CANTERBURY CATHEDRAL
FROM A DRAWING BY A. BRUNET-DEBAINES

GOTHIC ARCHITECTURE

BY

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With Two Hundred and Thirty-Six Illustrations

NEW YORK
MACMILLAN AND CO.
1893

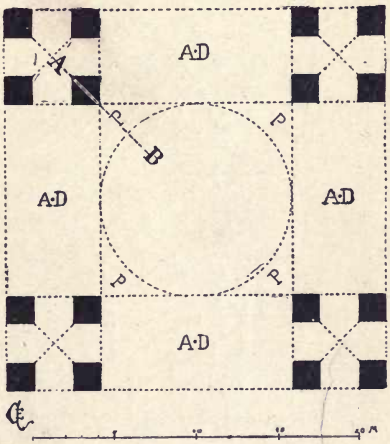
PART I

RELIGIOUS ARCHITECTURE

in the Roman vault the stones at the line of intersection, whether ribbed or not, were in complete solidarity with the filling on either side in which they were buried.

It follows that we shall seek in vain in the Roman ribbed vault the germ of the intersecting arch, with its essentially active functions.

For the origin of the intersecting arch we must turn to the eleventh century. We shall find it in the dressed stone cupola of St. Front, and more especially in its pendentives.

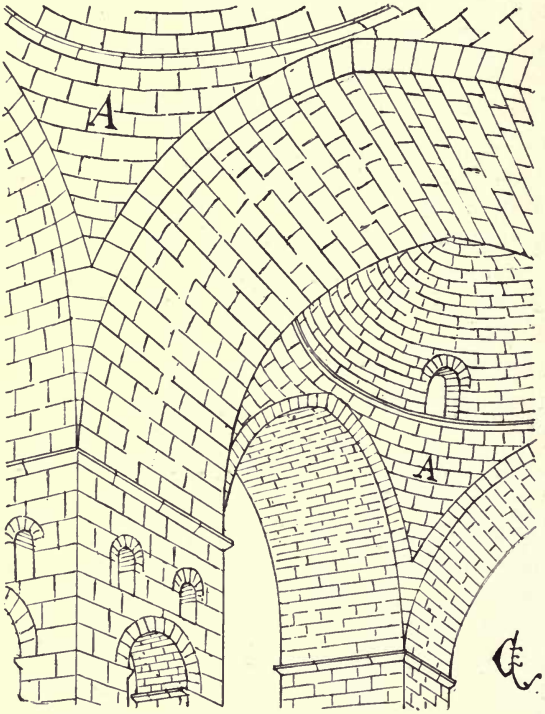


1. PLAN OF A CUPOLA OF THE ABBEY CHURCH OF ST. FRONT AT PÉRIGUEUX

Fig. 1 gives the plan of one of the cupolas of St. Front. It is composed of four massive transverse arches, the thrusts of which are received upon four piers united by pendentives (Figs. 2 and 3) passing from the re-entering angles at the spring of the arches to the base of the circular dome itself, each of the concentric courses bearing upon the keys of the *arcs-doubleaux*, and transmitting to them, and therefore to the piers by which they are supported, the weight of the cupola itself.

Fig. 3 is a section through one of the pendentives of St. Front, following the line A B in Fig. 1. It

shows that the first six courses are cut so as to make what is called a *tas de charge*; the upper surfaces are horizontal, the faces curved to the radius

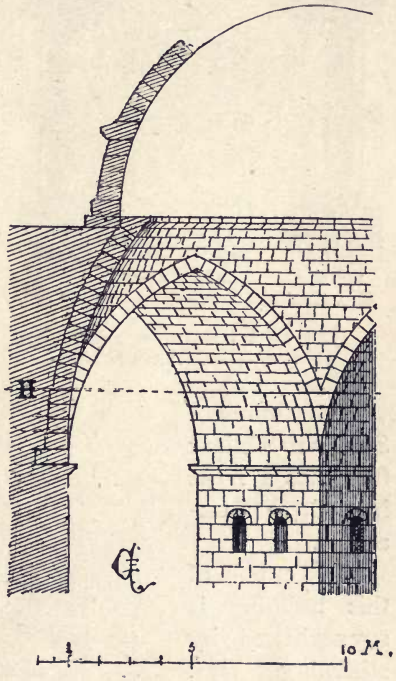


2. PENDENTIVE (MARKED A) OF A CUPOLA OF THE ABBEY CHURCH OF ST. FRONT

of the dome itself. After the sixth course the voussoirs are cut normally to the curve of the arch. The vaulting of religious buildings having long been the crux of mediæval architects, the construction of

the St. Front cupolas must have been an event much noised abroad, for towards the close of the eleventh century a large number of churches with cupolas were built in imitation of the mother church at Périgueux.

The construction of the churches of Angoulême and Fontevrault in the first years of the twelfth century shows that the architects were attempting to cover spaces of ever-increasing span on the Aquitainian model, while at the same time they set themselves to lighten their vaults, and consequently to reduce their points of support.

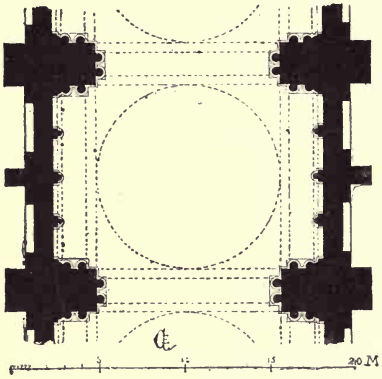


3. SECTION OF A PENDENTIVE ON THE DIAGONAL A TO B IN PLAN, FIG. 1

Fig. 4 gives the plan of one of the cupolas of Angoulême or of Fontevrault, both being built on precisely similar plan, with the exception of the number of bays to the nave.

Fig. 5 gives the section of a bay in one of these churches, and illustrates the considerable difference

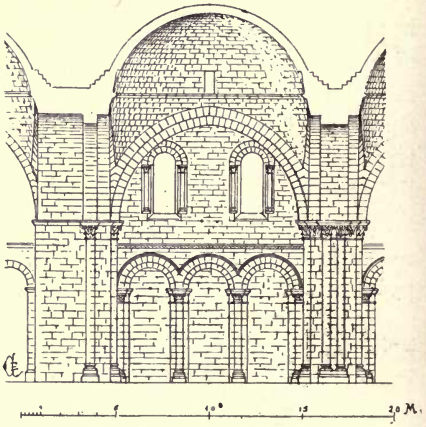
already existing between the mother cupola of St. Front and its offspring. The cupola on pendentives begins to show a certain attenuation, and we shall presently note a fresh step forward towards the solution of that problem so persistently grappled with by the mediæval architect — how to reduce the weight of the vault.



4. PLAN OF A CUPOLA OF ANGOULÊME OR FONTEVRAULT

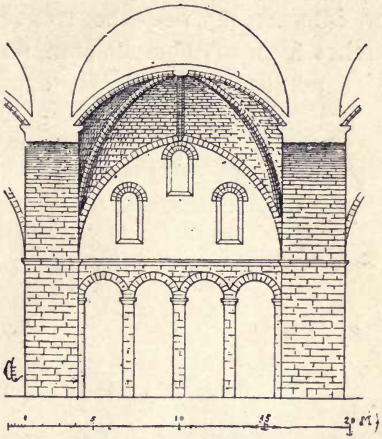
The Church of St. Avit-Sénieur furnishes a most instructive example.

The cupola of this building is strengthened by stiffening ribs. It becomes an annular vault, formed of almost horizontal keyed courses, sustained by transverse and diagonal ribs, which act the part of a permanent centering.



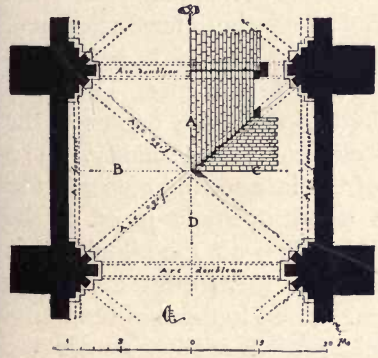
5. SECTION OF A BAY OF THE CUPOLAS OF ANGOULÊME

The Church of St. Pierre at Saumur marks a further step onwards in the construction of vaults derived from the cupola.[1]



6. SECTION OF A BAY IN THE CHURCH OF ST. AVIT-SÉNIEUR

Finally, the architects of Maine and Anjou achieved the long-desired consummation. Under their treatment the pendentives resolved themselves into their actively useful elements, the visible signs of which were diagonal or intersecting arches, salient and independent, set in precisely the same manner as the pendentives of the cupola (Fig. 3), and performing identical functions (Fig. 8).

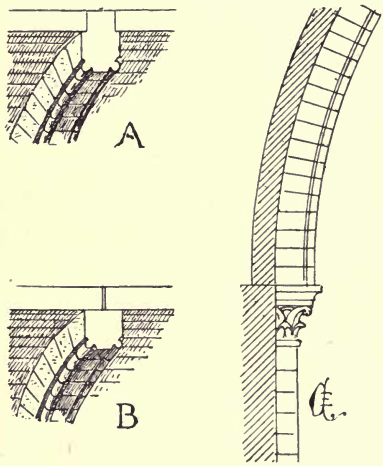


7. PLAN OF VAULT ON INTERSECTING ARCHES

The vault proper is no longer formed of concentric courses, as in the mother cupola. It consists thenceforward of voussoirs cut normally

[1] *L'Architecture Romane*, by Ed. Corroyer.

to the curve, and filling the triangles (A, B, C, D, Fig. 7) determined by the longitudinal, the diagonal or intersecting, and the transverse arches. These arches form a stone skeleton, no less solid though far less ponderous than the cupola pendentives, and sustain the vault by distributing its thrusts over four points of support.



8. SECTION OF AN INTERSECTING ARCH

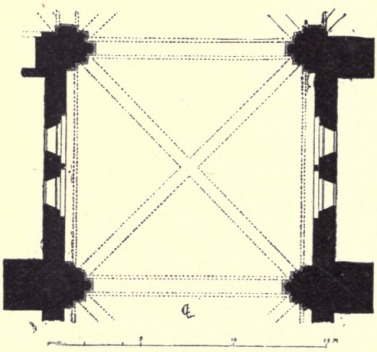
The triangular fillings no longer imprison the ribs, or, more exactly speaking, the intersecting arches, nor do they any longer neutralise their active functions. These fillings, on the other hand, have, like the intersecting arch, gained a new independence. They now contribute to the elasticity of the divers organs of the vault, a most essential element in its solidity. The peculiar arrangement of the intersecting arches in the nave of Angers gives incontrovertible proof of the direct filiation of this building to the Aquitainian cupola. The voussoirs of the intersecting arches are about equal in horizontal section to those of the transverse arches, while their vertical section equals the thickness of the filling plus the internal salience which marks their function. They look in fact like slices cut from the pendentives of a cupola (A, Fig. 8).

CHAPTER III

THE FIRST GROINED VAULTS

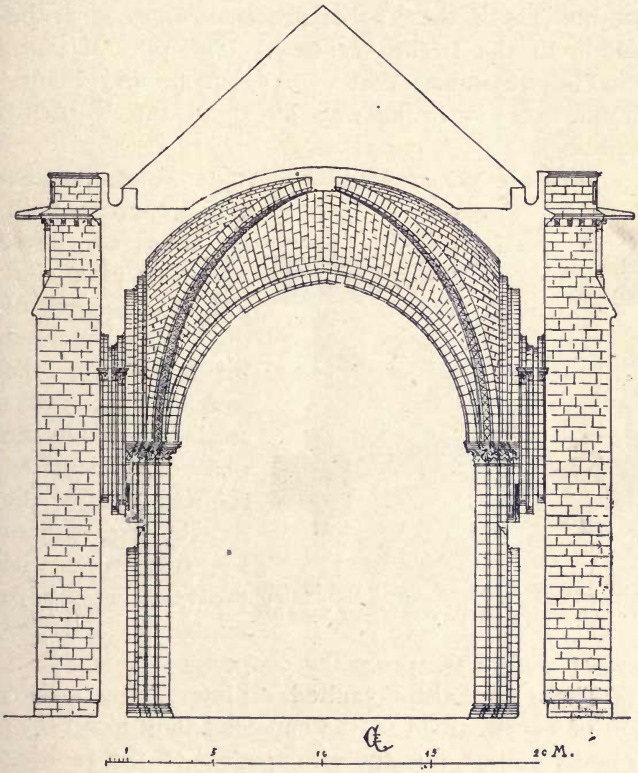
THE first application of the system of intersecting vaults appears in the great churches of Angers and Laval.

It is probable that the new methods propagated by the religious architects of Aquitaine and neighbouring provinces had excited the emulation of the Northern builders, more especially those of the Ile-de-France. Evidences to this effect are to be found in certain subordinate portions of their buildings at this period, such as side aisles or apsidal chapels. Their timid arrangement seems, however, reminiscent of the Roman system of ribbed vaulting, with a slightly increased prominence of the ribs superadded, rather



9. PLAN OF A BAY IN THE NAVE OF ST. MAURICE AT ANGERS

than of the revolution that had been effected in church vaulting generally.

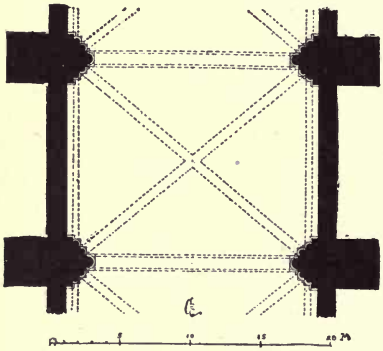


10. TRANSVERSE SECTION OF THE NAVE OF ST. MAURICE AT ANGERS

But, if we except perhaps Laval, nowhere shall we find the new system of vaulting upon intersecting arches more mightily demonstrated than at Angers, the aisles of which measure 54 feet across. The

grandeur of the architectural composition, no less than the admirable technical skill shown in the details, gives proof of the consummate mastery arrived at by the builders of these noble structures so early as the middle of the twelfth century. The plan of these churches resembles that of Angoulême and Fontevrault. It is in no way allied to the Northern buildings.

They are constructed with single aisles, like the cupola churches, with a series of bays, square on plan; but the arrangement of the vaults has been perfected by the logical use of intersecting arches in the place of pendentives, the architects of the day having realised by this time the progress we have explained and demonstrated in the preceding chapter.

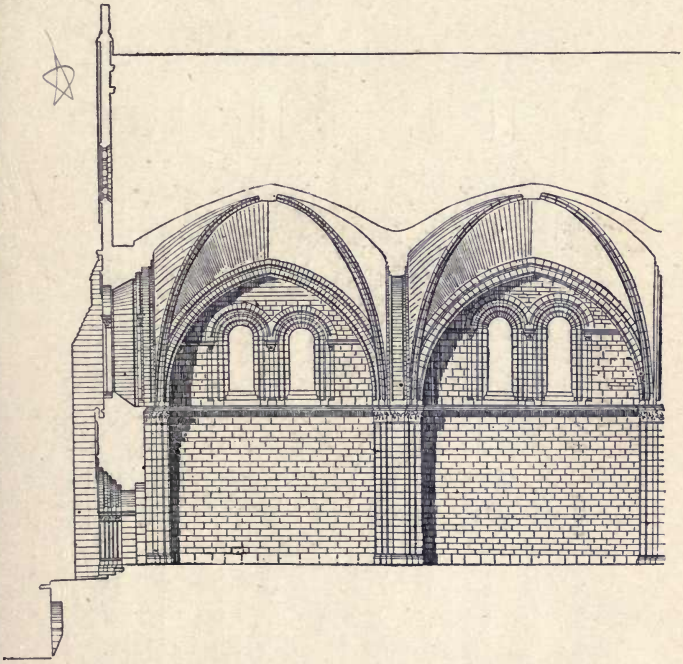


11. PLAN OF A BAY OF THE NAVE IN THE CHURCH OF LA STE. TRINITÉ AT LAVAL

These vast aisles, vaulted on intersecting arches, are of course allied to the cupolas; they recall their general outline, but the arrangement of the vaulting is different. The intersecting ribs are no longer merely decorative features; they have taken on all the active functions of the *arc-doubleau* and the formeret. Their union constitutes an elastic ossature, the weight being concentrated upon four points of support, which receive the impost of the arches, and

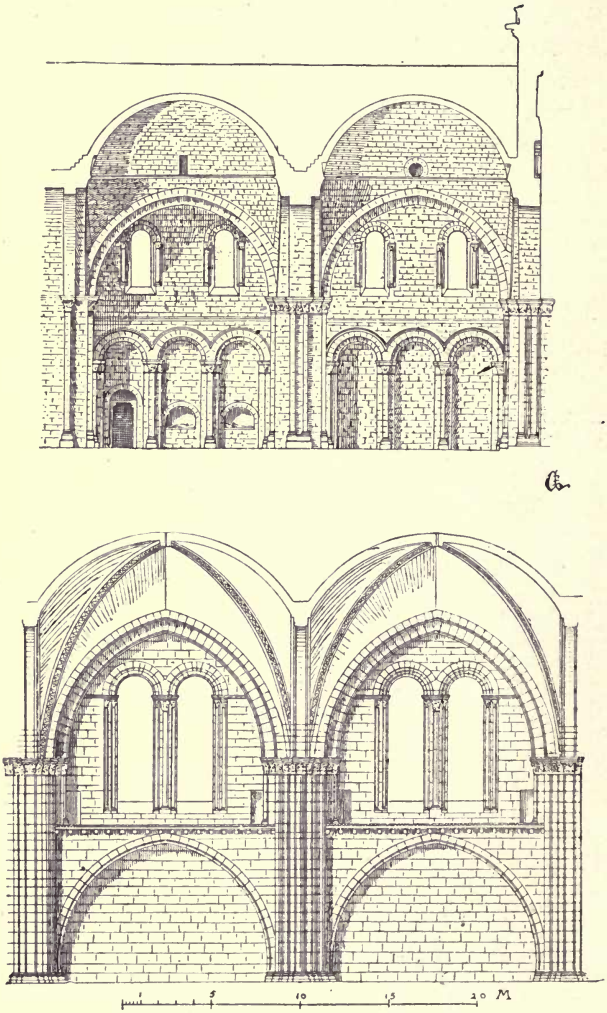
compose a stone skeleton, each unit of which has been cut and dressed to fill the exact place it occupies in the whole.

If we compare the sections (Figs. 13 and 14) of



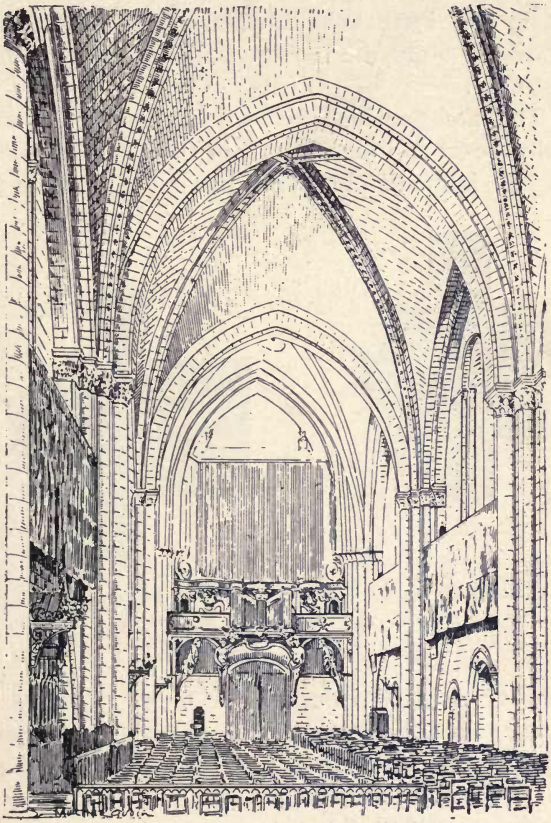
12. LONGITUDINAL SECTION OF TWO BAYS IN THE NAVE OF LA STE. TRINITÉ AT LAVAL

the churches of Angoulême and Angers, we may clearly trace the filiation between these buildings, the one dating from the first years of the twelfth century, the other from some thirty or even forty years later. We shall also note the advance made by the Angevin architects in the construction of groined vaults in the



13 AND 14. COMPARATIVE SECTIONS OF THE CHURCHES OF ANGOULÊME AND ANGERS

place of domes with pendentives, a development



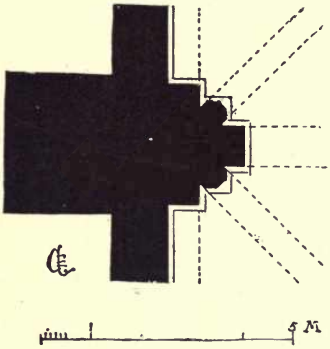
15. VIEW IN PERSPECTIVE OF THE NAVE VAULT OF ST. MAURICE AT ANGERS

worked out by the more perfect and reasoned application of the same architectural principle.

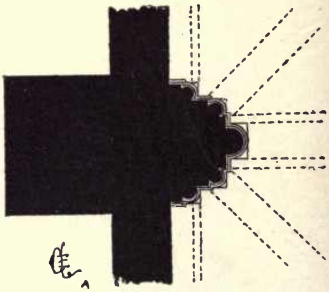
The Church of Laval, built simultaneously with

that of Angers, or only a few years later, shows a further advance, not merely in the matter of form, but in the increased science and ingenuity of combinations, and the methodical accuracy of the execution.

The arches which compose the ossature of the vaults become independent in their functions, as at Angers, immediately upon leaving the abacus, an



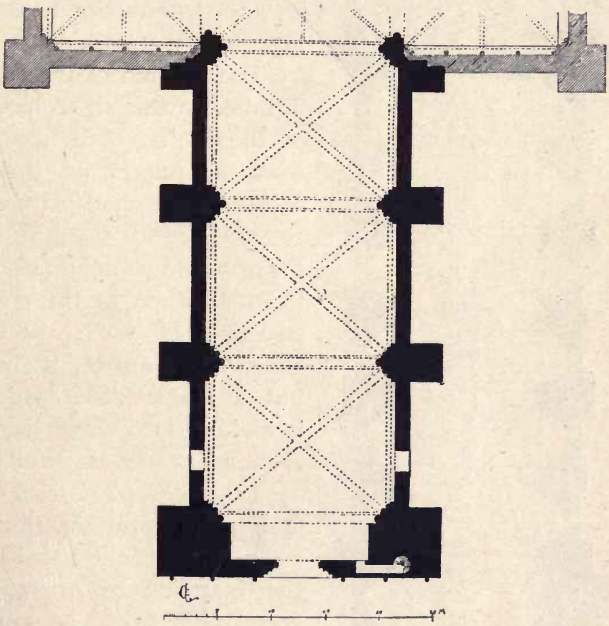
16. PLAN OF A SUMMER OF THE NAVE VAULT OF LA STE. TRINITÉ AT LAVAL



17. PLAN OF ONE OF THE PIERS OF THE NAVE OF LA STE. TRINITÉ AT LAVAL

essential characteristic of the new system. The lateral points of support are composed of piers proper and of clustered columns, crowned by corbelled capitals, which, by prolonging them, mark the formerets, the diagonal, and the transverse arches as they fall upon the abaci. It is easy to see in this arrangement the origin of those clustered shafts so generally and even excessively used in the thirteenth and fourteenth centuries, the main object of which was to conceal as far as possible the points of support.

crowned with a groined and ribbed vault; St. Caprais at Agen, which shows the same modifications, and lastly, the immense brick nave of St. Etienne at Toulouse, which measures 64 feet—all demonstrate

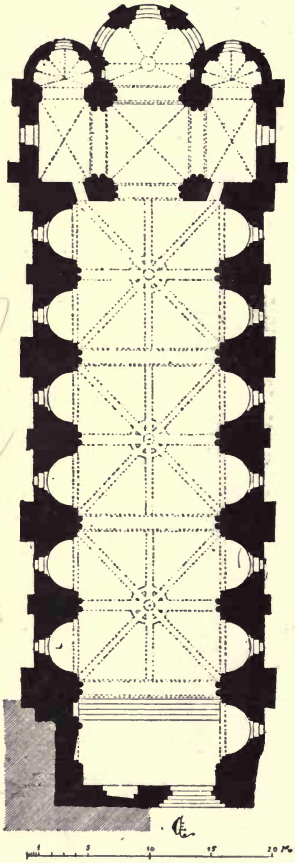


18. PLAN OF THE NAVE, ST. MAURICE AT ANGERS

the progression of the new principles in the second half of the twelfth century.

Towards the North the advance was no less general. Various buildings show to what excellent account contemporary architects had turned the system of vaults on intersecting arches, recognising

its admirable adaptability to different climates, and to the most diverse materials. But it was reserved for Angers, the cradle of its birth, to give an added perfection to this ingenious system.

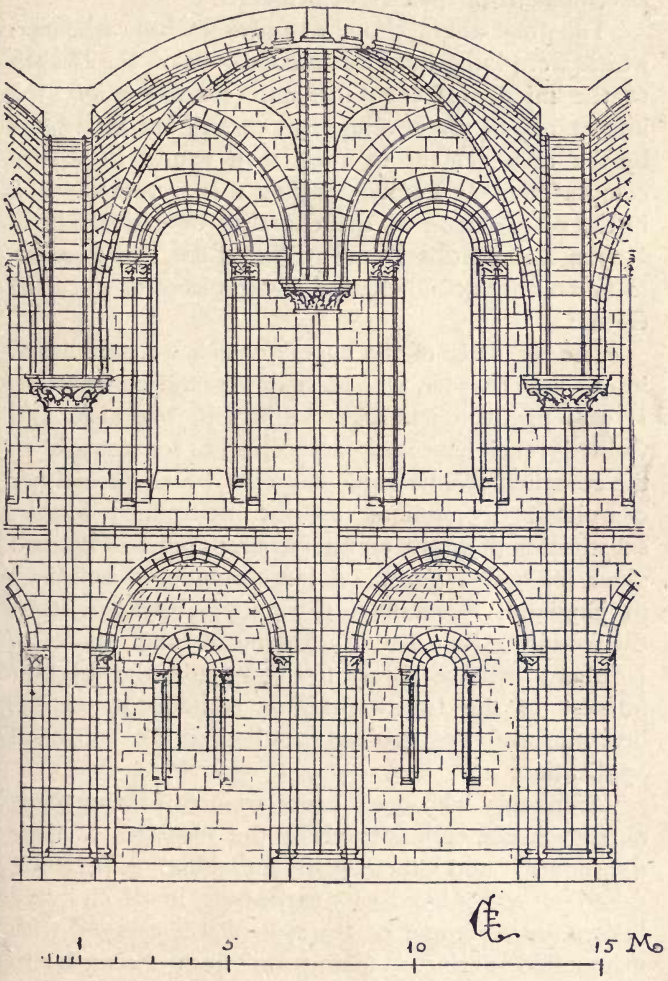


19. PLAN OF THE CHURCH OF LA STE. TRINITÉ AT ANGERS

The Church of the Ste. Trinité, on the right bank of the Maine, built by the sons or pupils of those architects who had planned St. Maurice for the hill on the opposite shore, marks a fresh advance in the construction of these vaults. Like St. Maurice, it has but a single aisle, which is divided into three bays, each as nearly as possible square on plan. The system of vaulting takes on a greater elegance by the insertion of a transverse arch, with its supporting shafts, in the centre of each bay. This divides the bay into two equal parts, and, cutting the diagonal ribs at their intersection, supports them at the critical point.

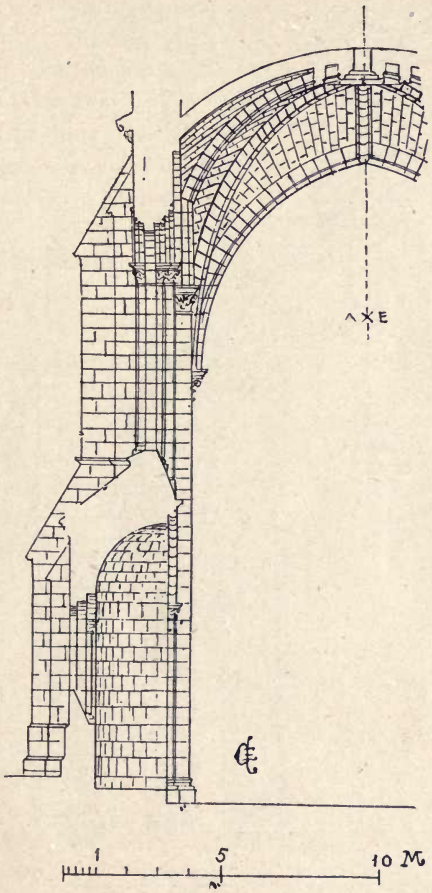
Fig. 19 gives the plan of these vaults, the system of which was eagerly seized upon by the Northern

architects, and the great abbey church of Noyon



20. LONGITUDINAL SECTION OF A BAY OF LA STE. TRINITÉ AT ANGERS

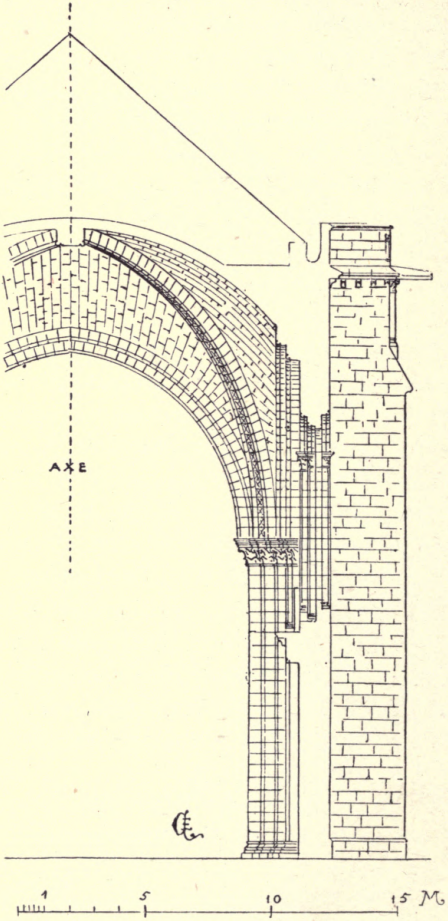
traditions, and disregarding the statical conditions



21. TRANSVERSE SECTION OF A BAY OF LA STE. TRINITÉ AT ANGERS

which ensured the solidity of the ancient buildings,

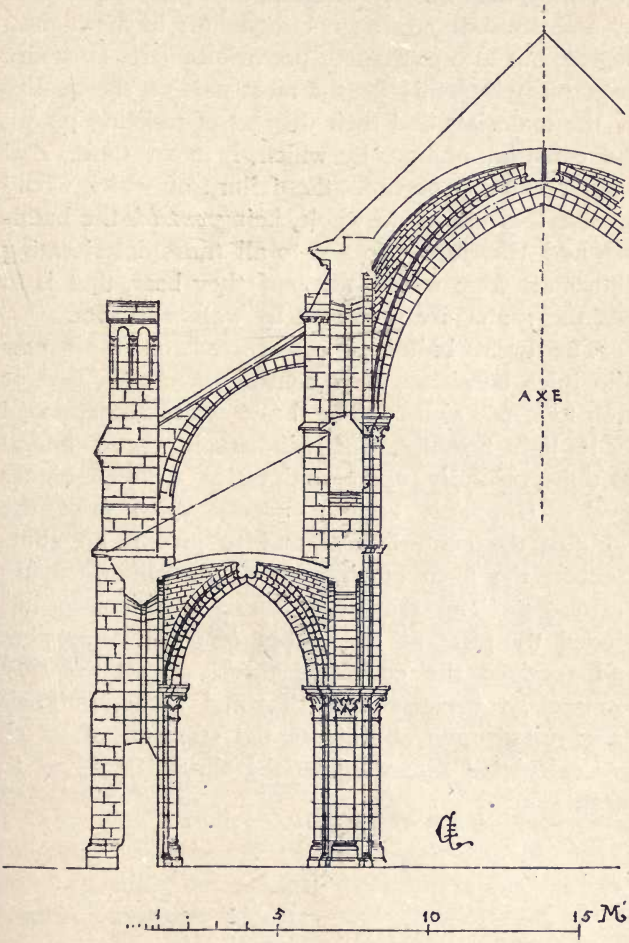
they invented a system of construction which is, as it



22. SECTION OF A SINGLE-AISLED CHURCH VAULTED ON INTERSECTING ARCHES WITH BUTTRESSES

were, merely a skeleton in stone, a stone version of

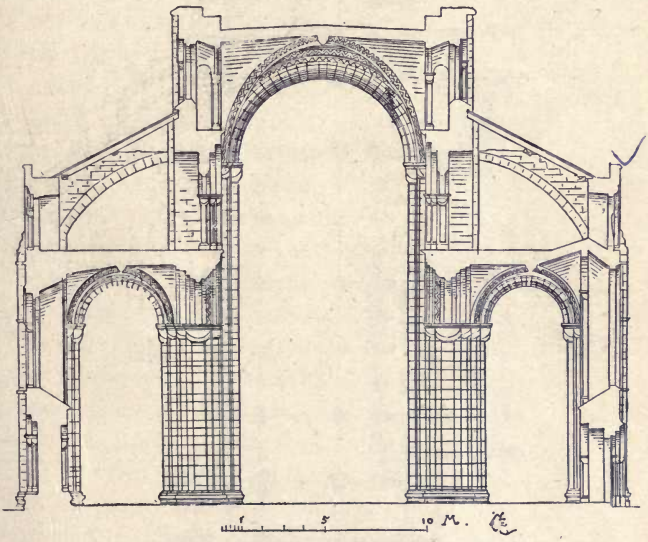
the timbered roof; its characteristic expression was



23. SECTION OF A THREE-AISLED CHURCH VAULTED ON INTERSECTING ARCHES WITH FLYING BUTTRESSES

land, and at Basle on the Rhine, to name but a few of the churches in which the modification of the vaults was long posterior to the construction of the building itself.

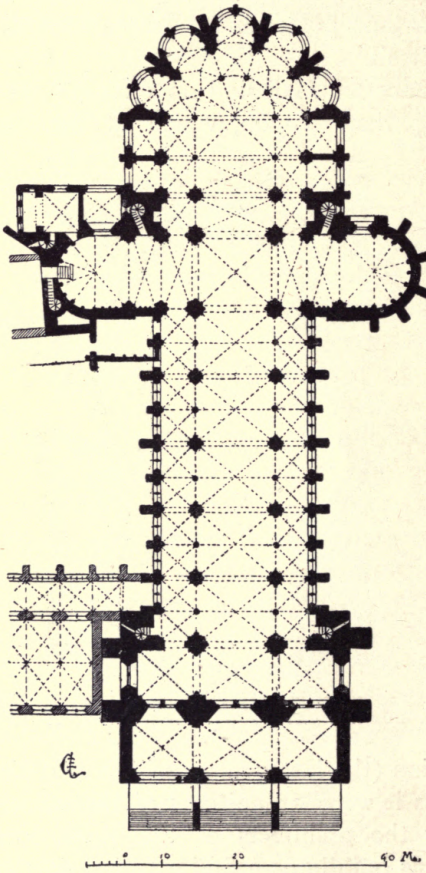
In France we shall find no example more deeply interesting than Noyon, which at the date of its



24. DURHAM CATHEDRAL. TRANSVERSE SECTIONS

construction (the last quarter of the twelfth century) formed, as it were, an epitome of the advance so far made by the architects of the Ile-de-France. In this curious building we find a fusion of the antique tradition developed by the Normans in their triforiums, and of the Angevin methods, as manifested in the groined vaults derived from domes: methods further perfected by the example of La Ste. Trinité

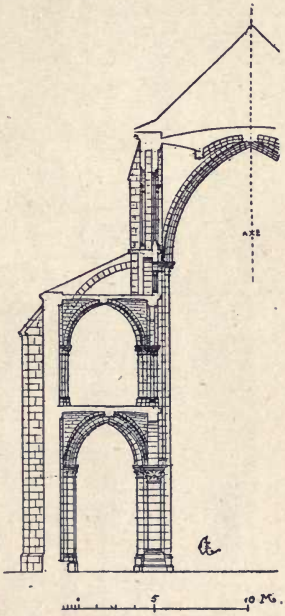
at Angers; in other words, by the adoption of inter-



25. ABBEY CHURCH AT NOYON. PLAN

secting arches planned on a square, the thrusts of all being received on the main piers, reinforced by an

intermediate transverse arch. And we note the appearance of the detached semi-arch beneath the roofing of the inferior aisles merging at its springing into the lateral *arc-doubleau*, and so resisting the thrust of the intersecting arches and transverse arches of the nave.

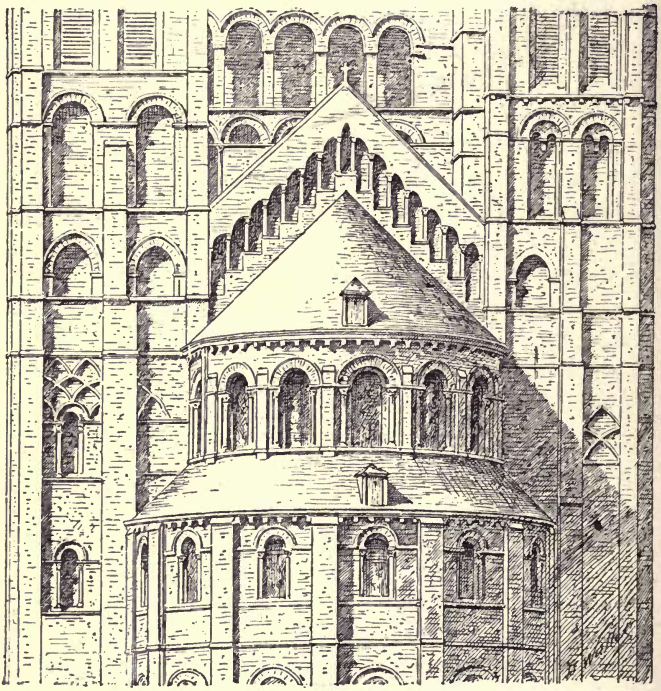


26. TRANSVERSE SECTION OF NOYON CHURCH

It has been said that Noyon was suggested by Tournai, doubtless on account of their superficial affinities. But the likeness is merely in general aspect, the methods of construction being wholly different. At Tournai the apsidal transepts are vaulted upon transverse arches of great strength, and upon radiating semi-arches united where they meet by a ring of voussoirs set horizontally, and at their springing by vaults keyed into their mass, an ingenious arrangement which recalls the vaulting of the *Salle des Capitaines* over the porch of the monastery church at Moissac.

