large domes and three somewhat smaller domes over the bema and the transepts, which are made slightly smaller than the crossing by the width of the pilaster shafts that support the arches leading into the three arms. By this skilful device a perspective effect of greater size is obtained. Great arches, which are practically barrel vaults, cross from pier to pier, and upon these the domes rest. Above the nave arcade is a narrow gallery, some 3 ft. wide, which represents the women's galleries of the Eastern Byzantine churches. It is, however, valuable as providing a unit of measurement, and thus giving size to the church, rather than for any utilitarian purpose. The capitals are not very characteristically Byzantine, being of a sort of pseudo-Korinthian type. They probably belonged to the original

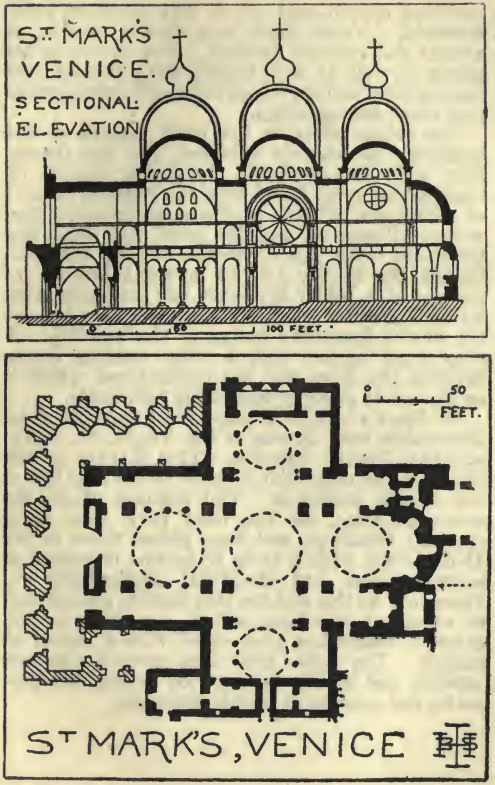


FIG. 82.—SECTION AND PLAN OF ST. MARK'S.

basilican church, and are of very excellent workmanship. Above them is a double abacus, or abacus and reduced dosseret. The church is not nearly so well lit as S. Sophia, the principal light coming from sixteen windows in each dome, placed just above the springing.

The colour effect is the main feature of the building: the marble columns, and the famous floor with the wonderful Byzantine mosaics on their golden ground, and even the pictorial mosaics of a later age, all give a richness unsurpassed elsewhere. Hence we find the usual flat Byzantine treatment with few moldings of any kind, although St. Mark's has an unusual amount of carving of a bolder type than one associates with Byzantine work, most of it, however, not belonging to the Byzantine design of the building. A very small cornice with a billet molding occurs between the dome and the pendentives, which is on the whole pleasing but hardly noticeable.

St. Mark's retains a magnificent example of an ikonostasis with figures of the Virgin, St. Mark, and the Twelve Apostles. This feature in the Byzantine churches corresponds to the rood loft of the Gothic buildings. The columns about the doorways come, for the most part, from early classical buildings, and were placed there in the 13th century with a truly Byzantine disregard of correspondence and structural applicability (v. Plate II.). In this and the 14th century a great deal of ornament has been added, especially to the exterior, which has been cased with a veneer of marble. The domes have been covered with tall cupolas, and to the same period belong the pinnacles and over-florid Gothic ornament.

THE CLERESTORY,
ROMSEY ABBEY.

CHAPTER IX

THE RISE OF GOTHIC ARCHITECTURE

DURING the development of Byzantine architecture — the direct outcome of the æsthetic character of the people of the regions where it occurs—we have another style developing in the West, a little later in reaching its maturity, but roughly the contemporary of the Byzantine. This style, to which the name 'Gothic' is not altogether inappropriately given, if we extend the term a little beyond its usual and somewhat arbitrary limits, was the style principally used by the Christians of the North. Those of the East made use chiefly of the Byzantine, and Italy of the Latin style—one, as we have seen, much more closely related to the Roman. Of course other styles have been used by Christians in different countries, as, for instance, in Norway or in Russia. Even in N.W. Europe, although it is convenient to group the styles of several countries under the one heading, there are in reality several styles; and the more one studies, say, the Gothic architecture of England and France, the more one realizes how little they have in common. It is true that to some extent GOTHIC ARCHITECTURE.

the great wave of Romanticism marks the æsthetic character of the whole area, so that a church in England is, of course, more like a church in France than a church in Russia, Constantinople, Italy, or Norway; but it is only a very inartistic or superficial observer that fails to see the enormous difference. The comparatively little that is known about the styles of the East offers an interesting parallel. We class Armenian architecture as Byzantine, but there is almost as much difference between the cathedral at Ani and S. Sophia as there is between S. Sophia and St. Paul's, London.

But, provided we remember that 'Gothic' is a name belonging to a group of styles rather than to one single style, it is really helpful to consider them together. The Gothic, then, may be defined as the architectural expression of those races which, beginning with Alaric the Goth (d. 410 A.D.), and Theodoric the Ostrogoth (d. 526 A.D.), overthrew and superseded the power and civilization of Rome. The beginnings of the Gothic tendency in architecture may perhaps even be taken as far back as Theodoric, but the culmination of the style is in the 13th century. The name 'Gothic' was originally given at the time of the classical revival as a term of contempt, practically meaning 'barbarous'; but although the actual Goths had nothing to do with what we term Gothic architecture, nevertheless they were the pioneers in that wave of North European civilization which finds its highest artistic expression in the architecture that passes under their name.

THE 'ROMANTIC' CHARACTER.

The character of the Northern races is essentially different from that of the South of Europe, and expresses itself, whether on its intellectual, artistic, moral, or religious side, in a manner of its own. There is also, undoubtedly, the character of an age as well as of a race, and this factor has also to be

taken into consideration. As a result of race and age in this case, we have in the artistic world the romantic expression that we see at its height in such examples of art as Malory's *Morte d'Arthur*, the *Chanson de Roland*, the Cloth Hall at Ypres, Lincoln Cathedral, or Bodiam Castle. Chivalry on the social side, as Romanticism on the æsthetic, is the outcome of the same root characteristic; the one is not the result of the other; they are cognate characteristics proceeding from a fundamental trait at the back. It is important to notice this, as it is a safeguard against some of the common errors of those who, perhaps learned in their own departments, have no practical artistic knowledge. All artists are familiar with the attempts of laymen to explain perfectly natural artistic forms, that arise inevitably from artistic causes, by reasons based upon moral or religious grounds. It is perfectly true that there may be close parallels in the moral or religious world, but these artistic forms are not derived from them any more than they from the art forms, although both they and the artistic forms may proceed from something behind them both. The Gothic form of art seeks to express itself by the principle of multiplicity rather than by simplicity, and by suggestion rather than completion.

ROMANESQUE GOTHIC.

The beginnings of Gothic architecture are to be found in what is perhaps best termed Romanesque Gothic—a style commonly known as Romanesque, and largely dependent upon Roman architecture. The term by which it is known is hardly a matter of much importance; but the chief interest in the style is in the points wherein it showed its living force in developing from Roman architecture, and in pointing the way towards the later Gothic, rather than in its dependence upon the former. The style, moreover, is largely influenced by other elements that have nothing to do with Rome: the

Kelto-Saxon influences of our own country, for instance, or even the influence of Byzantium.

After the downfall of the Western Roman Empire, while Europe was in the melting-pot, architecture seems to have been somewhat stationary. It is, however, difficult to make certain, as later re-building has practically destroyed all evidence. Even if the conquerors were desirous of building, there was much less opportunity for it than in times of peace. About the beginning of the 9th cent. we find men's thoughts turning towards an architectural expression that rapidly blossomed into great things. In Burgundy and Provence, along the Rhine valley, in Lombardy, in Normandy, and in our own country, arose architectural schools, all of great interest, with their own individual characteristics, which endeavoured to express this artistic principle of romantic, suggestive, complex unity. In spite of its many parts, there is in the developed Gothic more homogeneity than in any other style save the Greek. The stone vault upon the stone walls, stone columns and arches, though doubtless to some extent a practical precaution against fire, is still more the expression of this æsthetic principle. The effect of organic growth, rather than of aggregation, marked by an extraordinary æsthetic appropriateness in every member to the function which it has to perform, all helps towards the final scheme. Above all, the suggestiveness of a certain intricacy of plan and elevation, of structural features and of ornament, marks out the æsthetic character of the Northern peoples and the age during which these buildings were erected.

INDEPENDENCE OF THE STYLE.

It has been suggested that the Latin style had in itself a power of development that would have given us the future forms quite independently of the North; but, without entering into the argument, it is practically sufficient to point out that

Central Italy itself never produced anything of the kind, even when the North had invented the style and carried the art to perfection. The different schools were not equally successful. Burgundy and Provence, with their barrel vaults, exercised comparatively little influence; and although the Rhine churches at first were in the van, they dropped behind and left it for England and Normandy, and the slightly later school of the Île de France, to perfect the art. The influence of the Île de France school ultimately became the greatest of all, although the Durham dates have now been settled beyond dispute, and prove that the Durham, or at any rate the English, school was first in the field, with perhaps the two greatest inventions of the Gothic architects—the shell vault on ribs and the flying buttress. But English architecture, uninfluenced, pursued its own line of development to the last, ignoring the work alike at Canterbury and at Westminster, which shows French proclivities.

In a short work such as this, a sketch of the development of our own school, and a brief comparison with that of the Île de France, will perhaps be the best way of illustrating the leading features of the age.

KELTO-SAXON WORK.—Putting aside for the present all architecture save that of church building, —although the influence of domestic and civil work upon churches is enormous and commonly overlooked—we find that we have in this country a Kelto-Saxon type of church, resulting from the composition of divers elements, of which the more important are as follows:— KELTO-SAXON ARCHITECTURE.

In the first place we have a purely Keltic element in the architecture, partly surviving through the Keltic or British population, partly resulting from the architecture introduced by the Keltic missionaries of St. Columba from the North. This

spread over the whole country save the South-Eastern portion. St. Columba himself died in 597, but his missionaries continued to further his work. In the year in which St. Columba died, St. Augustine came over to Canterbury, with the powers of a bishop, to convert the English, and he introduced a Latin element. But this influence was small, and affected the style but little.

Later we have an influence of Northern monasticism, which must be distinguished from the great Norman influence of the Conquest, but which also represents the Romanesque Gothic of Northern Europe. East Anglia was converted by a Lombard priest, Felix, afterwards bishop, and even until quite a late date we find a distinctly un-English influence at work in the great Benedictine foundations of East Anglia. Sussex was converted by Birinus, an Italian or Lombard monk, early in the 7th cent., and to some extent East Anglia, Kent, and Sussex remained the stronghold of Continental influence until the last. Monastic builders from Normandy were employed at Romsey Abbey in 967, and upon Bishop Ethelwold's cathedral, Winchester, during the reign of Edgar, who with Dunstan as his administrator largely reformed the monastic system.

THE KELTIC ELEMENT.

The *first element* is by far the most important in the formation of the Kelto-Saxon type of church. It is characterized by a narrow rectangular plan, commonly of two or more chambers, of which Trinity Church, Glendalough, Ireland; Egilsay, Orkney; St. Regulus, St. Andrews, Scotland; Escomb, Durham; and Bradford-on-Avon, Wilts, England, may be taken as typical. The different characteristics to be noted are—(1) the general length as compared with the breadth; (2) separate rectangular chambers; (3) large porches, or side chambers, as at Bradford, Repton, Deerhurst, etc.; (4) a western tower of defence, round or square,

usually entered from within the church; this is a common feature; occasionally, as at Brechin, it is separate from the church; (5) a type that occurs as at Studland, Dorset, Barton on Humber, or Basing, Hants, where the tower actually forms the body of the church. (See examples in fig. 83.)

All these features continue to play a prominent part in English architecture, and help to distinguish it from that of the Continent. In the first

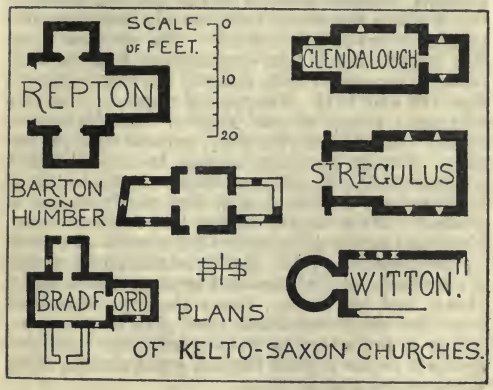


FIG. 83.

place, the extreme length of the English churches is one of their most important characteristics: they are the longest in the world. Secondly, the rectangular, instead of apsidal, endings to English churches are too familiar to need comment. Although the apse was introduced, it speedily disappeared, and never made way at all in the West of England. Thirdly, we may notice the English tendency to a series of more or less separate chambers—the separate closed-in choir, the nave

being often, as at Canterbury or Windsor, completely shut off, and the separate extensions at the east end, as at St. Albans, Wells, Gloucester, Hereford, Winchester, and indeed most of our cathedrals. Fourthly, the large porches or side chambers have a double influence. As entrance porches they are exceedingly common, *e.g.* Worcester, Gloucester, Canterbury, etc., and in hundreds of small parish churches. It is said that our inclement Western weather is the original cause of the western entrances being rarely used or altogether absent in this country. We also see these side projections in the very marked English transepts, as compared with those of the Continent (see figs. 110 and 111). Frequently there is a second transept; many of our English cathedrals have three, while Lincoln has four, pairs of such projections. Fifthly, the single western tower, so familiar a feature in the English parish church, can be traced back to this source, and it but rarely occurs in France. With regard to the last feature—when the tower forms the centre of the church—we reach by the addition of the characteristic side chamber a cruciform central towered type (*e.g.* Braemore, Hants, and the Priory, Dover Castle). There are doubtless other influences that give us this type, but it is probably the double influence that preserves it as the typical English great church, right through the Middle Ages.

THE LATIN ELEMENT.

The *second element* in the Kelto-Saxon style is the Latin style introduced direct from Rome by St. Augustine, *i.e.* the basilican type of church; but the Augustine influence seems to have been local and of little moment. The original church at Canterbury was quasi-basilican with an eastern as well as a western apse, the altar presumably being in the western at so early a date. There are one or two basilican examples up and down the country, but they are very rare. It is, indeed,

not at all certain whether the type as found at Wing in the vale of Aylesbury has anything to do with St. Augustine, and may not rather be a survival of the old Romano-British type of far earlier date, such as, presumably, we see in the plan at Silchester.

THE NORTHERN MONASTIC INFLUENCE.

Latin influence, however, does make itself felt, but through an indirect channel, and the division into nave and aisle is introduced through *the third great element* — the Northern monastic church. The aisle, however, never becomes quite the popular feature in this country that it is on the Continent. Five aisles, so common abroad, practically do not occur in English cathedrals. It is also largely to this influence that we owe the great central towered cross-church plan. But even this would probably have disappeared along with other importations had it not practically coincided with a type of more native origin. To this composite influence we may be said to owe the unequalled pyramidal composition of Salisbury, or the dominance of the central tower in such magnificent tower groups as Durham, Lincoln (fig. 112), or Lichfield, quite unapproached by the Continental architects.

DETAILS OF KELTO-SAXON WORK.

The details of the Kelto-Saxon style are very largely of Keltic and Teuto-Scandinavian origin, although decadent Roman work is also a factor to be considered. There are certainly affinities with early German work, particularly noticeable in the method of wall building, which is solid, and not built with a rubble core after the Roman method found in France. A brief résumé of the principal details is as follows :—

(1) Long and short work, or massive corner quoins. (2) Absence of buttresses. (3) Pilaster strips, stone carpentry, or strap work—a feature whose origin is obscure, but a far-away derivation from the Roman pilaster is perhaps the most pro-

bable. (4) The arches are semicircular, and often cut out of a single stone, or else they are straight-sided—a peculiarity not found in other styles (fig. 84). (5) The windows are often divided by baluster shafts, which are set in the centre of the wall, with a long stone forming a sort of abacus that runs from front to back through the whole thickness of the wall (fig. 84). (6) The windows are widely splayed, both internally *and externally*. (7) There is a great fondness for parallel lines as ornament, foreshadowing the later characteristic English parallel moldings of many bands, which contrast with the simpler flatter treatment of the Continent. (8) The interlacing bands and character-

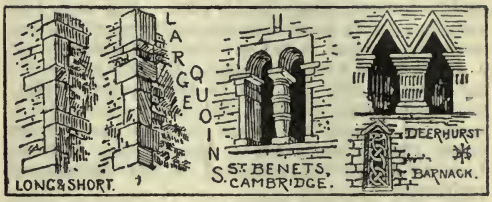


FIG. 84.—KELTO-SAXON DETAILS.

istic Keltic curves seem also to foreshadow the English ornamental work of the 13th century. There is a vast difference in the character of English and French ornament, which is generally overlooked. It is probably connected with a difference in origin.

Such are some of the principal points in connexion with the Kelto-Saxon work—a style much more important than is commonly supposed, which tends to be ignored on account of the greatness of the next style of architecture that made its appearance in these islands, and was in its turn made use of for Christian purposes.

THE RISE OF ENGLISH GOTHIC.—The Norman Conquest produced in Britain a massive style of architecture, of towers, fortresses, and strongholds. The churches, which naturally are always built in the style of the country, partake of the same character, so that a change comes over the church building in these lands. Contrasted with the comparatively light buildings of Kelto-Saxon work, we find heaviness almost the leading feature of the new work. But the English soon made their own influence felt, and for a time English church architecture undoubtedly led the way in Europe. ENGLISH GOTHIC ARCHITECTURE.

In the first place, the number of churches built is entirely without parallel. During the hundred years that followed, when the country had settled down after the disturbance of the Conquest, there were built between three and four hundred great cathedrals and monasteries, churches of first-class rank, besides numberless smaller buildings. In the last hundred years, with a population nearly twenty times as large, and enormously improved methods of transit and mechanical appliances, we have built only one great church, nearly completed a second, and laid the foundations of a third. Not only, however, was the number of churches remarkable, but the scale of the English churches very greatly exceeded all other churches in the world that were built about that time. In all the rest of Europe there were built only two churches of over 50,000 sq. ft. area. In England there were four churches that exceeded even 60,000 sq. ft. IMMENSITY OF OUTPUT

In many respects the very fact that England led the way was against her, because her great churches were already built when advancing art would have allowed her to build greater. Still more was she hampered in re-building and enlargement by the sizes already fixed. A new choir built on to an old nave cannot be made altogether out of scale with it.

AREAS OF GREAT MEDIÆVAL CHURCHES
built or in course of construction in A.D. 1100.

THE CONTINENT.		ENGLAND.	
Mayence . .	*c.* 36,000 sq. ft.	Gloucester . .	*c.* 38,000 sq. ft.
Worms . . .	40,000 ,,	Norwich . . .	*c.* 40,000 ,,
Tournai . . .	44,000 ,,	The Confessor's, Westminster .	40,000 ,,
St. Sernan, Toulouse	46,000 ,,	York	42,000 ,,
Spiers	53,000 ,,	Lanfranc's, Canterbury, with Conrad's Choir . .	46,000 ,,
		Durham	49,000 ,,
		St. Albans .	over 60,000 ,,
		St. Swithin's, Winchester . . .	66,000 ,,
		St. Paul's, London	66,000 ,,
		St. Edmund's, Bury	68,000 ,,

Cluny half a century later contained 54,000 sq. ft.

That England led the way in number and size shows an activity, a resource, and an initiative that, even taken by themselves, would be strong presumptive evidence in favour of her being a leader in style; and this we shall afterwards see to be the case.

CRUCIFORM PLAN AND CENTRAL TOWER.

The Romanesque Gothic is marked by the cruciform plan, and the Norman form has the central lantern tower. The origin of both these features is far from clear. The transept is generally considered to be the development of the space in front of the altar in the Latin style. This, however, is not found at Ravenna, for instance, and is not common outside Rome, and the intermediate steps in any case can hardly be said to be traceable. The central lantern is still more doubtful in origin. Some have suggested a Byzantine origin for the whole North European Cross-church as explaining both the cross and the central lantern; but although it may explain the cross better than the basilican church, and there is at least the lantern dome, while the basilica has no such thing, it is still a far cry from a Byzantine dome of the first period to a Norman lantern tower. The few dated

examples are merely enough to make us beware of drawing hasty conclusions. There seems no particular reason for not supposing that the central tower was invented in the North, except that it is the fashion just now to believe that no one ever invented anything—which is true only within certain limits. The central tower, as we have already seen, existed in this country quite independently of Latin or Byzantine influence. The object of the lantern tower was twofold. In the first place, it threw light into the centre of the building, where

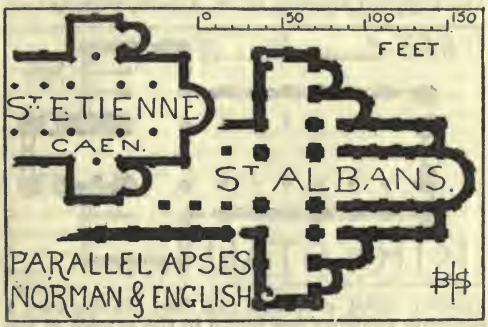


FIG. 85.

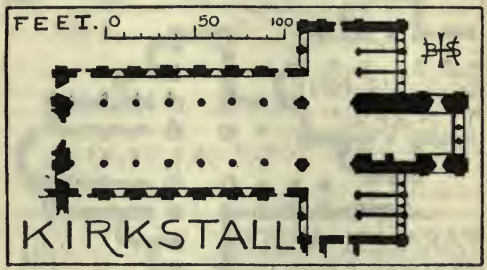
the high altar was put; and, in the second place, it formed a unifying central feature, both within and without. The removal of the high altar from its proper position to the east end leaves the lantern tower to throw its light upon an empty space.

THE MULTAPSIDAL TYPE.

In any case, we find two distinct types of Cross-church making their appearance in this country, both of which the national genius modified to suit its own æsthetic conceptions. First, we have the multapsidal type, and, secondly, the chevet type. The

origin of the multapsidal type is possibly to be sought in the Byzantine or Egyptian types already noted, or it may be directly derived from the basilica, but it certainly becomes quite a common variety. The Normans in Normandy treated it in their own way, squaring the end two bays beyond the crossing, in a manner perhaps foreshadowed at St. Apollinare Nuovo at Ravenna, and then adding the apse (St. Etienne, fig. 85). The Anglo-Normans took this plan, and it at once began to assume the first English characteristic of greater length. We find a typical example at St. Albans, with its long

FIG. 86.



parallel apsed chambers (fig. 86). In this case a squaring tendency has begun in the outside of the aisle-apses. At St. Mary's Abbey, York, there are seven perfectly round apses. This becomes one of the great types of Benedictine orthodoxy in the East of England.

ENGLISH ORIGINS.

But it is to the West and the North that we have to turn to find the truly English manner. Here we find Hereford with a square end as early as 1079–1095, and Llandaff and Romsey early in the next century. It has been said that the square end was introduced into this country by the Cistercians. This is impossible, as it was in use before the Cis-

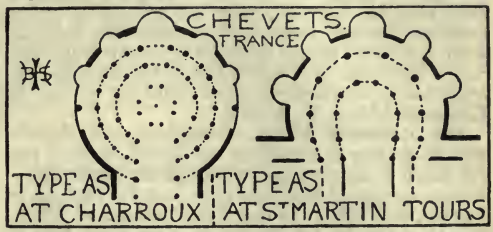
tercian order was founded. But it is interesting to observe that from this very Western district came Stephen Harding, one of the original founders, and head of the order, and abbot of Citeaux in 1109. It seems very probable that the Cistercians owe their square East ends to him. Hence, when we find the Cistercians at a later date building their square East ends in England, they are merely bringing back an English feature that naturally falls in with, and helps to strengthen, the native tradition. So we find that in English hands the multapsidal type develops a squared form, such as we see in Kirkstall Abbey, Yorkshire.

The Reformed orders, Cistercians and Augustinians, mainly in the West and North, worked out the English manner, and although the great Benedictine abbeys of the East have had the fortune to survive, it is rather to the ruined abbeys of Yorkshire and the Welsh Border that we must turn if we wish to see the English style in the making. Hence, while the conservative Benedictine abbeys were still using the round arch and the apsidal termination, we find the pointed arch and the square end in the North and the West. The change of style is, as in France, partly due to an Episcopal influence that furthered advance and reform. In the latter country the bishops joined hands with the laity against the old Monastic orders, and we get the great laic cathedrals of France. In this country they joined hands with the Reformed orders, and to this is due the strongly marked Monastic character of English building. In early days the Cistercians eschewed ornament, central towers and triforiums, which gave a chasteness to the style in their hands that, to some extent, it would be true to say, marks the English work until well into the 14th cent., even after such luxuries as towers and triforiums had become common again.

THE CHEVET TYPE.

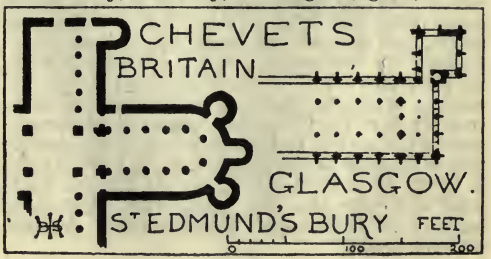
The other great type is the chevet type, which, as Fergusson says, is very probably a development from the circular church by the addition of a nave, the circular part becoming the choir. The development is apparently French as shown at Charroux, S. Benigne (Dijon) or St. Martin (Tours) (fig. 87). In England the choir has been added,

FIG. 87.



and the circular part becomes the nave. The chevet type, with or without its circumscribing chapels, is found at Bury St. Edmunds, Norwich, Edward the Confessor's Westminster Abbey, etc., and is always lengthened in the English manner (fig. 88). This we also find still further Anglicized with a square ambulatory at the east end, as at Dore Abbey, Salisbury, or Glasgow (fig. 88).

FIG. 88.



Besides the lengthening from east to west, the English æsthetic character shows itself in the wide transepts and the still more characteristic transeptal west ends (fig. 110), which we find even in Rouen Cathedral, a church planned by an English architect. This we can contrast with the narrow twin-towered French Norman type, such as we see at St. Etienne, Caen.

The Anglo-Norman church of Bury St. Edmunds had a wide-spreading front of 260 feet. Ely was planned for a west front of 164 ft., although it is doubtful whether this front was ever completed. These two are about three times as wide as the nave.

WIDTH OF WEST FRONTS, NAVES, AND MAIN TRANSEPTS OF ENGLISH CHURCHES.

	West Fronts. Feet.	Naves. Feet.	Main Transepts. Feet.
Peterborough	170	82	190
Rouen (English design)	185	120	195
St. Albans	150 (?)	77	190
Ely	200	77	180
Bury St. Edmunds	260	80	240
Lincoln, 13th cent.	180	100	245
Wells ,, ,, (a small church)	150	80	150
Durham	116	92	192
Pre-Conquest Westminster	..	..	155
Reading	..	..	*c.* 190
Glastonbury	..	..	*c.* 190
Winchester	128	96	215
York, 13th century	..	140	245
Old St. Paul's, 13th cent. (probably nearly the original Anglo-Norman plan)	170	110	250
Chester	118 14th c.	84	238 14th c. *i.e.* double the transept built

Compare these with

Notre Dame	155	155	170
Rheims, 13th century	155	135	200
Amiens ,, ,,	150	160	220

METHOD OF ENQUIRY.

The best way to obtain a general survey of each period is to work from the ground plan upwards. It has already been pointed out that Romanesque Gothic in England, perhaps most conveniently termed Anglo-Norman, is massive in its treatment, and this naturally shows on the ground plan. A single pier of Durham contains as much material as the whole set of piers of some of the later churches. The walls are always immensely thick, even when they support only a wooden roof, which on the whole is the commoner arrangement; but when they have to resist the thrust of a stone vault, this is even more the case. Buttresses are as yet quite rudimentary, and the history of Gothic architecture might be described as a progression from a heavy wall with a wooden roof to a glass wall and a stone roof. The projection of the buttresses becomes greater and the wall thinner, and the progress might be diagrammatically represented as in fig. 89. So what practically happens is that the wall is turned round in sections upon itself, whereby, with the same or even less material, a greater resisting power is obtained (fig. 89).

FIG. 89.—WALL DIAGRAM AND SECTION OF CHURCH.

ELEVATION.

Before passing upward to details, the general treatment of the elevation should be noted. The Anglo-Norman great church is a three-aisled building of three storeys (fig. 89). The nave-arcade is the principal series of arches in the church, and divides the central aisle, or nave, from the side aisles. In order to light the central aisle it is raised above the roof of the side aisles, whereby we obtain a clerestory, through which the light passes, and which is contrasted with the blind storey or

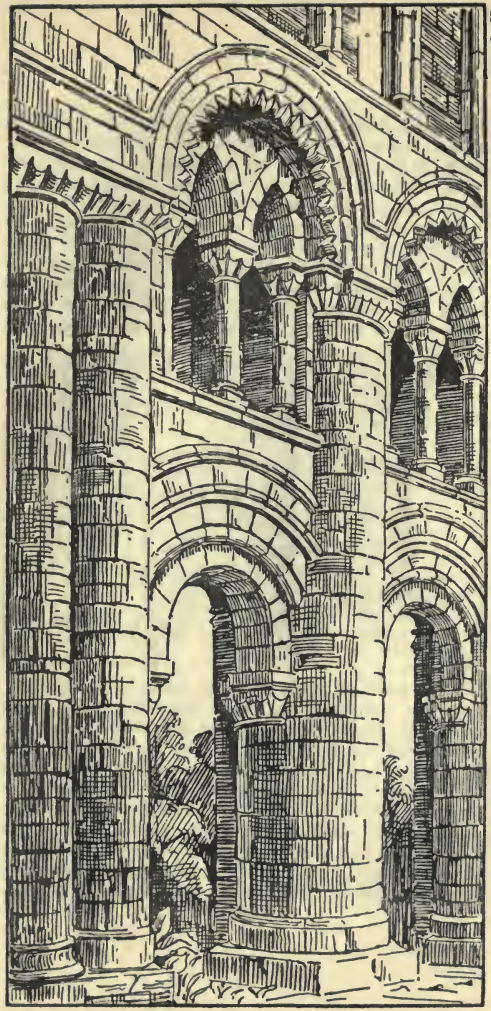


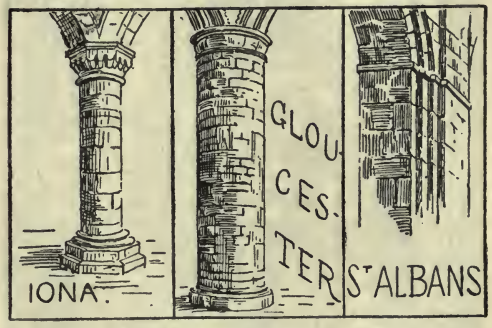
FIG. 90.—JEDBURGH ABBEY.

triforium that occupies the space of the aisle roof. Sometimes the triforium is transparent, as it is termed; that is, it is treated as a gallery with windows over the side aisles. This treatment is more common in France than in England.

BAY TREATMENT.

There is more variety in the bay treatment in this country than in France, arising in part from a different initial standpoint. The French architects were more interested in the logic of construction, and the tendency for their buildings is to become, as it were, skeleton constructions, and

FIG. 91.—ANGLO-NORMAN PIERS.



for the wall as such to disappear. The English, however, continued to regard the wall as a feature in itself, giving an æsthetic sense of horizontal continuity, as distinct from the vertical skeleton expression of French architecture. The wall, therefore, continues to some extent to be regarded as a field for decorative treatment on its own account. A single instance must suffice, and is seen in the interesting bay treatment, favoured mainly by the Augustinians, in which the triforium is treated as a hanging gallery, depending from the main arcade.