The combination of these *arcs-doubleaux*, which, in addition to the solidity of their independent structure, are strongly reinforced by the massive circular courses of the walls, is very peculiar, for it dispenses altogether both with auxiliary arches and

with abutments. Tournai, therefore, cannot be held to have begotten Noyon, for here we have groined

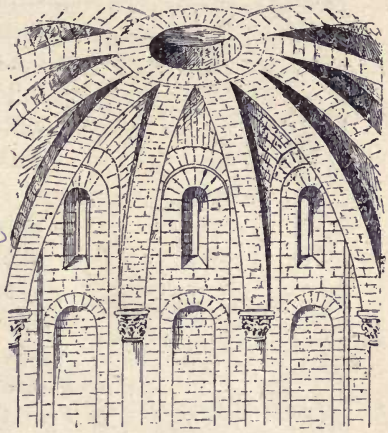


27. CHURCH OF TOURNAI, BELGIUM. EXTERIOR VIEW OF THE NORTH TRANSEPT TOWARDS THE SCHELDT

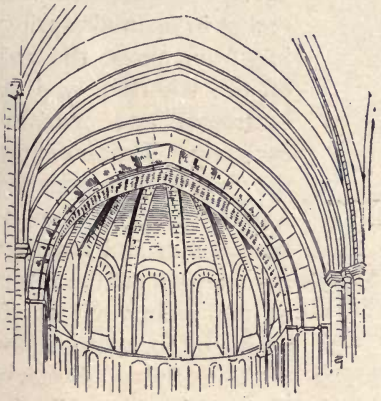
vaults, the intersecting arches of which demand the reinforcement of abutments either concealed or apparent to sustain the thrust of these vaults over the lateral *arcs-doubleaux*. The ingenious arrangement above cited had in no sense modified the methods of abutment followed by the architects of

the twelfth century even after the adoption of the vault on intersecting arches. These, as will be remembered, consisted in buttressing the walls and piers of the nave by cross walls or by arches concealed beneath the roofing of the side aisles.

We find at Soissons the first application of an architectural system, the special feature of which is the *flying buttress.*



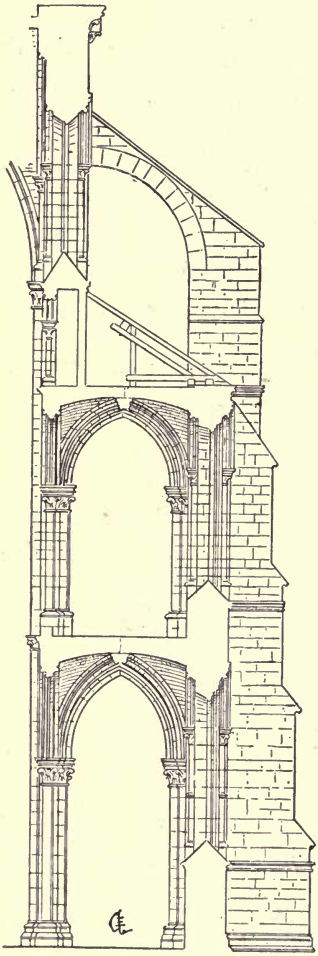
28. MONASTERY CHURCH AT MOISSAC. VAULT OF THE HALL KNOWN AS THE HALL OF THE CAPTAINS ABOVE THE PORCH



29. CHURCH OF TOURNAI, BELGIUM. INTERIOR OF THE NORTH TRANSEPT

The south transept of Soissons Cathedral was evidently suggested by Noyon. This is apparent in the adoption of the two-storied side aisle and in the semicircular plan. But the method of vaulting common to both churches has a greater refinement at

Soissons. Reduced to its simplest expression of strength by the attenuation of its skeleton, the vault still exercises its full thrust on those parts which rise above the upper gallery.

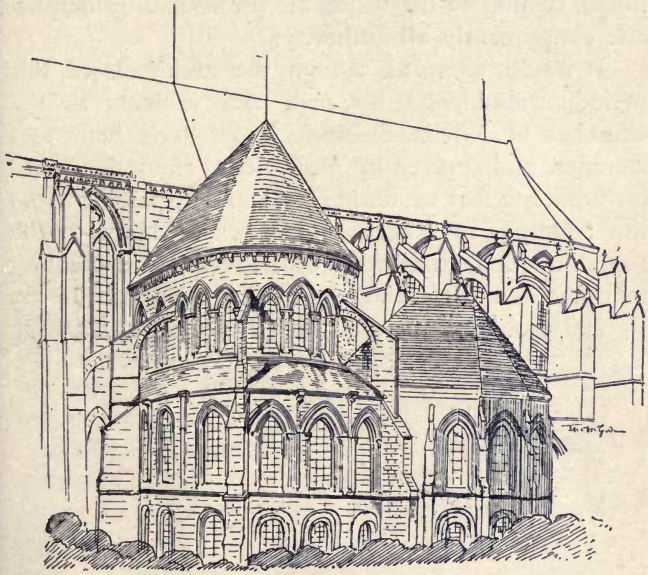


30. SOISSONS CATHEDRAL. SOUTH TRANSEPT. SECTION OF FLYING BUTTRESS

The architect of Soissons was not content, like his brother of Noyon, to support the vault laterally by interior arches collaborating with the *arcs-doubleaux* of the triforium, and reinforced by an abutment impinging on the wall of the central nave. To him the idea occurred of detached semi-arches in open air, springing from above the roof of the triforium and its buttresses and marking each bay. Thus was born the *flying buttress*, a feature frankly emphasising its special aim and function, namely, to meet the thrust of the main vault at its points of concentration.

The flying buttress, in combination with the intersecting arch, gave

birth to a new system of construction, a system on which were raised vast buildings which compel our admiration and demand our careful study, but should



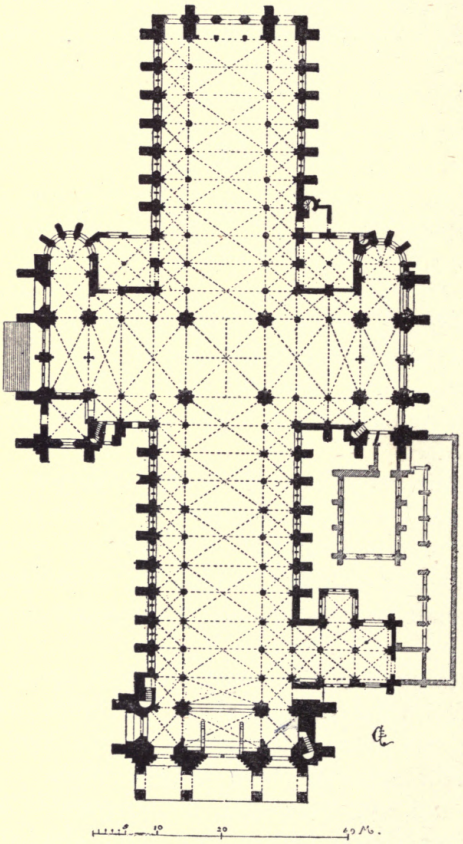
31. PERSPECTIVE VIEW OF SOUTH TRANSEPT, SOISSONS CATHEDRAL[1]

not invite our imitation. They are monuments to the ingenuity of the twelfth and thirteenth century

[1] These flying buttresses, in themselves insufficient for the task laid upon them, and worn by the destructive action of the weather, were pushed entirely out of shape by the constant pressure from within, the thrust of the vault being aggravated by the circular plan of the building, while the vaults themselves became dislocated by reason of their insufficient abutments. It became necessary to reconstruct the buttresses in 1880, to avert the total collapse of the south transept.

The reconstruction of these flying buttresses, and of many others of the same period, furnishes us with a criticism *ad hominem* upon the system.

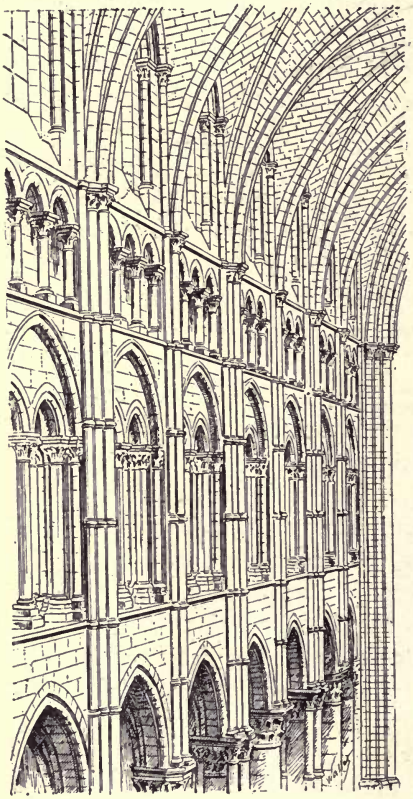
trustworthy records or upon contemporary readings of existing data, the result is too often a confusion



32. CATHEDRAL OF LAON. PLAN

among vanished monuments, or a contradiction between the buildings as they now exist and the historic records which relate to them.

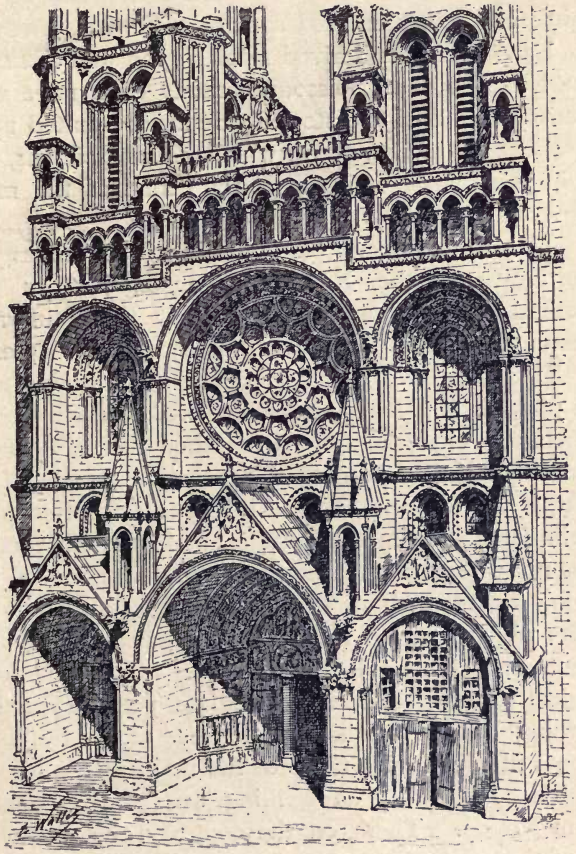
siderable numbers were conceived and continuously executed.[1]



33. CATHEDRAL OF LAON. INTERIOR OF THE NAVE

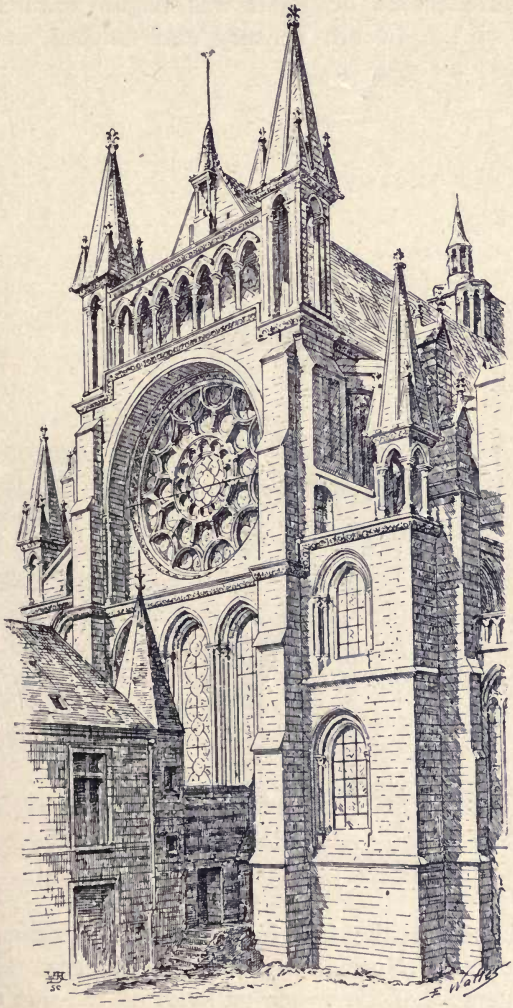
[1] It is possible, if not easy, to trace the architectural development of the Middle Ages in a good many cathedrals and churches of the twelfth and thirteenth centuries. We have, however, confined ourselves, for the purposes of our present synthesis, to the churches and cathedrals of

The great abbey churches founded towards the



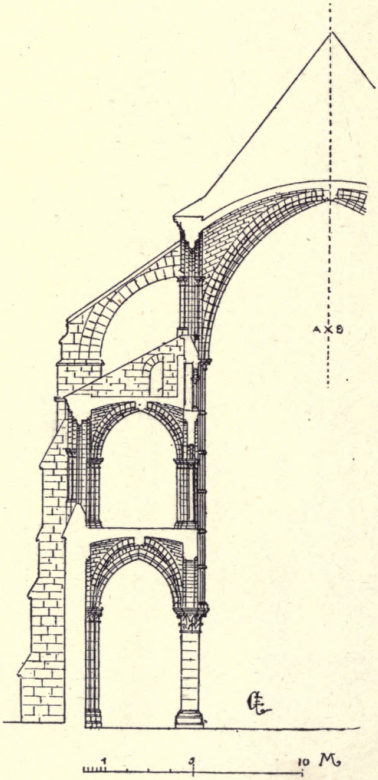
34. CATHEDRAL OF LAON. MAIN FAÇADE

the royal domain, and more especially of the Ile-de-France, not only because they served as models for the architects of their day, but because they illustrate in a remarkable degree the various transitions we desire to study.



35. CATHEDRAL OF LAON, THE EAST END

Notre Dame de Paris was begun towards the close of the twelfth century, and finished, save for

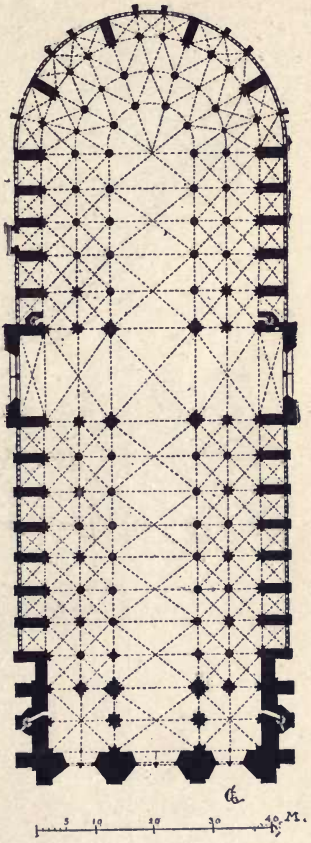


36. CATHEDRAL OF LAON. SECTION OF THE NAVE

the chapels, in the first half of the thirteenth. As at Laon, the Norman tradition is observed in the arrangement of the upper galleries of the side aisles, while the influence of the dome is again to be traced

in the sex-partite groining. The same illogical system of abutments obtains as at Laon.

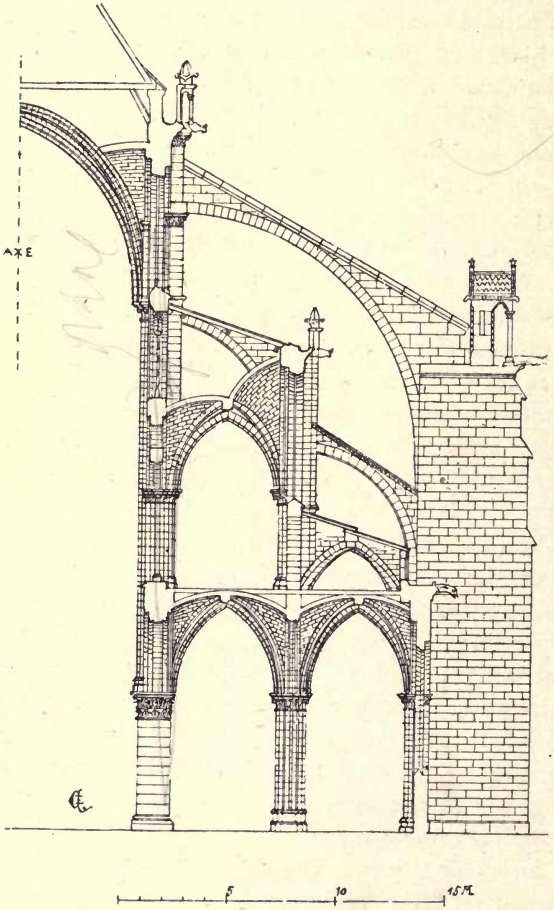
This vast building, consisting of a nave and double side aisles of equal height sweeping round the semicircular choir, seems to be one of the first five-aisled cathedrals; its grandiose arrangement, the boldness of its combinations, and the perfection of its detail mark the considerable progress made by the architects of the Ile-de-France.



37. NOTRE DAME DE PARIS. PLAN

The method of construction here adopted has a peculiar significance. The upper internal galleries, vaulted on diagonal arches, and raised considerably above the level of the second side aisle, the boldness of the flying buttress, which at one span embraces the two side aisles and forms the abutments of the main vault—alike prove that the architects of Notre Dame de Paris had adopted the newly discovered systems even to excess, and were applying them with unparalleled skill and ingenuity.

The Norman tradition which had obtained in the



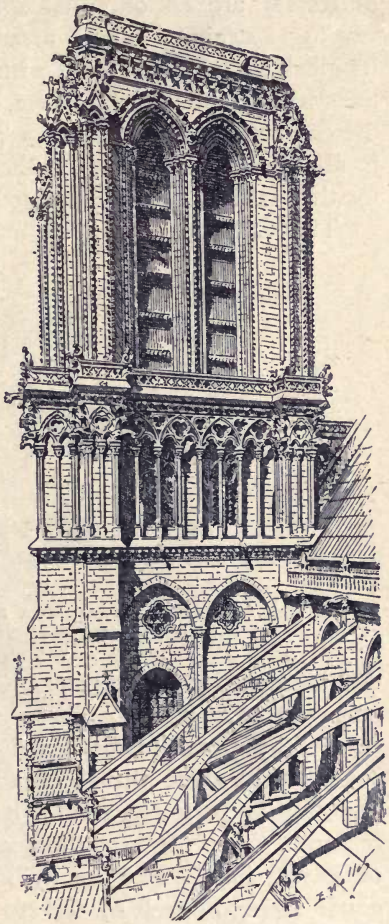
38. NOTRE DAME DE PARIS. SECTION OF THE NAVE

Ile-de-France passed away in the first years of the

thirteenth century. At Châlons-sur-Marne the nave is flanked by two-storied side aisles. But the upper gallery, vaulted and greatly reduced in size, shows that the conventional arrangement was fast dying out.

The influence of the dome was longer lived, as is shown in the construction of vaults at this period. We may still trace it at Langres in the domed form of the vaults, which, in spite of their rectangular plan, seem to be a reduced copy of the Angevin naves.

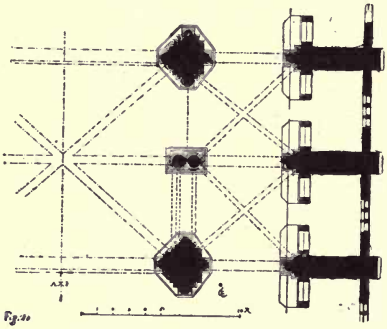
The naves of Sens and of Bourges are also vaulted in square compartments. The thrust of the vaults is carried by the diagonal arches to each alternate pier, the intermediate one receiving only the auxiliary transverse arch already



39. NOTRE DAME DE PARIS. FLYING BUTTRESSES AND SOUTH TOWER

fully described. Yet here again the exterior flying buttresses are all of equal solidity in spite of the varying strain. This arrangement, prudent if illogical, shows once more with what distrust architects had adopted that system of exterior abutment, the characteristic of which is a detached arch exposed to all the vicissitudes of weather, and yet responsible for the stability of the whole edifice.

The Cathedral of Sens marks a new phase of

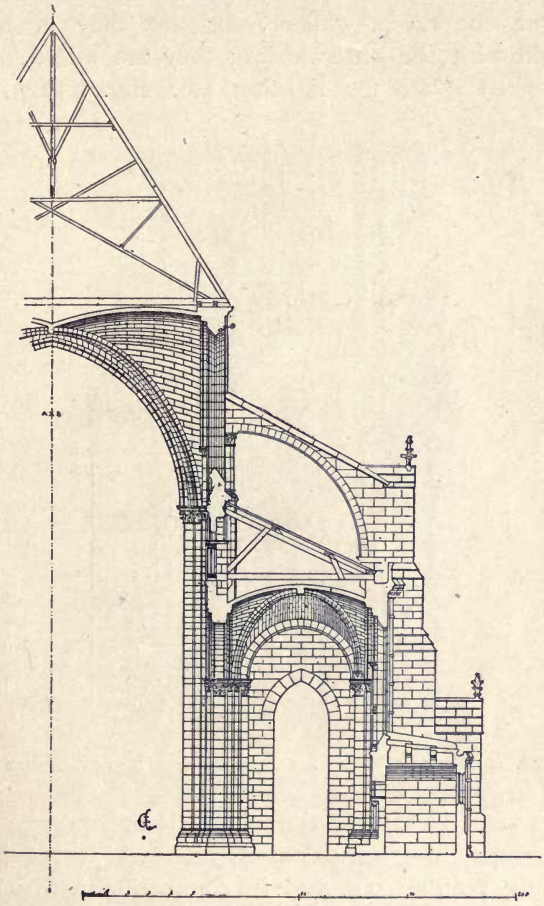


40. SENS CATHEDRAL. PLAN OF A BAY. VAULT IN SQUARE COMPARTMENTS OF TWO BAYS

development by its suppression of the upper gallery over the side aisles. These are now vaulted and covered by a lean-to roof; a flying buttress of single span receives the thrust of the main vault. The building is perfectly solid; its construction shows research, though it is as illogical as that of Laon or of Paris; for the exterior flying buttresses are all of equal strength, and so fail to proclaim their true functions, the interior thrusts varying considerably.

The arrangement at Bourges, which appears to have been mainly built, if not actually finished, in

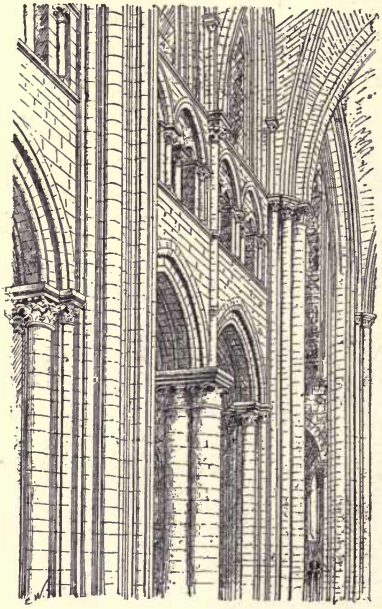
the first half of the thirteenth century, differs from



41. SENS CATHEDRAL. SECTION OF A BAY OF THE NAVE

that of Sens. The structure is one of five aisles,

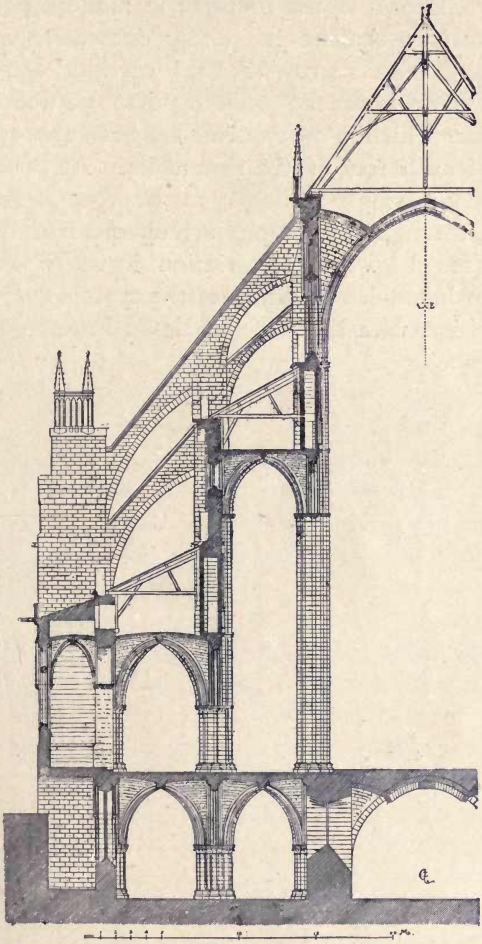
and in plan recalls Notre Dame de Paris, but the details are very dissimilar. The inner side aisles no longer support a gallery, nor are they of equal height with the outer aisles; they are raised so as to afford space for lighting (see Fig. 43). The



42. SENS CATHEDRAL. INTERIOR VIEW OF LATERAL BAYS

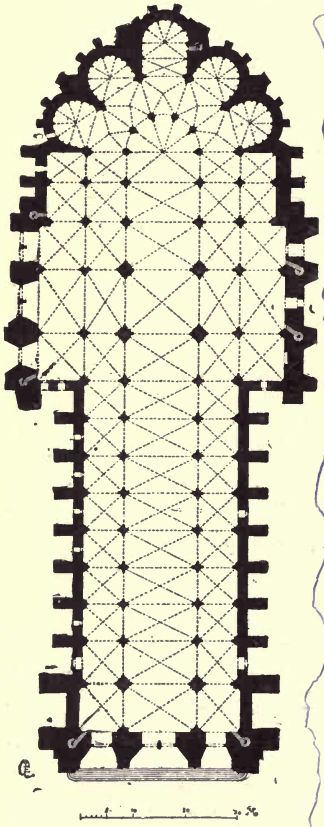
main vault is sex-partite planned on squares; but the same illogicality exists here which we have already pointed out, and in connection with which we will risk appearing somewhat insistent, in the hope of directing special attention to it. It is more glaring here than elsewhere, the flying buttresses

themselves being of exaggerated dimensions and of double span, embracing the two side aisles.



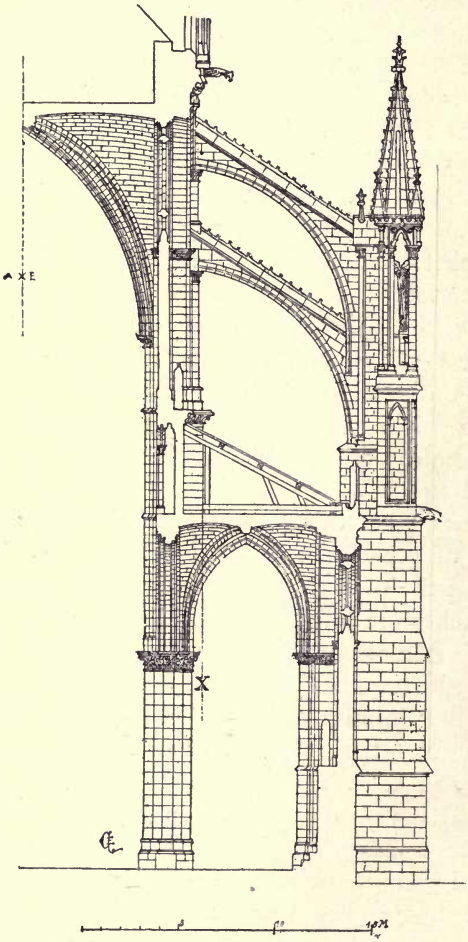
43. BOURGES CATHEDRAL. SECTION OF THE NAVE

apparent at Rheims than elsewhere, because of the colossal proportions of the building. The arrangement of the flying buttresses, however, is more logical than at Laon, Paris, Sens, and Bourges, by reason of the quadripartite arrangement of the main vault. The thrusts being equally distributed among the supporting piers, each flying buttress performs an identical office; their equal strength and solidity is therefore perfectly appropriate and logical. But though theoretically correct in its disposition of flying buttresses of equal strength to meet thrusts of equal strength, the method is vitiated by its inherent weakness as a system of abutment. The fragility of the flying buttress exposed it to two grave dangers, active and passive; active, taking into account the constant strain upon it as an abutment; passive, in regard to the gradual reduction of its solidity by exposure to weather. In support of this statement,



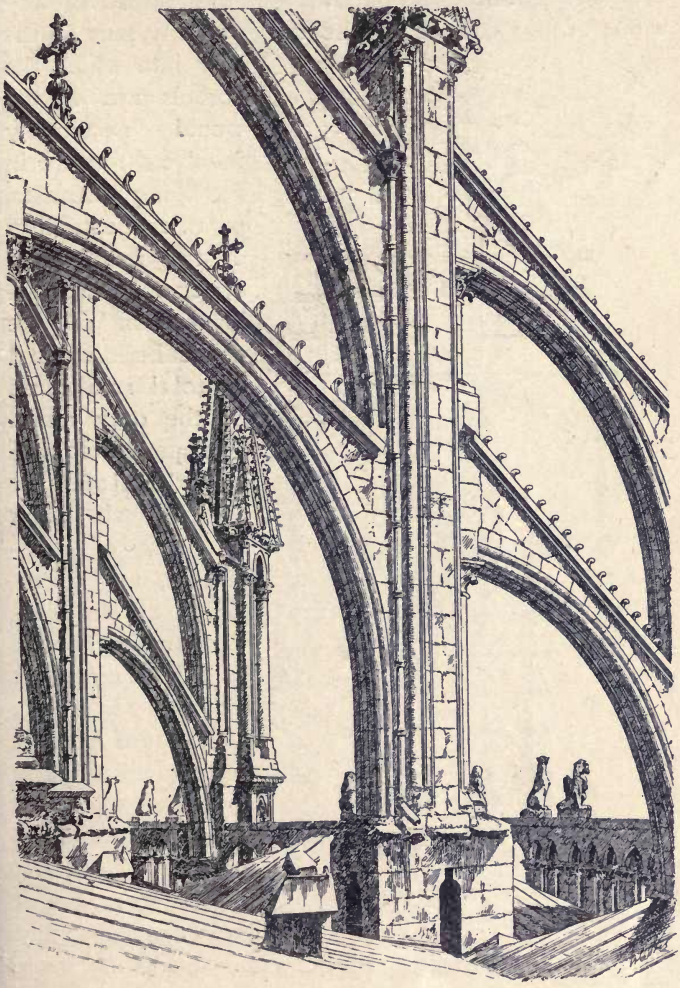
44. RHEIMS CATHEDRAL. PLAN

following the direction of the dotted line X in Fig.



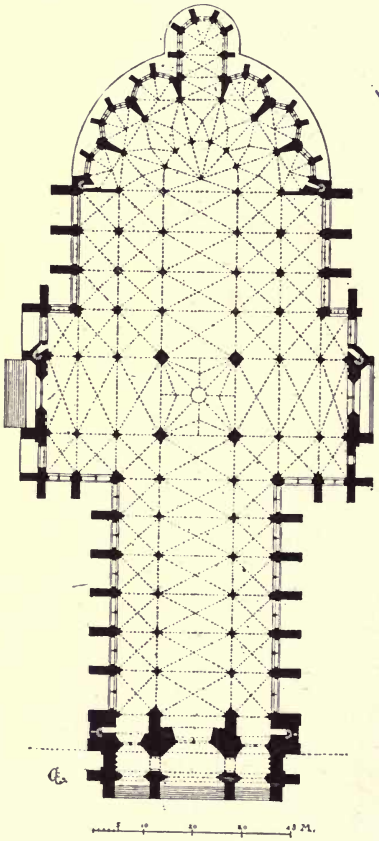
45. RHEIMS CATHEDRAL. SECTION OF THE NAVE

48. The boldness, or rather the imprudence of such



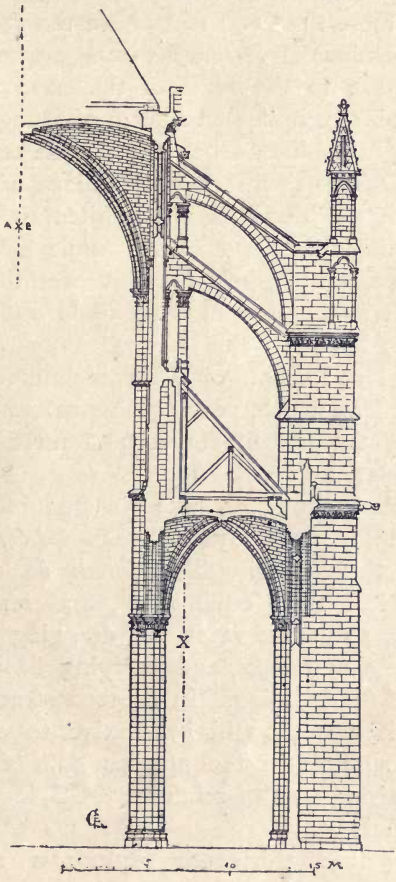
46. RHEIMS CATHEDRAL. FLYING BUTTRESSES OF THE CHOIR

an arrangement is patent, for the failure of any one of the courses, or the decay of any part of the pier into which the corbels are keyed, would necessarily involve a rupture in the flying buttresses, on which the stability of the main vault depends. The disintegration of the whole building and its total ruin could be the only result. The perils of such combinations, or rather such *tours de force* of equilibrium, are exemplified at Beauvais. The architects who built the choir, about the year 1225, basing it on that of Amiens, determined to raise a monument which should surpass, both in plan and elevation, all the structures of their epoch. They increased the breadth of the choir and of its bays, raising, in the latter, intermediate piers on the crowns of the lower archivolts, thus dividing the upper



47. AMIENS CATHEDRAL. PLAN

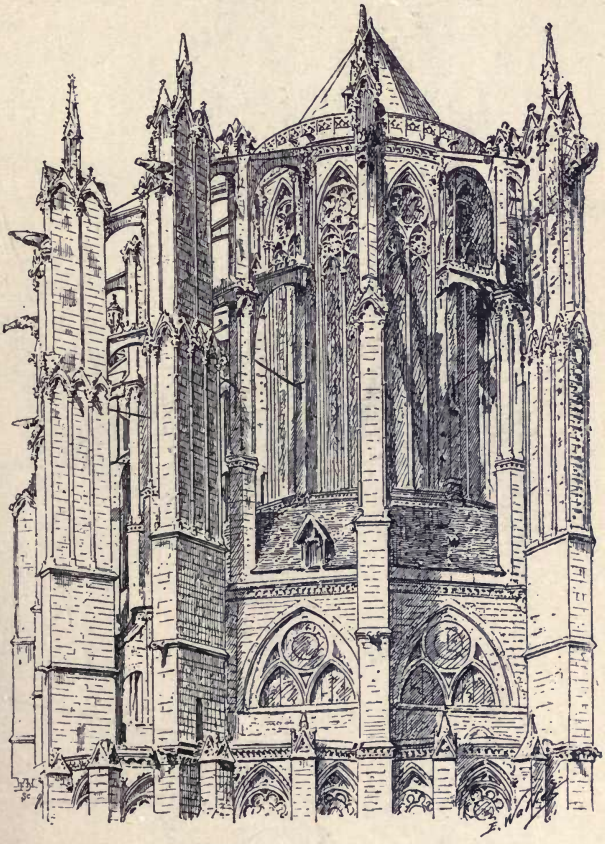
bays, and at the same time strengthening the vault by



48. AMIENS CATHEDRAL. SECTION THROUGH THE NAVE

auxiliary transverse arches. They exaggerated the height of the archivolts and of the large windows,

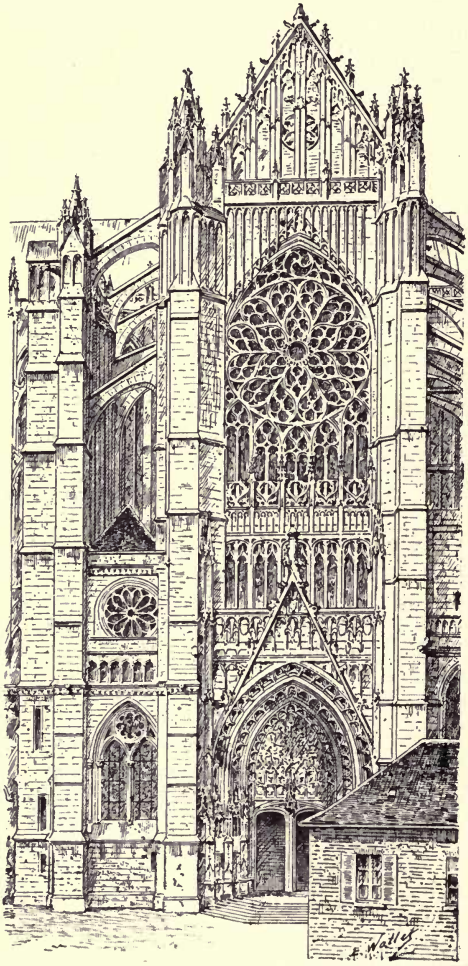
more modest dimensions. They had neither the exaggerated height nor the structural audacities of



49. BEAUVAIS CATHEDRAL. APSE

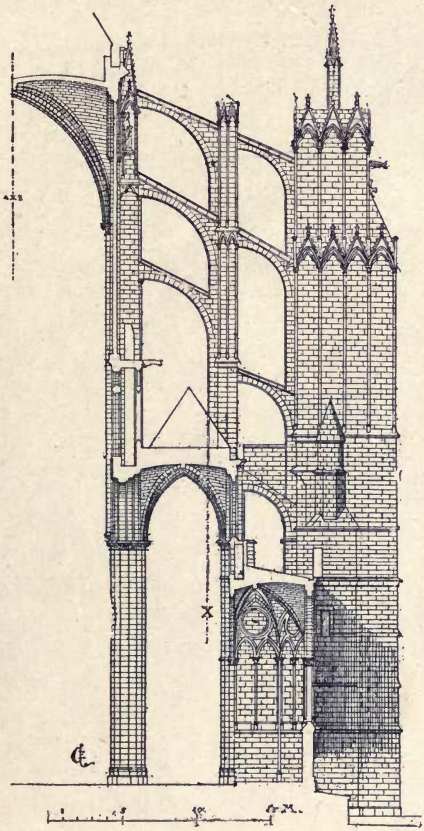
their exemplars. Few of these churches and cathedrals, the reconstruction of which on the new

system generally began with the choir, which was



50. BEAUVAIS CATHEDRAL, NORTH FRONT

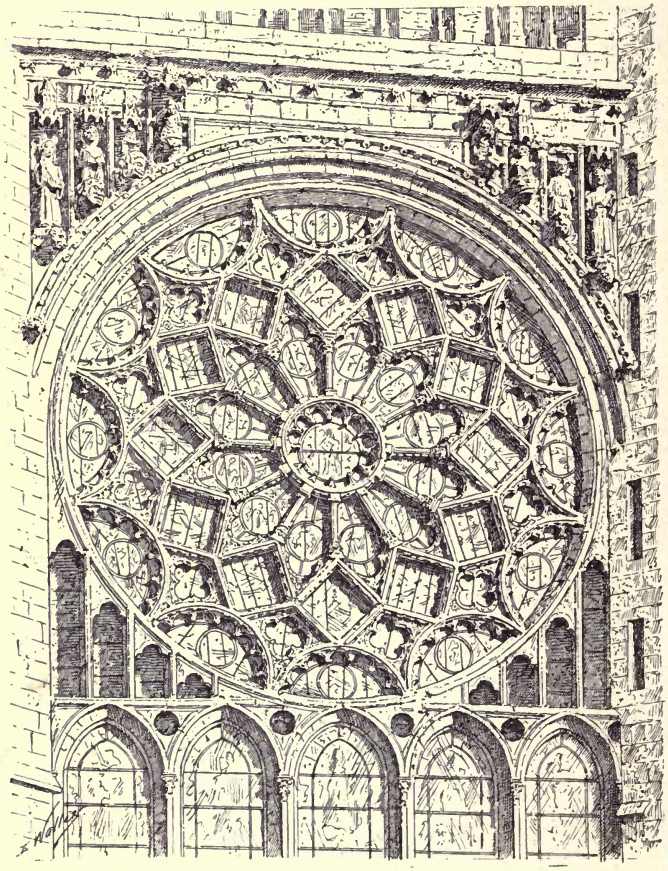
added to the primitive nave, were completed by those who initiated their erection. The most highly



51. BEAUVAIS CATHEDRAL. TRANSVERSE SECTION

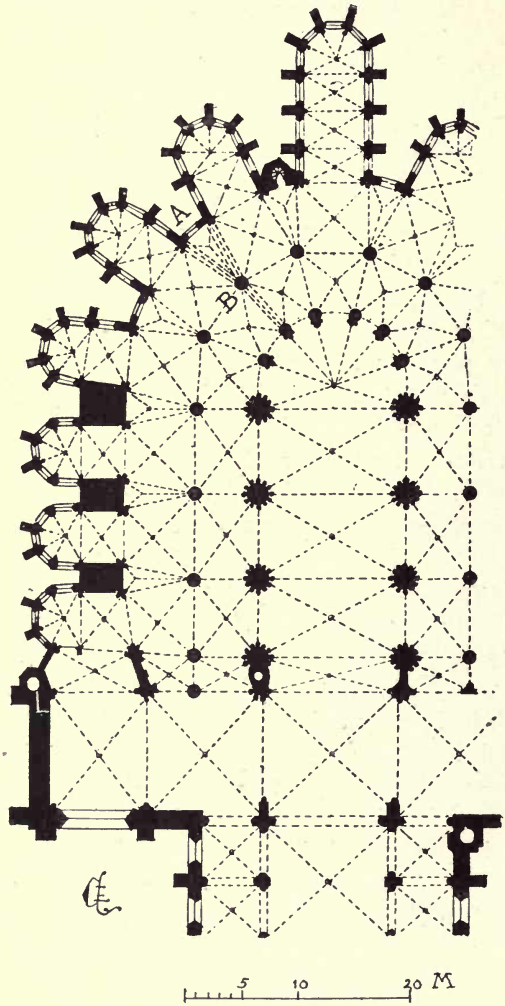
favoured in this respect were finished in the course of the fourteenth century; but in the greater number

of cases the work dragged slowly on, and reached



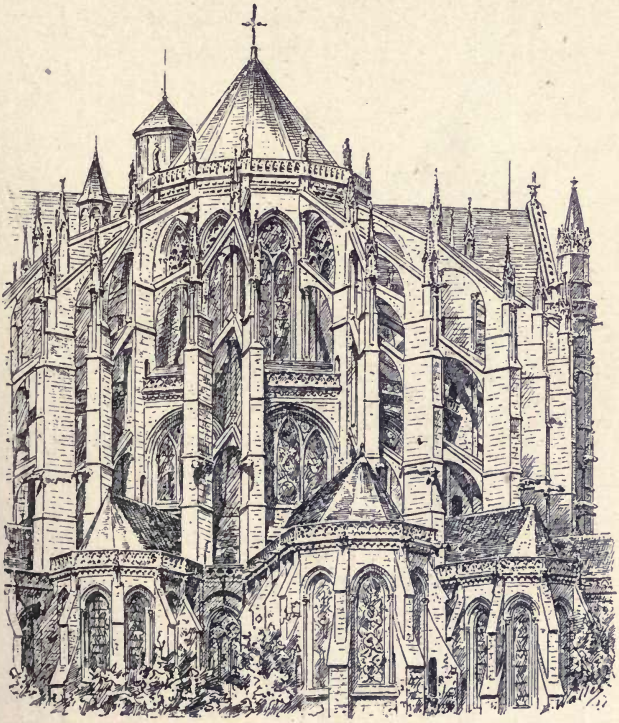
52. CHARTRES CATHEDRAL. ROSE WINDOW OF NORTH TRANSEPT

its end some two centuries after its inauguration. Reconstructive undertakings were constantly impeded



53. MANS CATHEDRAL. PLAN

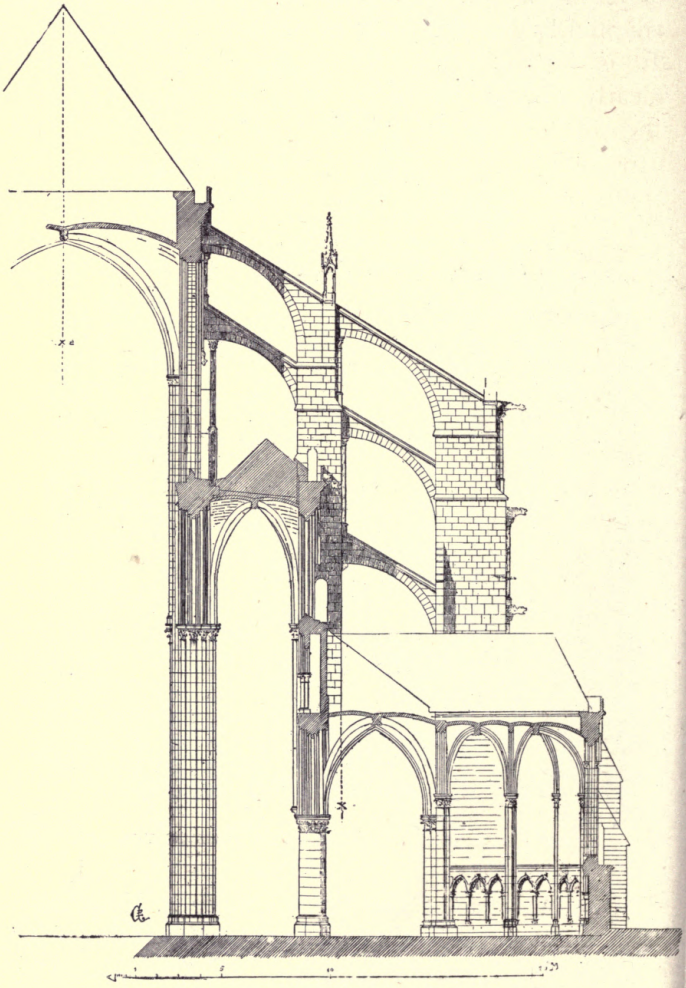
iron chains. Such expedients are a sufficient criticism of the ingenious but precarious system adopted by the architects of Mans.



54. MANS CATHEDRAL. FLYING BUTTRESSES OF THE APSE

The influence of the Ile-de-France in Normandy is manifest in the arrangement of choirs and apsidal chapels in Norman cathedrals of the thirteenth century. The Cathedral of Coutances, a monument

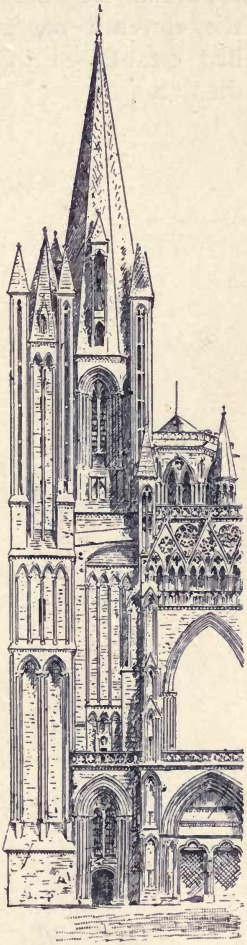
of the eleventh century, was rebuilt in the early



55. MANS CATHEDRAL. SECTION OF THE CHOIR

years of the thirteenth century under the impulse given by Northern France to the architecture of the period. It is in the choir that we clearly trace this influence, in the double columns of the apse, and the ingenious disposition of its collateral vaults. But the façade is purely Norman, not merely in general design, but in the details of the composition, facsimiles of which may be found in England.

The Cathedral of Dol in Brittany, one of the great churches of the thirteenth century, seems to have escaped the influences of the Northern innovation. Its general plan, its square apse lighted by large windows, the details of its architecture and ornamentation, all proclaim its affinity to the great churches which rose contemporaneously with it on either side of the Channel, in Normandy, and in England. It is very probable that it was built by the same architects or their immediate disciples, working on the more ancient



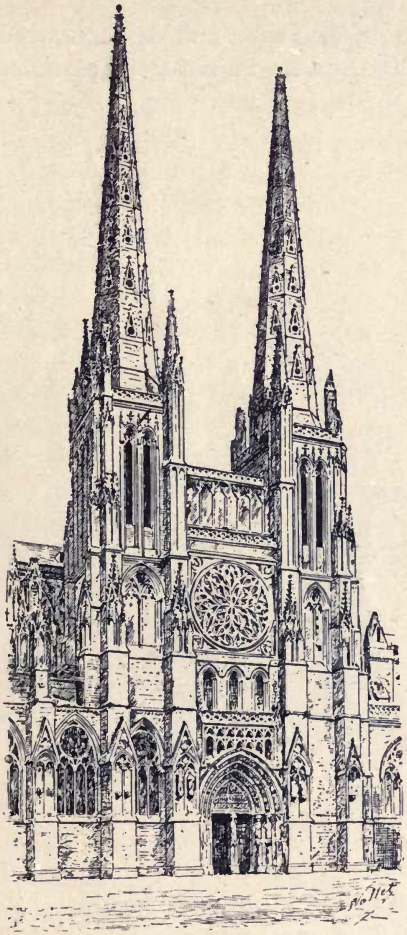
56. COUTANCES CATHEDRAL. NORTH TOWER

the nave, were completed in the following century, and the work was then abandoned until the reign of Napoleon III., who caused it to be again taken up. The Cathedral of Limoges was begun in 1273, under the direct inspiration of Notre Dame at Amiens.

57. RODEZ CATHEDRAL. WEST FRONT

Down to our own times it has had to content itself with a choir, a transept, and the suggestions of a nave, the last of which has lately been completed. At Rodez a greater perseverance was shown, and the work went steadily on from 1277 until the Renascence, at which period, however, the two western towers were left unfinished, notwithstanding

a contemporary description of their magnificence,

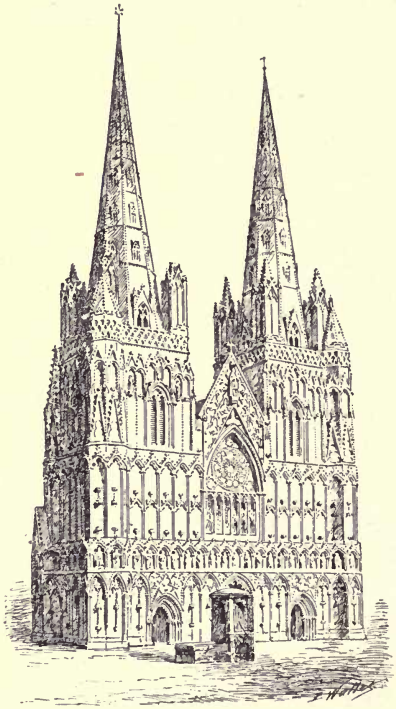


58. BORDEAUX CATHEDRAL. CHOIR AND NORTH FRONT

which, in a truly Gascon vein, compares them to the

Egyptian pyramids, among other world-renowned marvels.

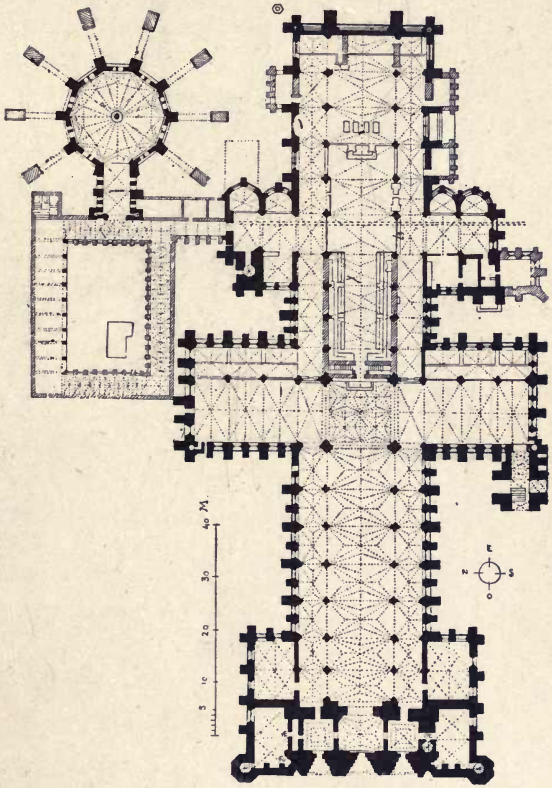
"In 1272 Toulouse and Narbonne entered the lists against Amiens, imitating its plan, and propos-



59. LICHFIELD CATHEDRAL. WEST FRONT

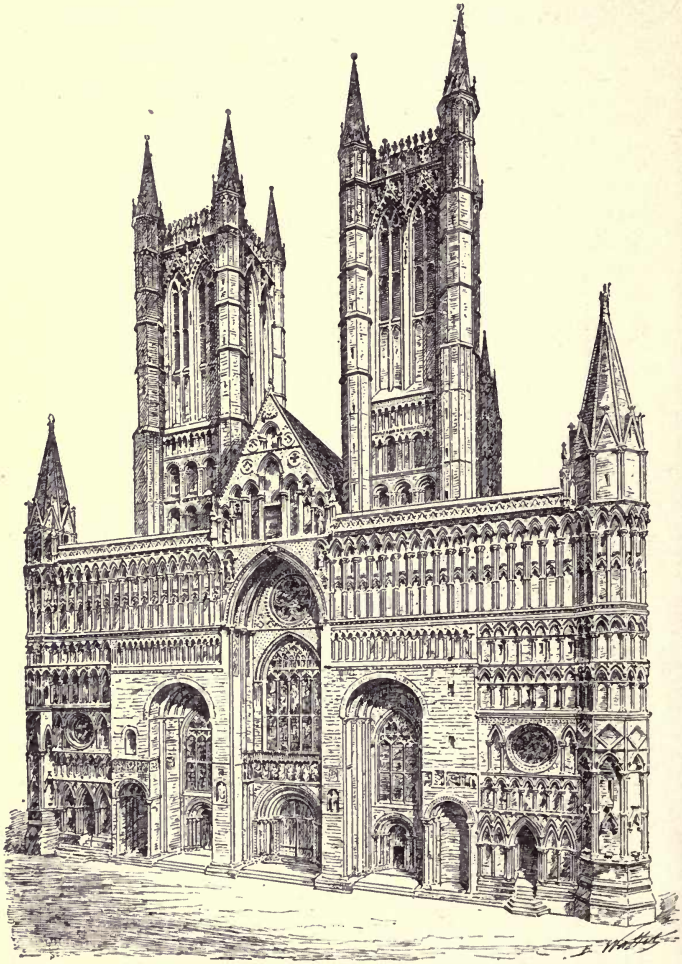
ing to at least equal it in dimensions. Neither of these undertakings proved happy. Archbishop Maurice of Narbonne died the same year the works were begun; his successors took but a lukewarm interest in their progress. In 1320 the sea re-

same architects, as they certainly were carried out by pupils or disciples of the same master-builders.[1]



60. LINCOLN CATHEDRAL. PLAN

[1] It is difficult to believe that Mons. Corroyer is in earnest in comparing the spires of Lichfield to those of Coutances, or the central tower of Lincoln to that of the same French cathedral. Mons. Corroyer appears to be unacquainted with the line of filiation between English spires and towers, and so looks, as a matter of course, for a French mother to such as strike his fancy.—ED.



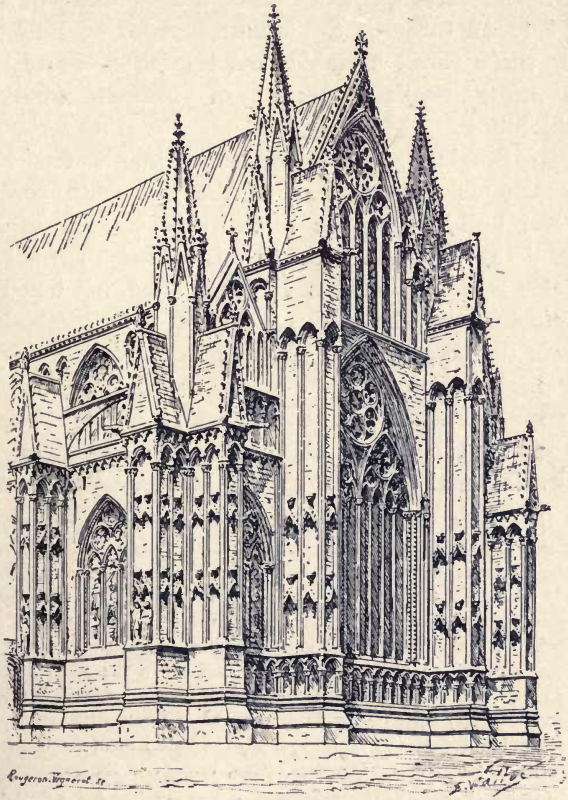
61. LINCOLN CATHEDRAL. WEST FRONT

grace and strength of French architecture, which

62. LINCOLN CATHEDRAL. TRANSEPT

may fitly be compared with gold, in its union of

the supple and the durable, of solidity and power of resistance equal to those of the less precious



63. LINCOLN CATHEDRAL. APSE AND CHAPTER-HOUSE

metal, with an adaptability to artistic ends far greater.

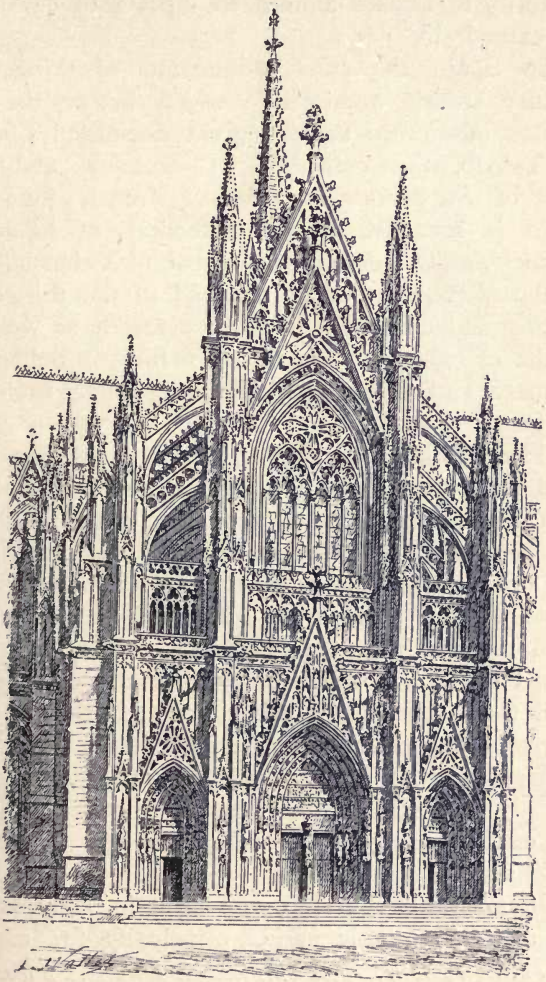
In the façade and the west towers English characteristics predominate, but the choir and the apse

either built between 1235 and 1300, or at any rate begun during this period, to be completed in the fourteenth century and even later.

64. BRUSSELS CATHEDRAL (STE. GUDULE). WEST FRONT

Ste. Gudule at Brussels was begun about 1226; but only the choir and the transept were

begun by a French architect, one Estienne de Bonneuil,



65. COLOGNE CATHEDRAL. SOUTH FRONT

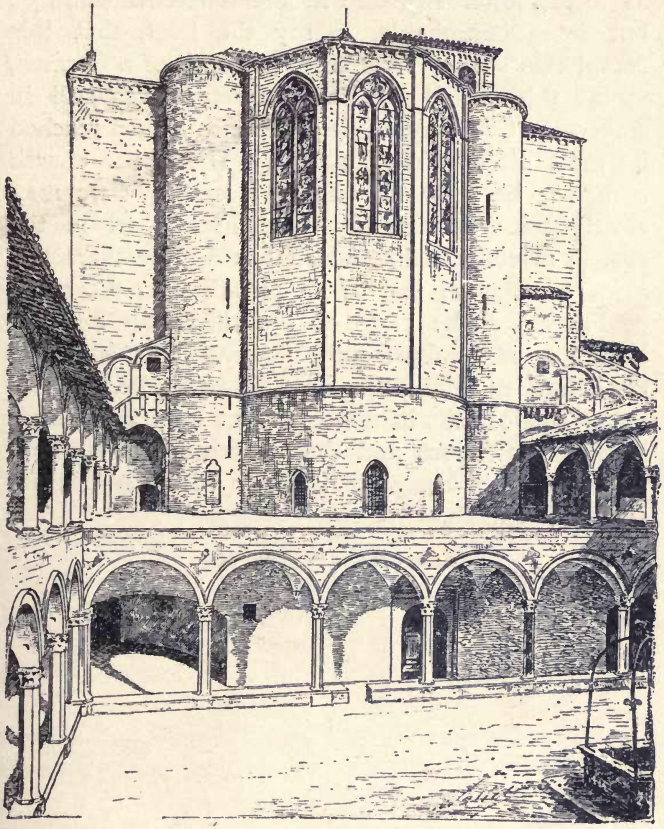
66. BURGOS CATHEDRAL. WEST FRONT

conclusion. Not to speak of the famous Cathedrals of Milan and Florence, nor of S. Anthony, nor of the Cathedral of Padua, the Cathedrals of Siena and Orvieto seem especially to lean away from antique

67. CATHEDRAL OR DUOMO OF SIENA. WEST FRONT

and Lombard traditions towards those of France, a characteristic especially notable in the decorative details of their west fronts, which recall in many ways the work of French architects during the thirteenth and fourteenth centuries.

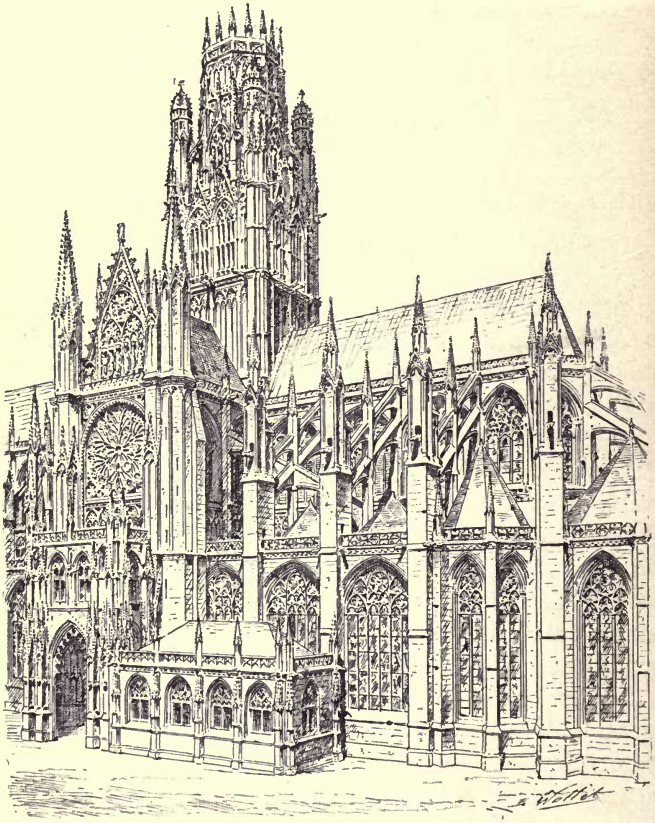
It is the opinion of some archæologists that the true parent of the Cathedrals of Siena and Orvieto



68. CHURCH OF ST. FRANCIS AT ASSISI. APSE AND CLOISTERS

was the Church of St. Francis at Assisi, which is not far distant. Now St. Francis of Assisi is undeniably French in origin. This church, which

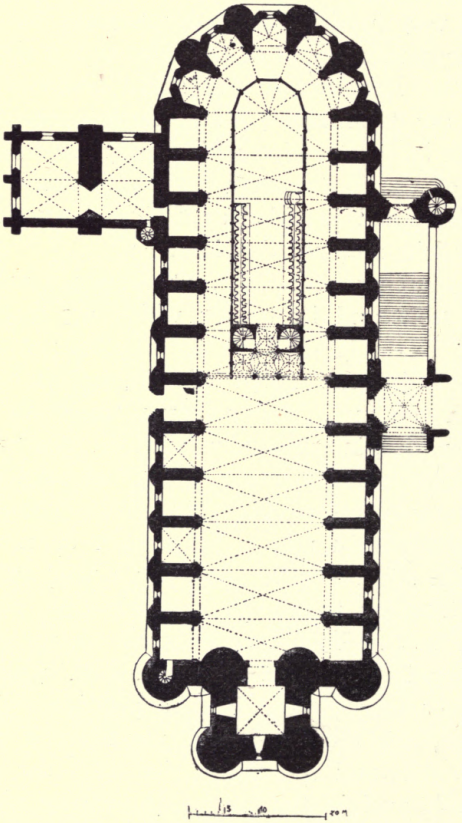
during the wars, or had fallen into decay through long neglect, consequent on the poverty of the



69. CHURCH OF ST. OUEN AT ROUEN. CENTRAL TOWER AND APSE, SOUTH FRONT

community, were either rebuilt or restored. The movement was, however, presently arrested by the

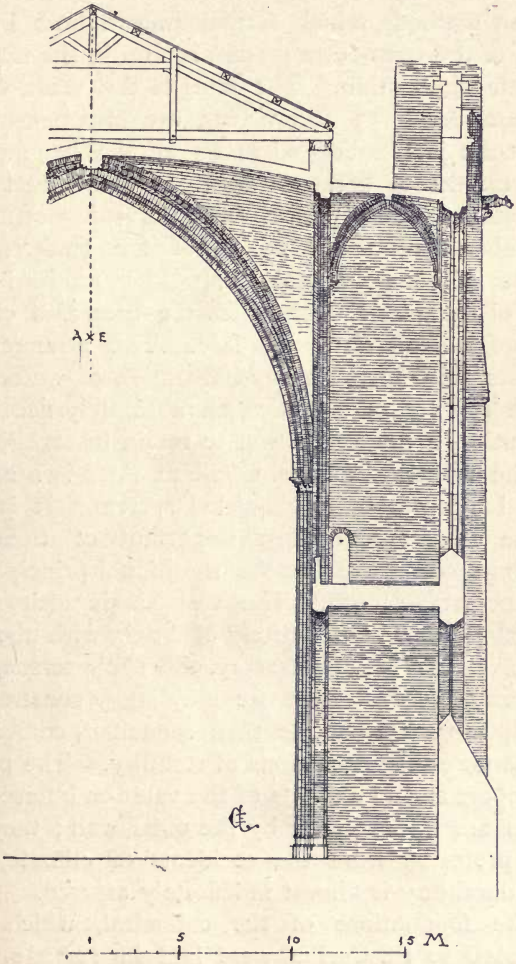
disappear in the fifteenth century. Thenceforward the lines of the intersecting arches of the vault, as of



70. ALBI CATHEDRAL. PLAN

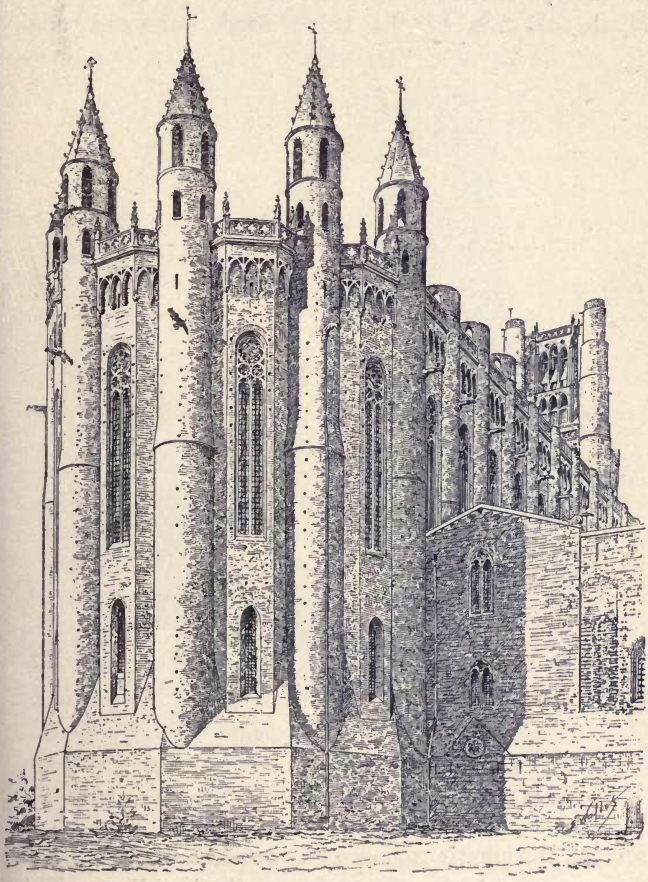
the longitudinal and transverse arches, run down without interruption to the base of the piers, where we find a complex faggot of mouldings crossing and

on the single-aisled plan. That of Perpignan has



71. ALBI CATHEDRAL. SECTION OF THE NAVE

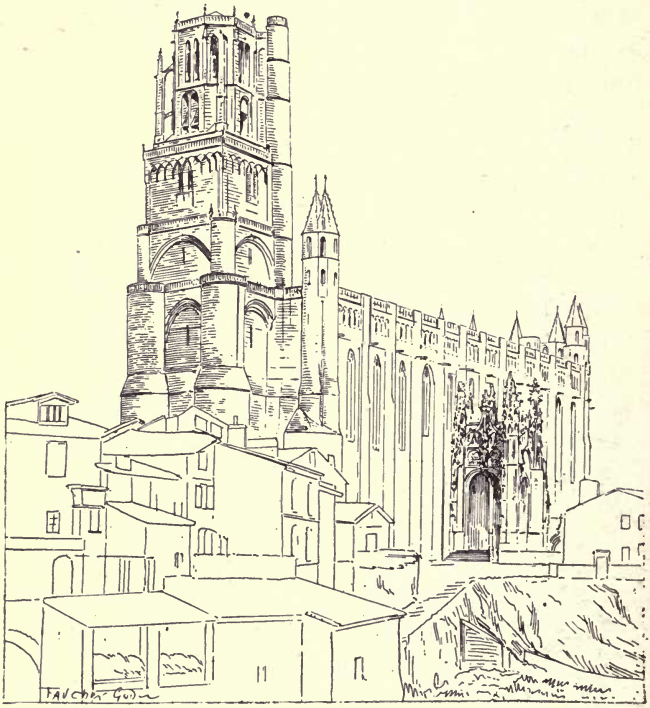
main building was finished towards the close of the



72. ALBI CATHEDRAL. APSE

fourteenth century, and the whole as it now stands was completed in the last years of the fifteenth and

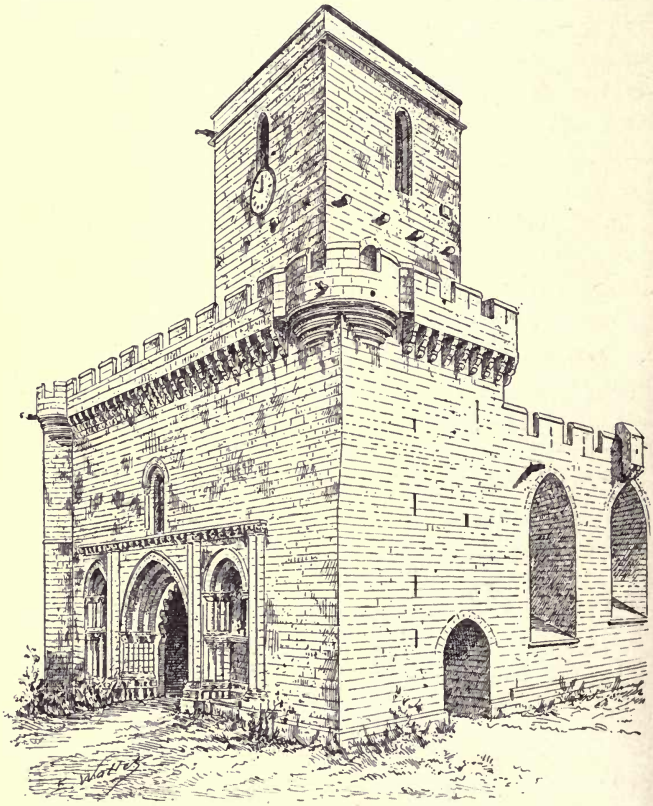
early part of the sixteenth century, by the addition of the baldacchino of the southern porch, or principal entrance, of the stone rood loft, and choir



73. ALBI CATHEDRAL. DONJON TOWER AND SOUTH FRONT

screen, the stalls of carved wood, and the fresco decorations which adorn the whole building. This varied workmanship renders Albi one of the most instructive of studies in connection with French decorative art, the successive developments being

military character of the architecture. The formidable aspect of the building is much enhanced by the

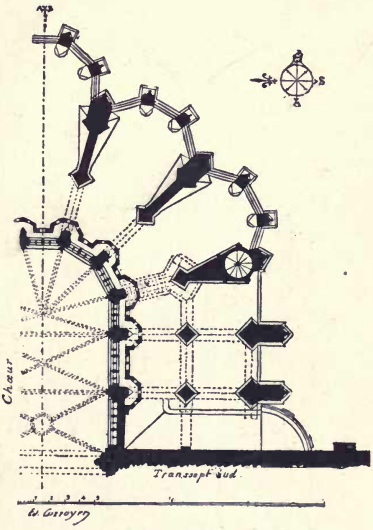


74. CHURCH OF ESNANDES (CHARENTE INFÉRIEURE). A FORTIFIED CHURCH OF THE FOURTEENTH CENTURY

western tower, in effect a donjon keep, completing the system of defence by its connection with the fortifications of the archbishop's palace, which in

75. ABBEY OF MONT ST. MICHEL. FLYING BUTTRESSES OF THE CHOIR (LATE FIFTEENTH CENTURY). FROM A DRAWING BY THE AUTHOR

first years of the sixteenth century.[1] This part of the church shows the effect of the decadence of which there had been indications so early as the close of the thirteenth century. Certain of the arrangements are very ingenious, notably that of the triforium, which rests on the reins of the lower vault, and forms, as seen from outside, a series of small apses standing out from the main wall. But the mason's work is negligent, especially in the flying buttresses, which were so carefully treated by the architects of the thirteenth century. The lines are attenuated by a multiplicity of mouldings to an almost thread-like slenderness; the spring of the arches is undefined by capitals, and the complicated network of the fenestration adds to the wire-drawn effect, and further diminishes the proportions of the building. There is little to admire but the extreme manual dexterity of the carvers. The carving of the granite, the only stone used at Mont St. Michel[2] save for the arcadings of the cloister,

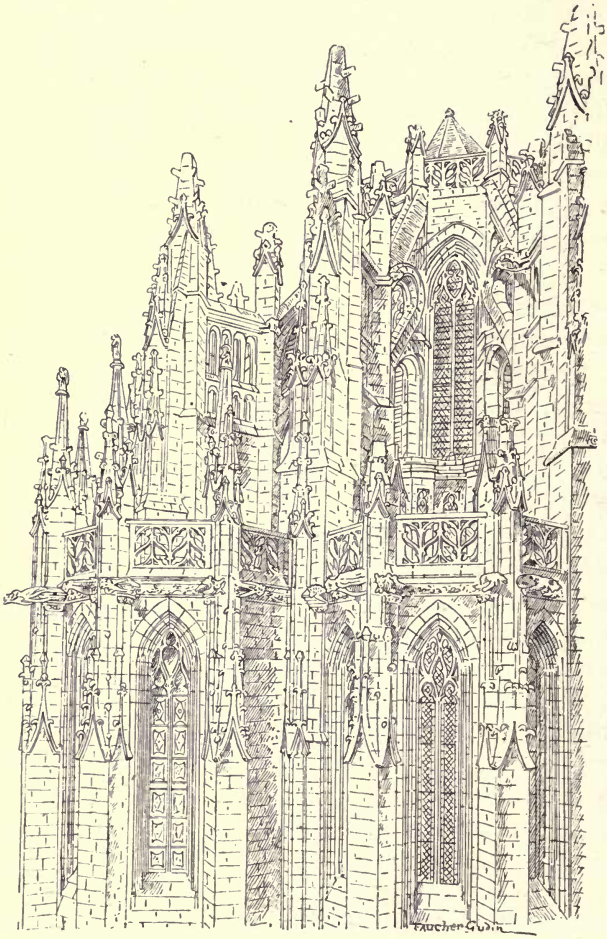


76. ABBEY OF MONT ST. MICHEL. PLAN OF THE CHOIR ABOVE THE LOWER CHAPEL

[1] *Description de l'Abbaye du Mont St. Michel et des ses Abords*, by Ed. Corroyer; Paris, 1877.