Examples may be seen at Jedburgh (fig. 90), Romsey Abbey, Oxford Cathedral, Glastonbury, and Dunstable. It gives a sense of height greater than either the simple two-storey or the simple three-storey treatment.

Anglo-Norman piers are of two main types. In the first, which is more or less columnar, we probably see a far-off descendant of the columns of Greece. There are two distinct varieties, of which one, PIER TYPES.

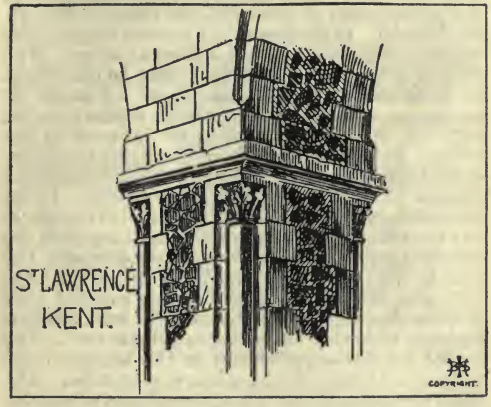


FIG. 92.

although generally built up in courses, and not in single drums, still, in general proportion of capital, and base, preserves the characteristics of a true column (Iona, fig. 91). The other is a huge mass of masonry with a few moldings round the top in lieu of a capital. This partakes more of the nature of a pier, and is peculiar to this country. Examples may be seen in Gloucester, Durham, Tewkesbury, etc. The second type is the pier

proper, developed from a section of wall left between the arches.

Both these types develop in two ways which mutually influence each other: first, the structural, which is more particularly characteristic of France; secondly, the decorative, which is more particularly characteristic of this country. In the first system additions are made to the pier, to support sub-arches and vaulting shafts; thus we get a composite type of pier where each part is assigned to the performance of some definite function (fig. 91, St. Albans). In the decorative system the pier also becomes composite, but in a different manner. The corners of the pier, for instance, may be chamfered off so as to form an octagon, or cut out as at St. Lawrence, Kent, and ornamental shafts inserted (fig. 92), thus giving a sense of lightness to the whole. Later we find these ornamental shafts arranged round the octagon formed by cutting off the corners. The octagon may become a circle. In the decorative system the change begins with the shaft, and the abacus remains square, and, in any case, the detached shafts have no direct connexion with the load above. When both load and support become very complex, the eye is sufficiently satisfied with the complex support for the complex load, without logically following out each subordinate part. The carpal and metacarpal bones in the beauty of the human anatomy may be taken as a parallel. The

BASES. bases are generally set on a square plinth, often with an ornament to fill up the angles. The commonest form of molding is a hollow above a round (fig. 93).

ROMANESQUE GOTHIC CAPITALS. There are three types of capital: (1) a pseudo-classic, a sort of debased Korinthian or Ionic, much commoner on the Continent than here; (2) a cushion-shaped capital which seems an original invention; and (3) the scalloped capital, a type derived from the cushion variety, which in its turn has important influences upon the next period

(see fig. 93). The abacus is always square, first with a plain chamfer, then with a hollow chamfer and a small nick above.

THE MAIN ARCADE.

Passing upward, we may note that the arches are generally round, although the pointed arch is occasionally found. The earliest known example of a pointed arch in this country is *c.* 1090 A.D., half a century before it becomes at all a general feature. The arcade arches are rarely of more than two orders (*i.e.* recesses or steps)—a main arch and a sub-arch (fig. 93). The moldings of the arch are very simple, a

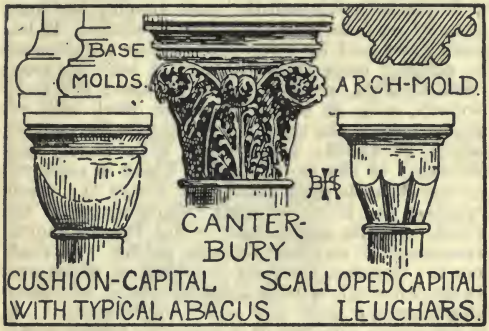


FIG. 93.

plain chamfer, a hollow chamfer, or an edge roll being all that is generally found. Door arches are often of many orders, being recessed sometimes as many as seven times. They are frequently much enriched.

THE TRIFORIUM

The features of the triforium arcade are the same as those below, but it might be noted that decorative development often makes its appearance here before it is seen anywhere else.

THE CLERESTORY.

The clerestory generally shows an ornamental arcade on the inner face of the wall, and plain round-headed windows on the outer face, com-

monly with a passage between the two in the thickness of the wall (v. Plate, Romsey Abbey). The Anglo-Norman window is generally widely splayed within, and set near the outer face of the wall, and in this respect it may be contrasted with the Kelto-Saxon window. It is not treated with the elaboration of the door. Some later Anglo-Norman windows show rich decoration outside, but it is interesting to notice that, whereas the door becomes a less important member as Gothic architecture advances, the window gradually becomes the most important of all.

GOTHIC ARCHITECTURE PRIMARILY AN ART.

In the roof we reach the most complex and most interesting feature in Gothic architecture. It has even been said by some that Gothic architecture is nothing more than the art of building stone vaults. This, of course, is ridiculous; the early writers, such as Rickman, whose work still remains one of the most interesting on the subject, wrote of Gothic architecture with hardly any reference to the vault at all. There is certainly enough that is distinctive, and shows the whole spirit of the thing, without taking notice of the vault. Gothic architecture is not the mechanical treatment of any one feature, neither the vault nor the buttress, nor even the window, which probably, after all, is both more influential and more characteristic than any other single feature. It is not even a question of mechanics; Gothic architecture is architecture—a truism, one would have supposed; it is neither engineering nor building, as some writers would have us believe. Hence it depends fundamentally upon æsthetic principles, which, so to speak, set the mechanical problems for the mechanicians to solve, and the latter are essential, it is true, but only means to an end.

Of course any one is at liberty to define 'Gothic' as he pleases; but to deny the title to such a building as Eltham Palace or St. Peter Mancroft, Norwich, is so to circumscribe the sphere of inquiry

as to make it of comparatively little importance. It is a primary and more fundamental question to find what is the root principle common alike to Crosby Hall, Exeter Cathedral, and Notre Dame, and differentiating these buildings from St. Sophia and St. Stephen's, Walbrook, than to find what differentiates them from each other—not that this latter inquiry has not great importance within the larger sphere.

THE VAULT AND THE STONE ROOF

A full discussion of the vault would be impossible within the limits of this little book, but it may be thus briefly summed up. In early days it was more

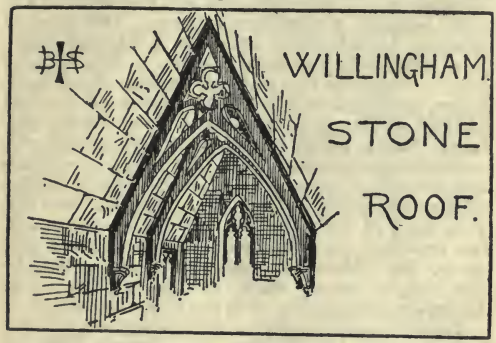


FIG. 94.

common to find an open-timber roof, but a desire to give organic unity to the whole conception, coupled doubtless with the advantages of greater security against fire, led to the gradual substitution of the roof of stone. This we find first in the aisles, and then over the wider spans, such as the great English Chapter Houses, some of them 40 ft. wide, or the high vaults over the naves of the great churches. The vault was almost always covered by a wooden roof to protect it from the weather.

This is to some extent a false construction, which is at variance with the ordinary methods of the Gothic architects. But there are a few examples of true stone roofs in this country,—the Treasury, Merton College, Oxford; Willingham, Cambridge; Minchinhampton; Bellingham, Rosslyn; Corstorphine, Craigmillar and Bothwell (fig. 94).

THE DEVELOPMENT OF THE VAULT.

The simplest form of vault is the plain barrel or waggon vault, which gives a great continuous thrust throughout its length, and therefore requires a very thick continuous wall. The effect is gloomy, because the lighting problem is difficult of solution. Large windows are impossible in a wall bearing a continuous thrust, and sloping windows in the vault are both weak and ugly. If a window is put in the vault, it is a natural step to carry up the vertical surface of the wall below, as we saw in Byzantine architecture (fig. 78). This at once suggests the treatment of intersecting barrel vaults, which is eminently suitable for the vaulting of a square space, A, O, C, being the square of intersection of two half cylinders of hemispherical section, corresponding to A′, O′, C′ (fig. 95, I and II). This form of vault was used by the Romans, and the tradition never completely died out; and this vault, the ribless quadripartite vault, as well as the simple barrel vault, is used by the early Romanesque builders, as in the castle at Oxford.

The intersection of two cylinders is not a circle, as in the case of intersecting spheres (see p. 136), but an ellipse. This elliptical line of intersection is termed the groin of the vault. Directly the space to be vaulted is not square, difficulties arise, and as long as semicircular vaults are used they will not intersect at the crown at all, as the vaults are of different height (fig. 95, III). It is therefore necessary to bring them to the same height, which may be done by stilting the narrower vault, that is, raising it on two vertical walls that serve the pur-

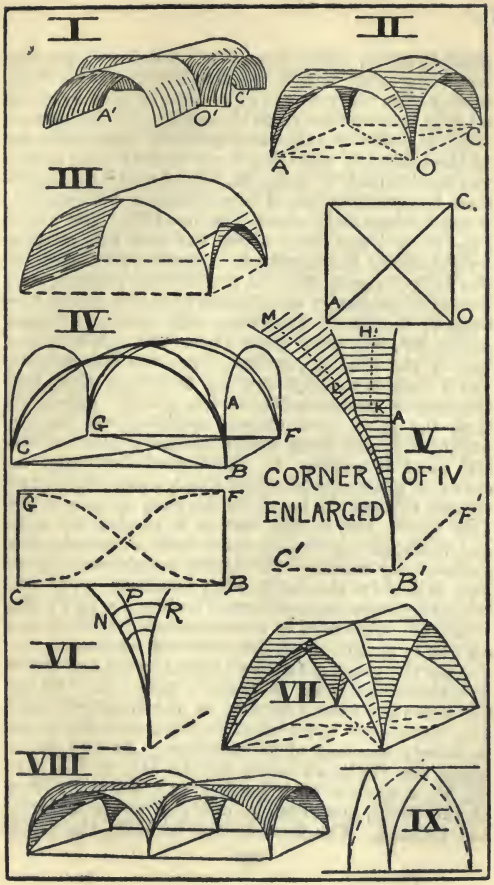

I
A'
O'
C'
II
A
O
C
III
IV
C
G
A
F
B
V
M
H
K
A
CORNER
ENLARGED
OF IV
G
F
C
B
C'
B'
F'
VI
N
P
R
VII
VIII
IX

FIG. 95.

pose of stilts. This may also be helped by using less than a semicircle for the larger vault. But, in any case, the groins will become twisted in plan, as may be seen in fig. 95, IV and V. In the narrow vault it is obvious that any point in that vault, up to the height of the stilt, must be vertically above the line CB (or C′B′ in fig. 95, V). Any point, therefore, being on the line of intersection of both vaults, must be vertically above the line CB. The groin also must keep close above the side CB, until a height above A is reached. On the other hand, in the bigger vault, there is no vertical portion, and it curves gradually away from the side BF at the outset; the groin, therefore, will tend away from above BF, but keep close above CB. When the top of the stilt is reached, however, the narrow vault curves rapidly over to the other side, but the larger vault continues its gradual curve, so that the groin now crosses rapidly over to the other side, and then keeps similarly close above GF until it reaches G. In actual building the curve is generally coaxed a little, so as slightly to reduce the violent break in the line, as seen in the plan above, but in any case it is excessively ugly and weak, as the weight of the vault rests upon the groins. By making the vaults enormously thick and filling in the back with concrete, until the whole becomes one solid mass for some way up the vault, the weakness is counteracted, but it means an undue weight upon the walls and supports.

THE PRINCIPLE OF THE GOTHIC VAULT.

Now the great invention of the Gothic architects was the substitution of another principle. So far the vault has been regarded as the intersection of two continuous cylindrical tunnels, and the groin is merely the line of intersection. At any point along the vault we have, say at ML or HK (fig. 95, V) a section of a perfect cylinder; the line of the groin, however, we saw was not in a plane, but twisted. The invention is to build the groin

regular (*i.e.* in a plane), and then accommodate the vaults to fit the groin, which is made in the form of a strong rib to support the whole. The vault is built by first erecting a series of arches of regular shape (*i.e.* in planes), not twisted, to form the ribs. The short ends may be stilted, the diagonals segmental, and the broad ends semi-circular, so as all to be of equal height. The vault itself is then built, as a light shell, resting on these ribs. This shell is built in courses, as NP, PR (VI), which are practically straight, but very slightly arched to the ribs upon which they rest. The consequence is that, as now the shell must follow the curve of the groin ribs, it cannot itself be part of a regular cylinder; and as before the diagonals were twisted to suit the vault surface, now the vault surface is twisted to suit the diagonals. The result is a curved surface very much resembling that of a ploughshare.

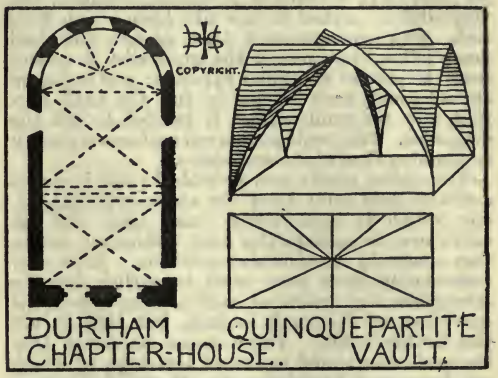
The ribbed vault—and by ribbed vault is meant a ribbed shell vault upon the above principle, *i.e.* one which is structurally based upon the rib curvature—is perhaps the most distinctive invention made by the Gothic architects. Ribs may occasionally have been used in earlier days to strengthen the groins of vaults, based upon the curvature of the vault surface, but that is not the Gothic vault. There seems no doubt that the earliest attested vaults of this type of which we have any knowledge are those of Durham Cathedral. Such were the high vaults of the choir begun in A.D. 1093. The earliest properly attested date in France is, at the very least, more than thirty years later.*

* The whole discussion of these dates, with regard to England and France, is given in J. Bilson's able little book, *Beginnings of Gothic Architecture* (1899). No other writer approaches Bilson in his thorough grip of his subject. A short résumé of the subject is given in the present writer's book, *The Gothic Era*, now in the press.

RECTANGULAR COMPARTMENTS.

As to the cause of the compartments assuming the rectangular form instead of the square, it can hardly be questioned that the primary reason was æsthetic and non-mechanical, as the great English Chapter Houses, with spans of 40 ft., where there were no structural considerations, are so built. The immense improvement to the vista, and the beauty of the apparent length thereby gained, quite apart from any principle of unified complexity, are sufficient to account for it (fig. 96). The French

FIG. 96.



continued to use the square vault for a long time, taking two compartments of the aisle to one of the nave, even inventing the sexpartite vault (fig. 95, VIII) to get over the difficulty before finally following the Anglo-Norman lead.

THE POINTED ARCH.

The introduction of the pointed arch into the vault followed not long after. It offers an æsthetically more pleasing solution of the problem of vaulting over a rectangle, at the same time preserving the level crown, than does the stilted arch

(fig. 95, VII). The pointed arch in every rib gives a far more satisfactory sense of æsthetic unity than the mixture of segmental and stilted arches, and it also reduces the ploughshare twist. As it would seem that every text-book writer hitherto has fallen into error upon this simple mathematical point, it is most important to notice that intersecting pointed tunnel vaults upon a rectangular base would give twisted diagonals. That is to say, that the lines of their intersection are not in planes, and the pointed arch by itself would not solve the difficulties.

Neither was the pointed arch used by any means solely in order to keep the level crown over the different spans, because in France the domical vaults, used when the ribbed system was introduced, continue even after the introduction of the pointed arch in the vault, and there is no attempt to make the crown level. Nevertheless, the fact that pointed arches of the same height can be erected over varying widths (fig. 95, IX) is one of their many advantages, as we may see in numbers of transept crossings, *e.g.* St. Bartholemew's, Smithfield.