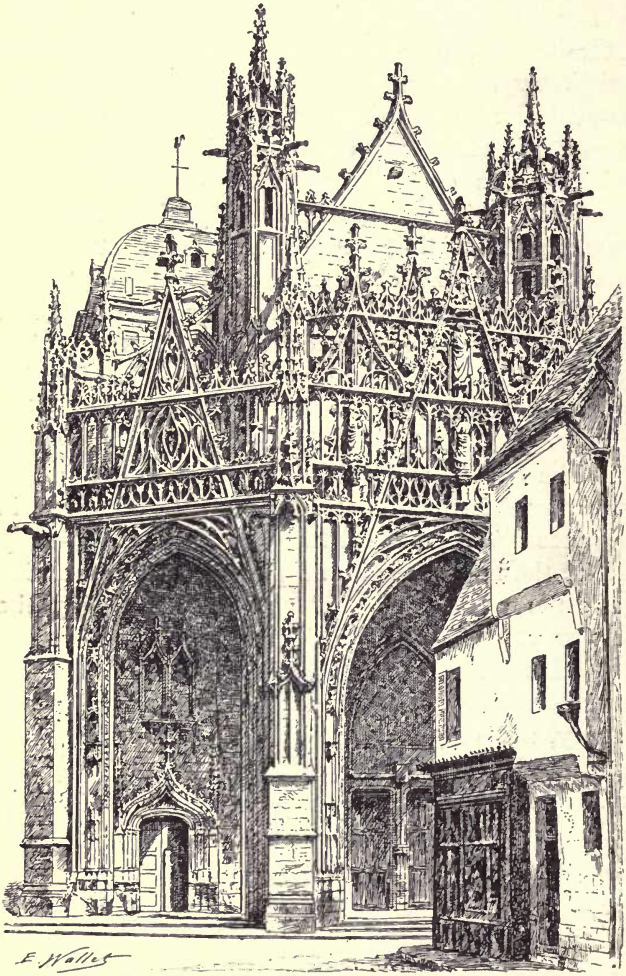
[2] See Part II., "Monastic Architecture."

is very remarkable, as is also the ornamental sculp-



77. ABBEY OF MONT ST. MICHEL. DETAILS OF THE APSE (LATE FIFTEENTH CENTURY)

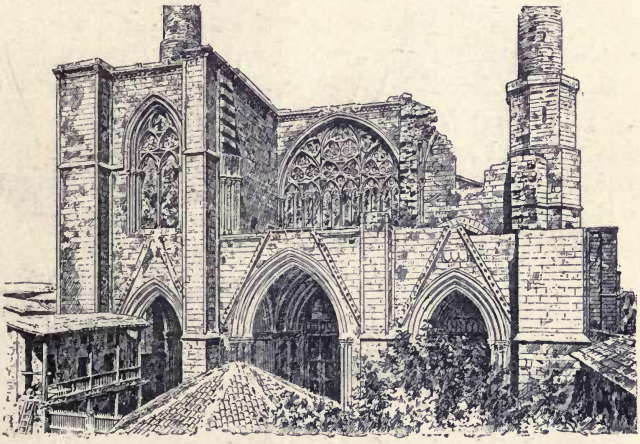
evident traces of their influence, which is further



78. ALENÇON CATHEDRAL. WEST FRONT (FIFTEENTH CENTURY)

manifested in certain structures of Rhodes and Cyprus from the thirteenth to the fifteenth century, in which Western and more especially French types have served as models.

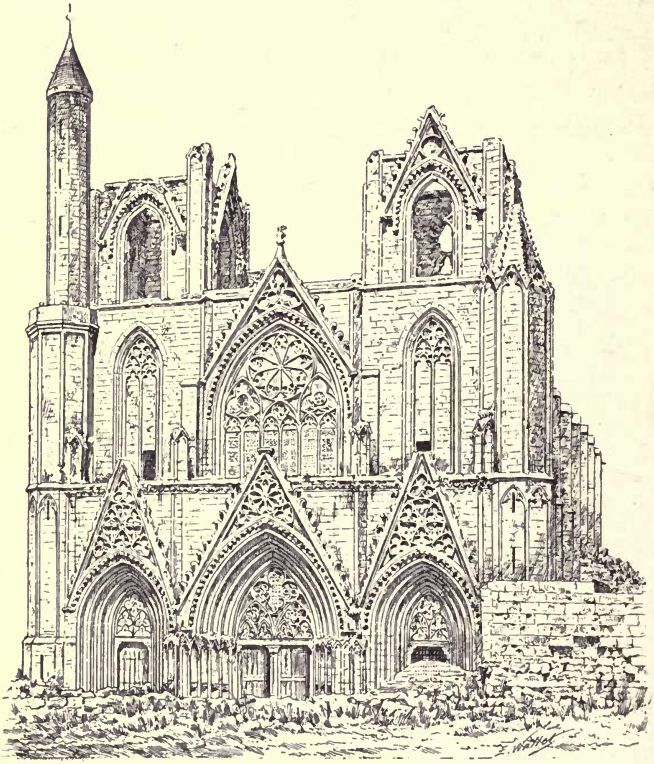
"It will hardly be disputed that the prolonged sojourn of the Crusaders in the Levant, the teachings of their architects, and the contemplation of their



79. FAÇADE OF THE CATHEDRAL OF ST. SOPHIA AT NICOSIA (ISLAND OF CYPRUS)

works, were considerable factors in the development of Arab art. There was a reaction of the West upon the East; sometimes indeed such a direct influence is perceptible as to astound and perplex the observer. To understand the part played by the Crusaders in the East, and to appreciate its Western and independent character, we must cast a rapid glance at the monuments constructed by them in Cyprus and Rhodes after their expulsion from

Syria. We shall find the movement which originated in the twelfth century progressing throughout the



80. CATHEDRAL OF ST. NICHOLAS AT FAMAGUSTA (ISLAND OF CYPRUS). FAÇADE

following centuries on the same lines; in other words, drawing a continuous inspiration from France.[1]

"The island of Cyprus was conquered in 1191

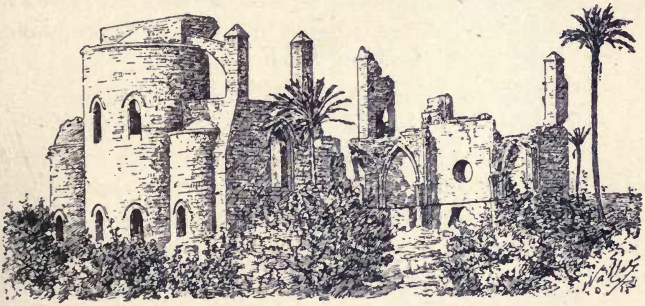
[1] Melchior de Vogüé, *Les Églises de la Terre Sainte.*

Achmet also date from the close of the thirteenth century. Among the more numerous buildings of the fourteenth century the most noteworthy are the Cathedral of St. Nicholas at Famagusta (Figs. 80 and 81), with its three portals and two towers; the Church of St. Sophia at Famagusta (Fig. 82), the Premonstrant Monastery of Lapaïs, remarkable

81. CATHEDRAL OF ST. NICHOLAS AT FAMAGUSTA (ISLAND OF CYPRUS)

for the beauty and nobility of its abbatial buildings, which comprise a large three-aisled chapel, and several religious buildings at Paphos and at Limasol. At Rhodes there are a number of churches built in the fifteenth century after French models, which had no less a vogue for dwelling-houses than for religious and military architecture; in a word, architecture —civil, religious, or military—was French in all its manifestations. "The guns of the order still point from the embrasures of the towers, Soliman's

stone cannon balls strew the neighbouring ground; sculptured on the house fronts are the blazons, and in many cases the French names, of their bygone owners. Involuntarily the mind travels back by the space of three centuries, reincorporating these for-

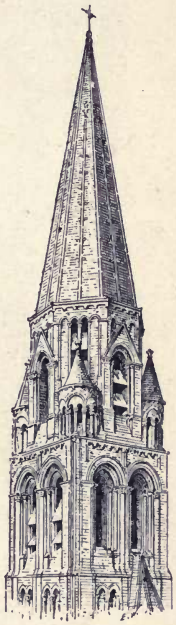


82. RUINS OF THE CHURCH OF ST. SOPHIA AT FAMAGUSTA (ISLAND OF CYPRUS)

gotten worthies, and repeopling their dwelling-places. One half expects to see the emblazoned doors thrown open, to give egress to knightly owners, mustering for the last time under the banner of St. John."[1]

[1] Melchior de Vogüé, *Les Églises de la Terre Sainte.*

the hour of prayer to a distant flock, small bells were in use to regulate the religious exercises of the clergy. They are called in the Latin texts *signum*, *schilla*, *nola*; in French *sin*, *esquielle*, *eschelitte*; from the beginning of the tenth century they were placed in the campaniles which crowned the domes.



83. STEEPLE, VENDÔME (TWELFTH CENTURY)

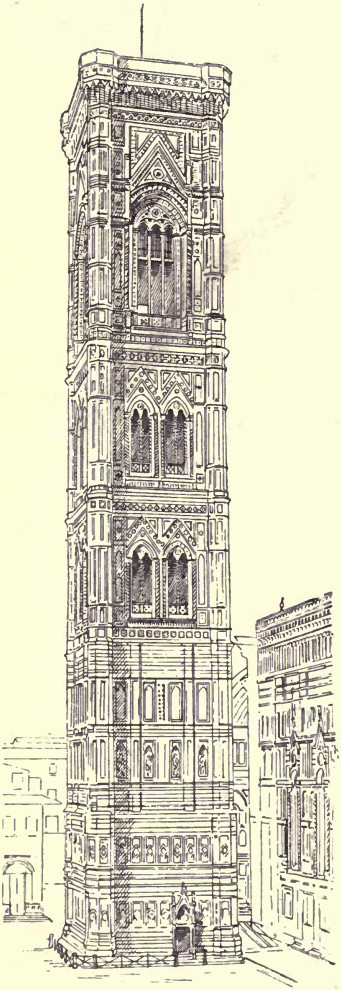
The Italian word *campanile* has the force of the French terms *tour*, *clocher*, *beffroi* (or the English tower, steeple, belfry). But the denomination *clocher* has a general application to all pyramidal structures rising above the roof of a church.

The belfry was a tower, in most cases isolated, which contained the bell destined to sound the curfew and tocsin, and to call the burghers to civic assemblies.

Like the belfry, the Italian campanile is generally an isolated building, but it is usually placed in the near neighbourhood of a church. Among the most famous *campanili* are those of Florence—begun in the fourteenth century, on the plans of Giotto,—of Padua, of Ravenna, and the famous leaning tower of Pisa.

In France the term campanile has a more general application, and is given to the little pierced

arcaded turrets which, in many churches, crown the walls of the façade and shelter small bells.

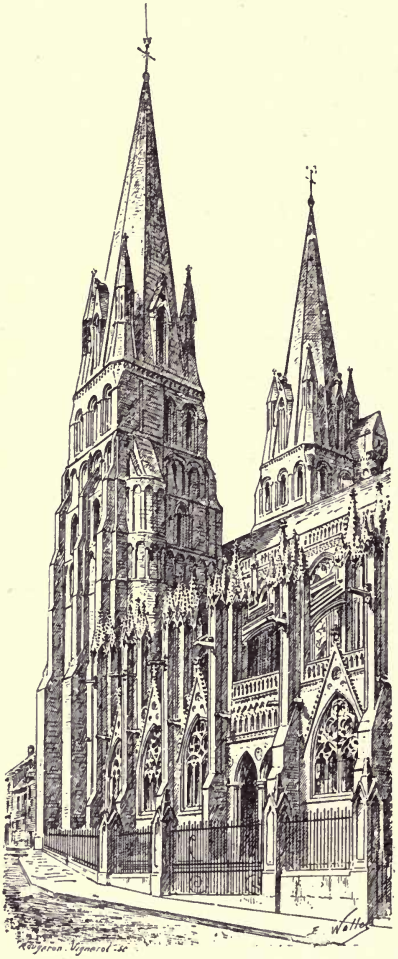


84. GIOTTO'S TOWER AT FLORENCE

The most ancient belfries of the original provinces of France have great analogies with Byzantine monuments as to form, even when differing in detail. One of the most remarkable of these is the tower of St. Front at Périgueux, which seems to date from the first years of the eleventh century. It marked the sepulchre of the Saint, and apparently embraced two bays of the original three-aisled Latin church of the sixth century, evident traces of which have been discovered to the west of the great domed building of later times.

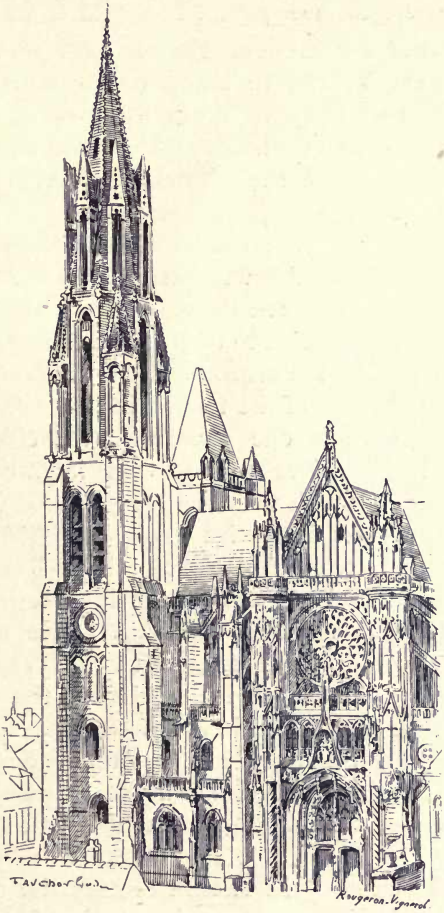
The tower of St. Front is composed of three square stories, diminishing on plan as they rise, and crowned

of such as were attached even to simple parish



85. BAYEUX CATHEDRAL. TOWERS OF THE WEST FRONT

churches may be explained if we consider them

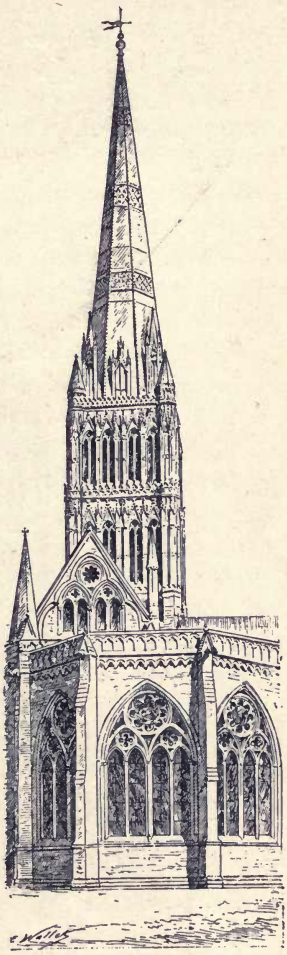


86. SENLIS CATHEDRAL. SOUTH TOWER OF WEST FRONT

mainly as denoting the status of an enfranchised

the spire, ensuring the solidity of the angles by a variety of ingenious combinations.

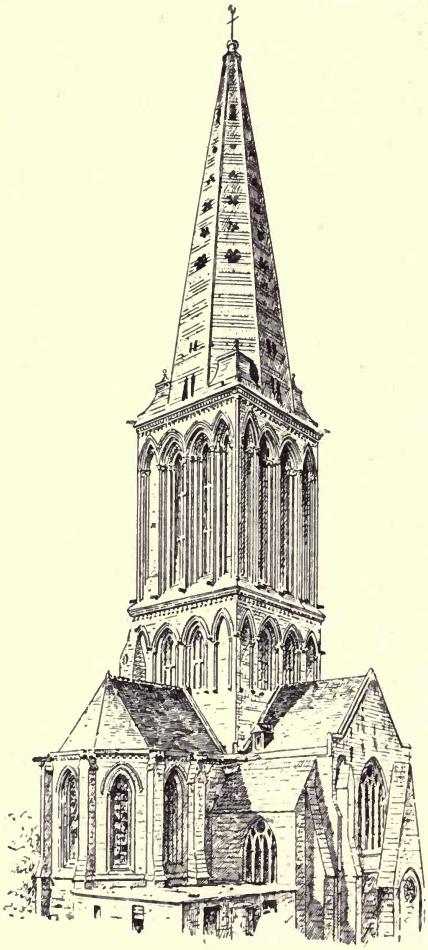
The great central towers of the Norman churches built in England and Normandy from the thirteenth to the fourteenth century were not always merely belfries, as at Salisbury or Langrune, for instance; in many cases they were lanterns, their functions being to light the centre of the church and to form a magnificent decorative feature at the intersection of transepts, nave, and choir in cruciform structures, such as St. Georges, Bocherville, Coutances, etc. Of all the French provinces Normandy clung most persistently to the lantern tower, and that of St. Ouen at Rouen is one of the most interesting examples.



87. SALISBURY CATHEDRAL-STEEPLE

In other provinces, notably Picardy, Champagne, Burgundy, and the Ile-de-France, lantern towers

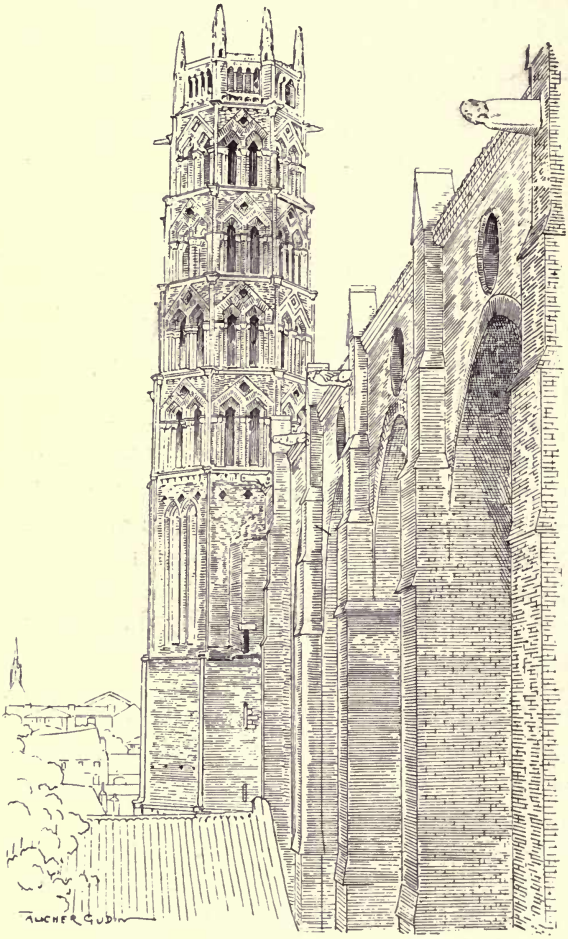
were superseded by timber *flèches* cased in lead, which



88. CHURCH OF LANGRUNE (CALVADOS). STEEPLE

rose at the intersection of the roofs of nave and transepts.

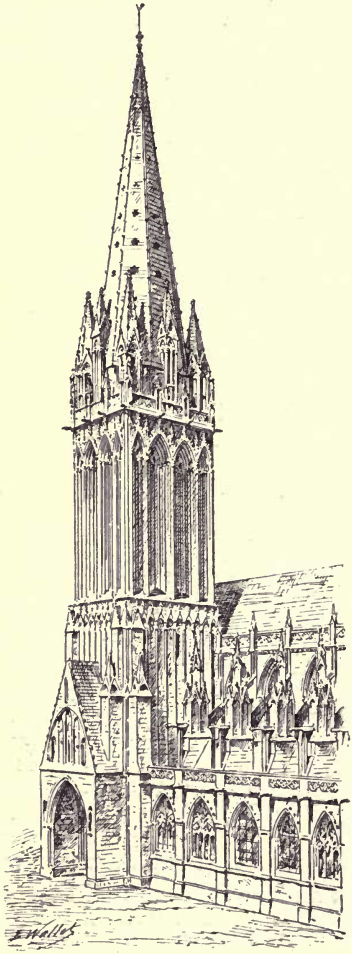
functions as belfries became apparent only above the



89. CHURCH OF THE JACOBINS AT TOULOUSE. TOWER

level of the vaults. A beautiful example of this

ated, and the mass of ornament seemed designed to conceal them as far as possible. In France the misfortunes of the times tended largely to perpetuate these dangerous foibles; for a number of churches which were founded at the close of the thirteenth century remained unfinished till the fifteenth and sixteenth, when Gothic art was in full decadence.

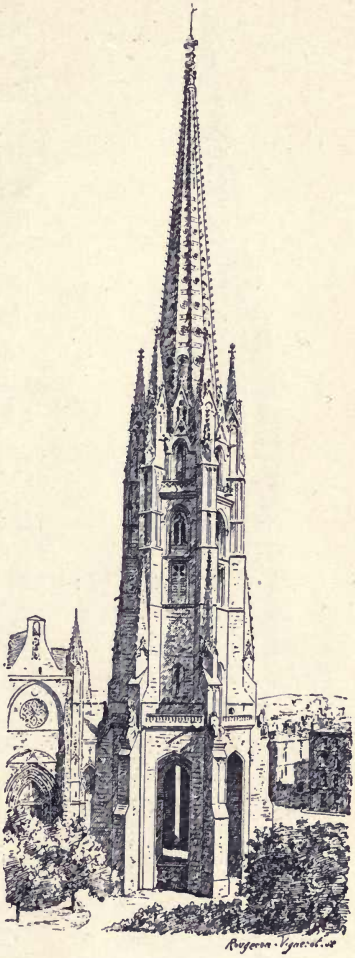


90. CHURCH OF ST. PIERRE AT CAEN. TOWER

But we must not passover unmentioned certain buildings famous for boldness of construction and magnificence of decoration, if not for purity of style. The following are perhaps the most important:—In France the tower of St. Pierre at Caen, which shows strong traces of that analogy, or family likeness, so to speak, uniting Norman edifices; and the

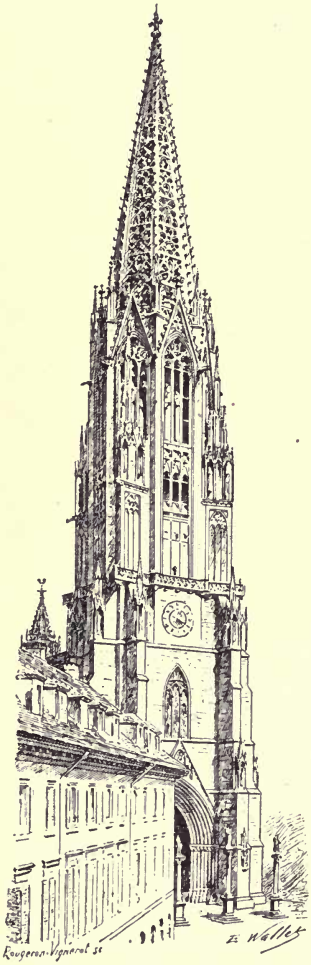
tower of St. Michel at Bordeaux, the spire of which was destroyed by a hurricane in 1768, and has lately been restored to its primitive height of 365 feet; in Austria the tower of St. Stephen, one of the most important of such buildings in that country, finished in 1433; the tower of the Cathedral of Freiburg-im-Breisgau (grand-duchy of Baden), one of the most beautiful and important examples. It was mainly constructed towards the close of the fourteenth century, but the open-work spire was added about the middle of the following century.

The Cathedral of Antwerp in Belgium was begun in the middle of the fourteenth century; the nave and the four side aisles were not completed till a century



91. CHURCH OF ST. MICHEL AT BORDEAUX. TOWER

later. The façade is said to have been begun in 1406 by a Boulognese master-mason, one Pierre Amel; but of the two belfry towers only that on the north was completed in 1518. Its principal merit lies in its boldness of construction and its unusual height of 410 feet, rather than in purity of style or beauty of detail, the latter being a conglomerate made up from every period of Gothic.



92. CATHEDRAL OF FREIBURG-IM-BREISGAU (GRAND-DUCHY OF BADEN). TOWER

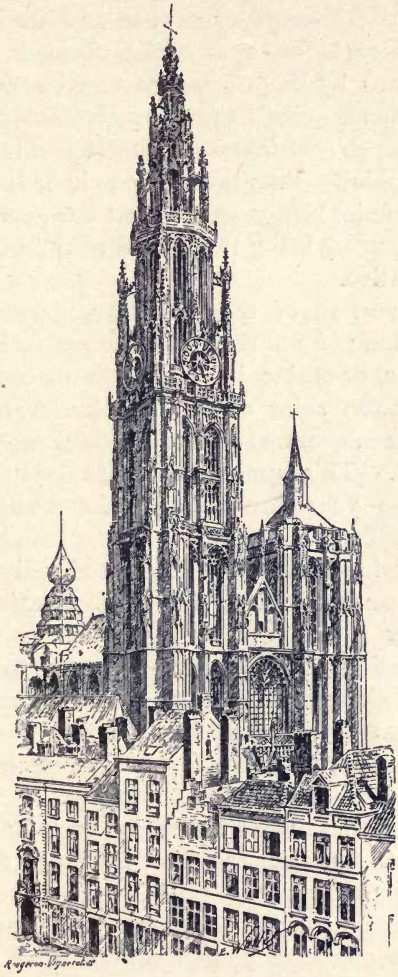
Choirs.—In Christian churches the choir [1] proper was an institution long before the chapels.[2]

At the extremity of the basilica, in the centre of the chalcidium or transept which gave to the basilican plan the form of a T or Tau—a figure venerated by the Christians

[1] *L'Architecture Romane*, by Ed. Corroyer; Paris, Maison Quantin, 1888.

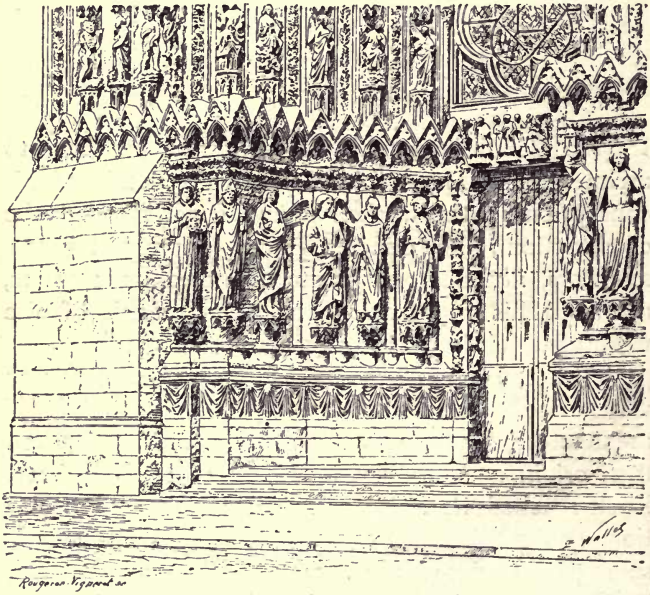
[2] *Encyclopédie de l'Architecture et de la Construction*, article "Chœur - Chapelle," by Ed. Corroyer.

as symbolising the Cross—were placed the altar, the



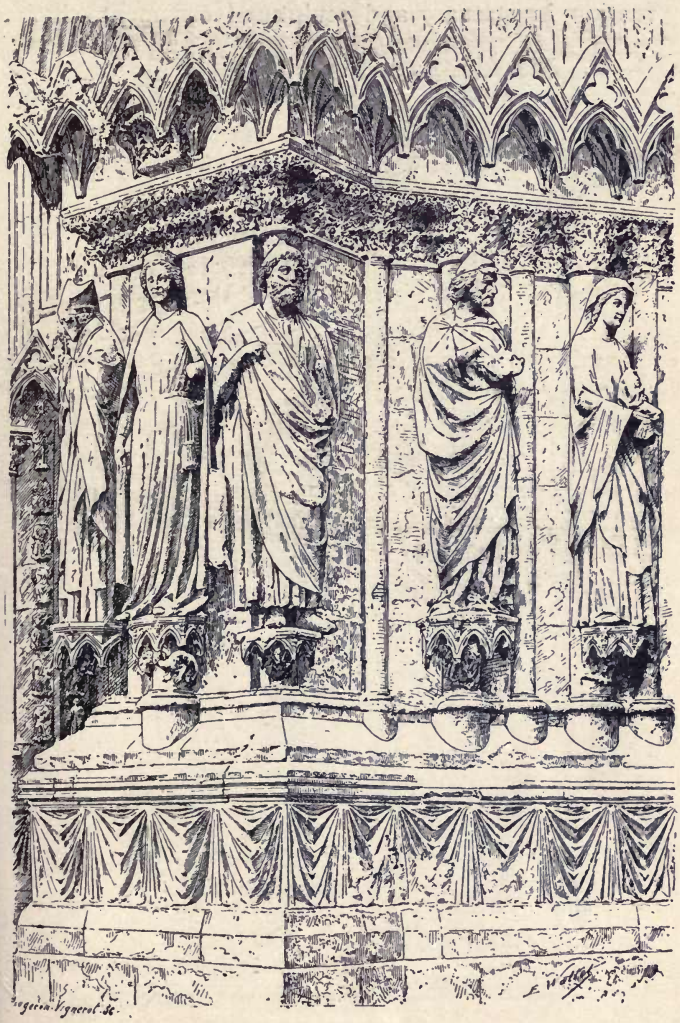
93. ANTWERP CATHEDRAL

Roman inspiration, and even direct imitation of Roman sculpture, is clearly traceable in the first half of the thirteenth century. Rheims, which may be accepted as the masterpiece, the last word, so to speak, of Gothic architecture, illustrates this influence in certain magnificent examples of the western porch.



94. RHEIMS CATHEDRAL. STATUES OF WEST FRONT. CENTRAL PORCH

The architects of the thirteenth century were pre-eminently the children of their generation. Ignoring their Latin descent they followed in the paths of the innovators so far as monumental structure was concerned; but they in their turn inaugurated a new departure by abandoning the Byzantine con-



95. RHEIMS CATHEDRAL. STATUES OF WEST FRONT

vention in statuary and sculptured ornament which

96. RHEIMS CATHEDRAL. STATUES OF WEST FRONT

had prevailed throughout the preceding century, in favour of the more ancient Roman tradition. In this one respect they made a salutary return upon those antique principles which they afterwards definitively abandoned.

The influence of Roman art upon French mediæval sculpture is unquestionable. Its course may be traced through the relations existing between North and South long before the Crusades, principally by means of the great religious communities, and even more manifestly in the countless monuments raised in Gaul on Roman models, or in those constructed by Gallo-Romans for several centuries. Many of these survived the incursions of the barbarians.

97. RHEIMS CATHEDRAL. INTERIOR OF PRINCIPAL DOOR. STATUE AND ORNAMENT

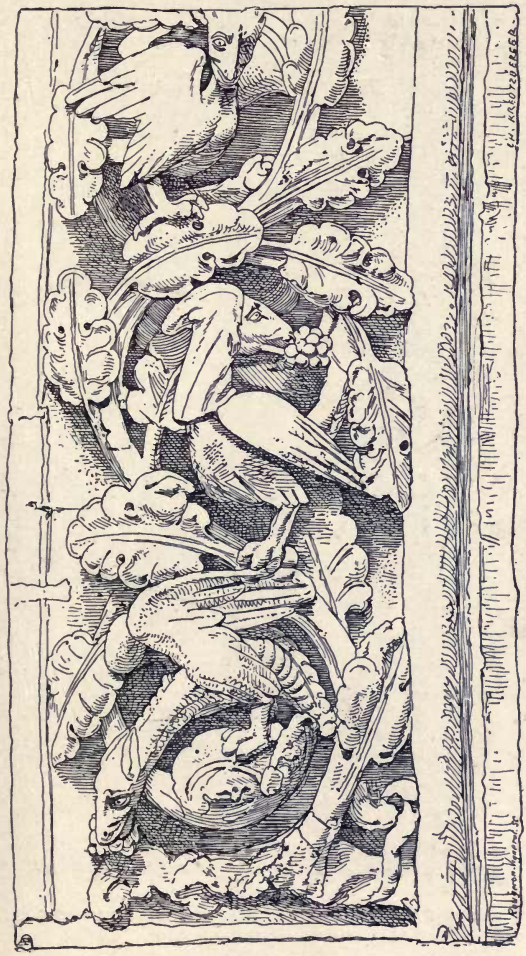
The origin of orna-

mental sculpture is no less venerable. Superficially, it would seem to have drawn its inspiration mainly from the Romanesque epoch; but according to modern *savants*[1] its source must be looked for in much remoter periods. Oriental art, imported into Scandinavia, and there barbarised, was introduced into Ireland in the early centuries of our era. The Irish monks, whose power was very great, and who seem to have been the principal agents in the Renascence of the days of Charlemagne, created, or at any rate greatly influencedCarlovingian art by their manuscripts and miniatures. From Carlovingian art that of the so-called Romanesque period was born, and this was

98. RHEIMS CATHEDRAL. INTERIOR OF PRINCIPAL DOOR. STATUE AND ORNAMENT

[1] M. A. de Montaiglon, Professor at the *École des Chartes*.

in its turn the parent of the ornamental sculpture of



99. NOTRE DAME DE PARIS. PRINCIPAL DOOR. RUNNING LEAF PATTERN

the thirteenth century. In the admirably decorative

character of this art we recognise the influence of

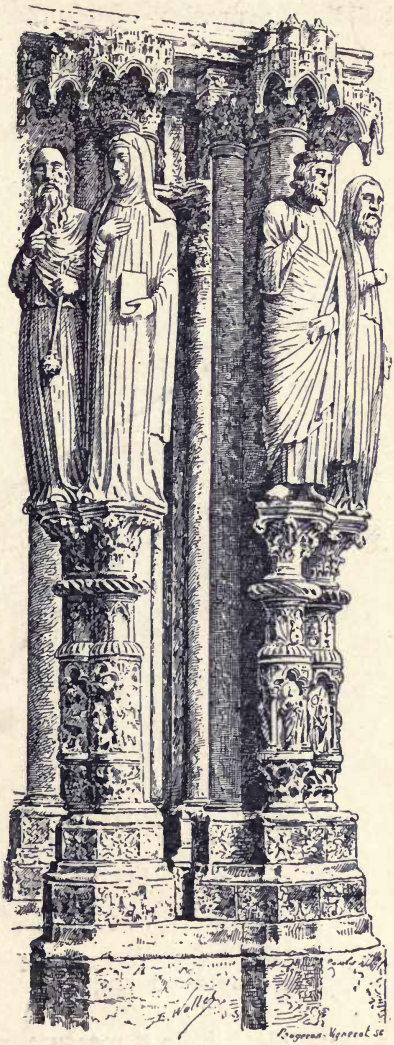
100. NOTRE DAME DE PARIS. RUNNING LEAF PATTERN ON ARCHIVOLTS OF NORTH DOOR

an ancient tradition handed on from generation to

generation, to be finally rejuvenated, invigorated, and transformed as to detail by a close study of nature, precisely as had happened in the allied development of statuary.

The architects of the Ile-de-France, like those of Rheims, assimilated the principles of the new art with the supple skill which characterised them, such assimilation bearing rich fruit at Notre Dame de Paris in the sculptured figures of the west porch, and no less in their accessory ornaments.

A most instructive comparative study is furnished by the north and south porches of Chartres Cathedral. Here we find, in one



101. CHARTRES CATHEDRAL. STATUES OF THE NORTH PORCH

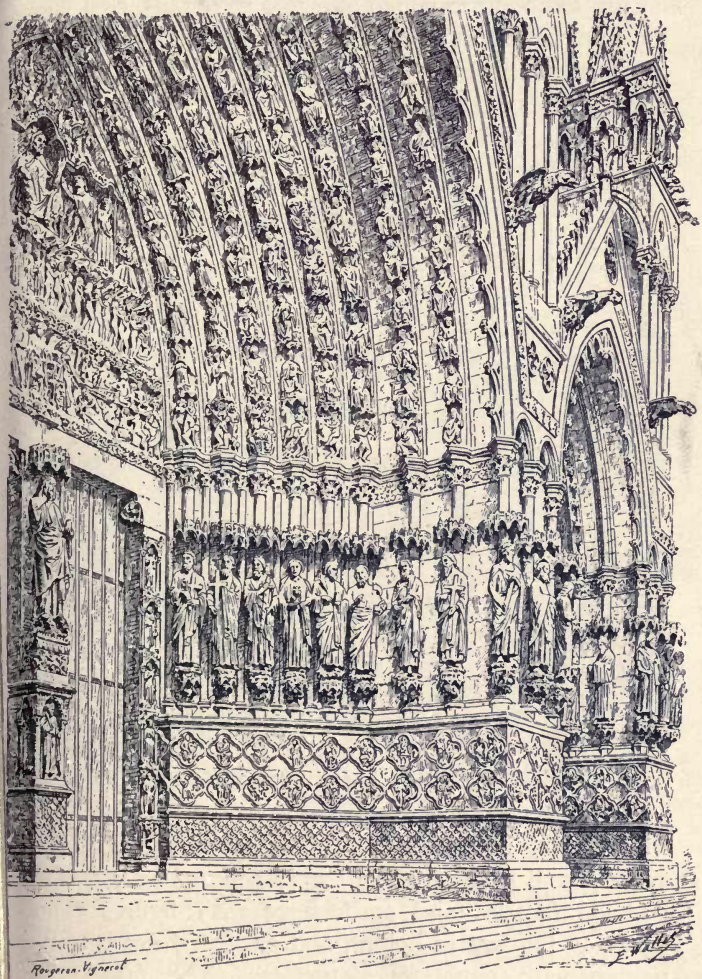
building, examples of sculptures inspired by the hieratic tradition of Byzantium, and of those which had been transformed and naturalised by a return to antique ideals.

102. CHARTRES CATHEDRAL. STATUES OF THE SOUTH PORCH

At Amiens again certain of the sculptures were influenced by the new principles. But in the greater part there is a prodigality of motive and looseness of execution which indicate decline no less surely than the mistaken ingenuity of the structural details.

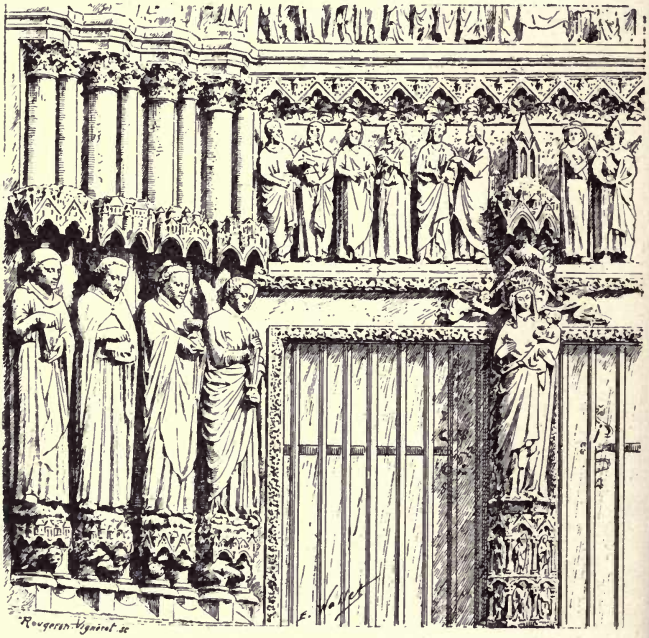
Mediæval sculpture followed the fortunes of architecture, both in its rise and fall. In its first beginnings it was characterised by a purity of style not unworthy of Rome in her most glorious days, but rapidly losing touch with the antique ideal, it lost measure and proportion in its

development. The wise laws of simplicity, essential to



103. AMIENS CATHEDRAL. CENTRAL PORCH OF WEST FRONT

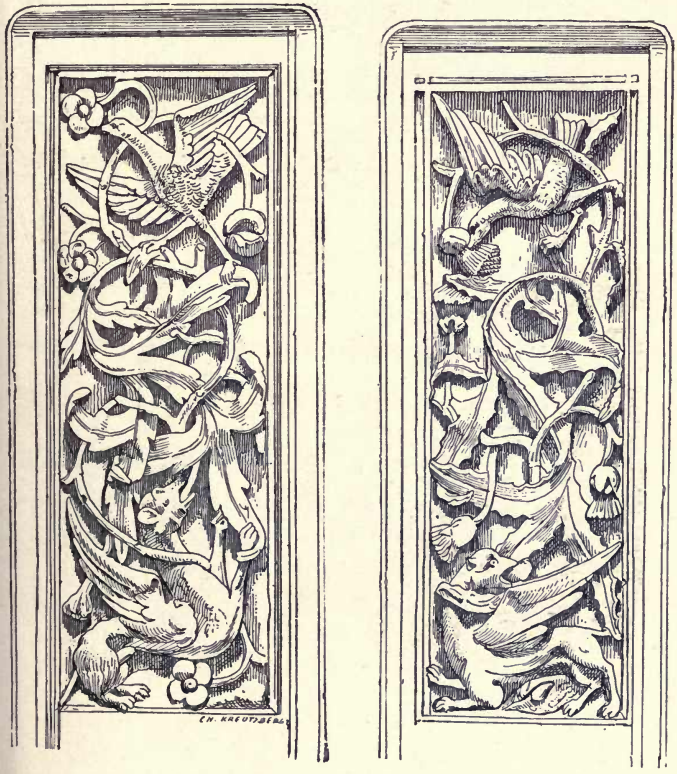
all greatness in art, were set aside in favour of an unruly exuberance which ran riot in details, and was the immediate cause of a decline perceptible even in the fourteenth century, and absolute in the fifteenth.



104. AMIENS CATHEDRAL. STATUES IN THE SOUTH PORCH

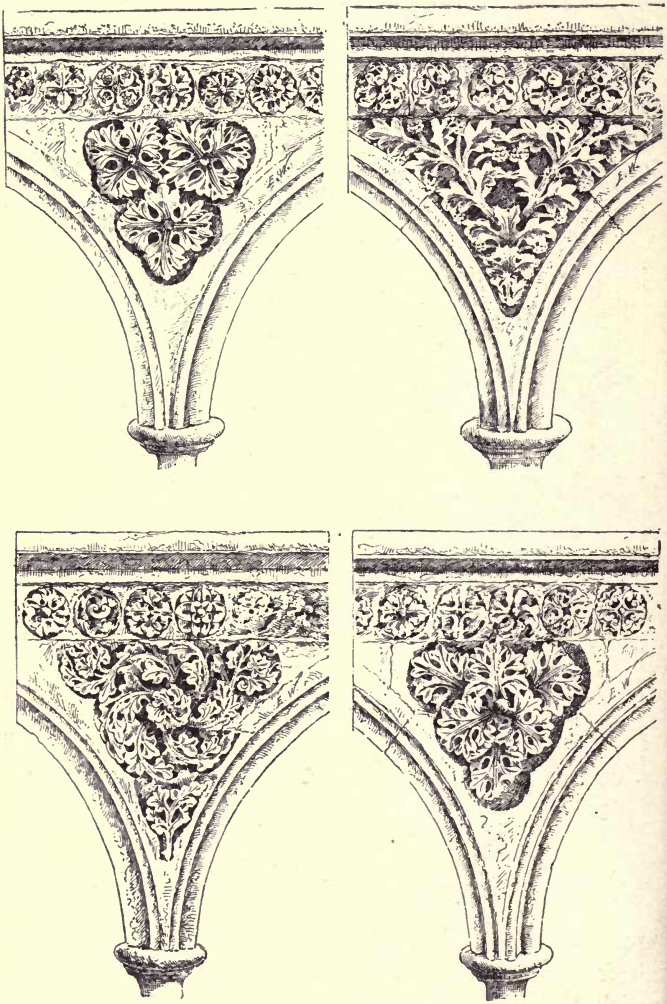
"Sculpture was at its zenith. We are astounded by the activity and fertility of thirteenth-century artists, who peopled façades and embrasures with figures from seven to ten feet in height, and animated every tympanum with countless statuettes. The façade of Notre Dame, by no means one of the richest, has

sixty-eight colossal statues, for the most part of the highest excellence; at Chartres and at Amiens there are over a hundred to each porch. The famous



105. AMIENS CATHEDRAL. CHOIR STALLS. CARVED ORNAMENT

figure of Christ at Amiens is a masterpiece; bas-reliefs work out the details of the main subject, and enrich the story with innumerable pictures of amazing vigour and originality."



106. ABBEY OF MONT ST. MICHEL. CLOISTERS OF THE THIRTEENTH CENTURY. CARVED ORNAMENT OF INTERIOR SPANDRILS

The favourite themes of the thirteenth century had something in common with those of the Romanesque epoch, though there is a sensible difference of treatment and considerable progress in composition, which exhibited more of taste and learning and less of eccentricity. But the satiric power and delight in caricature of our forefathers still demanded an outlet. These found expression in many a caustic gibe at clergy, princes, and rich burghers, and took substance in many a quaint gargoyle. A luxuriant system of ornamentation, adapted from the vegetable kingdom, was auxiliary to statuary. The main subject was enframed by it, or relieved against it; while often the composition itself was enriched

107. WOODEN STATUETTE (HEIGHT 23⅝ IN.) THIRTEENTH CENTURY. ATELIERS DE LA CHAISE DIEU, AUVERGNE

by its introduction to complete the decorative effect. Or such a system of decoration was the only sculpturesque motive employed; it was then used with the utmost elaboration, and developed at the expense of statuary. Such was the case in Burgundy and Normandy, in which provinces the latter art was of slow growth. The Byzantine character of the scrolls, carved bands, and fantastic foliage of Romanesque art disappeared; ornament took on a new independence, and began to seek its types among native plant forms.

108. IVORY STATUETTE (HEIGHT $9\frac{7}{8}$ IN.) THIRTEENTH CENTURY. SCHOOL OF PARIS

The carved leafage (Fig. 106) of the cloister arcades in the Abbey of Mont St. Michel strikingly illustrate this departure. The very plants which inspired the thirteenth-

century sculptors still flourish at the foot of the ancient abbey walls.

Thus the flora of our own fields was applied in lithic form to the elements of our church architecture. But the breadth proper to architectural sculpture was still preserved by means of ingenious combinations.

It was not until the fourteenth and fifteenth centuries that the imitation of natural forms became servile, tedious, and over-minute, and that the beauty of the whole was sacrificed to exaggerated faithfulness of detail.[1]

It should be noted that the decadence which manifested itself in monumental sculpture was far less rapid in the more intimate art which may be distinguished as *imagery*. In the thirteenth and fourteenth centuries all sculptors were *image-makers*; but towards the close of the latter, and during the fifteenth, the term was specially applied to carvers of images in wood, ivory, etc.

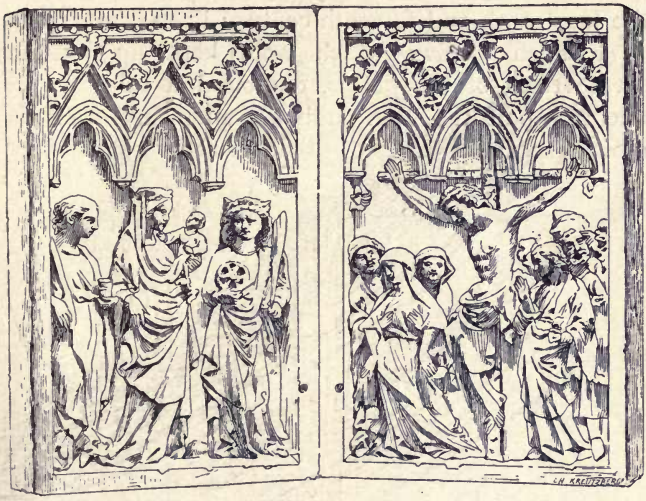
108A. IVORY STATUETTE (HEIGHT 9½ IN.) FIFTEENTH CENTURY. SCHOOL OF PARIS

[1] Anthyme St. Paul, *Histoire Monumentale de la France*; Paris, Hachette and Co., 1884.

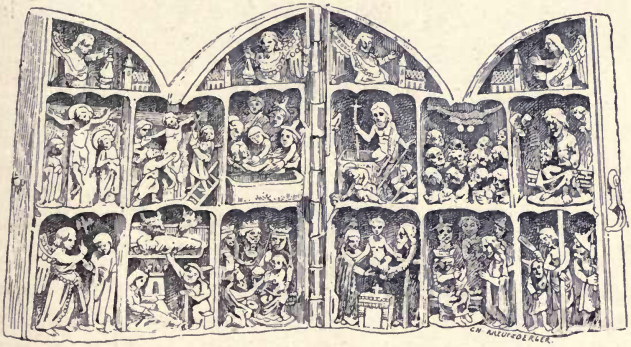
Art still flourished in their ateliers in all its beauty, notably that of the goldsmiths, who carved images in high or low relief in precious metals, and who, thanks

109. WOODEN STATUETTE (HEIGHT 10 IN.) FOURTEENTH CENTURY. SCHOOL OF PARIS

to the severely paternal regulations of the *maîtrise*, were enabled to bring French decorative art to the highest degree of perfection. The beautiful carved wooden stalls of Amiens, Auch, and Albi, to name



110. IVORY DIPTYCH (HEIGHT $6\frac{3}{8}$ IN.) FOURTEENTH CENTURY.
SCHOOL OF PARIS



110A. IVORY DIPTYCH (HEIGHT $2\frac{3}{4}$ IN.) FOURTEENTH CENTURY.
SCHOOL OF THE ILE-DE-FRANCE

but the most famous, testify to the vigorous talent of the fourteenth and fifteenth-century image-carvers.

Flemish *ateliers*, which were kept up by the severe rules of the guilds, exercised a salutary influence upon the Burgundian craftsmen. This is more especially true of the great workshops of

111. IVORY DIPTYCH (HEIGHT $4\frac{3}{4}$ IN.) FOURTEENTH CENTURY. SCHOOL OF PARIS

Antwerp and of Brussels, and perhaps also of those of Southern Germany. Burgundian influences reacted in their turn upon the artists of the Ile-de-France, notably in Paris (that brilliant centre of all artistic activities in the fourteenth century), and stirred them to emulation. The union of these various elements brought about the revival of the fine tradition of the thirteenth century, and towards

111A. IVORY PLAQUE (HEIGHT $6\frac{11}{16}$ IN.) COVER OF AN EVANGELIUM. FOURTEENTH CENTURY. SCHOOL OF THE ILE-DE-FRANCE (SOISSONS)

the close of the fifteenth century paved the way for a French Renascence, which heralded that more famous movement of the sixteenth, the credit of

112. HEAD IN SILVER GILT REPOUSSÉ. HALF-LIFE SIZE. THIRTEENTH CENTURY. ATELIERS OF THE GOLDSMITH'S GUILD OF PARIS

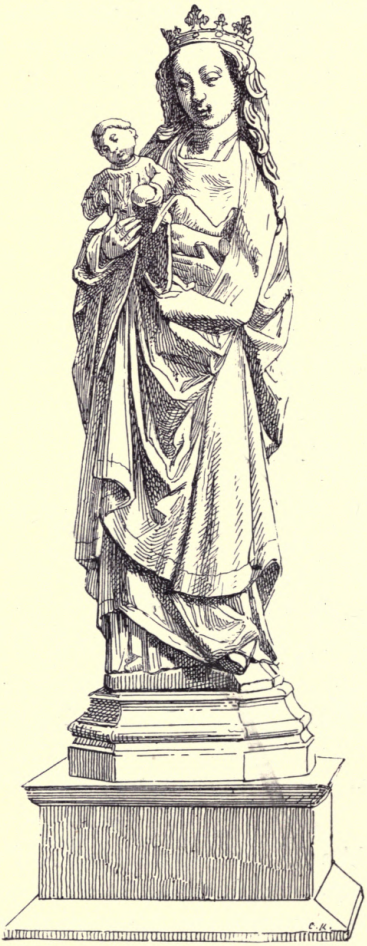
which is usually given to the Italians, who, however, such was the infatuation of the times, contributed rather to the debasement than to the regeneration of French national art.

The remarkable sculptures that owe their origin to the *ateliers* of Antwerp are distinguished by one of the quarterings of the civic arms, a severed hand burnt in with a red-hot iron. Those of Brussels are

113. GROUP CARVED IN WOOD (HEIGHT 10¼ IN.) FIFTEENTH CENTURY. SCHOOL OF ANTWERP

branded in like fashion. The images of wood, ivory, and *vermeil*, that we figure as illustrating the art of the image-carvers from the thirteenth to the fifteenth century, show that the old tradition was still cherished in this community. Their artists were so far swayed

by iconographic convention that a certain hieratic



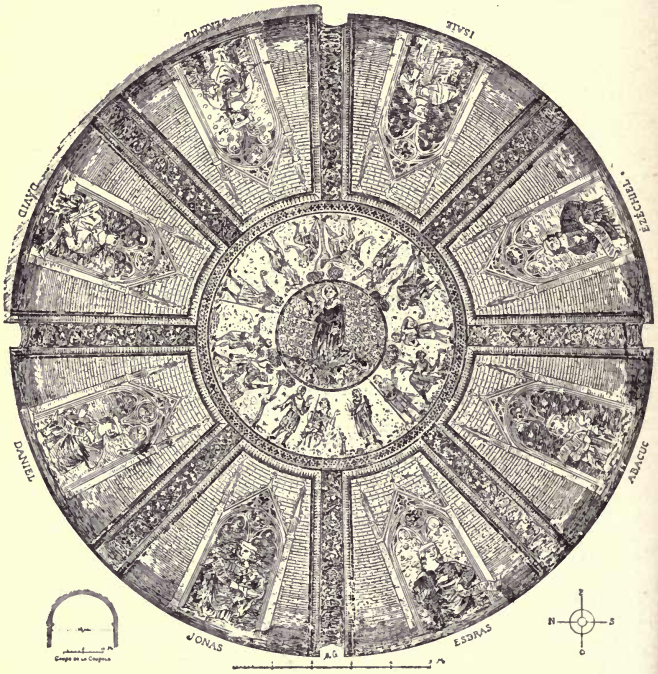
114. WOODEN STATUETTE, PAINTED AND GILDED (HEIGHT $19\frac{11}{16}$ IN.) FIFTEENTH CENTURY. SCHOOL OF BRUSSELS

sentiment is perceptible in their works; but this

115. WOODEN STATUETTE, PAINTED AND GILDED (HEIGHT $19\frac{11}{16}$ IN.) SIXTEENTH CENTURY. SCHOOL OF MUNICH

is never allowed to outweigh fitness of action and

resulting from that process of architectural evolution we have been considering. The hieratic tradition was set aside for the direct teaching and inspiration of



116. PAINTINGS IN CAHORS CATHEDRAL. HORIZONTAL PROJECTION OF THE CUPOLA WITH FORESHORTENED FIGURES AND THEIR ARCHITECTURAL FRAMEWORK

nature. But as the mastery of the painter increased, the mural spaces available for the application of his new methods diminished rapidly, till, by the thirteenth century, the only wall surfaces left to him were those beneath the windows, and some few

117. PAINTING IN CAHORS CATHEDRAL. FRAGMENT OF ONE OF THE EIGHT SECTORS OF THE CUPOLA. THE PROPHET EZEKIEL

the figures of the circular frieze, where the hands have evidently been carefully studied from nature.

Technically speaking, these paintings are not frescoes. "The medium employed seems to have been egg, the white and yolk mixed, and the method

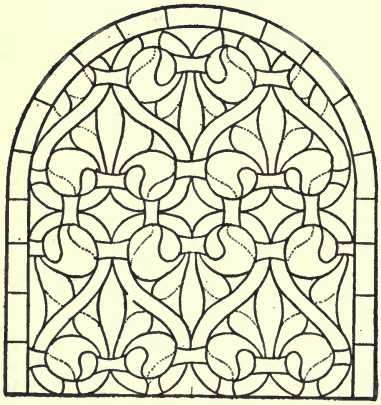
118. PAINTINGS IN CAHORS CATHEDRAL. FRAGMENT OF THE CENTRAL FRIEZE OF THE CUPOLA

very analogous to that of water-colour painting. . . . The red tones were laid over a bed of deep orange, the effect being one of extraordinary vigour and brilliance, taking into account the means at command. The use of a prepared ground was systematic, and was resorted to whenever intensity of the tones or colour effects was desired. Evident efforts in the

119, 120. PAINTED WINDOWS OF THE EARLY TWELFTH CENTURY. FROM ST. RÉMI AT RHEIMS[1]

[1] Drawings lent by M. Ed. Didron, painter upon glass.

greatly modified; if, on the other hand, they are intelligently applied, they tend to bring out the beauty of structural surroundings. . . . As is the case with all architectonic painting, stained glass demands simplicity in composition, sobriety in execution, and an avoidance of naturalistic imitation. It should aim neither at illusion nor perspective. Its scheme of colour should be frank, energetic, comprising few tints, yet producing a harmony at once sumptuous and soothing, which should compel attention, but seeks not to engross it to the detriment of the setting. Like a mural mosaic, an Eastern carpet, or the enamelled goldsmith's work of the twelfth and thirteenth centuries, a truly decorative window has no affinities with a picture, a scene or landscape gazed at from an open window, where the interest concentrates itself upon a particular point, and where the illumination is not equally diffused throughout. The fundamental law of decorative painting rests on a convention the aim of which is the satisfaction of the eye, which finds its pleasure to a far greater degree in the logical decoration of some structural or useful object than in its realisation of



121. PAINTED WINDOW OF THE TWELFTH CENTURY. CHURCH OF BONLIEU (CREUSE)

natural phenomena. Between painted windows and pictures a great gulf is fixed; and the modern school, the heir of the Italian Renascence, seeking to

122. PAINTED WINDOW OF THE THIRTEENTH CENTURY. CHARTRES CATHEDRAL

bridge it over, has seduced decorative art from the safe paths of sound judgment." [1]

The true functions of stained glass were never more admirably understood than in the twelfth

[1] *Le Vitrail à l'Exposition de* 1889, by Ed. Didron; Paris, 1890.

century. The artists of that day had a perfect comprehension of those colour-harmonies, the subdued splendour of which best accorded with the simple and vigorous forms of Romanesque

123. PAINTED WINDOW OF THE THIRTEENTH CENTURY. CHARTRES CATHEDRAL

architecture. Upon his glass of various tints the painter first outlined his figure or ornament in black. This outline he supported with a flat half-tint which supplied a rough modelling and allowed the forms expressed to make their fullest effect from a distance.

When, in the thirteenth century, the extreme austerity of religious buildings began to relax, the

124. PAINTED WINDOW OF THE THIRTEENTH CENTURY. CHURCH OF ST. GERMER, TROYES

splendour of the painted windows increased proportionately; but the coloration, though it increased

125. PAINTED WINDOWS OF THE FOURTEENTH CENTURY, CHURCH OF ST. URBAIN AT TROYES

coloration of stained glass; but the exact reverse was the case; and a marked modification took place in the glowing effects won by a diversity of strong tints. The sort of *camaïeu* which was the result obliged the painter to insist more strongly on the modelling of the figures, and to give less importance to the black outline, which was eventually suppressed altogether.

126. PAINTED GLASS OF THE FOURTEENTH CENTURY. HEAD OF ST. PETER. CATHEDRAL OF CHÂLONS-SUR-MARNE

In the sixteenth century painted glass became to a certain extent translucent pictures, in which architectural fitness was no longer respected. Composition lost its simplicity. A subject spread from panel to panel, regardless of the intervening tracery. Nevertheless, we forget the defects of this luxuriant development, and cease to wonder at its popularity, in view of that broad and vigorous execution and beauty of colour which give it a special decorative value of its own.

Enamelling is so closely allied to glass-painting as to claim a word for itself. Here, again, the decorative art of the Middle Ages was characteristic-

ally displayed, and though the process is more specially applicable to the ornamentation of goldsmith's work than to the decoration of large surfaces, it is one of the most brilliant and exquisite of the auxiliary arts.

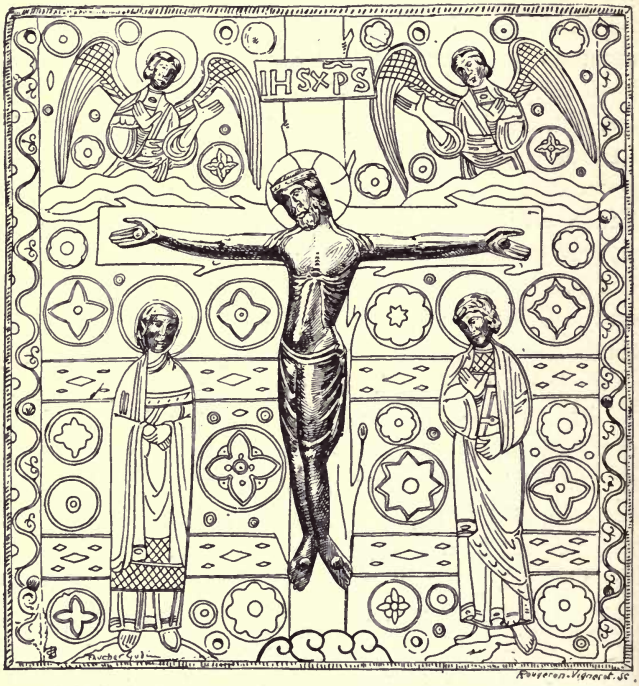
The earliest enamels are *champlevé* and *cloisonné*. By the *champlevé* process a hollow, the edges of which outlined the figures or ornaments, was cut in the field or ground of metal for the reception of the fusible enamel; for *cloisonné*, *cloisons*, or slender walls of metal were fixed upon the field to separate flesh from draperies, and one tint generally from another. The background, the *cloisons*, and the flesh were gilt and burnished; details were defined by

127. PAINTED WINDOW OF THE FIFTEENTH CENTURY. ÉVREUX CATHEDRAL

engraved lines, so that the draperies only were enamelled.

128. ENAMEL OF THE ELEVENTH CENTURY. PLAQUE COVER OF A MS. HEIGHT $4\frac{3}{4}$ IN., WIDTH $2\frac{9}{16}$ IN.

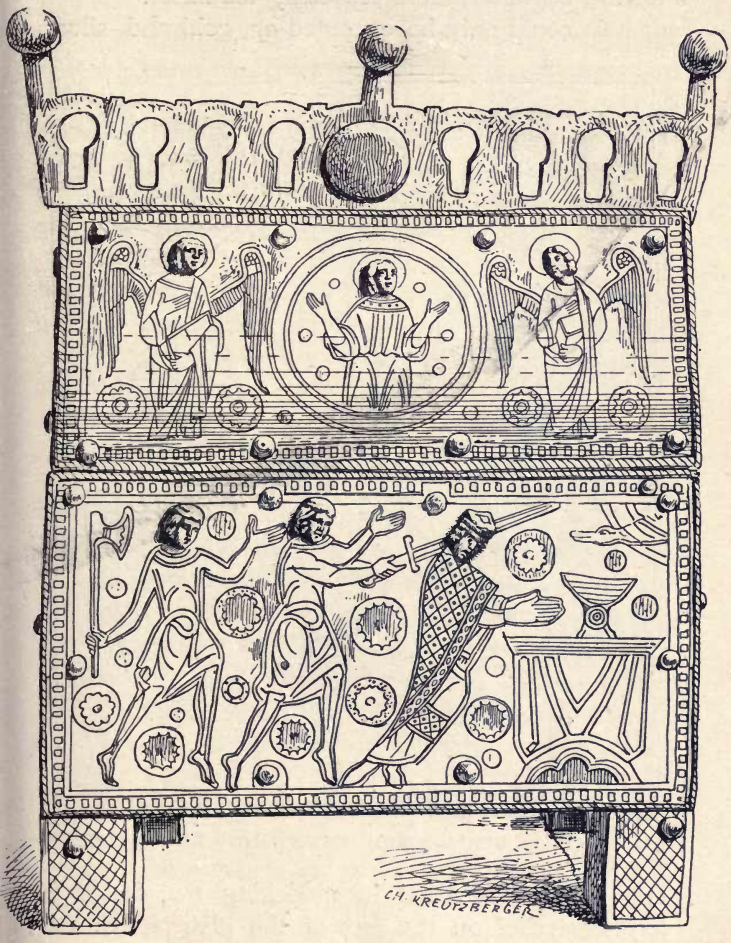
aroused general reprobation throughout Christendom. The universal feeling expressed itself at Limoges by the manufacture of a great number of reliquaries destined to receive relics of the sainted martyr.



129. ENAMEL OF THE THIRTEENTH CENTURY. PLAQUE COVER OF AN EVANGELIUM. HEIGHT $7\frac{2}{16}$ IN., WIDTH $6\frac{11}{16}$ IN.

In the details of the draperies and hands of those portions of Fig. 129 which are carved in low relief, we may trace the germs of those low-relief enamels known as translucent, or to be more exact, transparent enamels. This process originated in

Italy, and was commonly employed in France, and



130. ENAMEL OF THE TWELFTH CENTURY. RELIQUARY SHRINE OF ST. THOMAS À BECKET

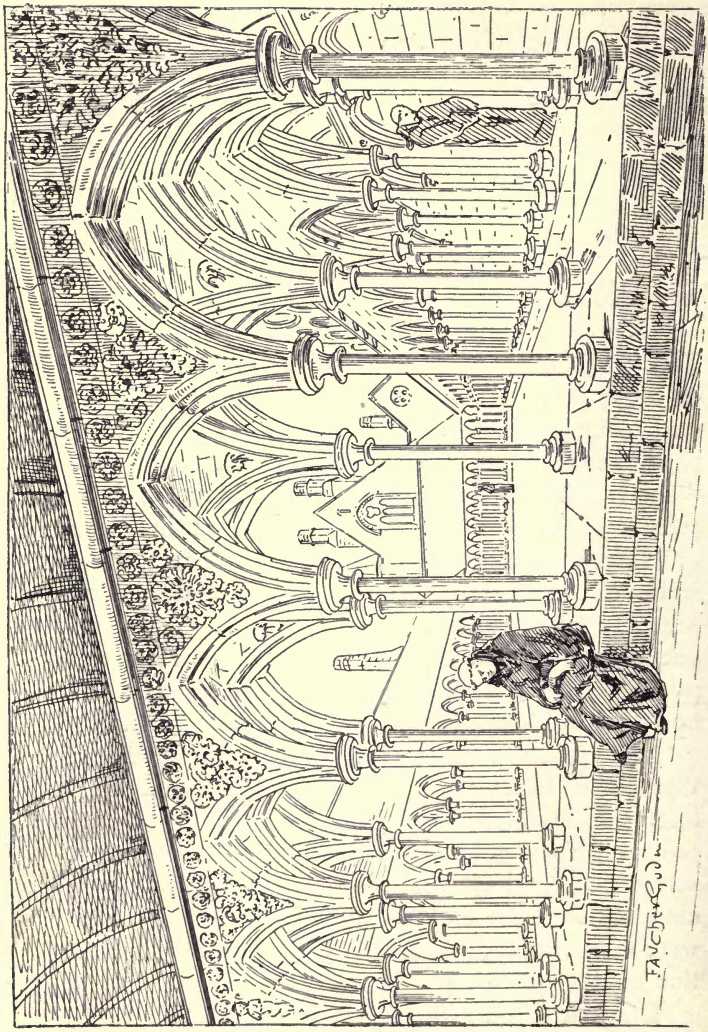
even in Germany throughout the fourteenth and fifteenth centuries, more especially the latter. These enamels could only be executed on gold and silver.

131. ENAMEL OF THE SIXTEENTH CENTURY. OUR LADY OF SORROWS

The method consisted in modelling the design in very low relief on the face of the plate, which was then covered with a transparent enamel of few colours. The process was a slow and difficult one;

PART II

MONASTIC ARCHITECTURE



132. ABBEY OF MONT ST. MICHEL. CLOISTER (THIRTEENTH CENTURY. FROM A DRAWING BY ED. CORROYER)

had been subjected under those various influences which manifested themselves in the glorious monuments built from the eleventh to the thirteenth century, when Gothic architecture reached its apogee.

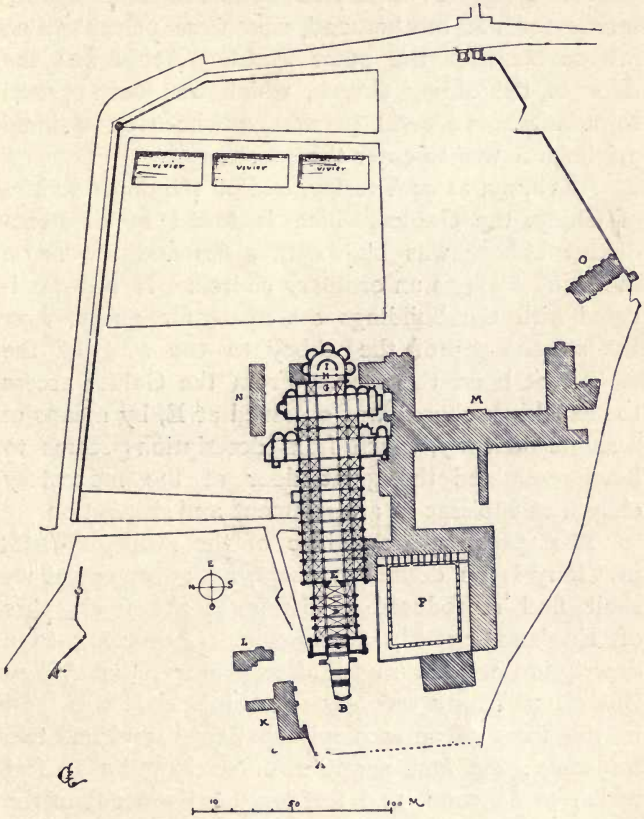
The abbots of the many abbeys of various orders built throughout this period were too enlightened to

133. ABBEY OF CLUNY. GATEWAY

disregard the progress of their contemporaries, and they promptly applied the new principles to the construction or embellishment of their monasteries.

The Abbey of Cluny was founded in 909 by William, Duke of Aquitaine, and declared independent by Pope John XI., who in 932 confirmed the duke's charter. Its rapid development and growth in power is sufficiently explained by the social and political circumstances of its origin. At the begin-

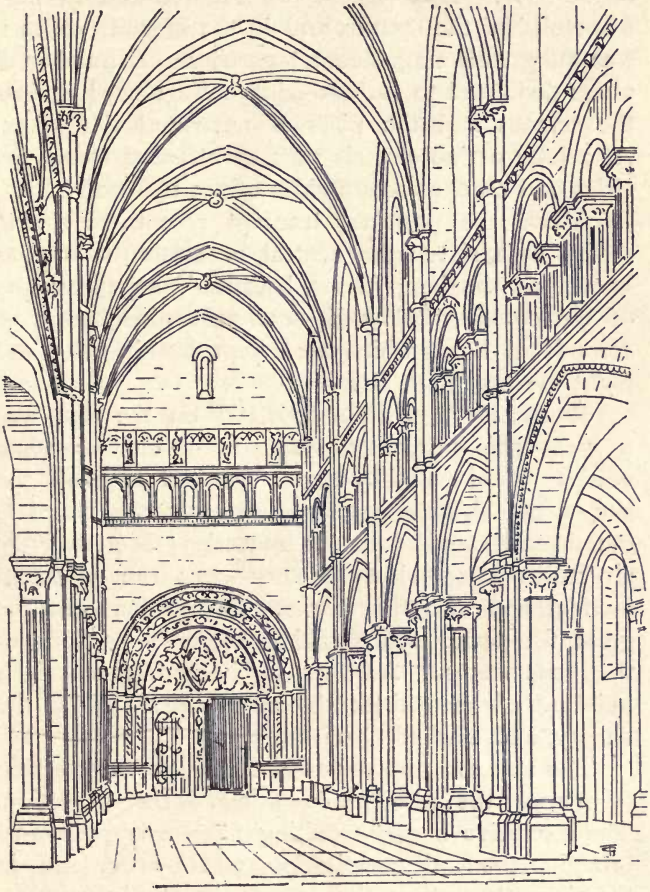
an open space between two square towers. The northern tower was built to receive the archives; that



134. ABBEY OF CLUNY. PLAN

on the south was known as the Tower of Justice. The ante-church or narthex at D seems to have been set apart for strangers and penitents, who were not

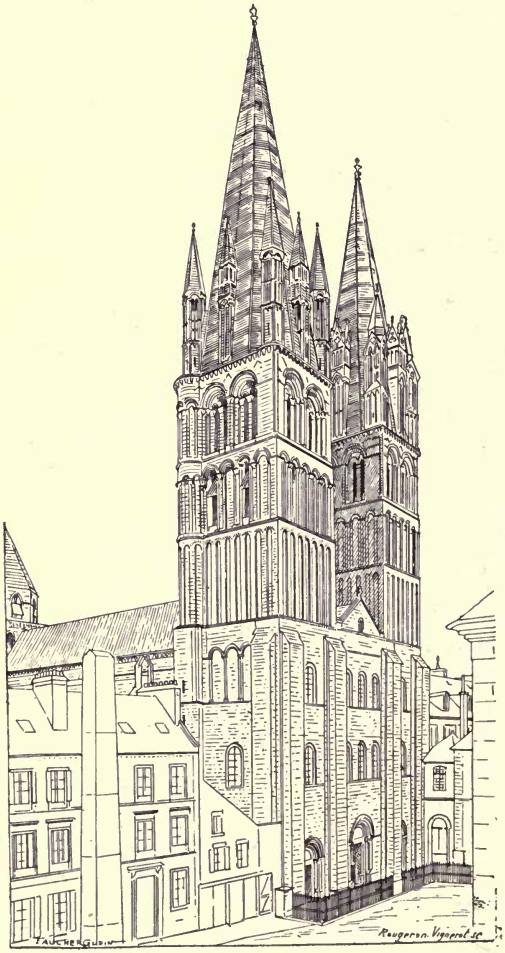
placed immediately beyond the second transept at



135. ABBEY OF CLUNY. INTERIOR OF NARTHEX, WITH DOOR LEADING INTO ABBEY CHURCH

G, and the retro-choir and altar at H. The choir,

Normandy. A large number of monasteries were



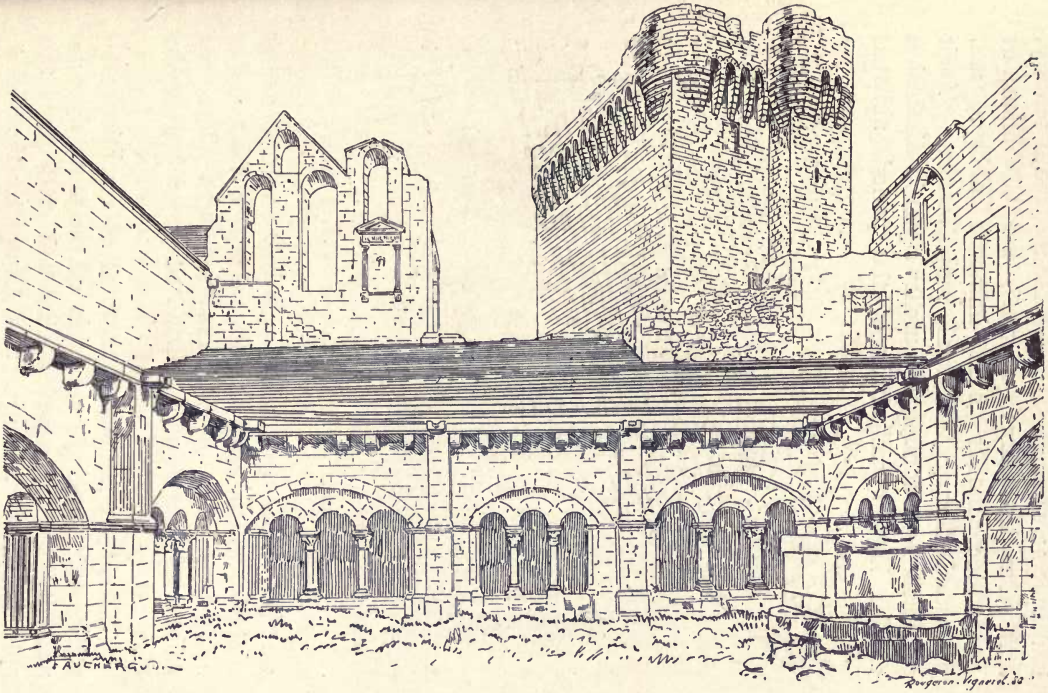
136. ABBEY OF ST. ÉTIENNE AT CAEN. FAÇADE

not only by the searching reforms he instituted at Clairvaux among the seceding monks of Cluny and Solesmes, but by the success of the Cistercian colonies he planted in Italy, Spain, Sweden, and Denmark, to the number of seventy-two, according to his historians.