An interesting variant of the sexpartite vault, which we might term quinquepartite, occurs in the aisle vaults of Lincoln, which is an ingenious and more justifiable use of the principle, as there are two windows on one side and only one opening on the other (fig. 96). Endless modifications occur.

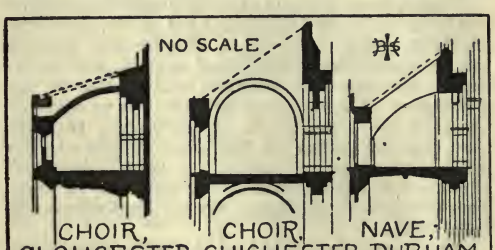
The origin of the pointed arch is another of those unsolved problems, but it occurs in the East long before it is found in Northern Europe. It is even found in Roman work—in the bridge of Severus in the Levant. It was certainly in common use in France earlier than here, although an example is found at Gloucester (*c.* 1090), of which Bilson gives an illustration. The pointed arch cannot be considered a specially Gothic feature, being found in

various Eastern styles; and, moreover, many buildings where it does not occur are obviously completely Gothic in feeling.

THE FLYING BUTTRESS.

In connexion with the ribbed vault appears the other great invention of the Gothic architects, namely, the flying or oblique buttress, where the buttress, instead of descending vertically to the ground, is carried obliquely upon an arch over an intervening space. This enables the abutment of the high vault to be carried across the aisles. The beginnings of this are seen in the demi-berceau or half-barrel vault of Gloucester (*c.* 1090), strengthened at intervals with buttresses or ribs. But the perfect system brings the abutment to bear, not continuously, but only so as to meet the resultant thrust of the vault ribs that support the vault. This we find in Durham choir (commenced A.D. 1093), where the buttress is carried over a semicircular arch. It occurs also at Chichester (commenced 1091), whereas the later development, namely, where the buttress is carried over a quadrant, was probably actually built at Norwich in 1096. It was certainly planned and half executed at that date, as that which remains after later

FIG. 97.



alterations attests. The nave of Durham shows it complete (A.D. 1125).* The French examples are later, but the credit of perfecting the feature certainly belongs to them, if they did not even carry it too far.

TOWERS. The Norman Towers, particularly those at the crossings, are very low in their proportions. The central tower was frequently treated as a lantern, and formed one of the most effective features of the whole building. In later periods a vault put below it at the crossing has often destroyed this beautiful effect.

The towers were apparently covered by low pyramidal roofs, from which the spire afterwards developed, and in the first stages of this development would present very much the appearance of the western towers of Southwell.

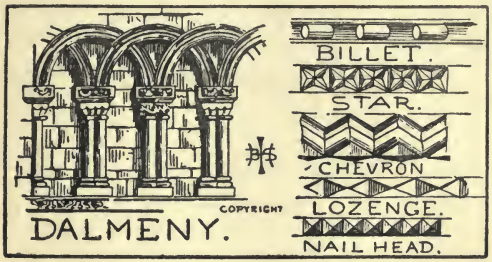


FIG. 98.—ARCADE AND MOLDINGS.

ORNAMENT. Anglo-Norman ornament, at first sparing, gradually becomes rich if not over-ornate. The frequent use of arcades along the walls, particularly as a sort of 'dado,' and on towers, is the most prominent of these features, but minor forms are endless, of which perhaps the most common are given in fig. 98.

The interesting harmonious relationship in Greek

* See references quoted above *re* the vault.

architecture between the curves of a molding-profile and the design upon it has been mentioned, p. 54. That there is a parallel æsthetic tendency observable in Gothic architecture has apparently hitherto escaped notice. The bowtell or round roll-molding (v. fig. 93) is the characteristic accompaniment of the round arch ; the pointed bowtell and the pointed arch appear together ; the ogee molding and the ogee arch are usually associated (v. p. 204) ; the wide cavetto molding belongs to the period of the similarly shaped three-centred arch (v. p. 216).

LINLITHGOW CHURCH: N. AISLE.

CHAPTER X

THE ZENITH AND DECLINE OF ENGLISH GOTHIC

IT has been usual among writers upon Gothic architecture to speak of a Transitional period; but as the special features that were supposed to distinguish it all appeared half a century earlier, this is only confusing. In any case, a division into periods is purely arbitrary. The whole story of Gothic architecture is one long transition, and the system of division into periods at all opens up the danger of considering the periods as though they were styles, which is to misunderstand everything. THE ZENITH OF GOTHIC ARCHITECTURE.

Anglo-Norman work developed into what are often termed the Early English and Decorated periods—the zenith of Gothic architecture. Here we see a further development of those principles we have already noticed. The tendency of the English plan is to become longer still. The old short choirs are pulled down, and great extensions take their place. In the elevation we may notice that the tendency is for the bay divisions to become wider in proportion to their height, and for the triforium to diminish. On the exterior the lofty spires of these two periods are the most distinguishing features.

The decorative sense develops and shows itself PIER TYPES

in every member. Three great types of pier make their appearance—the South-Western, the South-Eastern, and the Northern. The South-Western is formed by triplets of shafts attached to a central core and ranged regularly round it (Pershore, fig. 99). It is probably directly derived from the Anglo-Norman composite pier. But it makes little headway beyond its own district, and gradually dies out. Not so the South-Eastern and Northern varieties. The South-Eastern type is formed by a central core with detached shafts round it, generally, although not invariably, of purbeck marble or some local variety (fig. 99). The central core is built up, and the shafts are monoliths, or in two or three long sections with annular bands. The Northern type, *e.g.* Roche and Sweetheart abbeys (fig. 99), is a composite pier of several shafts all united in one, without a central core, and seems to have originated from such forms as we see in Bishop-Auckland Castle, Durham galilee, or Selby triforium. In these cases there are a number of separate shafts not grouped round a central mass. In the Northern type the composite pier is built up in horizontal courses, and the shafts composing it are therefore not continuous.

For a time the South-Eastern type carries everything before it and drives back the Northern, so that during the 13th cent. (Early English period) it practically becomes the type of the period, and is found, for instance, as far north as Durham. In the 14th cent. (Decorated period) the Northern re-asserts itself, and the South-Eastern type is driven back and disappears. The Northern type remains supreme, as long as Gothic architecture lasts, and is found all over the kingdom. A very beautiful example occurs at Grantham, with the fillets particularly common to this type. In the same church is an early example of the South-Eastern type (fig. 99).

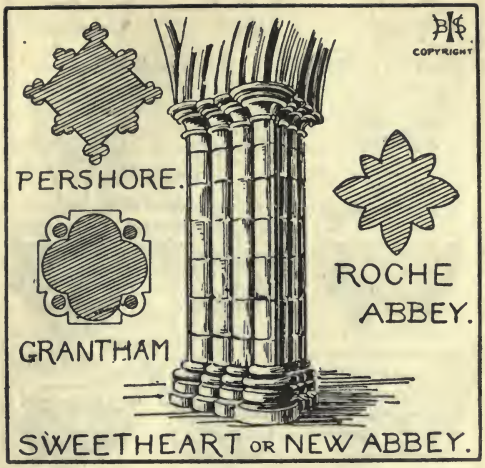


FIG. 99.—EXAMPLES OF ONE S.W., ONE S.E., AND TWO NORTHERN PIERS.

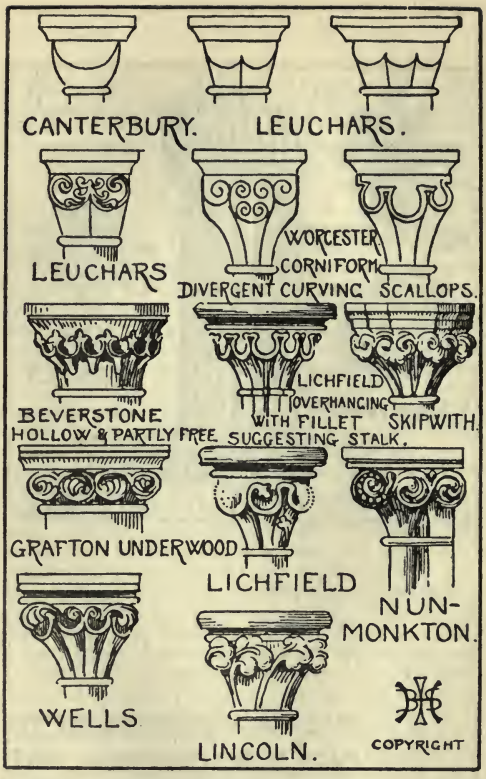


FIG. 100.—DEVELOPMENT OF CAPITAL.

The commonest base in the 13th cent. is characterized by the water-holding molding (fig. 101), developed from the so-called Attic base (fig. 20, cap. II.). In the 14th cent. the hollow is filled by a round, the lowest member often overlapping the plinth. The English capitals are distinguished from those of the Continent by the characteristic abacus, which in English work is almost always round, and in the thirteenth century consists of a roll and fillet deeply undercut, and in the 14th of a scroll molding. The neck-molding is generally a plain astragal in the 13th cent. and a scroll molding in the 14th. See 13th cent. capital and 14th cent. capital from Bradford (fig. 104). Those capitals that have foliage are marked in the 13th cent. by a beautiful type, apparently derived from the scallop capital (see fig. 100), and very different from the French type derived from the classical capitals. The English variety, which we may term stiff stem foliage, is generally said to have the same origin as the French capitals, being derived from the classical volutes; but a careful examination of the capitals of the West Country and the North, where the national style has its origin, has led the present writer to the above conclusion. Doubtless the Continental variety was not without its influence; but not only does the other derivation explain the general form more satisfactorily, with its stiff stem and without the lower band of foliage found in French work, but it also explains another peculiarity of the English capital. The English foliage tends to twirl round the capital instead of standing out from the centre as in Continental work.

BASES.

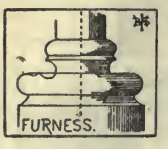


FIG. 101.

CAPITALS.

In the 14th cent., although the forms are sometimes exceedingly beautiful, there is a distinct artistic decadence. An attempt to be true to nature

14TH CENT. CAPITALS.

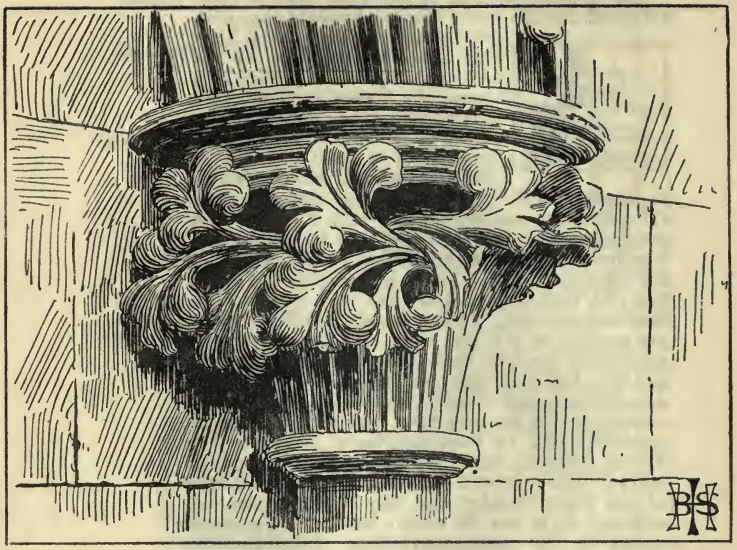


FIG. 102.—
LICHFIELD CATHEDRAL.

results in being untrue to the stone material in which the artist is working—a much more serious fault. The forms are ill adapted to stone, and,

FIG. 103.

moreover, instead of growing up organically from the neck, are twined round like an applied harvest festival decoration, and have no part in the organic unity of the whole. Compare figs. 102 and 103.

FIG. 104.

ARCHES AND MOLDINGS.

The arches are pointed and with numerous moldings, of which those in fig. 104 are typical. The Early English moldings are marked by freehand drawing and numerous independent members, separated by deep hollows, *e.g.* Peterborough. Characteristic members are the roll and fillet and the pointed bowtell. Decorated moldings are set out by the compass instead of being drawn freehand. The fillets on the triple roll and fillet are set differently. The ogee curve makes its appearance, and a three-quarter hollow often marks off the orders of the arches (fig. 104, Northborough and Deopham). Up to the end of the 14th cent. the orders of the arch are generally clearly distinguished.

The ogee arch appears soon after the ogee form was first used in the window tracery, and it is about the same time that we find the ogee molding becoming common.

THE WINDOW.

The development of the window is a long story, whose course can only be briefly indicated. The normal early Anglo-Norman window is a square with a semicircle over it. This tends to become longer in its proportions, and the process continues after the introduction of the pointed arch, producing the so-called lancet window, until such extreme examples are reached as at Bottesford, which is 8 in. wide and 15 ft. 6 in. high. The natural result is to group windows together, one being insufficient for lighting purposes (fig. 105).

In the gable end the normal arrangement in the first half of the 13th cent. is three windows, the central one raised to fill the gable. At first the windows are quite distinct; then a common hood mold gradually draws them together, and finally includes them under one arch (fig. 105). The small spandrels are first pierced with various shapes and finally cut out altogether, and then cusped as at Cirencester or Peterborough Cathedral. But this pushes all the ornament up into the extreme head;

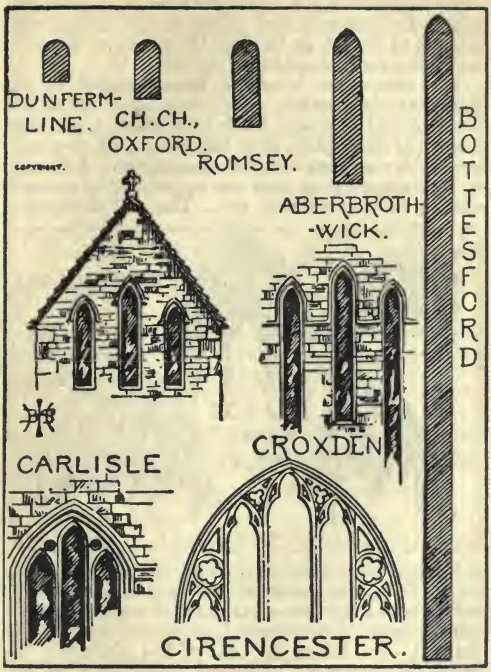
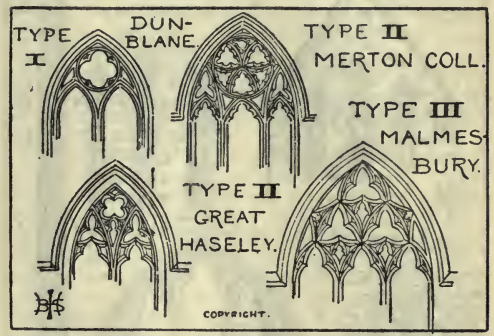


FIG. 105.—EARLY STAGES IN THE DEVELOPMENT OF TRACERY.

and it is perhaps the two-light window in the aisle, which follows suit, that tends to the filling with tracery of the whole head of the window above the springing (see examples in fig. 105).

We thus pass from the lancet period to the first traceried period, which has been called the Geometrical period. This is a most misleading name, as it implies that the curves of the next period are not set out with a compass. Although at first glance they may not appear to be parts of circles, they invariably are. The real distinction

FIG. 106.—SIMPLE TRACERY.



is between curves of single and double curvature; or the first period may be described as composed of independent figures—circles, curvilinear triangles, and squares (not spherical, of course), quatrefoils, trefoils, etc., filling the head of the window. The terms Simple and Compound would be short and self-explanatory.

SIMPLE CURVE TRACERY.

There are three main types of Simple or independent-figure tracery. In type I. (fig. 106) the circle or other figure rests on two sub-arches. The points of the sub-arches projecting below the central

ornament are objectionable, and probably are the cause of type II. making its appearance, in which the outer curves of the sub-arches coincide with the curves of the window arch. It should be noted that type I. does not disappear but continues to be used, and this is the case all through the development of window tracery; a new form does not entirely oust an old one. The objection to type II. is that it tends to push the ornament too much into the head of the window. In all cases the sub-arches

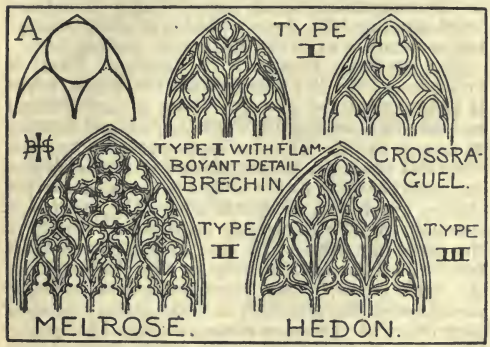


FIG. 107.—COMPOUND TRACERY.

may also intersect or be separated from each other. Type III., which is really a three-light development, has no leading sub-arches, but the arches of the lights alone, and no leading central ornament.

COMPOUND CURVE TRACERY.

The development into the Compound or flowing period is the result of attempts to improve type I. Divers devices had been tried to get rid of the objectionable points, the best being the disguising of them by a pointed trefoil. It occurred, however, to some unknown English genius that an exceedingly

simple and obvious device—as is the case with most great discoveries—was to omit the points, and continue the sub-arch-curve into the curve of the circle. Thus is obtained a curve of double curvature or an ogee curve. The other side of the sub-arch is made to correspond, giving a circle supported on ogee arches (fig. 107, A. See also late window at Linlithgow, Plate IV.). The bottom and top of the circle then disappear, leaving us the completed type I. of the Compound period. This develops on lines similar to the independent-figure period with a second and third type (fig. 107). Square headed windows, though not so common as in the 15th cent., are not rare.

VAULTING. The vaulting continues to develop. First, in order to reduce the ploughshare curvature, resort is had to elliptical ribs, involving a most difficult and complex problem in the setting out and erection of every vault. This is superseded by pseudo-elliptical vaulting, where, instead of a true ellipse, an approximation to the ellipse is made by parts of circles, which join at points where the tangent is common to both circles, so as to avoid breaks in the curve (fig. 108). The line of the pier or shaft from which the vault springs is also tangential to the arch curve. This pseudo-elliptical vaulting would assist the architect in making the ribs clear each other at the same distance above the springing. Yet it would not quite attain that object, which would require not only that the curves should be similar, but that the angles between the ribs on the plan should be equal. The device, however, is a very distinct step in the direction of the fan-vault.

THE RIDGE RIB. The ridge rib to mark the leading line of the roof, and also to provide a line of fitting for the vault shell, was apparently first used at Ripon. It has great æsthetic value, giving continuity to the whole and a line of emphasis to the vista. It is, in fact, the dominant æsthetic line of the building,

corresponding to the keel of a boat. The French architects could not use it with any effect, on account of their broken ridge lines caused by the domical vault. Where they have used it the result is unpleasantly suggestive of *mal de mer*.

THE TIERCERON.

In order to reduce the space between the ribs, and to make the filling easier, subsidiary ribs are introduced, called *tiercerons* by the French architects. They were invented by the builders of Lincoln Cathedral and used first in a peculiar way (fig. 108). In the 14th cent. lierne or net ribs make their appearance, and give great complexity to the vaults (fig. 108).

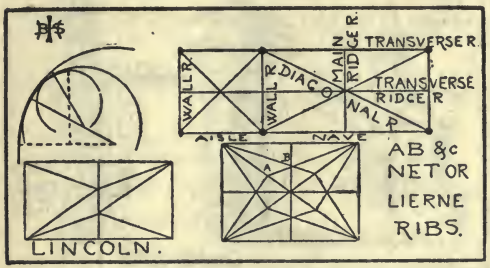


FIG. 108.

THE BUTTRESS.

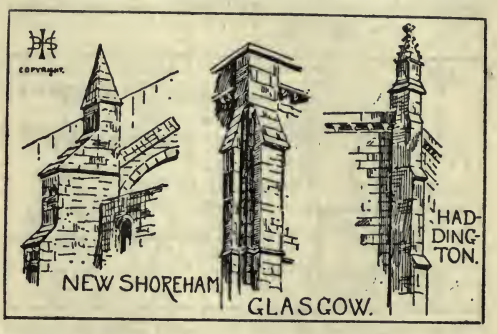
The buttresses in the 13th and 14th centuries become more prominent, and the pinnacle, giving additional resisting power to the buttress, soon appears in the Early English period. Angle buttresses in the 14th cent. are commonly set diagonally, instead of in pairs at right angles (fig. 109). The set-offs marking the stages of the buttress are either plain slopes or not uncommonly gable-shaped below, while in the Decorated period a niche is not infrequent.

THE SUMMIT OF GOTHIC ARCHITECTURE.

It is difficult, and indeed inadvisable, to try to assign any particular date or period for the summit

of Gothic architecture. In many points it continued to advance down to a very late date, more particularly in the development of towers and of the vault, but the decorative foliage certainly declines after the 13th century. For beauty of lighting nothing equals the so-called lantern churches of the 15th cent., but the window itself is perhaps at its best in the 14th. It is so with all arts; decadence does not come suddenly throughout the whole, but shows itself here and there, while the main trend is still forward. It would be much

FIG. 109.—BUTTRESSES.



easier to assign a definite summit to French than to English architecture. In France there is a more or less definite single effort culminating in the 13th century. In England there are continuous new impulses: vault, wall, pier, foliage, window, and vault again; each in turn seems to play the leading part.

FRENCH AND ENGLISH WORK.

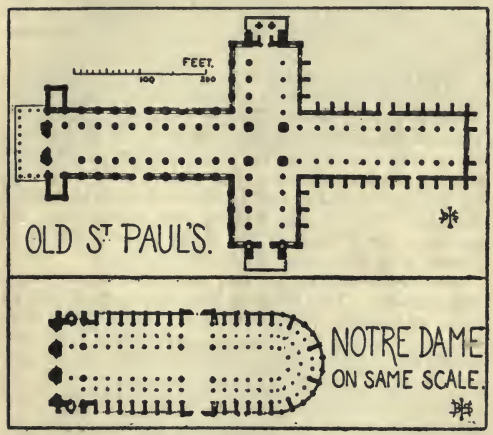
As said at the outset, the French and English styles are entirely different. A summing up at this point of a few of the differences between the plan of a great English and a great French church

may show that it is surprising, not that they are now seen to be different, but that any one ever thought they were the same.

The English church is long and narrow with three aisles. The French is short and broad with five aisles.

The English West Front is broad. The French West Front is narrow, in Notre Dame narrower even than the nave.

The English transepts project enormously beyond the main lines, and often the English church has two or three of these



FIGS. 110 AND 111.— METROPOLITAN CHURCHES OF ENGLAND AND FRANCE

projections. The French transepts hardly project at all, and one only is attempted.

The English church has a square East end. The French church has a semicircular chevet.

The English church has a long choir, generally more or less shut off from the nave, being largely the result of monastic influence. It has no side chapels. The French church is broad and open throughout, with a short choir, largely the result of lay influence, and has numerous side chapels dear to the laity.

The four enormous central piers in the English church show the central tower that dominates the whole. The French church has great Western towers, but nothing, or merely a 'flèche,' at the crossing.

The English church is cut up by screens and divisions. The French church is open (figs. 110–113).

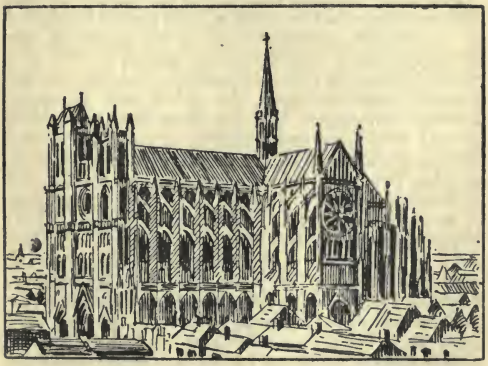
FRENCH AND ENGLISH INTERIORS.

The interior of a French church is hard to surpass. It is exceedingly lofty, which gives it a most impressive character. The internal effect of the chevet is often exquisitely lovely, and the grace of the proportions as a whole, width of bays, and width to height, is in every way admirable.

The English church in its interior depends for its impressiveness upon length rather than height, except where modern folly, as at Norwich, has planted an enormous organ that entirely destroys the whole *raison d'être* of the building, completely (not partially) blocking the vista which would be, in its way, perhaps the finest in the world. Both English and French effects are delightful, but perhaps the French is the finer. Yet there is no reason why they should not be combined.

FRENCH AND ENGLISH EXTERIORS.

But with regard to the exteriors there is no comparison. The English here loses something by want of height. (Visit Chartres, Amiens, and then Lincoln within two days of each other, and the result will be startling.) But the dominant central tower, the wonderful skyline, together with the tower-groups, the grand projecting transepts and fronts, with their fine shadow effects, make the French examples look in comparison a shapeless mass. Where there is a narrow tall twin-towered front, there is an unpleasant effect of an overweighted end suggestive of a giraffe. The Franco-German church of Cologne is perhaps the worst example of this effect. The differences extend to every molding and every detail, and to the spirit in which everything is carried out: the French is more logical, the English more picturesque.



FIGS. 112 AND 113.—LINCOLN AND AMIENS.

RECT-ANGULAR PERIOD.

THE DECLINE OF ENGLISH GOTHIC.—The last period of English architecture is marked by rectangular forms and horizontal lines, and is generally called 'Perpendicular.' This word in most minds is so closely associated with vertical, that 'Rectangular' is a more satisfactory name.

Roofs become nearly horizontal, tops of doors and windows and all the arches follow the same tendency. There is often an actual straight horizontal line, strongly emphasized, above these features, particularly in the case of doors. Horizontal-topped towers take the place of spires, horizontal transom bars appear in the windows, and horizontal-topped panellings, instead of niches, occur all over the walls. Even the foliage and other ornaments become rectangular in form.

The Early English period was an age of Ecclesiastic reform, and the work of that period is marked by a certain ecclesiasticism in its planning and arrangements. The Traceried period of the 14th cent. is the age of the great nobles; the very ecclesiastics themselves aped the pride and pomp of worldly splendour; and the churches, with their private chantries and heraldic ornament and such things, partake to some extent of this character, as Mr. Prior points out (*History of Gothic Art in England*, 1900). The people, too, are beginning to assert themselves. The worship of Our Lady being particularly the cult of the people in England, we find the Lady chapels being built all over the country, in most instances actually at the east end, and approached from behind the high altar. The ecclesiastic privacy of the monastic choir perforce disappears. During the Wars of the Roses, the great barons gradually vanished, and the trading classes made their influence felt. This is the age of the guild chantries, and above

all of the parish churches of the people. The large proportion of our parish churches belong to this date, and are built in the Rectangular style. Hardly a single great monastic church or cathedral was built at this time, although, of course, there was a certain amount of re-building and enlargement. The chantries and other extensions affect

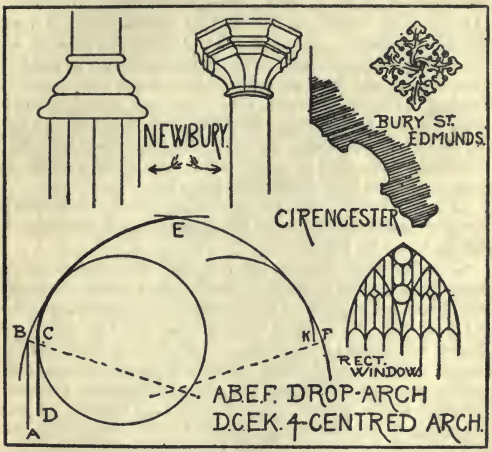


FIG. 114.

the plans of the churches, and tend to obscure all transeptal projections.

THE PIERS. The piers still belong to the Northern type, but incline to become meagre in their treatment both in section and in their capitals and bases (fig. 114). The S-shaped curve under the chamfered abacus is characteristic, as is also the curious cushion molding in the base and the bell shape above it. Capitals sometimes disappear altogether, and the mold-

ings run right round the arch without a stop. Foliage when found is rectangular in treatment (fig. 114).

THE ARCH AND ITS MOLDINGS.

The arches above show the same attenuation in the treatment of their moldings, and the distinction between the orders of the arch is often quite lost. The most characteristic feature is the cavetto, a wide hollow in the middle of the group (fig. 114). The arch, both in the main arcades and in the window, is often of the four-centred or of the three-centred variety. Most arches are struck from two centres, but a four-centred arch, while rising without a break from the springing, allows the crown to be comparatively flat (DCEK, fig. 114). A drop arch, as it is called, gives the flat crown, but produces a broken effect where it springs from the shafts (B, fig. 114).

THE TRIFORIUM.

The triforium, owing to the horizontal tendency in the roofs, practically disappears and becomes a mere band of ornament.

THE WINDOW.

The window gradually becomes a series of rectangular panels, partly as offering increased strength for the vast windows that become common, partly to further the easy arrangement in the glass of rows of saints standing in niches. Artistically both window and glass design is thus mechanical and decadent. Moreover, the monotonous reiteration of little standing saints in the tracery is out of scale with the larger size of the saints in the window lights below. It is a poor substitute for the interesting variety of glass designs in the varying shapes of the tracery lights in the heads of the 14th cent. windows.

The first step in the direction of rectangularity in the window is the horizontal transom bar, a feature borrowed from domestic work, where it had long been common. Next the vertical lines appear in the head of the window, at first timidly, they then ascend from sill to crown, and finally even

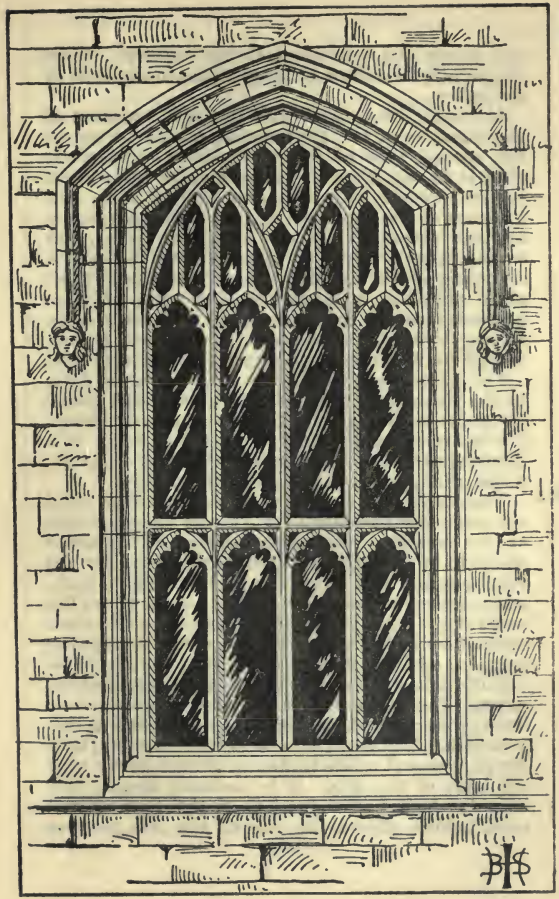


FIG. 115. WIN-CHESTER.

cut across the sub-arches of the tracery. These stages may be taken as rough clues to the date of a window.

It should be noticed that the vast majority of the windows of the Rectangular period belong to the second type of those previously considered: that is to say, that the sub-arches in their outer curves coincide with the main window arch. In the case of the depressed arches, that are common in this period, it is not at all an infrequent arrangement to bring the tracery down below the springing of the window arch. Occasionally, as at Winchester, a second window-arch of more pointed form is inserted under the main arch, leaving two small spandrels. The tracery is then brought down to the springing of this arch (fig. 115).

The square-headed window is a very usual form in the Rectangular period. It even occurs under the gable in the great East window of Bath Abbey. There are generally four cusps in the lights of a Rectangular window instead of two, which is the usual arrangement in the preceding period.