During his lifetime the poor hermitage of the *Vallée d'Absinthe* (which name he changed to Claire-

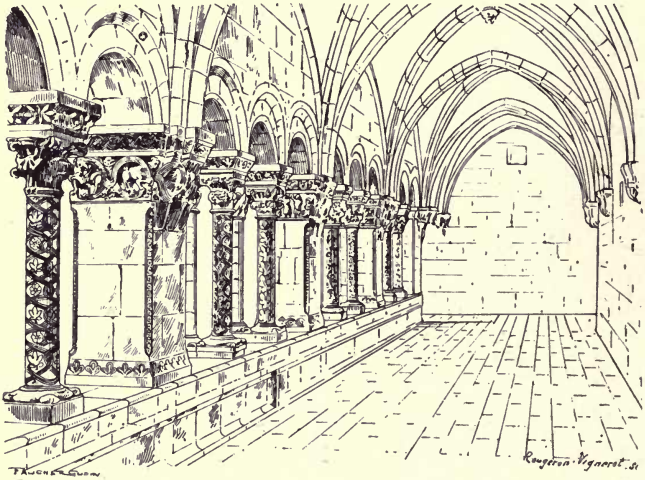
137. ST. ALBAN'S ABBEY (ENGLAND)

Vallée, Clairvaux) had become a vast feudal settlement of many farms and holdings, rich enough to support more than seven hundred monks. The monastery was surrounded by walls more than half a league in extent, and the abbot's domicile had become a seignorial mansion. As the fount of the order, and mother of all the auxiliary houses, Clairvaux was supreme over a hundred and sixty monasteries in France and abroad. Fifty years after the death of St. Bernard the importance of the order



138. ABBEY OF MONTMAJOUR (PROVENCE). CLOISTERS

had become colossal. During the thirteenth century, and from that time onwards, the Cistercian or Bernardine monks built immense abbeys, and decorated them with royal magnificence. Their establishments contained churches equal in dimension to the largest cathedrals of the period, abbatial

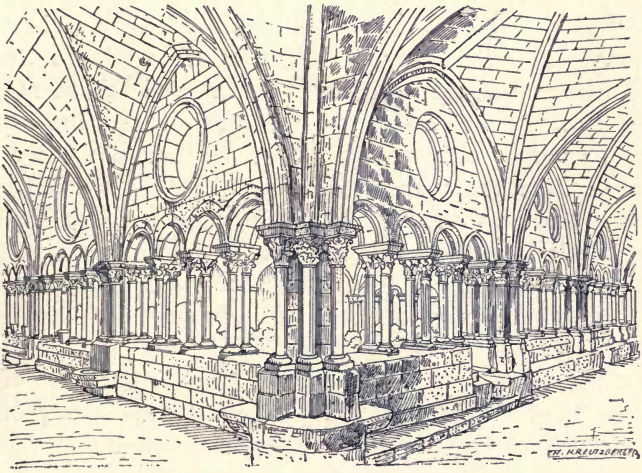


139. CHURCH AT ELNE IN ROUSSILLON. CLOISTERS

dwellings adorned with paintings, and boasting oratories which, as at Chaâlis, were *Stes. Chapelles* as splendid as that of St. Louis in Paris. The very cellars held works of art in the shape of huge casks elaborately carved.

Thus, by a strange recurrence of conditions, the settlements founded on a basis of the most rigorous austerity by the ascetics who had fled from the splendours of Solesmes and Cluny to the forest,

became in their turn vaster, richer, and more sumptuous than those the magnificence of which they existed to rebuke. With this difference, however: the ruin brought about by the luxury of the Cistercian establishment was so complete that nothing of their innumerable monasteries was spared by

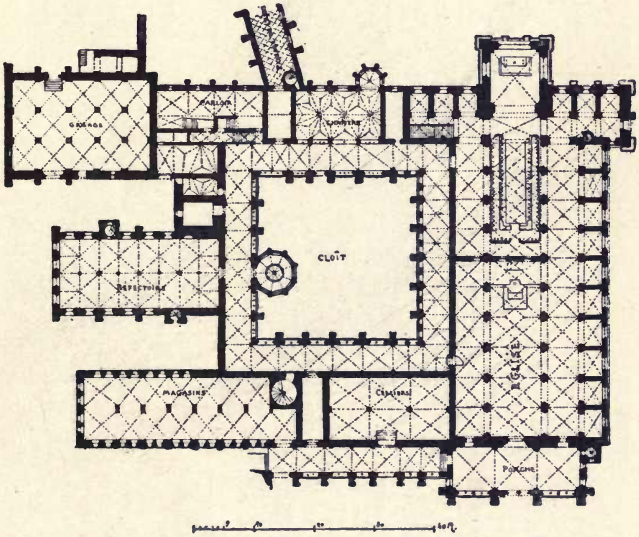


140. ABBEY OF FONTFROIDE (LANGUEDOC). CLOISTERS

social revolution but a few archæologic fragments and historic memories.

The influence of the Cistercian foundation extended to various countries of Europe. It was manifested in Spain, at the great Abbey of Alcobaco, in Estramadura, said to have been built by monkish envoys of St. Bernard; in Sicily, in the rich architectural detail of the Abbey of Monreale; and in Germany, in the foundation of such abbeys as those of Altenberg in Westphalia, and Maulbronn in

Perche; Breuil-Benoît, Mortemer, and Bonport, in Normandy; Boschaud, in Périgord; l'Escale-Dieu, in Bigorre; Les Feuillants, Nizors, and Bonnefont, in Comminges; Granselve and Baulbonne, near Toulouse; Floran, Valmagne, and Fontfroide, in Languedoc; Fontenay, in Burgundy, etc.

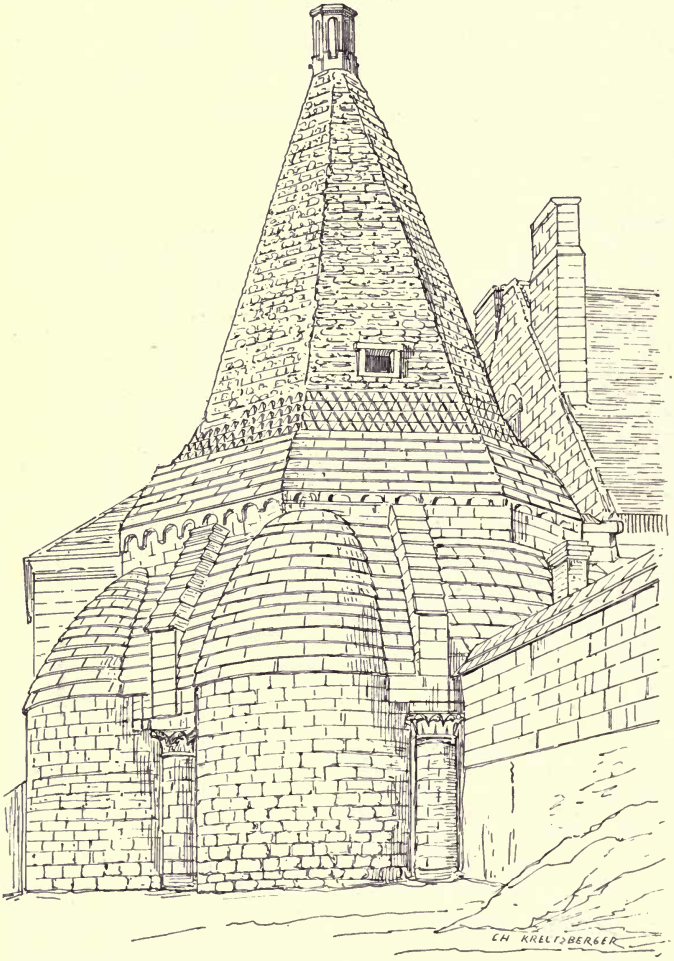


141. CISTERCIAN ABBEY OF MAULBRONN (WURTEMBERG). PLAN

Towards the close of the eleventh and the beginning of the twelfth century other fraternities had been formed in the same spirit as that of Citeaux; "in the first rank of these was the Order of the Premonstrants, so named from the mother abbey founded in 1119 by St. Norbert at Prémontré, near Coucy."[1]

[1] Anthyme St. Paul, *Histoire Monumentale de la France.*

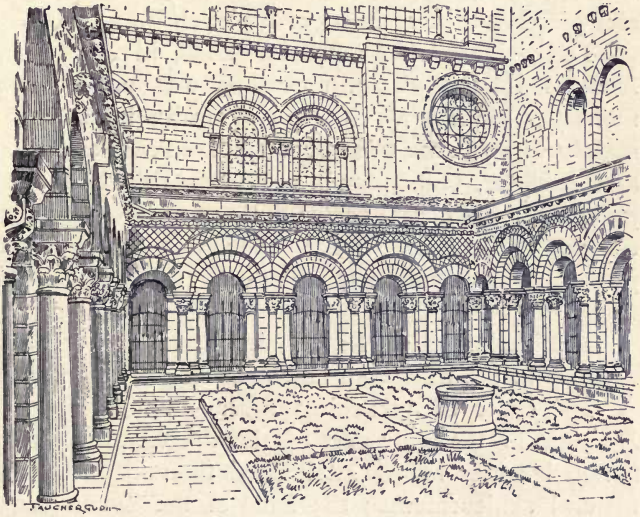
To this order the monastery of St. Martin at



142. ABBEY OF FONTEVRAULT. KITCHEN

Laon, and others in Champagne, Artois, Brittany, and Normandy owed their origin.

In the early part of the twelfth century Robert d'Arbrisselles founded several double monasteries for men and women, on the model of those built in Spain in the ninth century; that of Fontevrault was



143. CATHEDRAL OF PUY-EN-VELAY. CLOISTERS

not more successful as a monastic experiment than the rest, but it gave rise to a number of superb buildings. The abbey itself contributed in no slight degree to the progress of architecture, which developed in Anjou at the dawn of the twelfth century, and manifested itself principally at Angers in works the supreme importance of which we have dwelt upon in the early part of this volume.

orders, such as the Augustinians and Carmelites, by way of balancing the power of the Clunisians and Cistercians.

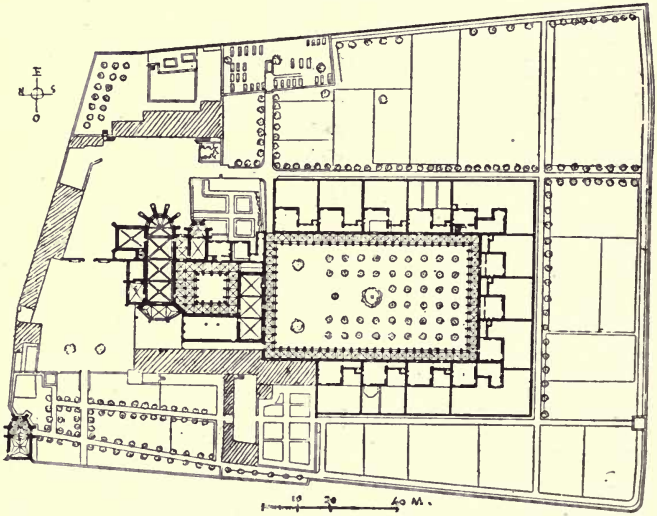
To the preaching friars St. Louis granted the site of the Church of St. Jacques, in the Rue St. Jacques, Paris — whence the name *Jacobin* as applied to

144. ABBEY OF LA CHAISE DIEU (AUVERGNE). CLOISTERS

monks of the Dominican order,—and here they built in 1221 the Jacobin monastery, the church of which, like those of Agen and Toulouse, has the double nave peculiar to the churches of the preaching friars.

From the thirteenth century onwards the arrangement of the abbeys diverges more and more from

The ancient *Chartreuse* of Villefranche de Rouergue, either built or reconstructed in the fifteenth and sixteenth centuries, still preserves some remarkable features. The plan, and the bird's-eye view (Figs. 145 and 146) from *L'Encyclopédie de l'Architecture et de la Construction*, gives an exact idea of the monastery. Some of the cells are still intact,

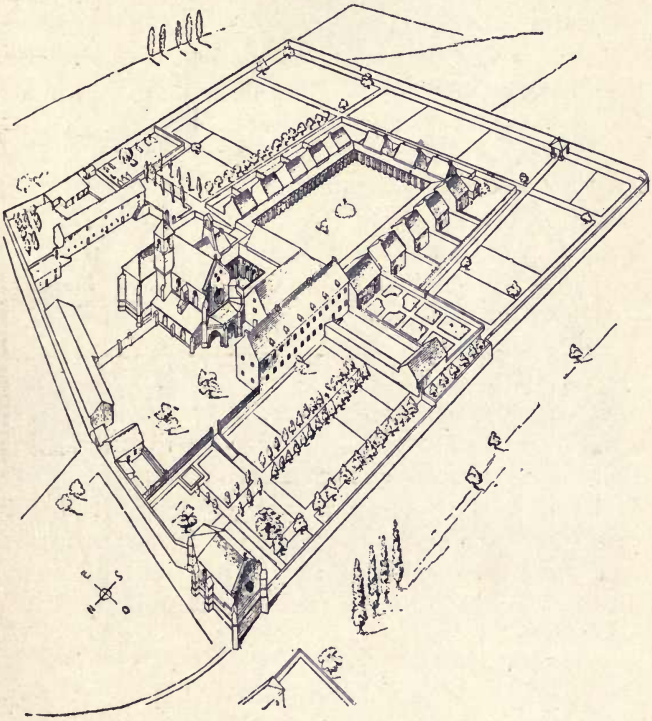


145. CHARTREUSE OF VILLEFRANCHE DE ROUERGUE. PLAN

also the refectory, and certain other portions of the primitive structure.

In spite of the rigidity of the *Rule* of St. Bruno certain foundations of his order became famous, notably the monastery established by the Carthusians on the invitation of St. Louis in the celebrated castle of Vauvert, beyond the walls of Paris, near the *Route d'Issy*. The castle was regarded with terror by the

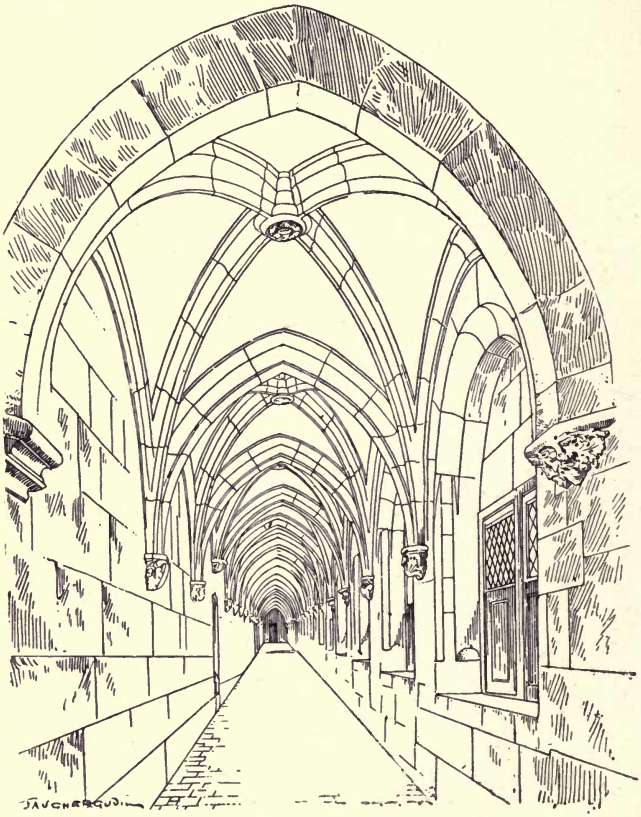
Parisians, who declared it to be haunted by the devil, whence the popular expression: *aller au diable Vauvert*, which later was corrupted into *aller au*



146. CHARTREUSE OF VILLEFRANCHE DE ROUERGUE. BIRD'S-EYE VIEW

diable au vert. The Carthusians, nevertheless, took up their quarters in the stronghold, and enriched it with a splendid church built by Pierre de Montereau, the foundation stone of which was laid by St. Louis in 1260. The *Chartreuse* of Vauvert developed

greatly, and became one of the most famous of the order. It was in the lesser cloister of this monastery

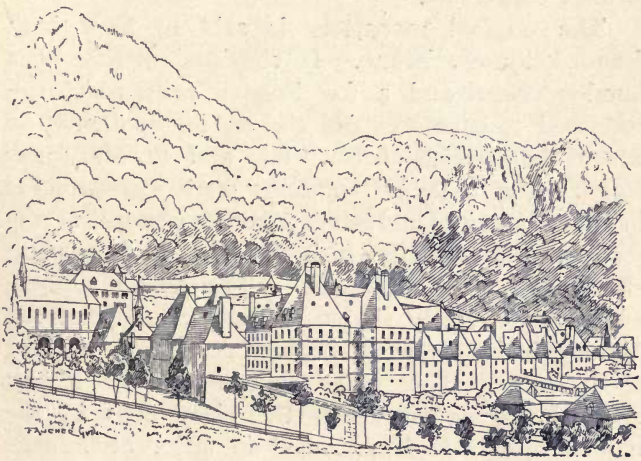


147. GRANDE CHARTREUSE. THE GREAT CLOISTER

that the artist Eustache Le Sueur painted his famous frescoes from the life of St. Bruno in the beginning of the seventeenth century.

The most famous Carthusian monasteries of Italy are those of Florence, which dates from the middle of the fourteenth century, and is attributed in part to Orcagna, and of Pavia, founded at the close of the fourteenth century by Giovanni Galeazzo Visconti.

The French Carthusian monasteries of greatest

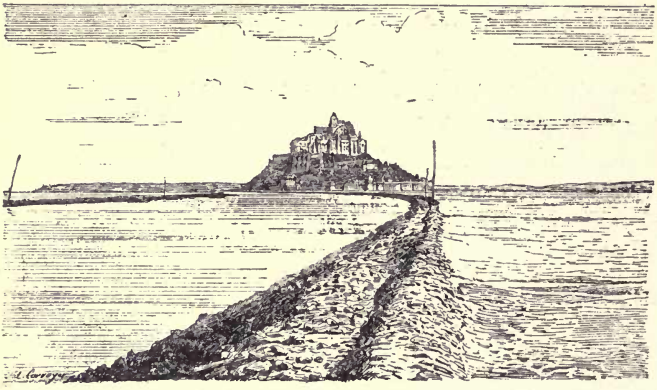


148. GRANDE CHARTREUSE. GENERAL VIEW

interest after Vauvert, which had the special advantage of royal protection, are those of Clermont, in Auvergne, Villefranche de Rouergue (Figs. 145 and 146), Villeneuve-lez-Avignon, and Montrieux, in Var. The *Chartreuse* of Dijon is one of the most ancient, not only as to its buildings, which are the work of the Duke of Burgundy's architects, but in respect of its famous sculptures of the tomb of Philip the Bold, and his wife, Margaret of Flanders, and those

The Abbey of Tournus was, like Cluny, surrounded by walls connected with the city ramparts.

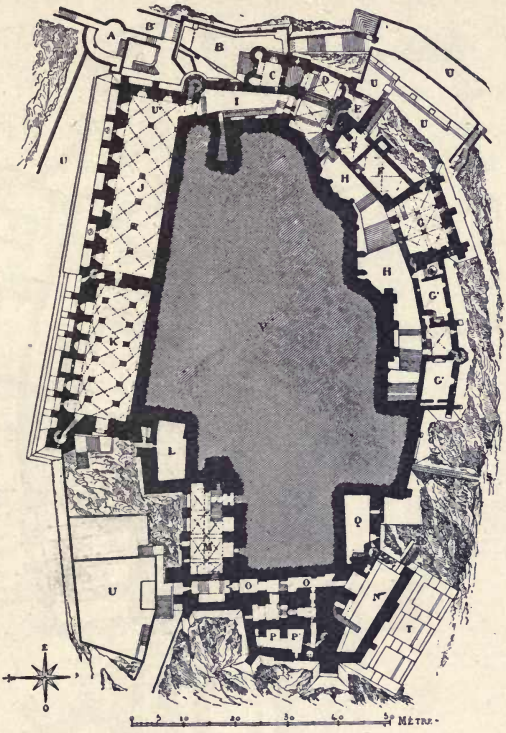
The Abbey of St. Allyre, in Auvergne, near Clermont, was defended by walls and towers, which seem to have been added to the original structure of the ninth century at some period during the thirteenth, when such fortification of religious houses became necessary.



149. ABBEY OF MONT ST. MICHEL. GENERAL VIEW FROM THE ROCKS OF COUESNON, TAKEN IN 1878, BEFORE THE CONSTRUCTION OF THE DYKE

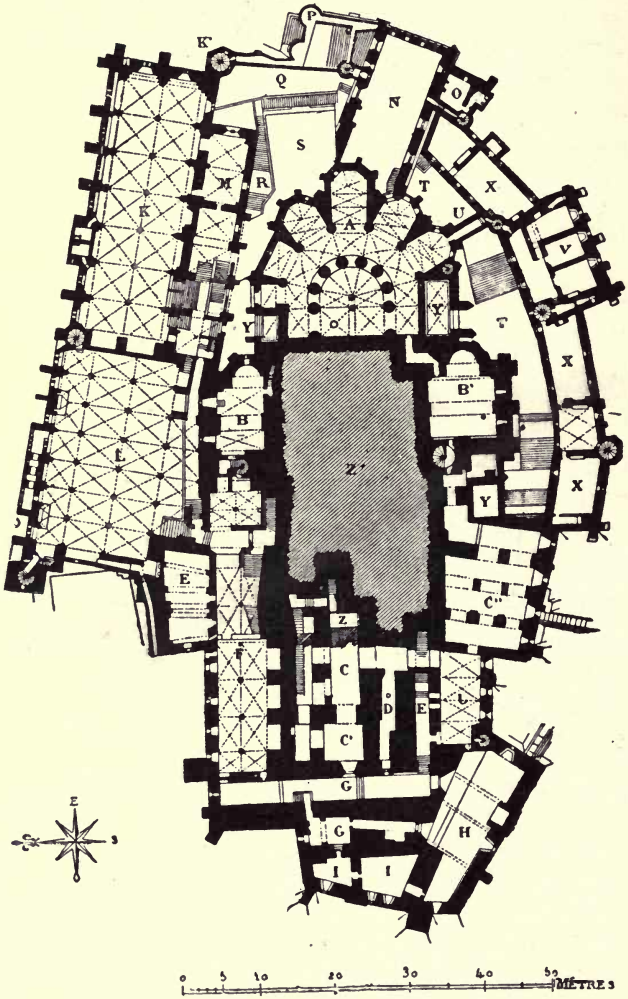
In many other monasteries a system of defence more or less elaborate was adopted; but the most famous of all the abbeys built by the Benedictines was unquestionably Mont St. Michel, which, for boldness and grandeur of design, is unique among military and monastic monuments from the eleventh to the close of the fifteenth century.

The Abbey of Mont St. Michel was founded in 708 by St. Aubert, according to tradition. At the

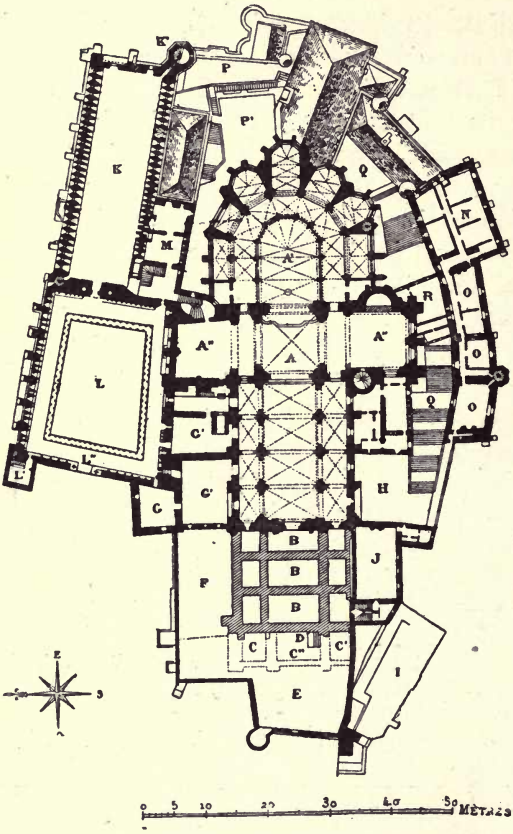


150. ABBEY OF MONT ST. MICHEL. PLAN AT THE LEVEL OF THE GUARD-ROOM, ALMONRY, AND CELLAR

Key to Plan.—A. Tower known as the *Tour Claudine.* Ramparts. B. Barbican. Entrance to the abbey. B′. Ruin of the stairway known as the *Grand Degré.* C. Gate-house. D. Guard-room known as *Bellechaise.* E. Tower known as the *Tour Perrine.* F. Steward's lodging and Bailey. G. Abbot's lodging. G′. Abbatial buildings. G″. Chapel of St. Catherine. H. Courtyard of the church, great stairway. I. Courtyard of the *Merveille.* J, K. Almonry, cellar (of the *Merveille*). L. Formerly the abbatial buildings. M. Gallery or crypt known as the *Galerie de l'Aquilon* (of the North Wind). N. Hostelry (Robert de Thorigni). O. Passages connecting the abbey with the hostelry. P, P′. Prison and dungeon. R, S. Staircase. T. Modern wall of abutment. U. Garden, terraces, and covered way. V. Body of rock.



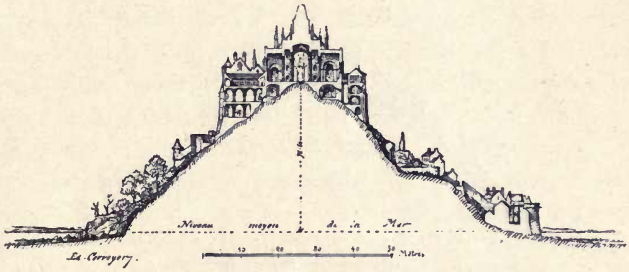
151. ABBEY OF MONT ST. MICHEL. PLAN AT THE LEVEL OF THE LOWER CHURCH, THE REFECTORY, AND THE CHAPTER-HOUSE, OR KNIGHTS' HALL.—*For Key to Plan see opposite page.*



152. ABBEY OF MONT ST. MICHEL. PLAN AT THE LEVEL OF THE UPPER CHURCH, THE CLOISTERS, AND THE DORMITORY

Key to Plan.—A, A′, A.″ Church, choir, and transepts. B, B′, B″. Three first bays of nave, destroyed in 1776. C, C′, C″. Towers and porch (Robert de Thorigni). D. Tomb of Robert de Thorigni. E. Formerly the terrace in front of the church. F. Formerly the chapter-house. G, G′. Formerly the claustral buildings. Dormitory. H. Platform at the southern entrance of the church. I. Ruin of the hostelry (Robert de Thorigni). J. Infirmary. K. Dormitories of the thirteenth century (*Merveille*). K′. Tower, known as the *Tour des Corbins* (thirteenth century, *Merveille*). L, L′. Cloister and archives (thirteenth century, *Merveille*). M. Vestry (thirteenth century, *Merveille*). N. Abbot's lodging. O. Accommodation for guests. P. Courtyard of the *Merveille*. P′. Terrace of the apse. Q. Courtyard of the church and great staircase.

Built on the summit of a rock, the impregnable steepness of which provided a natural rampart north and west, it depended solely upon the advantages of its position for defence. Its situation in the midst of a treacherous sandy plain—a position which gave rise to the mediæval name, *Le Mont St. Michel au Péril de la Mer*—secured it against attempts at investiture, and even to a great extent against sudden assaults. Enclosures of stone or wooden fences surrounded it at those points on the east



153. ABBEY OF MONT ST. MICHEL. TRANSVERSE SECTION, FROM NORTH TO SOUTH [1]

where the less rugged nature of the surface rendered access comparatively easy, and where stood the entrance, with the various habitations which had grouped themselves round it. The so-called *town* had been founded in the tenth century by a few families decimated by the Normans, in their raids upon Avranches and its neighbourhood after the death of Charlemagne. In the thirteenth century it consisted of a small number of houses which, by

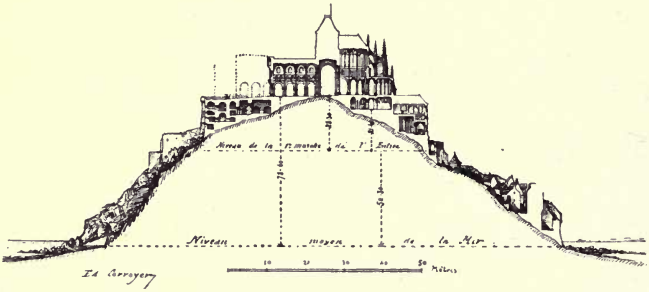
[1] *Description de l'Abbaye du Mont St. Michel et de ses Abords*, by Ed. Corroyer; Paris, 1877.

way of security against the vagaries of the sea, were built upon the highest point of the rock to the east.

In 1203 the greater part of the abbey, the church excepted, was destroyed during the wars between Philip Augustus, King of France, and John, King of England.

Historic records prove conclusively that the abbey had no defensive works properly so-called in the twelfth and early part of the thirteenth century.

From this period onwards abbeys, more especially



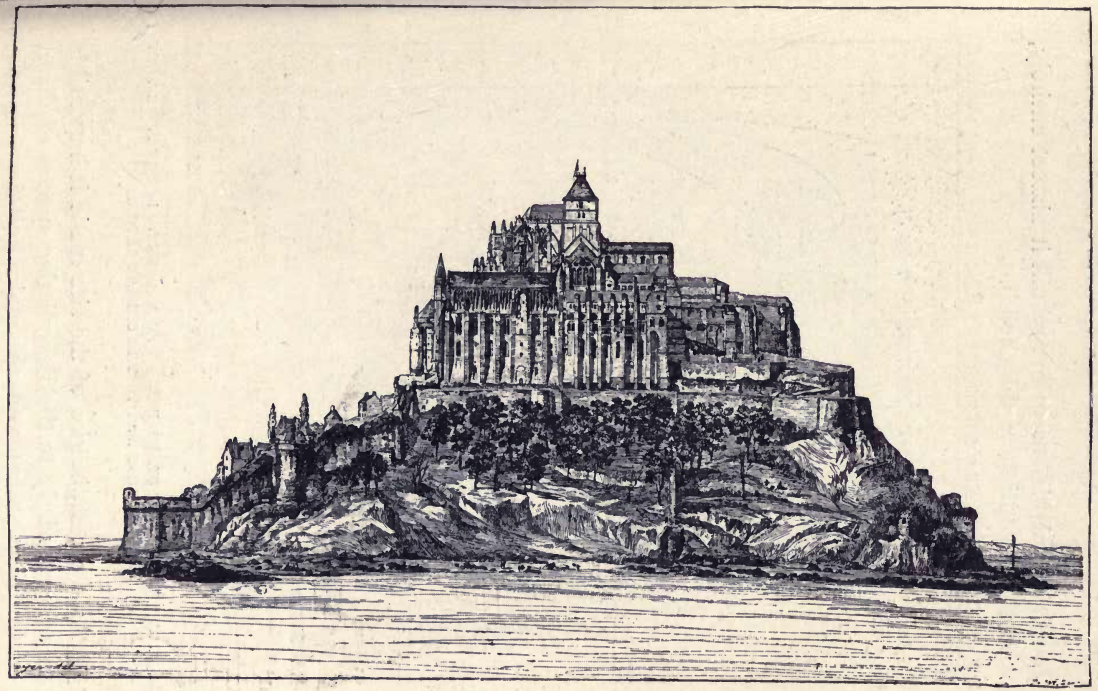
154. ABBEY OF MONT ST. MICHEL. LONGITUDINAL SECTION, FROM WEST TO EAST

those of the Benedictine orders, were transformed into regular fortresses capable of sustaining a siege. The abbots, in their character of feudal lords, fortified their monasteries to ensure them against disasters such as had marked the early years of the thirteenth century. Mont St. Michel is one of the most curious examples of such fortification.

The original architects of the abbey seem to have been unwilling to diminish the height of the mount by levelling. Resolving to detract in no degree from the majesty of so splendid a base for

become a feof of the royal domain, the Abbot

155. ABBEY OF MONT ST. MICHEL. GALERIE DE L'AQUILON (GALLERY OF THE NORTH WIND)



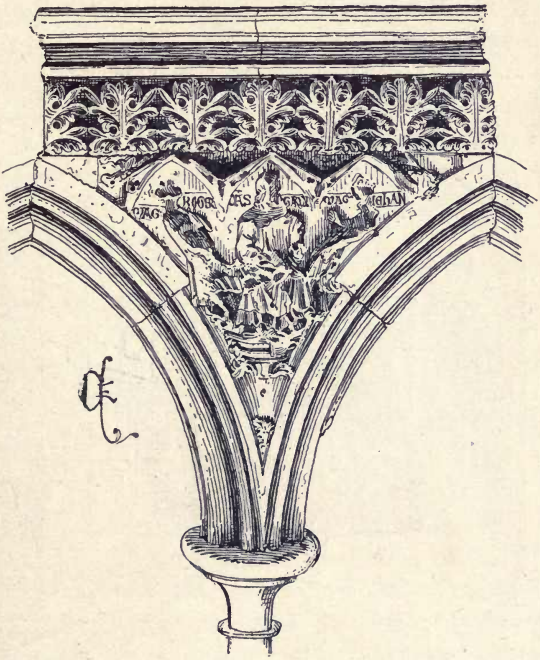
156. ABBEY OF MONT ST. MICHEL, NORTH FRONT. GENERAL VIEW FROM THE SEA

Jourdain and his successors rebuilt it almost entirely, with the exception of the church.

157. ABBEY OF MONT ST. MICHEL. THE ALMONRY. PERSPECTIVE VIEW LOOKING WEST. THE CELLAR BEYOND

As the peculiarities of the site made it impossible to adhere strictly to the Benedictine system of direct communication between the main buildings and the

church, the *lieux réguliers*, or accommodation reserved for the monks, were disposed above the magnificent building to the north of the church, which, from the



158. ABBEY OF MONT ST. MICHEL. NAMES OF THE ARCHITECTS OR SCULPTORS OF THE CHOIR

time of its foundation, was known as *La Merveille* (the Marvel).

This vast structure fairly takes rank as the grandest example of combined religious and military architecture of the finest mediæval period.

The *Merveille* consists of three stories, two of

159. ABBEY OF MONT ST. MICHEL. CELLAR. PERSPECTIVE VIEW FROM WEST TO EAST. THE ALMONRY BEYOND

which are vaulted. The lowest contains the almonry

means avoided, the difficulties of raising great masses of stone to the foot of the *Merveille*, the foundations of which are over 160 feet above the sea-level, had

160. ABBEY OF MONT ST. MICHEL. REFECTORY

still to be met. It seems certain that the east and west buildings of which the *Merveille* consists were built at the same time, for though certain differences

are perceptible in the form of the exterior buttresses, they evidently result from the interior formation of the various apartments. A study of the plans,

161. ABBEY OF MONT ST. MICHEL. CHAPTER-HOUSE, CALLED THE HALL OF THE KNIGHTS

sections, and façades of the buildings is convincing on this head, and the general arrangements, notably that of the staircase, all point to the same conclusion.

This staircase is a spiral in the thickness of the buttress which, with its crowning octagonal turret, forms the point of junction between the two buildings. It winds from the almonry of the eastern ground-floor to the knights' hall on the west, passing through the dormitory of the eastern block to terminate in the northern embattlement above.