THE VAULT. The vault still continues its development until we reach the wonderful fan tracery characteristic of this country. The multiplication of tiercerons seems to have suggested a polygonal form for the vault-conoid, and from this to a circle is easy, and we reach the concavo-convex conoid of the fan vault (fig. 116). The desire to make the ribs clear each other at the same distance above the springing, to which allusion has been made above, doubtless had a good deal to do with the development. The architects of the Gloucester cloisters have produced a delightful piece of work on this principle. But there is one objection, namely, that the flat central space makes an abrupt break with the lines of the ribs. It is probably largely this that led to the introduction of the four-centred arch, which allows the line of the ribs to pass

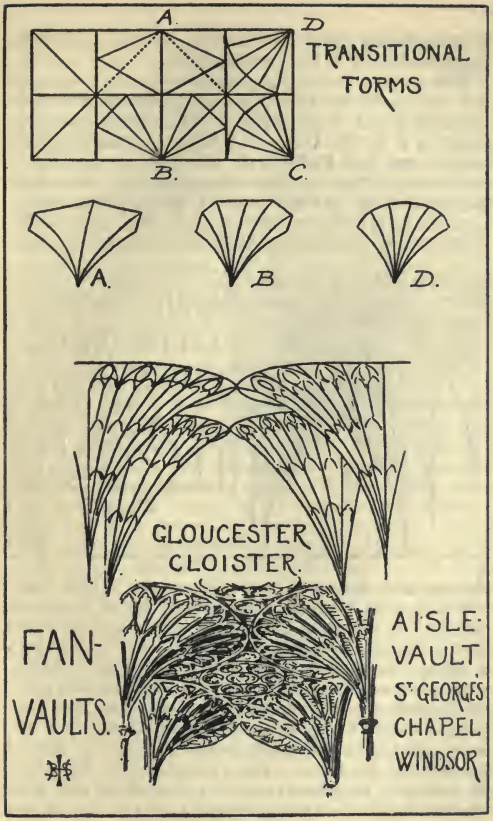
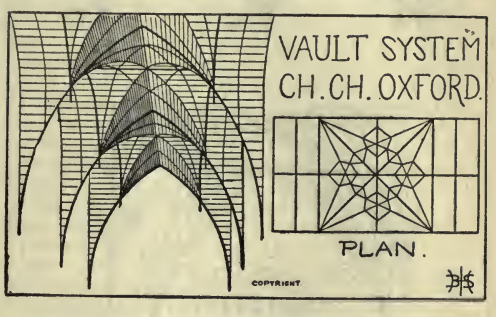

A.
D
TRANSITIONAL FORMS
B.
C.
A.
B
D.
GLOUCESTER CLOISTER.
FAN-VAULTS.
AISLE-VAULT
St GEORGE'S CHAPEL WINDSOR

FIG. 116.

imperceptibly into the central space. Compare Gloucester and Windsor (fig. 116).

This is very satisfactory for a vault over a square, but the problems of satisfactorily vaulting a rectangular space begin again. The most complete solution is by the Oxford architects in the Divinity schools and the Cathedral, which are not true fan vaults (fig. 116); and the same principle, somewhat meretriciously carried out in a true fan vault, appears in Henry VII.'s Chapel, Westminster. The principle is practically that of dividing up the

FIG. 117.



rectangular space to be vaulted into a new nave and aisles, as it were. The springings of the main vaults are then supported upon great transverse arches thrown across the whole space. In this way a square compartment is obtained in the middle, which is easy to vault, and the small minor compartments can be treated by some other method. In the case of the Cathedral at Oxford they are very effectively treated as barrel vaults. It should be noticed that every stone (voutain) of the vault is cut to fit its place, and is not wedged out with mortar behind as is practically invariable on the

Continent. This characteristic is quite a common feature even of early vaults in England. Alongside the development of the stone vault proceeds that of the open timber roofs; and the fine open timber roofs of this period are one of the great features of the style.

THE TOWER.

Perhaps the finest of all the features of this period is the tower, which presents an endless variety of beautiful forms. They are generally of several storeys, with an openwork parapet at the top. The buttresses are commonly set in pairs, showing the corner of the wall between, which gives a delightful emphasis of light and shadow to the outline of the tower. In decadent work, such as Magdalen College, Oxford, their place is taken by small octagonal turret forms.

In the finest examples the great windows are at the top of the tower, to which the rest are subordinated. The difficulty in the composition is satisfactorily to combine the vertical lines with the horizontal lines of the stages. Over emphasis of either spoils the effect of the whole. Possibly the Angel tower at Canterbury is the most successful of them all, which has a curious cross between the octagonal turret and the buttress form. There are turrets with small continuous buttresses, without set-offs, at each angle of the turret. Of those with spires, that at Louth is unsurpassable. An open crown upon the top of the tower, composed of converging flying buttresses, is a peculiarly Scots feature. St. Giles, Edinburgh, and the Cross Steeple, Glasgow, are examples. Newcastle is an English instance.

INFLUENCE OF DOMESTIC WORK.

The influence of domestic architecture upon that of the church is a subject of great interest which has hardly yet received the study that it deserves. In early days many of the problems were first worked out in the Norman castles. Later, the domestic window with its transom bars and the

beautiful open timber-roofs of the great halls had considerable effect upon church architecture. Of course, the plans and arrangements are different, but the spirit of the two is the same. Sometimes, as, for instance, in Belgium, the greatest achievements are in civil architecture; and although the bulk of these buildings in our own country have perished, such examples as the small Town Hall at Cirencester have a charm quite equal to that of the churches. But in any case, whether the building is for the Church, the State, the Borough, or the private individual, the artistic qualities triumph over the special difficulties involved in the particular instance, and the series of buildings—castles, cathedrals, halls, palaces, and churches—is as noble as that in any style.

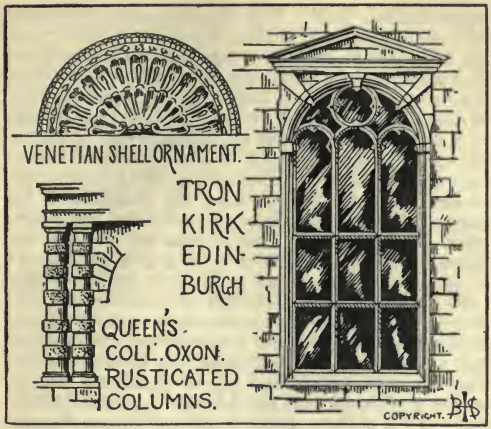


FIG. 118.—RENAISSANCE DETAILS.

CHAPTER XI

RENAISSANCE ARCHITECTURE

WHEN, at the time of the Renaissance, men's minds began to turn back to the glories of the classical epoch, the result was naturally seen in architecture as in everything else. It was also natural that the beginning of the architectural change should be in Italy, as was the case in other departments of the movement, particularly in view of the large number of actually existing remains

THE ITALIAN RENAISSANCE.

upon Italian soil. The development, however, was considerably stimulated by the discovery of the manuscript of Vitruvius Pollio, the architect of Augustus, who wrote the *de Architectura*. This famous treatise, in ten books, upon the architecture of the Augustan epoch, was translated into Italian in A.D. 1531. In spite of the impetus thus given to the study, it would appear to have been by no means entirely beneficial in its results. Vitruvius seems to some extent to have been the Palladio of his day, viewing the art in a cut and dried and somewhat lifeless manner, which was not without its effect upon his followers of a later generation. It is true that Vitruvius' work was drawn chiefly from Greek sources, although these were probably very late; but it must always be remembered that, in the main, Renaissance architecture was founded not upon the Greek but upon the Roman style—a style itself a hybrid and full of solecisms. Many of the criticisms that are brought against Renaissance work apply equally to that of Rome, in such instances as the profuse use of meaningless decoration, and the unintelligent application of features imperfectly understood, *e.g.* the architrave that supports no ceiling, the incomplete drums, flutings, or drafted stones copied from unfinished Greek work, and chopped off sections of entablature, as in the church of St. Spirito, Florence.

CLASSICAL FEELING IN ITALY.

It may be said that Brunelleschi, the Florentine, was the first great architect of the Renaissance. He produced a plan for the building of the dome of the Cathedral of Florence soon after A.D. 1407, which was eventually carried out. The spread of the style in Italy was extraordinarily rapid. The cause was very largely that the Gothic style had never firmly established itself in Italy: indeed, it may practically be said that it never penetrated to Central Italy at all. Even in Florence such an example as the famous campanile of Giotto has

hardly anything of the real Gothic spirit, in spite of the applied Gothic features and ornament. It is not the living organism of Gothic structure and ornament, but a simple rectangular block with an elaborate veneer of surface adornment. The Italian mediæval churches were mainly 'Latin' in motive, and it was natural that the Italian mind should turn whole-heartedly toward a style which it had never in essence entirely abandoned.

SPREAD OF THE STYLE.

From Italy the movement spread throughout Western Europe with varying degrees of rapidity, and was strenuously fought by the architectural traditions of the lands into which it made its way. The Renaissance style made no headway in the East, because the Greeks, who for centuries had been the most cultured people of Europe, were at this time overwhelmed by the Turks. In fact, the sack of Constantinople in A.D. 1453, although it was the final blow to Greek civilization in the East, scattered the Greeks over Europe, and very largely made the Renaissance what it was.

DIVISIONS OF THE STYLE.

In the case of any revival or Renaissance style, it is always more difficult to make a division into periods than in the case of a style of true growth; because, in the first place, the individual factor is stronger, depending upon study and research, and also at any moment fortuitous circumstances may combine to make a particular building a more complete representation of the old style. But it may be said that Renaissance architecture was by no means wholly a 're-naissance'; it was in many respects a living style. And it may be noticed that it did pass through three more or less clearly marked stages, although these vary considerably both in manner and in date in different countries.

The first period is marked by a distinctly Gothic tendency, besides showing a comparatively limited knowledge of the nature of ancient work.

The second period, the period of maturity,

shows a much greater knowledge of classical detail and arrangement, and is marked by a much more definitely classical spirit. The picturesque irregularity of Gothic planning and elevation gives way to a precise and calculated symmetry. The style reaches its zenith and exhibits itself in many of the world's noblest buildings, although the lover of Gothic architecture will always feel a certain coldness about them, and the lover of Greek architecture will be repelled still more by their lack of spontaneity, subtlety, and delicate restraint. In the work of the second Spanish period there is a certain restraint, it is true, but it is rather a formal coldness, and does not resemble the reserved but intense passion of Greek work. The nearest approach to the true Greek restraint is in the best work of Florence. It is to this second period that we have to look for the true work of the Renaissance. It is here that we learn what are really its characteristics. The first period is but one of transitional preparation, and the last of over-ripeness and decay.

The third period, sometimes known as the 'Rococo,' is marked by exaggeration, ostentation, and a still more mechanical application of rule, which proceeds side by side with a tendency towards slavish reproduction of ancient work. The latter tendency resulted in what is sometimes called the 'neo-Classic revival,' doubtless hastened as an antidote to the extravagances of the Rococo.

THE FIRST PERIOD.

In the first period, then, the new style was fighting its way. Even in Italy, although the architects themselves were probably completely unconscious of the fact, the influence of Gothic work was quite marked, whereas in other countries the Gothic influence for a long time remained paramount, and the period of transition was enormously prolonged. In France, even in late Renaissance days, when Wren was building in England in a

severely classical style, the high roofs and other features betray a Gothic origin.

In Florence, although the classical orders were used, they were very much subordinated, and in comparison with later work their use seems timid. Their actual scale was small, and this also was the case with the ornamental features which are characteristic of Gothic work. There was still a tendency towards that multiplicity of parts which characterizes Gothic feeling. Windows are generally round-headed, often with sub-arches in the typical Gothic manner, and occasionally they even contain a sort of tracery, especially in France and Britain (fig. 118). Even pointed arches are used, particularly in Venice, as in the Doge's palace.

In Florence great use is made of rustication—one of the typical affectations of the Renaissance, which seems to have had its origin in ancient Roman work, where unfinished Greek work was copied in which only the outer borders of the stones had been dressed. Ugly and meaningless as it frequently is, particularly in its aggressively finished forms, it is not so hideous or so foolish as the leaving of occasional square blocks in a round column—a device that even the most extreme admirer of Renaissance work does not attempt to defend. This, however, does not appear until the style is more or less advanced. It becomes common in France during the reign of Charles IX. (A.D. 1560–1574). Rustication was never popular in Venice, where there had always been a certain true Gothic feeling, mingled with Byzantine, which was distinctly opposed to anything Roman. Indeed, it was doubtless partly a survival of this feeling that caused the Renaissance style to be reluctantly adopted in Venice only when the 16th cent. was well advanced. A rather charming device common in Venice at this period may at this point be noted, namely, the so-called shell ornament (fig. 118).

Another objectionable feature, apparently first used by Alberti in St. Maria Novella at Florence, in A.D. 1470, is the inverted console placed above the aisles. Presumably it may be regarded as the successor of the flying buttress of Gothic work, but it is utterly unfitted to perform any function structurally or æsthetically. A curve suited for a small decorative bracket becomes ridiculous when applied to a feature of the main composition over a score of feet in length (fig. 119).

THE RENAISSANCE IN THE NORTH.

On the whole, it may be said that, although many churches were built in Italy during the Renaissance, partly as a result of the counter-Reformation of the Jesuits, in the North the Gothic epoch had more than supplied all the churches that were required. Hence, religious buildings in the North, particularly during the first period, are comparatively rare, and it is only in such instances as the churches of London built after the Great Fire that there is anything very extensive in the way of ecclesiastical work. It was rather a palace-building epoch, such as is shown in the great *châteaux* on the Loire, of which the Château Chambord may be taken as typical. In the North, Renaissance architecture made its way very slowly, at first appearing only in minor accessories such as altars, tombs, pulpits, doorways, and occasional enlargements, as the apse of St. Pierre at Caen. When the main fabric itself is attempted, the result is a building entirely Gothic in planning, arrangement, and construction, and the surface ornament merely is of the classical type. Pilasters take the place of buttresses, and cornices the place of corbel tables, and so on, as, for example, in St. Eustache, Paris —an excellent specimen of the first period of Renaissance work in France.

In Britain, although Inigo Jones and Wren introduced a pure classical style earlier than anything of the kind in France, this transitional feeling con-

FIG. 119.

tinued in some districts much longer, particularly in Oxford. A window from Edinburgh (fig. 118) is a good instance of this composite style. As late as 1648–1652 the charming little church of Berwick-on-Tweed affords a most pleasing specimen of the fusion of the two styles.

In the South of France much work was done by bands of travelling Italians, who have left there a marked impress upon the minor features of the period. In the main it is true that French work of the time of Francis I. (1515–1547) is marked by a special elegance peculiar to itself. It is doubtless the outcome of the elegant French-Gothic acting upon the Renaissance style, and applies especially to domestic examples. In England the Early period, which may be said to cover the reigns from Henry VIII. to James I., may be divided into two. The earlier part, from the close of Henry VII.'s reign to the death of Edward VI., is marked by Italian influence, as in the case of Torrigiano's tomb made for Henry VII., and the later part is marked by Flemish and German influence; but throughout the whole period everything is tentative and experimental.

THE SECOND PERIOD.

In the second period we have the matured Renaissance style, when buildings were classical not only in detail, but in spirit. This may be said to have been inaugurated in Italy when in A.D. 1506 Bramante commenced the church of St. Peter's in Rome, a date which was about contemporaneous with the very first beginnings of Renaissance influence in Britain.

In this second period the picturesqueness of Gothic planning almost entirely disappears. It is, however, to be noticed that the great cross plan of the large churches, although carried out in a severely symmetrical manner, is the indelible impress of the Gothic hand upon the succeeding age. Even St. Peter's itself is so planned. Not only so, but, in the case of both St. Peter's, Rome, and of St. Paul's, Lon-

don (figs. 110 and 124)—the two greatest buildings of the style—the more severely symmetrical plan of the Greek cross, as designed by the architects, was altered to the long-naved Latin cross in deference to Gothic tradition. Both churches suffered by this arrangement, St. Peter's very seriously.

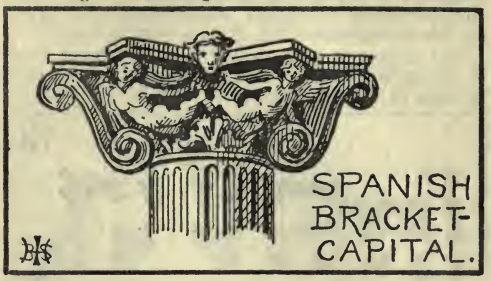
The orders in this period are no longer used in an unobtrusive manner, but become, except perhaps in Florence, the main feature of the style, THE ORDERS.

FIG. 120.

although, as in ancient Roman work, they are generally little more than mere ornament unrelated to the anatomy of the building. They are usually treated on Roman lines; but there was considerable latitude, the shafts occasionally being even fluted spirally, or wreathed with foliage and fruit, or, worst of all, broken by square or round (fig. 118) blocks. The Tuscan order becomes clearly defined in Renaissance work as a separate order.

In Spain a new kind of capital appears, termed the 'bracket capital,' in which two or more brackets spring from the head of the column. It has the advantage of reducing the strain on the architrave.

FIG. 121.



In the best designed work one order is used for each storey; and in France this arrangement was practically universally observed. This was owing to the supreme influence in that country of Barozzi da Vignola, author of *The Five Orders of Architecture*, who had been brought back to France by Francis I. But in Venice Palladio introduced a system wherein one order ran through two or more storeys, minor orders being introduced in the storeys themselves. This unsatisfactory arrangement, which still further degraded the orders as mere applied ornament, unfortunately became popular in Britain, owing to the influence of Palladio, who was the inspirer of Inigo Jones.

DISTINCTIONS OF STYLE.

One might even make a division of Renaissance architecture according as the orders or the windows formed the main element of the wall design. The latter is distinctly more Gothic in feeling, and is found more particularly at the beginning and end, before the Gothic art had quite disappeared, and after the Renaissance had spent its force. To

some extent the division would be one of locality. In Florentine work the order is always less dominant than in either the school of Rome or that of Venice, and this distinction may also be noticed in those countries respectively influenced by these schools.

The column itself frequently bears the arch, particularly in early work, although the more usual arrangement is a massive pier with attached pilasters. Occasionally the unpleasant device is used of a section of entablature above the columns from which the arch is made to spring.

MOLDINGS, ETC.

The moldings of the orders and other parts were the simple circular sections of Roman work. The great series of receding moldings on the arches of Gothic architecture were replaced by square soffits; and string courses and moldings generally become comparatively scarce. Effect is given by strongly marked entablatures dividing off the storeys of the building, and altogether horizontal features become very pronounced. In Italian and particularly Florentine work, a great cornice of very large proportions is often used on the top storey, suited in its size to the whole height of the building and not merely to the storey in which it occurs. This on the whole gives a pleasing effect with its marked shadow line.

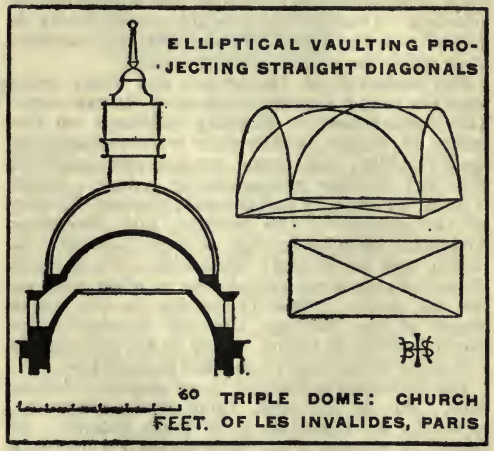
ORNAMENT

The ornament is founded upon classical Roman work; but in the best Renaissance examples, especially in Florence, it is more refined. It should be noticed that Renaissance carving was almost invariably executed after the building was set up. In Gothic buildings every stone was completed before it was put into its place. The result is that the jointings often cut unpleasantly across Renaissance work, whereas Gothic jointing and the carving-design are thought out together. It is simply one aspect of the principle that the Gothic pile was always essentially a building;

the Renaissance pile was rather a monument, treated somewhat after the manner of a picture.

VAULTING. The old Roman ribless vault was revived, at least in form, but a considerable geometrical improvement was made. In the plain barrel form it remained semicircular, but in the case of intersecting vaults over a rectangular space the curve of the vault was made elliptical, so that

FIG. 122.



the diagonal groins might be projected as straight lines upon the plan (fig. 122). It should, however, be observed that in an enormous number of cases the vault was a mere plaster sham, and not part of the construction, as in Roman or Gothic work. All roofs in Italy were hidden within by ceilings, but in France and Germany the open timber-roof was made an important feature. The roof

is of low pitch, and in the majority of instances so low that from most points of view the parapet forms the sky-line. In France, however, we find the high 'Mansard' roof; and in Germany the high roof with tiers of dormer windows is a very common feature. The fact is that Germany never wholly adopted the Renaissance style until long after every other country in Europe, and these high roofs are mediæval in character.

THE DOME.

The glory of the style is the dome, which in its general treatment follows the Byzantine method. There is almost universally a drum, as in the second Byzantine period; but it is made an even more important feature, and very commonly is enriched by a colonnade. It was usual to build these domes with an outer and an inner shell of different curvature and a space between. The outer dome is frequently a mere timber-framed erection, resting upon the other, as in Sansovino's S. Giorgeo dei Greci at Venice, or the outer dome of the Église des Invalides, Paris, which consists of three domes (fig. 122). In this connexion may be noticed the very great use of carpentry all through Renaissance work, which has been compared by some writers to the modern use of iron. St. Paul's, London, has an outer and an inner dome, with a brick cone between. St. Peter's, Rome, has two brick domes.

SPIRES.

Renaissance spires were not of common occurrence save in England and Spain. They seem to have been invented first by Sir Christopher Wren, but the Spanish use is possibly independent.

OPENINGS AND WALLS.

In the second period round-headed windows were less frequent, and square-headed windows, often with small pediments over them, were the rule. The rustication, so common in Florence in the early period, was now generally confined to the quoins, as in the Pandolfini Palace designed by Raphael, and more or less freely copied in The

Travellers' Club, London. At the same time there was a tendency for all wall space to disappear, and for the whole surface to be covered with an exuberance of applied architectural features. The detail and moldings became more vigorous and elaborate, but lacked the earlier refinement.

The Roman method of building had been largely one of veneers. The inner part of the wall was of inferior material, but the outside was cased with fine stone or more often marble. The Romanesque Gothic had made use of a double wall with a rubble core, derived from Roman use; but this system was gradually abandoned, and in the best Gothic work the wall was built solid, or at least all the face stones were bonded into and formed an integral part of the wall. The Renaissance architects realized that this was a better system, and endeavoured to follow it out in their work. At the same time veneer was not infrequently used, and plaster facing was by no means uncommon. This was particularly so in the last period, when panels, cornices, and ornaments even upon the exterior were of plaster—a most unsatisfactory arrangement.

ITALIAN SCHOOLS.

In Italy itself it may certainly be said that there were three distinct schools of the art:

(1) The *Florentine*, which depended largely on fenestration, and in which the orders played a secondary part. It was very severe, with a breadth and vigour of treatment exemplified in the due sense of the value of contrast as applied to plain wall surface and ornament, and again in the effective depths of shadow given by deep recesses and heavy cornices. It is marked by extreme delicacy in the ornamental carving.

(2) The *Venetian*, which was shallower and more pompous, with great ornaments introduced for ornament's sake, often coarse and over-insistent. There is less severity, and many curves give a

weakness of effect. Orders of varying heights are used, and are often piled upon other orders somewhat indiscriminately.

(3) The *Roman*, which is midway between the two in severity. It is marked by great pilasters of the whole height of the building, so as to give the effect of one storey, and in consequence of this it has had a greater influence upon church architecture. The pilaster and not the column is used, as the inter-columniations upon so huge a scale would make the span of the architrave impossible.

In the third period there was a distinct decline, and a great deal of extravagance and affectation, such as broken entablatures, and pediments, and curved and irregular cornices. In Italy there is a peculiar lack of inspiration, and the work of Maderno and Bernini may be taken as typical. One of the most pleasing examples is that of St. Maria della Salute, by Longhena, in Venice (A.D. 1632). Its proportions and general mass are excellent, although the details leave something to be desired. Doubtless it owes a great deal to its situation. St. Genevieve (The Pantheon), Paris

THE THIRD PERIOD.

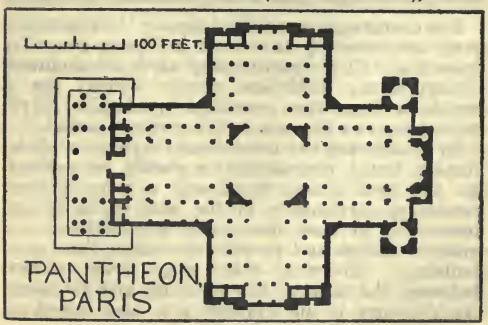
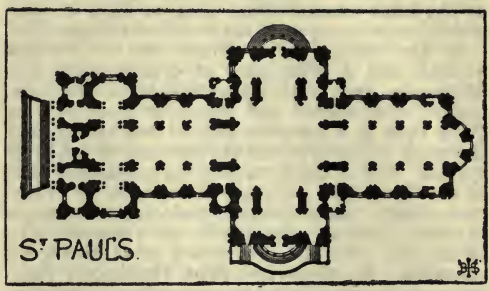


FIG. 123.

(A.D. 1755), although greatly superior to most work of the time, belongs to this period. It was built from Soufflot's designs, and is interesting as having the smallest amount of area of supports of any Renaissance church, comparing even with Gothic work in this respect. Compare its plan (fig. 123) with that of St. Peter's (fig. 120) or St. Paul's (fig. 124). It has not been successful, however, for it has been necessary to prop and support it several times.

FIG. 124.



The extravagances of the 'Rococo' in France are even surpassed by the work in Spain generally known as 'Churriguerresque,' after the architect Churriguerra, doubtless partly caused by a revulsion from the over-bald mechanical style of such men as Herrera in the previous period.

GENERAL CHARACTER.

In considering the Renaissance style as a whole, certain broad characteristics should be noticed. In the first place, there was a very distinct tendency, particularly in the case of its Italian inventors, to view the whole composition as a matter of line and proportion rather than as a building. There is often very little relation between the uses of the building and its form. Architecture is an applied art, and therefore,

unless it be well adapted to the function that it has to perform, it cannot be a success. But, further, it is not only upon these grounds that so much Renaissance work must be condemned. Even upon æsthetic grounds, in the erection of a monument as distinct from a building, it is necessary that the thing should form an organic whole; and a column which is the outcome of the æsthetic endeavour of many ages to express the beauty of support, is clearly out of place when it supports nothing. The concealment of construction and arrangement is a similar but different question. An enormously heavy lantern, rising above what is apparently a dome of light construction, may, it is true, be defended upon the grounds that it is obvious that there must be some further support within. The eye would, however, probably be æsthetically more satisfied if there were some indication of this support, as otherwise there is considerable though not absolutely certain danger of the artistic unity being marred. To treat the matter as a moral question is, of course, absurd, and simply shows entire ignorance of the nature of all æsthetic philosophy. One might as well argue that a portrait was false because it was not flesh and blood but paint and canvas. But there is no doubt that Renaissance architects were in the habit of sailing very near the wind, and there is frequently a distinct want of harmony in their work. Some of the faults are directly traceable to Roman influence, and it is a pity that the greatest of the Renaissance architects were not better acquainted with Greek work, not merely in detail, but viewed as an artistic conception. As contrasted with Gothic work, Renaissance work—as is also the case with both Greek and Roman work—is more concerned with the building as a whole than with the parts. It is this that

makes the exact repetition of similar parts a possibility. But when the Renaissance architect —as was not infrequently the case—allowed the quality of the detail to suffer, although he may find precedent in Roman work, he falls far behind that of Greece, whose detail was the most exquisite and subtle of any architecture in the world.

PROPORTION.

Connected with the desire to form a pleasing whole, is the immense attention paid to proportion and also to symmetry, which was regarded as the best means of attaining this end. With regard to proportion, it is doubtful whether, with all their rules and formularies, the Renaissance architects were on the whole more successful than those of the Gothic era in this respect. A certain level was maintained; but if these laws were a check against falling below, they were also a check against rising above. For an interior vista the Renaissance architects never surpassed such an one as Amiens. The proportions of the bay designs of most of the great Gothic cathedrals are admirable. With reference to their exteriors more may be said; but as regards the proportionate disposition of its masses, it would be hard to find any Renaissance building to rival Durham: certainly not St. Peter's, Rome, whose façade and minor cupolas are entirely out of proportion with the rest. It is true it is a work of many architects, but so is Durham. St. Paul's, London, is perhaps the one rival; and St. Paul's, taking all things into consideration, is the finest of all Renaissance buildings. As for façades, the simple inevitableness of such an one as York Minster has deprived it of the praise it deserves. A façade such as that at Certosa will not stand comparison for a moment, neither will that of the Invalides at Paris nor the Pantheon, good as far as it goes, and certainly not Bernini's façade to St. Peter's. Again St. Paul's is the only possible rival.

A great deal of nonsense has been talked about Renaissance proportions. One of the most characteristic qualities of Renaissance work is its treatment of scale. The parts themselves are few in number, but of great size. The result is to give the impression of the building as a whole being very much smaller than it actually is. St. Peter's, Rome, is the largest church in the world, but in effect of size it is surpassed by many a Gothic cathedral not approaching it in area. It is probable that the contrary result was expected, but such is the fact. It is true that there is a certain calm and even dignity about the system, but this should rather be set against the loss of mystery and suggestiveness.

Renaissance architecture is largely the product of scholarship, and as such it challenges criticism in a way that is not the case with less 'studied' styles. It is therefore easy to form an erroneous notion of its value as a style in the architecture of the world, and to fail in giving it the place that it deserves.

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GLOSSARY

ABACUS: The flat slab or uppermost member of the capital. It may be square, round, etc., v. p. 34.

ABUTMENT: A wall, pier, or buttress that receives the thrust of an arch.

AISLE: The interior longitudinal divisions of a columned building. The term is generally applied only to the side aisles, but occasionally to the central aisle or nave.

AKANTHOS: A plant whose leaves somewhat resemble those of the thistle.

AKROPOLIS: A citadel—literally the top of the city.

AMBO (pl. ambones): A pulpit in the choir whence the Gospels and Epistles were read.

AMBULATORY: A passage to walk in, nearly always confined to the aisle round the end of the choir.

AMPHI-PROSTYLE: v. p. 71, and fig. 32.

ANKONES: Projecting portions of stone left on blocks for purposes of handling. Also the brackets or consoles supporting the cornice of Ionic doorways.

ANNULET: A small molding encircling a shaft or column.

ANTA: A flat column of rectangular section attached to a wall, v. p. 69, and fig. 31.

APOPHYGE: The slight curve given to the ends of a classical column where it expands to meet the capital or base.

APSE: A semicircular termination or projection in the plan of a building, v. fig. 85.

ARCADE: A series of arches upon columns.

ARCHITRAVE: The lowermost of the three members of the entablature, v. p. 35.

ARRIS: The exterior angle of two surfaces; an edge.

ASHLAR: Hewn or squared stone work, as opposed to rubble.

ASTRAGAL: A small, projecting, round molding, v. fig. 27.

ATRIUM: The entrance court of a Roman house. It occurs also in early Christian churches.

ATTIC: Belonging to Attica, the country of Athens. Also a low storey above an entablature.

BALUSTER SHAFT: A small shaft of more or less bulbous outline.

BAPTISTERY: A separate building, or part of a church, used for baptism.

BARREL VAULT, or WAGON VAULT: A vault shaped like a half barrel, v. p. 188.

BASE: The lowest member of a column or shaft.

BASE-MOLD: The molding of a base.

BASILICA: The public hall of the Romans. Christian Basilica, a form of church, v. cap. VI., for full discussion of subject.