The eastern and northern façades of the *Merveille* are models of severe and virile beauty; a massive

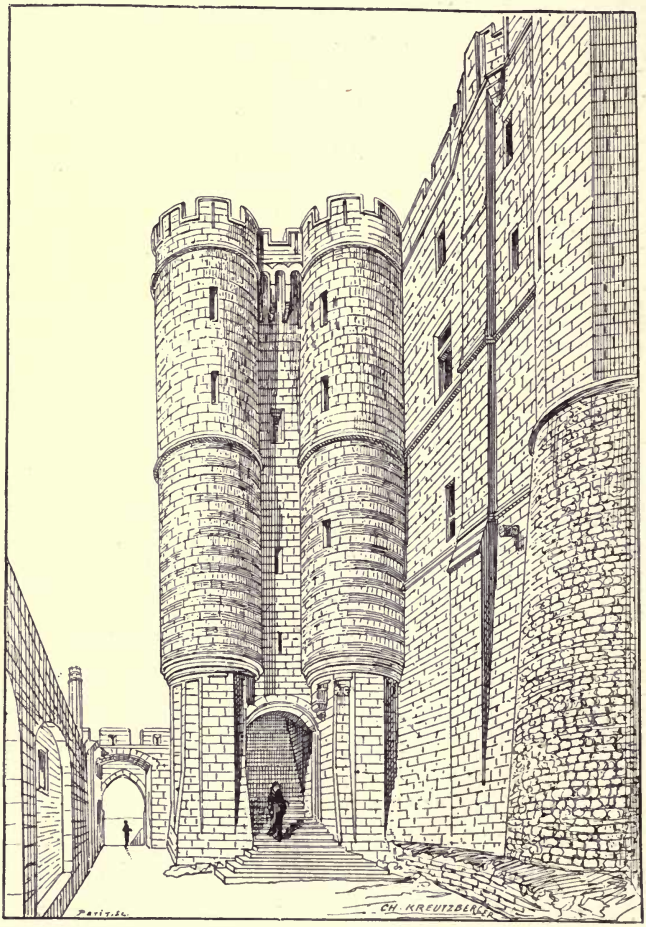
162. ST. MICHAEL'S MOUNT, CORNWALL

grandeur characterises them, especially striking and impressive in the northern front as viewed from the sea. The vast walls of granite (the material used throughout, save in the inner walk of the cloister) are pierced with windows varying in shape according to the character of the rooms they light. Those of the dormitory are very remarkable. They are long and narrow, and affect the aspect of loopholes, deeply splayed outwards; the peculiar form of the honeycombed window-heads suggests a reminiscence

PART III

MILITARY ARCHITECTURE

calculations as in our own time. The system by



163. ABBEY OF MONT ST. MICHEL. GATE-HOUSE

which the architect and the engineer have each

the besieging party brought up against the walls for an escalade, directed the sappers who undermined them, and, in fact, superintended the manufacture of all such offensive engines as were necessary in the conduct of a siege, a process which, before the invention of firearms, necessitated preparations as prolonged and tedious as they were complicated and uncertain. In short, the architect was the constructor of fortifications, the *engigneur* their assailant or defender. It was not until the time of Vauban that military engineers were called upon to exercise functions so much more extensive. At an earlier

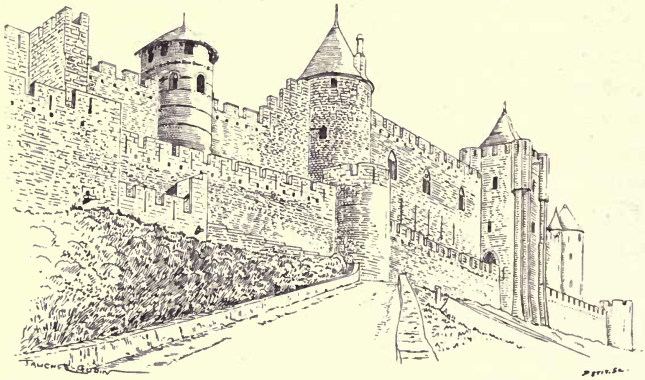
164. CITY OF CARCASSONNE. RAMPARTS TO THE SOUTH-EAST

period there were, however, specialists in construction who undertook such works as the circumvallation of Aigues-Mortes, but their labours had little in common with those of modern engineers.

Before the feudal period the fortifications of camps consisted either of earthworks, of walls built of mud and logs, or of palisades surrounded by ditches, in imitation of the Roman methods of castrametation. The *enceintes* of towns fortified by the Romans were walls defended by round or square towers. These walls were built double; a space of several yards intervened, which was filled up with the earth dug from the moat or ditch, mixed with

rubble. The mass was levelled at the top and paved to form what is technically known as a covered way, or terrace protected by an embattled wall rising from the outer curtain.

That portion of the *enceinte* of Carcassonne which was built by the Visigoths in the sixth century is thus constructed on the Roman model. "The ground on which the town is built rises considerably above



165. CITY OF CARCASSONNE. NORTH-WEST RAMPARTS. ROMANO-VISIGOTHIC TOWER (FIRST ON THE LEFT)

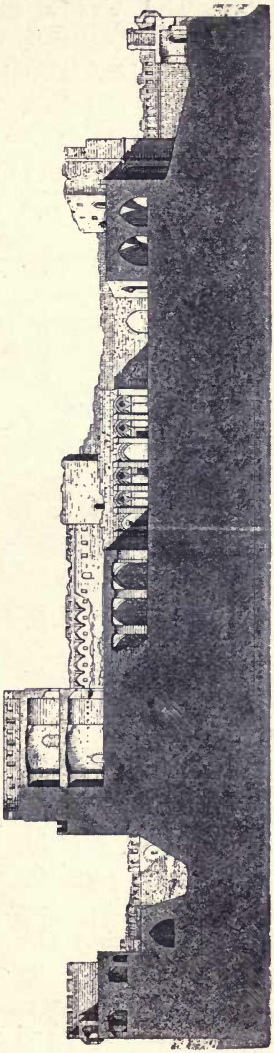
that beyond the walls, and is almost on a level with the rampart. The curtains[1] are of great thickness; they are composed of two facings of dressed stones cut into small cubes, which alternate with courses of bricks; the intervening space is filled not with earth, but with a concrete formed of rubble and lime."[2] The flanking towers which rise considerably above the curtains were so disposed that it was possible to

[1] The wall space between the towers.

[2] Viollet-le-Duc, *La Cité de Carcassonne.*

barrier; secondly, stone machicolations in place of the wooden *hourds* or timber scaffoldings which were retained in France till the close of the thirteenth century; and finally, the talus, a device by which the thickness of the walls was tripled at the base, thus affording increased security against the arts of the sapper and the earthquake shocks so frequent in the East.

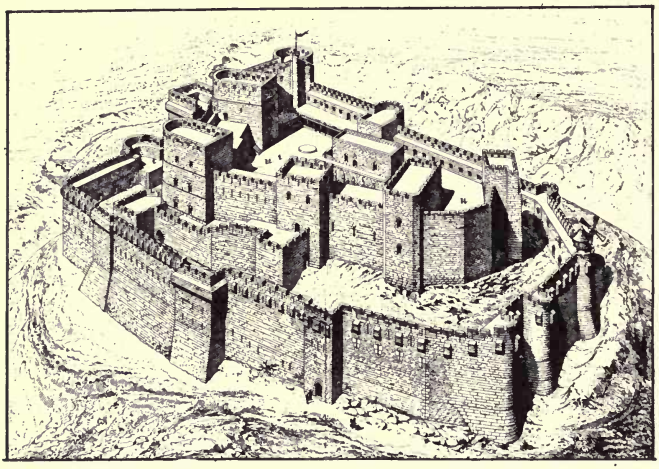
The buildings of the second class belong to the school of the Knights Templars. Their characteristic features are the towers, invariably square or oblong in shape, and projecting but slightly from the curtains. The fortress of Kalaat-el-Hosn,[1] or *Krak* of the knights, commanded the pass through which ran the roads from Homs and Hamah to Tripoli and



166. FORTRESS OF KALAAT-EL-HOSN IN SYRIA (*KRAK* OF THE KNIGHTS). SECTION, AS RESTORED BY M. G. REY.

[1] *Étude sur les Monuments de l'Architecture Militaire des croisés en Syrie*, by G. Rey; Paris, 1871.

Tortosa, and was a military station of the first importance. Together with the castles of Akkar, Arcos, La Colée, Chastel-Blanc, Areynieh, Yammour, Tortosa, and Markab, and the various auxiliary towers and posts, it constituted a system of defence designed to protect Tripoli from the incursions of the Mahometans, who retained their hold on the

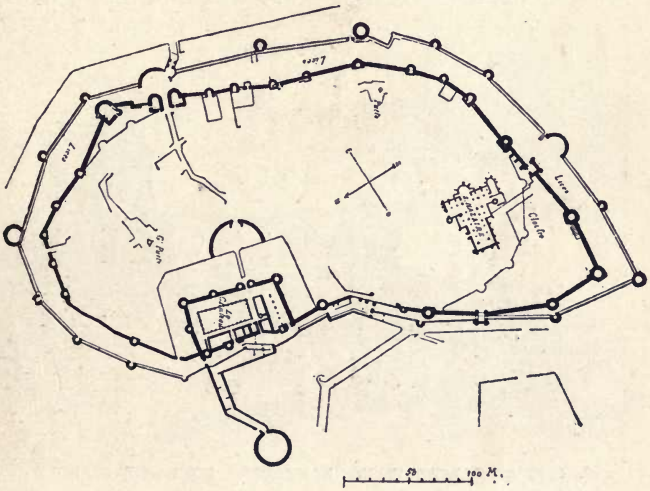


166A. FORTRESS DE KALAAT-EL-HOSN IN SYRIA (*KRAK* OF THE KNIGHTS). AS RESTORED BY M. G. REY

greater part of Syria. . . . The *Krak*, which was built under the direction of the Knights Hospitallers, has a double *enceinte*, separated by a wide ditch partly filled with water. The inner wall forms a reduct, and rising above the outer enclosure commands its defences. It also encompasses the various dependencies of the castle, the great hall, chapel, domestic buildings, and magazines. A long vaulted

passage, easy of defence, was the only entrance to the place. To the north and west the outer line consisted of a curtain flanked by rounded turrets, and crowned by machicolations, which formed a continuous scaffolding of stone along the greater part of the *enceinte*.

The action of the East upon the West was



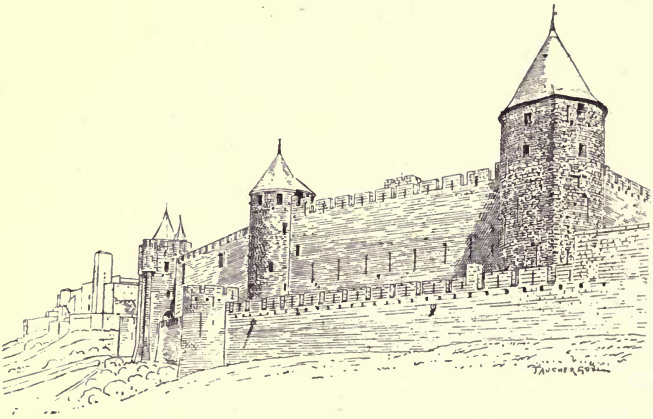
167. CITY OF CARCASSONNE. PLAN (THIRTEENTH CENTURY)

manifested in the thirteenth and fourteenth centuries by the application to the fortification of Carcassonne and Aigues-Mortes of methods in use among the Crusaders in Syria.

This oriental influence is apparent at Carcassonne in the double *enceinte* borrowed from Syrian fortresses.

The city of Carcassonne stands upon a plateau commanding the valley of the Aude, the site of an

ancient Roman *castellum*. In the sixth century it fell into the hands of the Visigoths, who fortified it. It increased considerably in extent during the tenth, eleventh, and twelfth centuries, but in the time of Simon de Montfort (1209) and of Raymon de Trancavel (1240) the *enceinte* was not nearly so important as it became under St. Louis. By the middle of the thirteenth century the king had begun



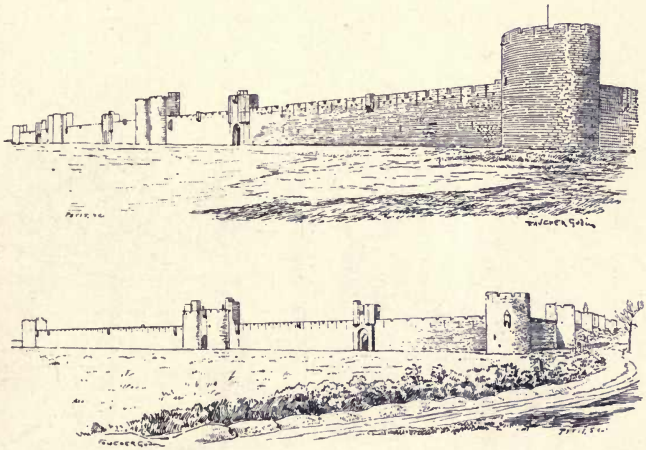
168. CITY OF CARCASSONNE. RAMPARTS. SOUTH-WEST ANGLE

the construction of defensive works on a vast scale, and built the outer *enceinte*, which still exists, as may be seen on the plan (Fig. 167) taken from Viollet-le-Duc's *Cité de Carcassonne*.

The primary object of the *enceinte* was to secure the place against a sudden attack during the completion or enlargement of its interior defences. The additions of St. Louis, which were carried on by Philip the Bold, rendered Carcassonne impregnable

in the general estimation. "As a fact, it was never invested, and did not open its gates to Edward the Black Prince till 1355, when all Languedoc had submitted to him."[1]

Oriental influences are equally evident at Aigues-Mortes. The Genoese Guglielmo Boccanera, who constructed the *enceinte*, was apparently familiar with



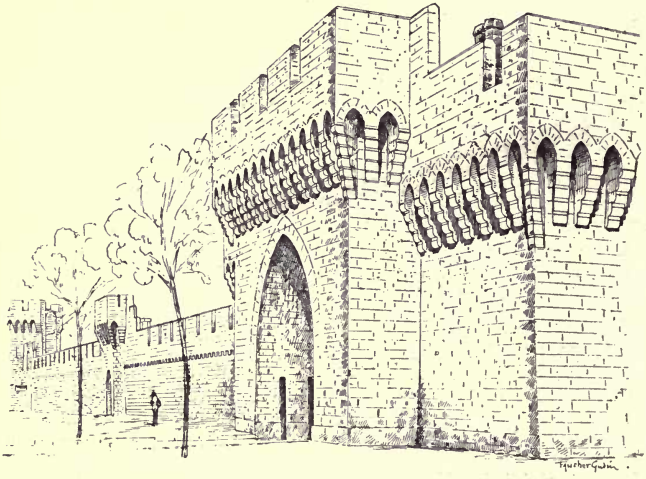
169. RAMPARTS OF AIGUES-MORTES, NORTH AND SOUTH

the system of fortification adopted by the Crusaders in Syria. The machicolations which here make their first appearance in Languedoc (in the reign of Philip the Bold), proclaim the filiation of Aigues-Mortes to the Syrian fortresses. Italian influences are also perceptible in the square plan of the flanking towers. French architects had always preferred the round tower, as more solid in itself, and less open

[1] Viollet-le-Duc, *La Cité de Carcassonne.*

to attack from sappers, who, in advancing against a building of this form, were fully exposed to the missiles of the defenders from the curtains adjoining; while, on the other hand, the angles of the square tower gave a certain protection to assailants advancing against its front.

The ramparts of Avignon, which date from the

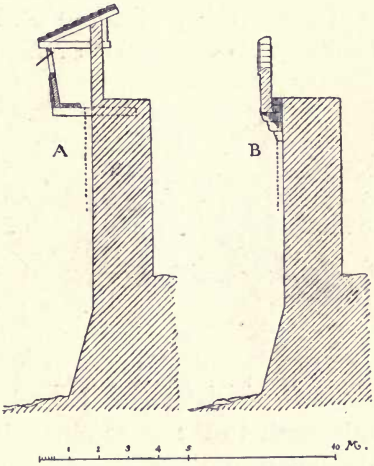


170. RAMPARTS OF AVIGNON. CURTAIN, TOWERS, AND MACHICOLATIONS

fourteenth century, seem to have been constructed on Italian methods. The curtains are flanked by square towers, open towards the town, and surmounted by embattled parapets corbelled out from the walls, and machicolated so as to command their bases.

In the thirteenth century walls and towers were provided with movable wooden scaffoldings, as

shown at A in the figure. Spaces were left in the masonry of the walls for the insertion of wooden beams, which, projecting from the curtain, supported an overhanging gallery. This, being pierced with traps or apertures in the flooring, commanded the base of the wall, and was an important element in defensive operations. But as it was found that these timber galleries were easily set on fire by assailants, they were replaced in the fourteenth century by stone machicolations, as shown at B, consisting of corbels, supporting an embattled parapet. Between the inner face of the parapet and the outer face of the curtain the supporting corbels alternated with openings for the defence of the base, as already described. This arrangement, among the earliest examples of which are the square towers of Avignon, was soon generally adopted by architects in the construction of city ramparts.

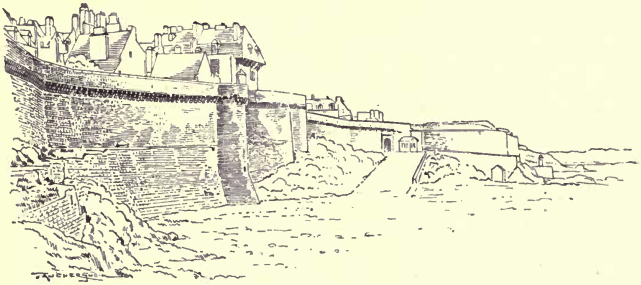


170A. MACHICOLATIONS

"The art of fortification, which had made great advances at the beginning of the thirteenth century, remained almost stationary to the end of it. During the Hundred Years' War, however, it received a fresh

impetus. When order had been restored in the kingdom, Charles VII. set about the restoration or reconstruction of many fortresses recaptured from the English. In the defensive works of such towns and castles, and in various new undertakings of a like nature, we recognise the method and regularity proper to an art based on well-defined principles, and far advanced towards mastery."[1]

In the Abbey of Mont St. Michel the successive modifications applied to military *enceintes* from the



171. RAMPARTS OF ST. MALO (FIFTEENTH CENTURY)

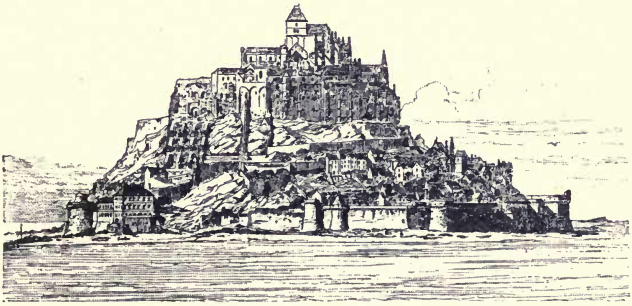
thirteenth to the fifteenth century, are illustrated in the fullest and most interesting manner.

Of the fourteenth century fortifications, which surrounded the original town at the summit of the rock, connecting the ramparts with the *Merveille* on the north, and the abbey buildings on the south, some fragments still remain. The tower on the north is intact. The walls are crowned with machicolations, in accordance with the then novel system of massing the defences at the top of the ramparts. The gate of the *enceinte* was to the south-east,

[1] Viollet-le-Duc, *Dictionnaire*, vol. i.

communicated with the *Grand Degré*, and by a series of ingenious and unique combinations was so contrived as to command all the approaches.[1]

In 1411 the Abbot Robert Jolivet was nominated lord of the abbey by Pope John XXIII. After his election by the monks he was made captain of the garrison by the king, but continued to live in Paris. In 1416, however, he hastened to his abbey, which was threatened by the English, who had possessed themselves of Lower Normandy after the battle of

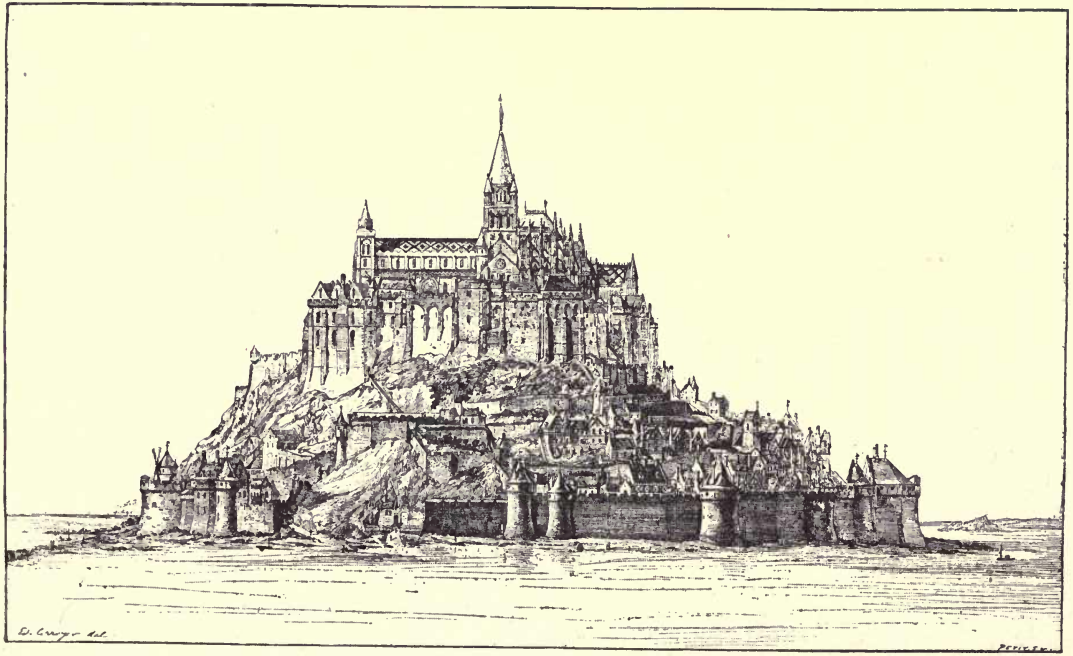


172. MONT ST. MICHEL. SOUTH FRONT (AS IT WAS IN 1875)

Agincourt in 1415. Whilst the English were busy fortifying Tombelaine, Robert Jolivet completed his walls and certain towers round about the town, which still exist. To meet the expenses of his undertaking the abbot obtained a grant from the king of fifteen hundred *livres* from the revenues of the Viscounty of Avranches, besides a subsidy from the Master of the Mint at St. Lô.

At the time when Robert Jolivet was building

[1] Ed. Corroyer, *Description de l'Abbaye du Mont St. Michel*, etc.; Paris, 1877.



173. MONT ST. MICHEL. FORTIFICATIONS OF THE FOURTEENTH CENTURY (AS RESTORED BY ED. CORROYER)

but the temporary concessions of Charles the Bald were claimed as definitive by those to whom they had been made. "When, therefore, that feeble monarch proclaimed the heredity of the feofs at Quierzy-sur-Oise in 877, he did but sanction that which was already an accomplished fact. . . . When the feudal system was firmly established, the nobles

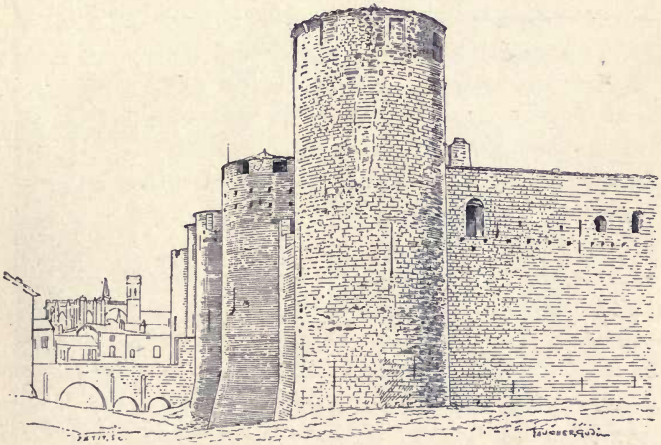
174. CASTLE OF ANGERS

turned their attention to the maintenance of their usurpations alike against the kings of France, strangers, and neighbours. To this end they carefully chose the best strategic positions in their territories, and fortified them in the most durable fashion at their command. The imposts they levied were considerable, and their serfs were subject to endless exactions." [1] Stone castles were accordingly built

[1] Anthyme St. Paul, *Histoire Monumentale de la France.*

which, in general arrangement, adhered to primitive models. In 980 Frotaire had raised no less than five around Périgueux, his episcopal town.

In 991 Thibault File-Étoupe built a fortress on the hill of Montlhéry, near the royal residences of Paris and Étampes, which was very formidable to the first five kings of the house of Capet. Later,



175. CARCASSONNE; CITADEL. VIEW FROM THE NORTH-EASTERN ANGLE. (SEE PLAN, FIG. 167)

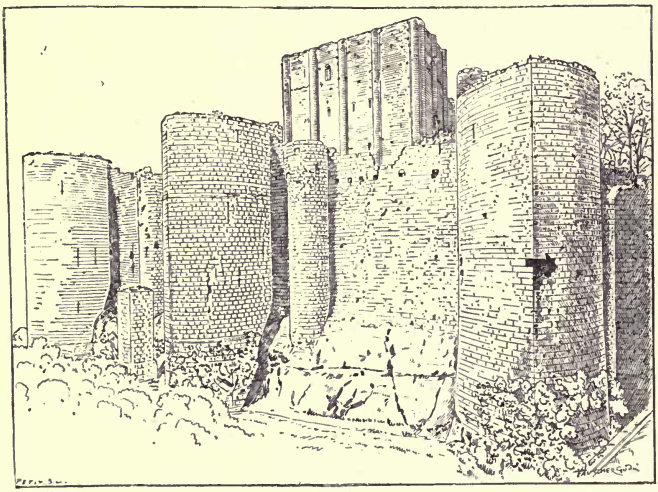
when it became a royal possession, it was one of the chief bulwarks of the city.

In the Middle Ages the castle bore the same relation to the fortified town as did the keep to the feudal castle, and the history of one is bound up in that of the other.

In a fortified town the castle was the lodging of the leader and his soldiers. It was connected with the ramparts of the place, and had one or more

special outlets; it was further provided with defences on the side of the town itself, so that upon occasion it became an isolated stronghold.

The Castle of Carcassonne is a famous example of such offensive and defensive fortification. It was built in the first years of the twelfth century, and is composed of various lodgings for the chief and his



176. LOCHES CASTLE. KEEP

garrison, defended east and north, on the side towards the city, by towers and curtains (Fig. 175). At the south-west angle independent reducts and towers guard the courtyards and approaches. The west front overlooks the open country, and here was placed the gate, which was defended by a series of formidable devices so ingenious as to preclude all possibility of surprise.

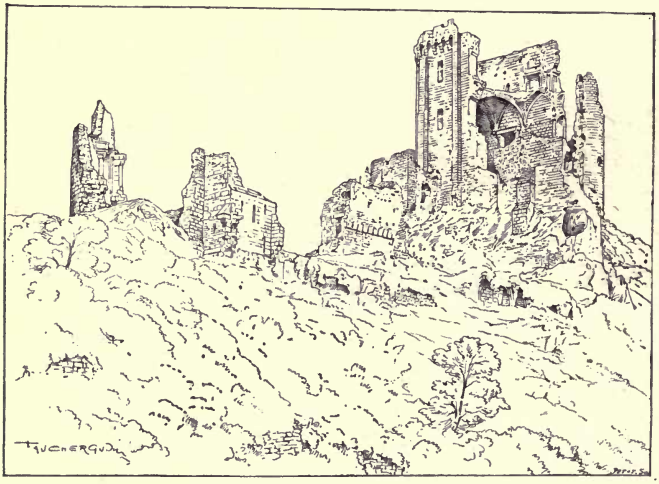
which is ascribed to Foulques Nerra, but which seems to belong rather to the twelfth century, at which period military architecture had made a great advance. The keep of Loches is perhaps the finest of all such structures in France; in height it is nearly 100 feet; the ramparts seem to date from

177. FALAISE CASTLE. KEEP

the thirteenth century; the form of the towers on plan is a pointed arch, a shape adopted as offering greater resistance at the part most frequently attacked by the sapper.

At Falaise, where the castle like that of Domfront is built on a rugged promontory, the ramparts are later than the keep, the architectural details of

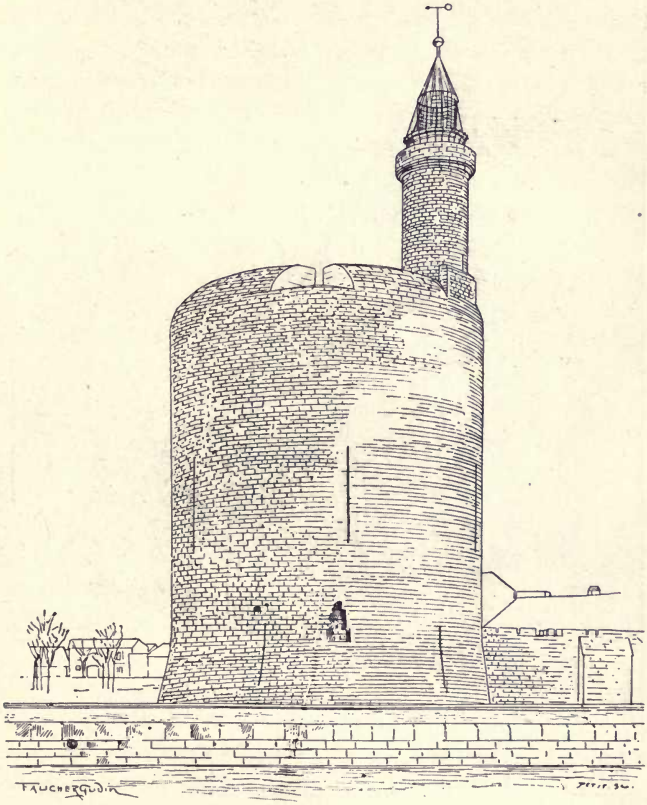
which point to the twelfth century. This hypothesis is supported by a passage in the Chronicle of Robert du Mont, quoted by M. de Caumont. In 1123 Henry II. rebuilt the keep and ramparts of Arques, and carried out similar restorations at Gisors, Falaise, Argentan, Exmes, Domfront, Amboise, and Vernon.



178. LAVARDIN CASTLE. KEEP

Other keeps of equal interest in point of situation, plan, or details of construction are:—Ste. Suzanne, Nogent-le-Rotrou, Broue, L'Islot, Tonnay-Boutonne, Pons, Chamboy, Montbazon, Lavardin, Montrichard, and Huriet in the Bourbonnais. All these, in common with those first described, are square or rectangular on plan. From the end of the twelfth century onwards the cylindrical form

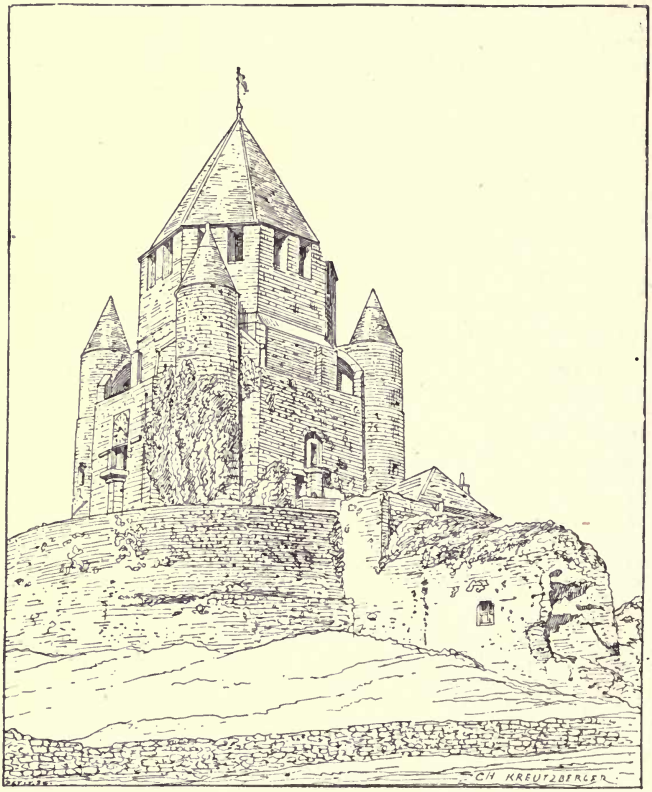
predominates in the plan of keeps and towers. On the whole, it offered the best resistance to the



179. KEEP OF AIGUES-MORTES. TOUR DE CONSTANCE

mediæval assailant. The convex surface was of equal strength all round, and as we have seen in the preceding chapter, the circular trace for towers

gave the garrison the best chance of defending their



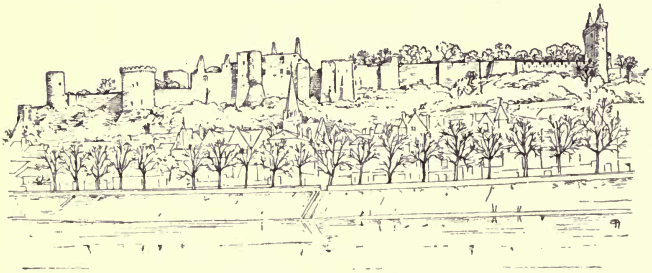
180. PROVINS CASTLE. KEEP

bases from the curtain, and of opposing the work of sappers and miners.

The great advance made in architecture by the general adoption of an expedient so simple and

which crowns the feudal *motte* or mound. It was built in the twelfth century, and was considerably augmented by the line of walls and square towers which Philip Augustus drew round the mound.

The *Château Gaillard*, built at the close of the twelfth century on an eminence commanding the Seine at Les Andelys, has several peculiarities of arrangement. The round keep is first enclosed by a circular *enceinte*, or rather by a square, the angles of which have been rounded. This in its turn is

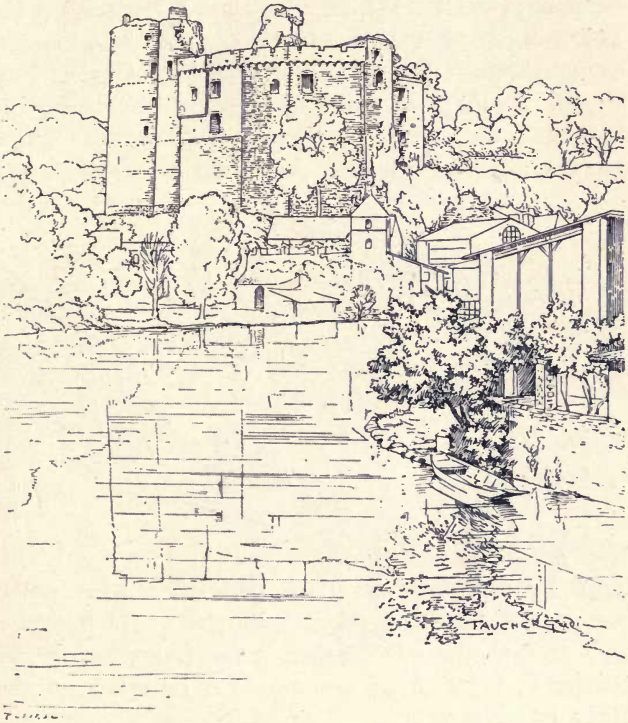


181. CASTLE OF CHINON. SOUTH FRONT

surrounded by an elliptic enclosure connected with the defences of the castle, and consisting of a series of segmental towers united by very narrow curtains. In this massive structure the art of the architect manifests itself only in the robust solidity of the masonry. It is the keep in its purely military character. No trace of decoration mitigates its austerity.

Philip Augustus, having possessed himself of the Château Gaillard, fortified Gisors on the same formidable scale, and proceeded to build the castle of Dourdan as well as his own palace fortress of the

Louvre, in Paris. Upon the death of the king, Enguerrand III. began to build a fortress at Coucy, which he completed in less than ten years (1223-

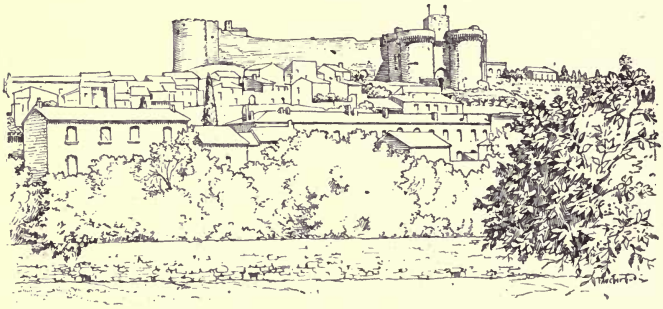


182. CASTLE OF CLISSON. KEEP

1230). Its grandiose proportions and formidable system of defence surpassed everything that had gone before. Coucy was, in fact, the architectural manifestation of that haughty ambition to which Enguerrand

is said to have given free expression during the minority of his sovereign.