BAY: A compartment or vertical division of a building, generally repeated.

BEAD: A small, round molding sunk flush with the main surface, fig. 27, p. 54.

BED-MOLD: The moldings of the cornice immediately below the corona.

BEMA: The presbytery or chancel, a term generally used of the Eastern churches.

BOWTELL: A round projecting molding.

BUTTRESS: A projection from the wall to form an additional support.

CAMPANILE: A bell-tower.

CAPITAL: The uppermost member of the column, that spreads out to take the burden, v. p. 34, Doric Capital. English Capitals, pp. 184, 201, 215.

CATACOMBS: Underground passages used for burying.

CAVETTO: A wide, hollow molding.

CELLA, or NAOS: The main building or cell of a temple, containing the temple image.

CHAMFER: A sloping or bevelled edge. When hollowed out it is called a hollow chamfer.

CHAPTER HOUSE: The building in which the Chapter (governing body of Cathedral or Abbey) meets.

CHEVET: A semicircular or polygonal eastern termination, with an ambulatory round it.

CHOIR: The term is generally used to include the choir proper, where are the singers' stalls and the presbytery, q.v.

CHURRIGUERRESQUE: Late Spanish Renaissance work, sometimes known as Plateresque, v. p. 238.

CIST GRAVES: Graves with cists or chests like coffins.

CLERESTORY: An upper wall or storey containing windows, v. p. 180, also p. 76.

CLOISTER: A covered ambulatory. (The cloisters are generally arranged round three or four sides of a quadrangle next the church, called the cloister garth.)

CONOID: v. Vault.

CONSISTORIUM: The place of assembly of an ecclesiastical council or court. (Also used of the Assembly itself.)

CONSOLE: A bracket or corbel in classical architecture.

COFFER: A deep panel in a ceiling.

COLONNADE: A series of columns.

COLUMN: A round simple pillar, including base, shaft and capital to be distinguished from the pier, v. p. 30 et seq.

CORBEL: A projecting stone or bracket in Gothic architecture; commonly carved.

CORBEL TABLE: A series of corbels supporting a parapet.

CORNICE: A projecting molded member. The uppermost of the three members of the entablature.

CORONA: The flat-faced member of the cornice, v. bottom of p. 36.

CRAMP, or CRAMP IRON: A piece of iron bent at each end and let into the upper surface of two stones, when their vertical faces are joined, so as to hold them together.

CUPOLA: A circular or polygonal concave ceiling or roof. The exterior is more often termed a dome.

CUSHION CAPITAL: A cushion-shaped variety of Anglo-Norman capital, v. fig. 93.

CUSP: A point formed by the meeting of two concave curves. In Gothic architecture a point so formed between the foils of the tracery.

CYMA: A molding formed of a compound curve, concave and convex. The cyma recta has the hollow above and the round below. The cyma reversa, or ogee, has the round above, v. fig. 27.

CYMATIUM: The uppermost group of moldings in each sub-division of the entablature. The term has no reference to the form of the moldings, which may vary, v. p. 36.

DENTIL BAND: A band of dentils or small projecting blocks used principally in bed moldings of Korinthian cornice, v. top of fig. 23 and bottom of fig. 45.

DIAGONAL RIB: A rib crossing a vault diagonally from corner to corner.

DISTYLE: Having two columns.

DOME: A hemispherical roof. The term is also applied to a polygonal roof of the same nature.

DOMICAL VAULTS: A vault rising to the crown, and therefore assuming somewhat of a dome shape.

DORMER WINDOWS: A window in a sloping roof placed in a small vertical gable rising from the face of the roof.

DOSSERET: A kind of upper duplicated capital, v. p. 143, and fig. 65.

DOWEL: A wooden or iron pin used for joining the stones in a building.

DRAFTED STONES: Stones with a dressed border, the centre being left undressed.

DROP ARCH: An arch struck from centres below the level of the springing.

ECHINOS: Literally a hedgehog or sea urchin; the main portion of the Doric capital that approximates to the shape of the latter. The term is sometimes applied to any molding of similar contour, v. p. 34.

EDGE ROLL: The roll or bowtell at a corner or edge, especially common in Norman work.

ELEVATION: The projection of a building upon a vertical plane, as opposed to the "plan" which is projected upon a horizontal plane.

ENTABLATURE: The portion of a classical building above the columns, v. p. 32 and 35.

ENTASIS: A slight bulge or swelling in a column, v. p. 57.
EXO-NARTHEX: Outer narthex.
EXTRADOS: The outer face or curve of an arch or dome, opposed to Intrados.
FAÇADE: A face or front of a building.
FACIA: A broad fillet, band, or face.
FAN-VAULT: v. p. 218 and fig. 116.
FENESTRATION: A window arrangement.
FILLET, or FILLET MOLDING: A small, flat, projecting face or band, v. fig. 27.
FLÈCHE: A small spire.
FLUTINGS: Small hollows or channels in a column, v. p. 34 and fig. 20.
FLYING BUTTRESS: A buttress in the form of an open arch, generally carried over the aisle of a building, v. p. 194, fig. 97.
FRIEZE: The middle member of the entablature, v. pp. 32 and 36.
GABLE: The triangular topped, exterior wall of a building.
GLYPH: A channel or fluting in the Triglyph, v. p. 36 and fig. 21.
GROIN: The edge formed by the intersection of two vault surfaces, v. p. 188 et seq.
GUILLOCHE: An ornament in classical architecture formed by interlacing bands, like a continuous figure of eight.
GUTTA: A small ornament resembling a drop, used under the mutules and the tænia of the architecture in Greek architecture.
HEADER: A stone set transversely in the wall, as opposed to stretcher, which is set longitudinally.
HOOD-MOLD, or DRIPSTONE: The projecting molding over the top of an arch.
HYPÆTHRAL: Having some part open to the sky.
IKONOSTASIS: A screen with figures upon it, v. p. 141.
IMPOST: The springing of an arch, the point of junction between the arch and the pier or support.
IMPOST MOLDINGS: The moldings at the impost.
INTER-COLUMNIATION: The space between columns.
JAMB: The side or vertical piece of a window, door, or other opening.
JOISTS: The timbers upon which the floor is laid.

KREPIS: The platform or stylobate in Greek architecture, v. p. 32.

LANCET-WINDOW: A narrow, pointed window (mainly used in 13th century).

LANTERN: An open tower (or even a dome) throwing light into a building, v. p. 174 et seq.

LARNAX: A coffer or box.

LEAN-TO: A minor building whose roof in a single slope rests against the main building.

LIGHT-WELL: An open shaft for the admission of light.

LINTEL: A horizontal beam or block of stone spanning an opening.

LOGGIA: A covered space like a portico with an arcade open to the air. It may be on any storey.

MEGARON: A hall or main chamber, v. p. 14.

METOPE: The slab between the triglyphs, v. p. 36.

MODILLION: A projecting bracket below the corona in the cornice of the Korinthian and composite orders, v. fig. 45.

MOLDING: Narrow bands of ornament depending for their effect upon the curves in the contours of their sections. The surface of the moldings are often carved with superficial ornament, v. p. 53 et seq., and figs. 27 and 28, also figs. 98 and 104.

MULLION: The vertical bar dividing the window lights.

MULTAPSIDAL: Having many apses, v. p. 175 and fig. 85.

MUTULES: The projecting blocks under the corona of the cornice in Doric architecture, one above each triglyph and metope, usually with guttæ on the under side, v. fig. 21.

NAOS: v. Cella.

NARTHEX: An outer vestibule, at the opposite end from the altar, into which catechumens and penitents were admitted; sometimes a space screened off within the church, v. p. 116, fig. 58, etc.

NAVE: The part of the church west of the crossing; the term is frequently confined to the central portion excluding the aisles.

NAVE-ARCADE: The main arcade on the ground floor dividing the nave from the aisles.

NECK: The place where the capital joins the column.

NICHE: A recess in the wall, generally for a statue.

OGEE: A compound curve, concave and convex, v. p. 208 and fig. 107 A. In Greek architecture known as the cyma reversa, q.v.

OPUS INCERTUM and OPUS RETICULATUM: v. p. 106 and fig. 53.

ORDER: A term given to the varieties of classical architecture, v. p. 30. The term is also used of the steps or recesses in a Gothic arch, p. 185, fig. 93.

ORTHOSTATAI: The facing blocks at the foot of the wall, equal in height to two or three courses, v. pp. 6 and 28, also fig. 1.

OVOLO: A convex classical molding, a quarter circle in Roman work; parabolic or hyperbolic in Greek, v. fig. 27.

PARAPETASMA: A curtain or veil; used to screen or protect the temple image.

PEDIMENT: A gable in classical architecture.

PENDENTIVE: A spherical triangle below the dome proper which enables it to be carried upon columns or other detached points of support, v. p. 137 et seq. In Gothic architecture the term is sometimes used of the cell of a vault, i.e. the portion between two ribs that spring from the impost.

PERISTYLE: A range of columns entirely surrounding a building.

PILASTER: A flat column attached to a wall.

PINNACLE: A small, pointed or spire-like termination; generally above a buttress.

PLAN: The projection of a building upon a horizontal plane, or a horizontal section of a building. Ground plans: the arrangement of the parts upon the ground irrespective of level.

PLINTH: A block or portion of coarse masonry below the base of a column, also applied to the projecting face at the bottom of a wall.

PODIUM: A lofty triforium upon which a building is placed.

PORTICO: A shallow porch with columns in front. It need not necessarily be upon the front of a building.

PRESBYTERY: The part of the church containing the altar, beginning at the eastern termination of the stalls and ending with the main building, not including the lady chapel or other appendages.

PRINCIPAL: The large rafters occurring at intervals which mark off the roof into bays.

PROPULAIA: A gateway or entrance. τὰ προπύλαια strictly means the parts before the gateway, and the term is only applied to a gate with a portico both before and behind, v. fig. 10.

PROSTYLE: v. p. 71 and fig. 32.

PURLIN: The horizontal timber resting on the members and supporting the common rafter.

QUADRIPARTITE VAULT: A vault divided into four parts by two intersecting diagonals, v. fig. 95 VII.

QUATREFOILS: An ornament divided by cusps into four lobes or foils, which may be either round or pointed.

QUOINS: An external angle of a building. Quoin stones: the corner stones.

RAFTERS: The sloping timbers of a roof.

REBATE: A rectangular sinking, recess, or half groove like a step, formed by cutting away the edge of a solid.

REGULÆ: The small, rectangular projections below the triglyphs, v. fig. 21.

RETROCHOIR: The chapels, etc., behind the high altar. The term is generally used of an open space that is more than a mere ambulatory between the high altar and the east end or eastern chapels.

RIB: A projecting band of stone on the groin of a vault, v. p. 190 et seq.

ROCOCO: A debased variety of ornament of Louis XIV. and XV., marked by meaningless scrolls and shell work; often applied to the late ornate periods of the French Renaissance.

ROLL AND FILLET: A roll molding with a fillet upon it, v. p. 204.

ROOD: The large crucifix at the entrance to the chancel, with figures of the Virgin and St. John.

ROOD LOFT: A beam, or screen, or loft supporting the rood.

RUBBLE: Coarse walling of rough and irregular stones. The core or inside of a pier or wall is often of rubble when the exterior is of ashlar.

RUSTICATION: Ashlar work with deep channels to mark the joints between the stones. The surface is generally artificially roughened.

SCALLOPED: Cut like the edge of a scallop or cockle-shell. Scalloped capital, v. fig. 93.

SCANTLING: The sectional dimensions of a piece of timber.

SCHOLA: The lodge room of the Roman sodalicium or friendly society, v. foot of p. 115.

SCOTIA: A large, hollow molding, v. p. 53.

SCROLL MOLDING: The molding, with a section showing an overlapping edge like a scroll. Common in the abacus of decorated capitals, fig. 104, v. Capital from Bradford.

SEXPARTITE VAULT: v. p. 192 and fig. 95 VIII.

SHAFT: The part of a column between the capital and the base in Gothic architecture. The term is applied to the small clustered columns surrounding the central core.

SHAFT GRAVES: A grave approached by a vertical shaft or well-like opening.

SHELL VAULT: A vault built as a light shell as contrasted with the solid concrete vaults of the Romans and their successors.

SILL: The horizontal piece of stone or timber at the bottom of a door, window, or other opening.

SOFFIT: Literally the ceiling; applied to the under side of arches, entablatures, etc.

SPANDREL: The triangular space between an arch and a rectangular shape over an arch. Also applied to similar spaces, e.g. the triangle between a pair of arches and the horizontal string course above them.

SPLAYED: The expansion given to an opening by sloping or bevelling the sides.

SQUINCHES: The small arch across the interior angle for the support of a tower, dome, etc.

STILTED ARCH: An arch which has a vertical portion intervening between the capital and the springing of the arch proper, v. p. 190.

STILTED VAULT: v. Stilted arch and foot of p. 188.

STOA: A portico with a colonnade.

STRAIGHT-SIDED ARCH: A triangular-headed opening, usually formed by two straight stones meeting together, v. fig. 84.

STRETCHERS: Stones built transversely in the wall, opposed to headers, q.v.

STRING COURSE: The horizontal molding or band of ornament.

STYLOBATE: The platform, formed commonly of three steps, upon which a Greek building rests. Strictly speaking the term applies only to the top step upon which the styles or columns rest. The word krepis should be used to denote the whole platform, v. p. 30.

SUB-ARCH: A smaller inner arch placed below another one. The term is applied both to an inner order where the sub-arch is attached throughout to the main arch, and also to minor arches standing clear within the main arch, e.g. the sub-arches in a traceried window.

TEMENOS: The sacred enclosure in which the Greek temple stood.

THERMÆ: The Roman bath-houses.

THOLOS: A round building, a rotunda. Also used of a vault or dome, or round, vaulted building.

TIE BEAMS: The horizontal roof beams that tie in the feet of the rafters and the tops of the walls to keep them from spreading.

TORUS: A large, round, convex molding, v. fig. 27.

TRABEATED: Having horizontal beams or lintels spanning the openings. Opposed to arcuated, where the openings are spanned by an arch.

TRACERY: The open pattern work in the head of a Gothic window. The term is also used of similar patterns borrowed from the windows applied elsewhere as ornaments.

TRANSEPT: The portion of a building crossing the nave and producing a cruciform plan.

TRANSOM BAR: The horizontal stone bars in the divisions of the window lights.

TREFOILS: An ornament divided by cusps into three lobes or foils, which may be either round or pointed.

TRIAPSIDAL: Having three apses.

TRIFORIUM or BLIND-STOREY: The arcade forming the storey above the main or ground floor arcade. It is generally in the vertical space taken up by the aisle roof, and therefore dark; hence the term blind-storey. There are, however, examples of triforiums lit with windows, termed "transparent triforiums," v. top of p. 182.

TRIGLYPH: The vertical channelled blocks dividing up a Doric frieze, v. p. 36.

TRIUMPHAL ARCH: v. p. 118, foot and top of p. 119.

TYMPANUM: Literally a drum; the triangular filling of a pediment, v. p. 37.

VAULT: An arched roof, v. p. 188 et seq.

VAULT CONOID: The mass of masonry of coniform shape at the springing of a vault. It would form a quarter conoid in a corner, e.g. in a tower vault, a half conoid where two bays come together in a nave or aisle, and a complete conoid in a crypt where four vaults meet upon one pier, v. p. 218.

VAULTING SHAFTS: A shaft or small column continuing the line of the vault ribs downward to a corbel or the ground.

VENEER: A thin surface of more costly material applied as a skin to a substance of inferior quality.

VOLUTES: The great whorls of an Ionic Capital, v. p. 38.

VOUSSOIRS: The wedge-shaped stones of which an arch is built.

VOUTAIN: The stones in a vault corresponding to the voussoirs in an arch.

WAGON VAULT: v. barrel vault.

WATER-HOLDING BASE: A particular form of 12th and 13th century base, v. p. 201, fig. 101.

WATTLE AND DAUB-CONSTRUCTION: A construction of plaited withies, twigs, or wattles and mud.

INDEX

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