Next in importance to the castles and keeps of the thirteenth century, already enumerated, are the following:—The White Tower of Issoudun; the Tower of Blandy; the octagonal keep of Châtillon-sur-Loing, Semur; the royal fortresses of Angers, built by St. Louis; Montargis, Boulogne, Chinon, and Saumur; the *Tour Constance* or keep of Aigues-Mortes, ascribed to St. Louis; the castle of Najac,

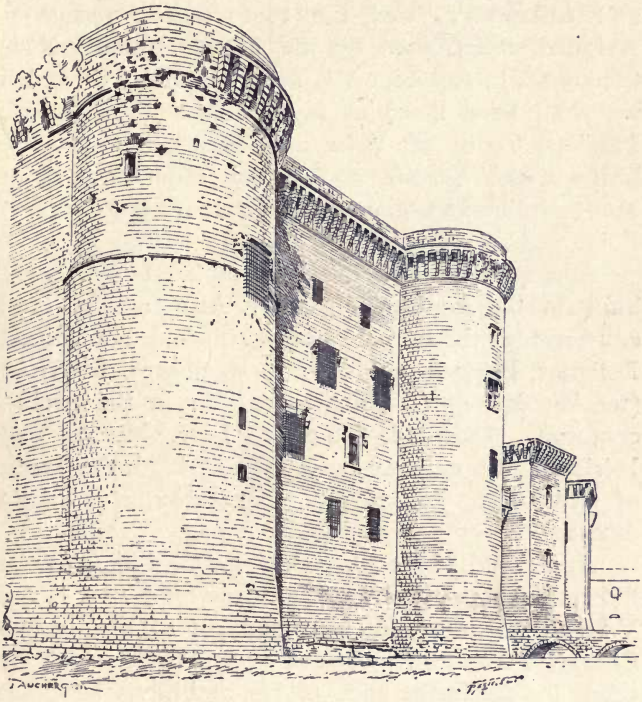


183. VILLENEUVE-LES-AVIGNON. CASTLE OF ST. ANDRE

built by his brother, Alphonse of Poitiers; the castles of Bourbon l'Archambault and Chalusset, and the castle of Clisson, rebuilt or begun by Olivier I., Lord of Clisson, after his return from the Holy Land, etc.

In the fourteenth century military architecture developed chiefly on reconstructive lines. Ancient fortresses were reorganised in accordance with the new methods of attack and (consequently) of defence, and the weak points brought to light by recent sieges were dealt with. The same process was

applied to the construction of towers which had hitherto been furnished with several rows of loop-holes, an excellent expedient for the defence of



184. CASTLE OF TARASCON

curtains and approaches, but subject to this drawback, that it directed attention to the most vulnerable points. The first effect of the use of cannon in warfare was to increase the thickness of the walls; subsequently, such structural modifications were

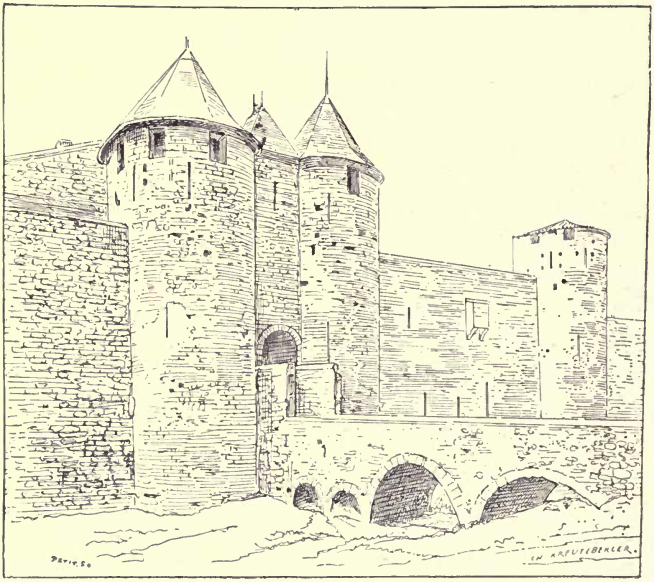
been so exhaustively described in special works, notably those of Viollet-le-Duc, that we need not reproduce them here. We have cited them as characteristic types of those colossal fortresses and keeps, admirable alike in grandiose proportion and refinement of detail which are the supreme expression of feudal power.

185. VITRÉ CASTLE

Several other castles were built in Albigeois, Auvergne, Limousin, Guyenne, La Vendée, and Provence, notably at Tarascon. The keeps of Trèves in Anjou also date from this period.

Important castles sprang up all over Brittany in the fifteenth century. Such were Combourg, Fougères, Montauban, St. Malo, Vitré, Elven, Sucinio, Dinan, Tonquédec, etc.

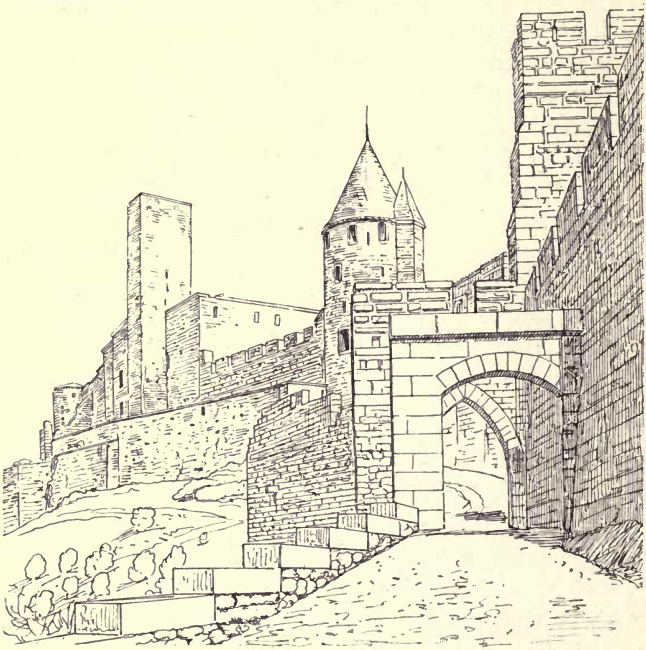
bridge, by raising a movable portion of which, however, entrance might be barred on the very threshold. The narrow gateway passage was defended by two projecting towers pierced with loopholes, and connected by a curtain. The whole structure formed a



186. CITY OF CARCASSONNE. GATE-HOUSE OF THE CASTLE

fortified gate-house, known as a *châtelet*, which had to be carried before an assailant could penetrate to the fortress beyond. The passage was further defended by a single or double portcullis, a grated timber framework like a harrow, cased with iron, the uprights of which were spiked at the bottom. The passage was also defended by machicolations or

the *lists* (Fig. 187)—that is to say, the space between the inner and outer enclosures. He afterwards built a huge tower, known as the *Barbican*, to the west of the castle, with which it was connected by

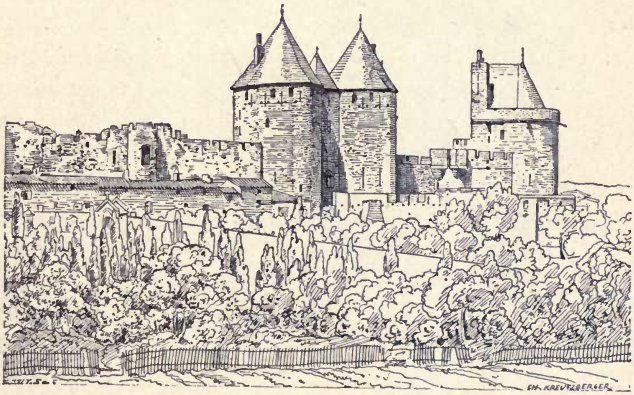


187. CARCASSONNE. GATEWAY OF THE LISTS, KNOWN AS THE *PORTE DE L'AUDE*

crenellated walls, and by inner cross-walls, so arranged in a kind of echelon that the open spaces on one side were masked by the projections on the other (see plan, Fig. 167). The tower was destined to cover sorties from the garrison, and to keep open communication by the bridge across the

Aude. It was rather an outwork than a barbican such as Philip the Bold built before the *Porte Narbonaise*, on the east of the city, towards the close of the thirteenth century.

The *Porte Narbonaise* bears a general resemblance to the main gate of the castle, subject, however, to the great advance made in military architecture in the course of a century. The gateway towers are pro-



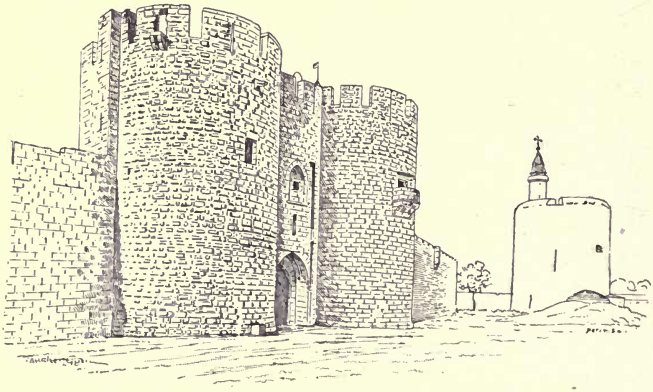
188. CITY OF CARCASSONNE. GATE KNOWN AS THE *PORTE NARBONAISE*

vided with spurs, an invention directed against the attack of miners, which had the further advantage of interfering with the action of a battering-ram, by exposing those who worked it to missiles from the adjacent parts of the curtain. The gate opened immediately upon the lists; it was defended by the crenellated semi-circular barbican, which was united on either side to the embattled parapet of the lists. Access to the barbican was obtained only by a narrow passage preceded by a bridge, the latter

easily defended by a redan which adjoined the postern of the barbican.

The gate itself was provided with two portcullises like those of the castle gate; behind the first were massive folding-doors, and over it a wide machicolation.

The constructive methods employed in the building of fortified gates were modified as military architecture progressed on lines already considered

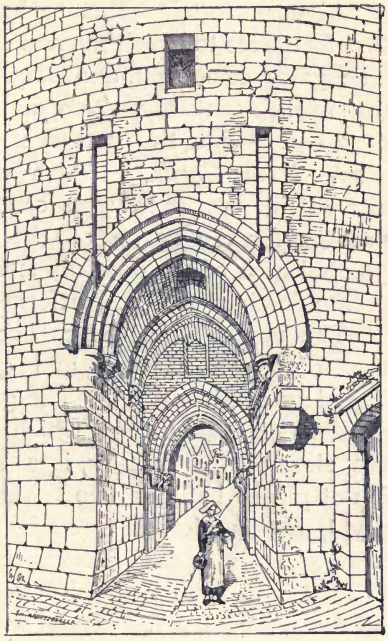


189. RAMPARTS OF AIGUES-MORTES. GATE KNOWN AS THE *PORTE DE LA GARDETTE*. DRAWBRIDGE. (TO THE RIGHT OF THE DRAWING THE *TOUR CONSTANCE*, BUILT BY ST. LOUIS)

by us in the first chapter of this section, when dealing with defensive methods generally, which, in the fourteenth century, seem to have been in advance of those of attack. A steady improvement in details went on until the invention of gunpowder came in to profoundly modify the conditions alike of defence and assault.

The gateways of fortified *enceintes* were modified in the fourteenth century not only by alterations in

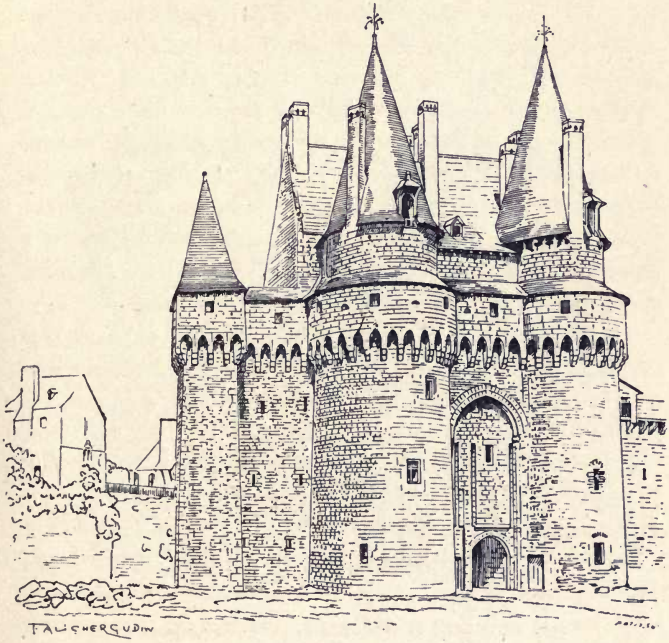
the plan of towers, the substitution of stone machicolations for the wooden *hourds* or scaffoldings of parapets, the addition of portcullises, folding-doors, and the *machicoulis* of the vaulted passage, but further by the invention of the drawbridge. A drawbridge, it may be hardly necessary to say, consisted of a wooden platform suspended by chains to cross-beams poised on uprights on the principle of a see-saw; when lowered, the bridge afforded a passage across the moat. It was raised by depressing the inner ends of the lever-beams which pivoted upon a fulcrum, and thus brought the platform up vertically against the front of the building, where it formed an outer door which an attacking party had either to batter in or to bring down by cutting the chains.



190. RAMPARTS OF DINAN. GATE KNOWN AS THE *PORTE DE JERZUAL*

It will be readily perceived that such a bridge was infinitely more effectual and more to be depended

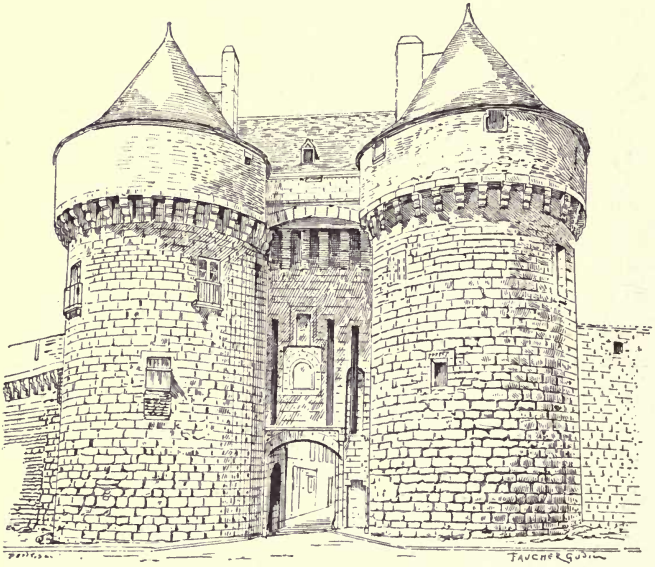
doubled the protection it gave. In case of alarm, the chain had simply to be let go, and the panel falling by its own weight, the bridge rose, and the barricade was complete.



191. VITRÉ CASTLE. GATE-HOUSE

By the fifteenth century drawbridges were in universal use; an interesting development was the result. This was the introduction of a smaller gate or postern in the curtain between the towers, by the side of the great gateway. Each of the two apertures was furnished with its own drawbridge.

That of the centre, which was reserved for horsemen and vehicles, was worked by two beams or arms, as we have seen, while the smaller footbridge of the postern was raised by means of a single beam, the chain of which was attached to a forked upright.



192. ENCEINTE OF GUÉRANDE. GATE OF ST. MICHEL

The castle of Vitré, which was built, or at least completed at the close of the fourteenth or beginning of the fifteenth century, illustrates the system in the gateway of its *châtelet*.

The gate-house, known as the *Porte St. Michel*, at Guérande, which was built together with the *enceinte* by John V., Duke of Brittany, in 1431, still

The main gate of the ramparts, which was built between 1415 and 1420, is to the west of the place,

193. RAMPARTS OF MONT ST. MICHEL. GATEWAY KNOWN AS THE *PORTE DU ROI*

in the curtain flanked by the tower known as the *Tour du Roi.* This gate and the lateral postern

older than that of St. Nicholas (on the right), which is supposed by them to have been built in the sixteenth century on the foundations of an earlier tower contemporary with that on the other side of the Channel. The piles upon which these towers stand seem to have given way in part, and to have caused a perceptible inclination of the Tower of St. Nicholas.

The suggestion made in a very fanciful modern design, that the two towers were once united by a

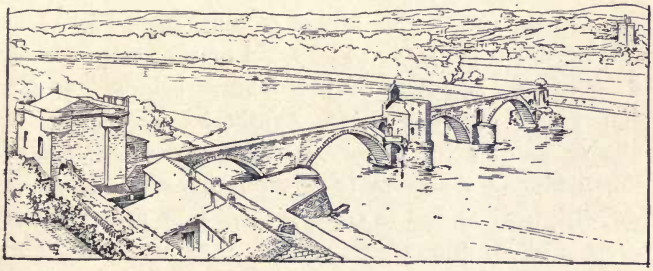
194. ENTRANCE TO THE PORT OF LA ROCHELLE. TOWER OF ST. NICHOLAS, AND TOWER CALLED *TOUR DE LA CHAÎNE*. BEFORE THE RESTORATION

great arch, is wholly without foundation. Such a useless structure would have entailed defensive works equally useless, seeing that a chain stretched from tower to tower at high tide—at low tide the harbour was inaccessible—would have been perfectly effectual against any vessels of that period attempting to force a passage.

Bridges.—As is the case with all other architectural buildings, the origin of bridges dates back to the Romans, by whom they were often decorated with triumphal arches. The bridge of St. Chamas

in Provence, known as the *Pont Flavien* (Flavian Bridge), is an example which seems to date from the first centuries of the Christian era.

The triumphal arches were in later times replaced by fortifications; they became *têtes de pont*, *bastilles*, or crenellated gate-houses, the function of which was not, like that of the arches, the decoration of the structure or the glorification of its founder, but the defence of the passage across the river, and the



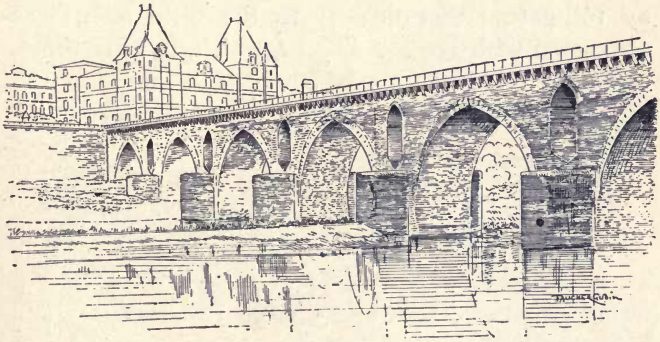
195. BRIDGE AT AVIGNON. RUINS OF THE BRIDGE KNOWN AS THE PONT DE ST. BÉNÉZET

protection of the fortress with which it communicated.

Among the bridges constructed by mediæval architects, that of St. Bénézet, the Bridge of Avignon, seems to be the most ancient. This bridge, which was begun about 1180, and completed some ten years later, is equally remarkable for its architectural details, and the structural problems solved by its builders. It crosses, or rather used to cross, the Rhone—for though the arm towards the *Rocher des Doms* is the narrower, it is the deeper—on nineteen arches, extending from the foot of the Doms, on the

bank the ancient chapel, dedicated to St. Nicholas, is still standing. Access to it is obtained by means of a flight of corbelled steps rising from the foundation to the entrance, and by an overhanging landing-stage, resting at one end against the pier, at the other against the flank of the arch.

The old bridge at Carcassonne seems to be contemporary with that of Avignon, but its arches are



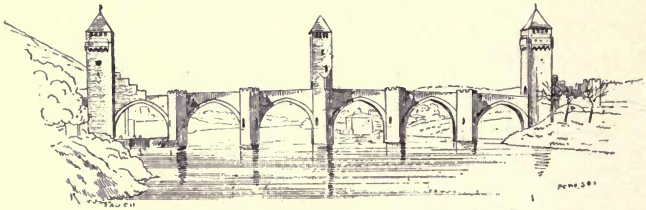
196. BRIDGE OF MONTAUBAN, KNOWN AS THE *PONT DES CONSULS*

semicircular, their keystones are bound into the intrados, and their piers are spurred to the level of the platform, where they form recesses or refuges, which the narrowness of the bridge rendered very necessary.

Among bridges of the thirteenth century we may mention that at Béziers, where the arches, both pointed and semicircular, resemble those of Carcassonne in construction; but here the piers only rise above the summers of the arches by the height of two or three courses, and their spandrils

are pierced to give free passage to the current during floods.

The bridge which spanned the Rhone at St. Savournin du Port, known as the *Pont St. Esprit*, was the work of a Clunisian abbot about 1265. It resembled the Bridge of Avignon in the construction of the piers with their pierced spandrils; the arches, however, were semicircular. The platform, which is some 16 feet across, was barred at either end by toll-gates; that nearest to the little town was connected with the *tête de pont*, which, in after times,



197. BRIDGE OF CAHORS, KNOWN AS THE PONT DE VALENTRÉ

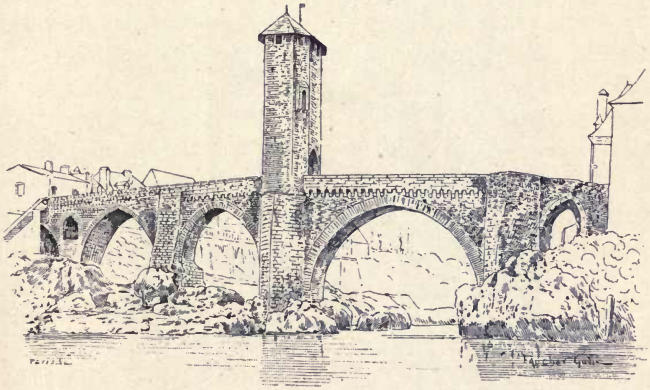
was incorporated with the fortress commanding the course of the Rhone above the bridge.

The question of tolls was an important one in those days, and gave rise to frequent disputes. The towers and gate-houses of bridges were toll-bars as well as defensive outworks.

The bridge at Montauban, known as the *Pont des Consuls*, which was begun at the close of the thirteenth century, remained unfinished till the beginning of the fourteenth, when Philip the Fair gave such help as was needed for its completion, on condition that he should be allowed to raise three towers on the bridge, with a view to the appropriation of the tolls.

The Bridge of Montauban is built entirely of brick. It consists of seven pointed arches, resting on spurred piers, which are pierced with arches, also pointed, and rising to the same height as the main arches, to provide for the frequent floods of the Tarn.

The Bridge of Cahors is one of the most beautiful of fourteenth-century examples. It is still of



198. BRIDGE OF ORTHEZ

great interest in spite of the various restorations it has undergone, chiefly of late years.

This bridge, which is known as the *Pont de Valentré*, was begun in 1308 by Raymond Panchelli, Bishop of Cahors from 1300-1312, and cannot have been finished before 1355. It consists of six slightly pointed arches; the piers, which rise to the level of the parapet, forming lateral refuges, are triangular above bridge and square below. At each end the bridge was commanded by a crenellated

structure, forming a gate-house or *tête de pont* on

199. ABBEY OF MONT ST. MICHEL. FORTIFIED BRIDGE CONNECTING THE LOWER CHURCH WITH THE ABBEY

either bank. In the middle rose a lofty tower with

PART IV

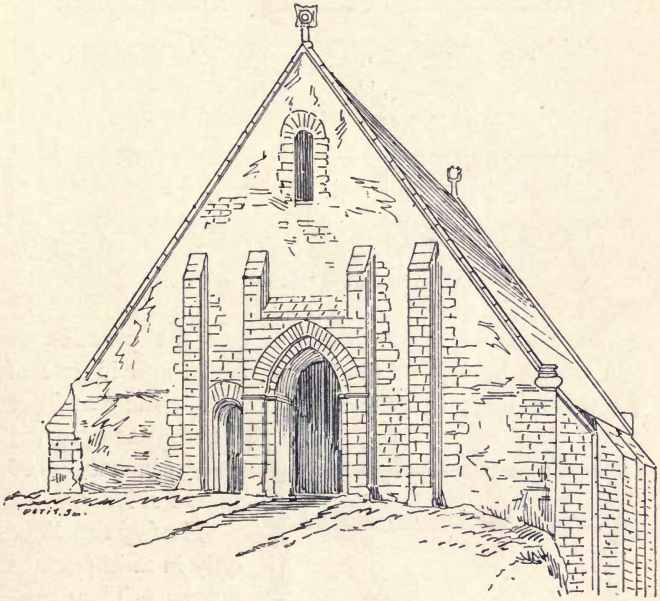
CIVIL ARCHITECTURE

The barns or granaries of mediæval times were rural dependencies of the abbeys, but were built

200. TOWN-HALL AT ST. ANTONIN (TARN ET GARONNE). THE UPPER PART OF THE BELFRY WAS REBUILT ABOUT 1860

outside the enclosure of the monastery proper, and formed part of the *priory* or farm. The entrance of the barn was a large door, opening upon the yard

in the centre of the front gable end; access was also obtained by means of smaller doors in the side walls, and often a postern was constructed beside the main entrance for ordinary use. The great central doors were then only thrown open for the

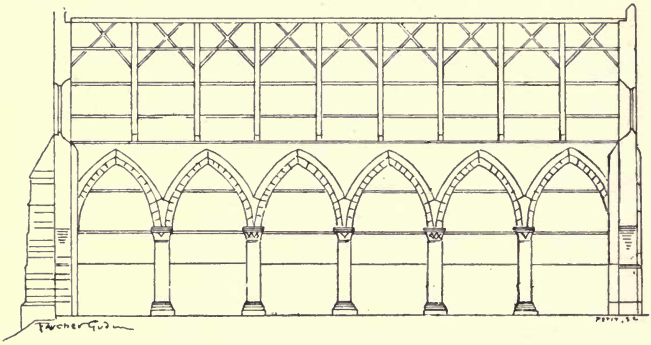


201. BARN AT PERRIÈRES (CALVADOS). END OF TWELFTH CENTURY. (AFTER CAUMONT)

passage of carts, which, entering at the front, passed out through a similar door in the opposite gable end, as at the barn of Perrières, which, though situated in Normandy, was a dependency of the Abbey of Marmoutier, near Tours.

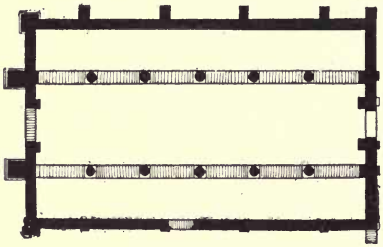
Such barns were generally large three-aisled

buildings, the central aisle divided from those on either side by an arcade, or pillars of wood or stone, which supported the pointed timber roof covering the whole.



201A. BARN AT PERRIÈRES. SECTION

In some of these barns it was the practice to pile wheat, barley, or rye in the centre and in one of the side aisles; in others the central aisle was kept free for passage, and the grain was stored in the sides.

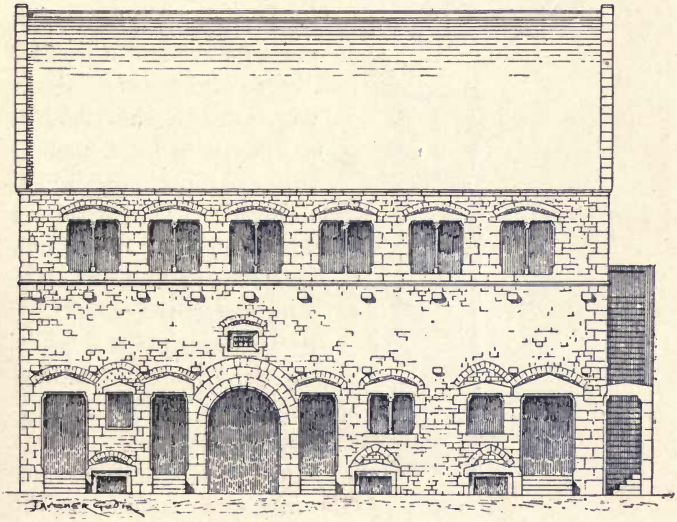


201B. BARN AT PERRIÈRES. PLAN

The façades differ only in unimportant details. They consist of vast gable ends, following the lines of the roof, and strengthened by pilasters. A large doorway, with a small postern to the side of it, occupies the centre of the base, and the apex is pierced with narrow openings to light, or rather to ventilate, the interior.

Tithe-barns were very generally constructed on this plan. When large and important they had two stories, as at Provins.

These were not as a rule vaulted, but the granaries, or *greniers d'abondance*, were often built with three stories, that of the ground-floor, and even

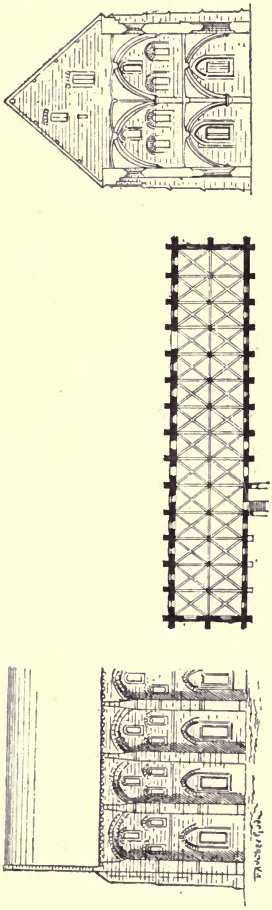


202. TITHE-BARN AT PROVINS

the one above it, being vaulted. The granary of the Abbey of Vauclair, in the department of Aisne, built towards the close of the twelfth century, is a very interesting example of such structures.

Some idea of the importance of religious establishments at this period may be gathered from the foregoing details. The great abbeys were miniature towns, and their dependencies, the priories, con-

sisted of vast farms, round which large villages soon grew up. The cultivators of these great holdings combined agricultural labours with their religious exercises, and the priors in especial were not only priests, but perhaps even in a greater degree stewards or bailiffs, whose duty it was to collect payments in kind, such as tithes or other revenues, to store these, together with the crops of their own raising, and finally to administer the wealth of every description—lands, woods, rivers, and ponds—belonging to the abbey.

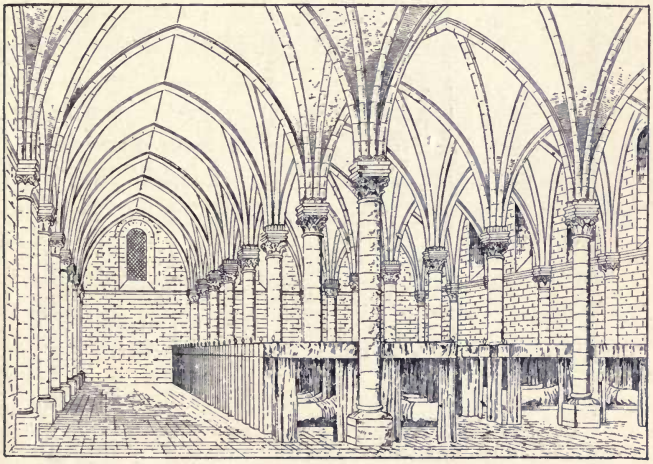


203. GRANARY OF THE ABBEY OF VAUCLAIR

Hospitals.—A large number of charitable institutions, called in the Middle Ages *maisons dieu*, *hôtels dieu*, hospices, hospitals, and lazar-houses, were founded in the eleventh century, and greatly developed in the twelfth and thirteenth.

A hospital was attached to most of the large abbeys or their dependencies. The cities also owned hospitals founded or served by monks.

Lazar-houses had multiplied throughout Western Europe by the end of the twelfth century, from Denmark to Spain, from England to Bohemia and Hungary; but these buildings gave little scope to the architect. They consisted merely of an enclosure surrounding a few isolated cells, and a chapel,



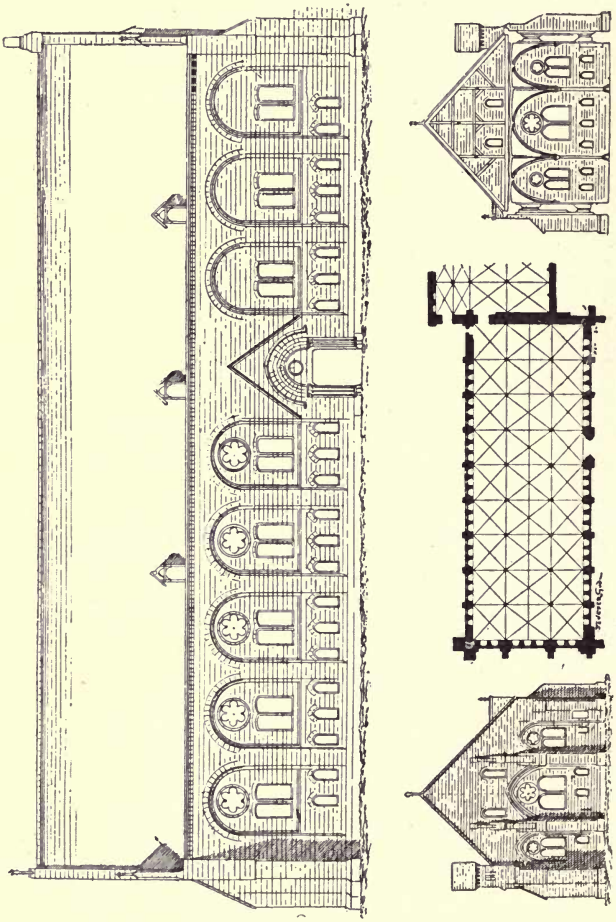
204. HOSPITAL OF ST. JOHN AT ANGERS (TWELFTH CENTURY). GREAT HALL, AS RESTORED BY A. VERDIER

attached to which were the lodgings of the monks who tended the lepers.

But many of the hospices or hospitals built from the end of the twelfth to the fourteenth century are magnificent buildings, in general arrangement much resembling the great halls of the abbeys.

It must be borne in mind that hospitality in the Middle Ages was obligatory; each monastery, therefore, had its eleemosynary organisation, which included

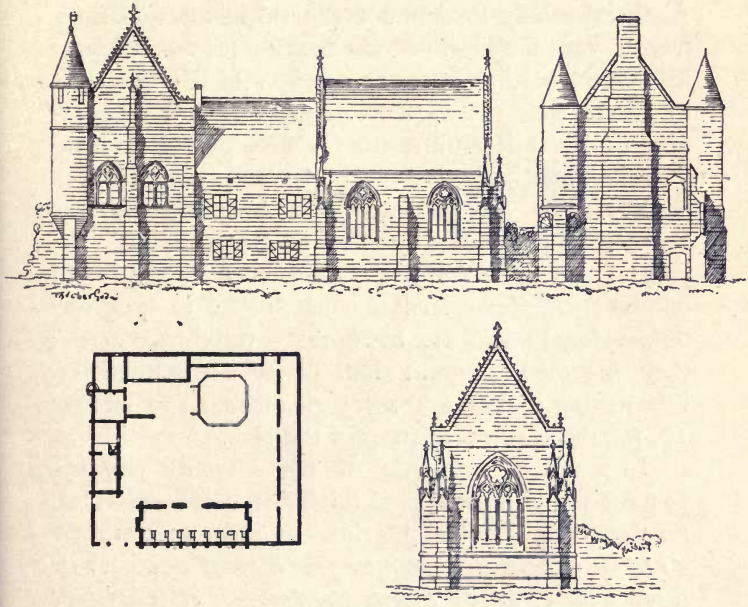
special buildings for the accommodation of monks



205. ABBEY OF OURSCAMPS (OISE, THIRTEENTH CENTURY). HOSPITAL, AS RESTORED BY A. VERDIER

whose business it was to tend the sick and to distribute alms to them and other travellers and pilgrims.

We learn from Viollet-le-Duc that so early as the Carlovingian period taxes were levied in aid of the poor, the sick, and pilgrims. Charlemagne had enjoined hospitality in his ordinances and

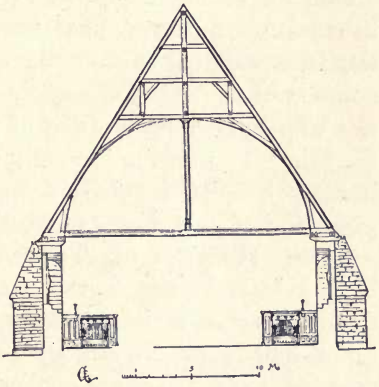


206. LAZAR-HOUSE AT TORTOIR (AISNE, FOURTEENTH CENTURY). FROM DRAWINGS BY A. VERDIER

capitularies, and it was forbidden to refuse shelter, fire, and water to any suppliant.

The communes vied with kings, nobles, abbots, and citizens in the discharge of such duties. Hospices and hospitals were founded on every hand, either in deserted buildings, or in specially constructed edifices.

In the first years of the fourteenth century several hundreds of *hôtels dieu*, hospitals, and lazar-houses received help from the King of France. St. Louis founded the *Hospice des Quinze-Vingts* for the blind, and in many towns hospitals were erected for the insane, the old, and the infirm, in addition to the usual lazar-houses. Special hospitals had already been established for women in labour, and a chapel was founded for their benefit in the crypt of the *Ste. Chapelle* of Paris, dedicated to Our Lady of Travail, of Tombelaine, in Normandy.[1]



207. HOSPITAL AT TONNERRE. SECTION OF THE GREAT HALL

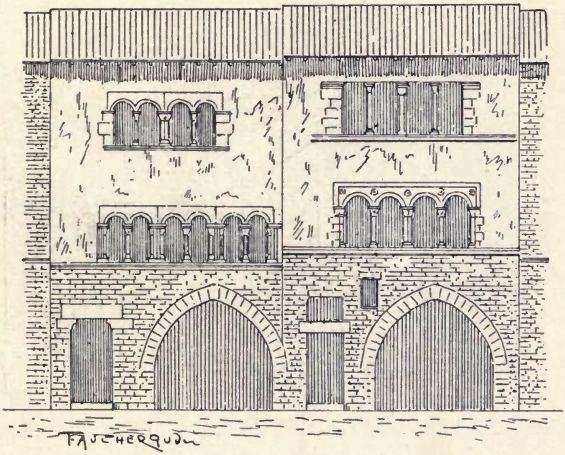
Several hospitals of the Gothic period still exist. That of St. John at Angers is one of the most remarkable. It comprises a great hall, divided into three aisles, and vaulted on intersecting arches, and a chapel dating from the close of the twelfth or beginning of the thirteenth century. The fine barn at

1369) this hospital has lodged and sheltered 16,690 pilgrims journeying to or from St. Michael's Mount, besides others. And it has further given shelter each night to some thirty-six to forty poor pilgrims and other needy persons, whereby the poor hospital is heavily burdened and in sore straits for lack of beds, sheets, and blankets."—Ed. Corroyer, *Description de l'Abbaye du Mont St. Michel et de ses Abords*; Paris, 1877.

[1] *Idem.*

and climates, offers so wide a field for study. To keep within the limits assigned us by the arbitrary term Gothic Architecture, we must confine our rapid sketch to the architectural period which dates from the middle of the twelfth to the close of the fifteenth century.

Nothing remains of habitations constructed in

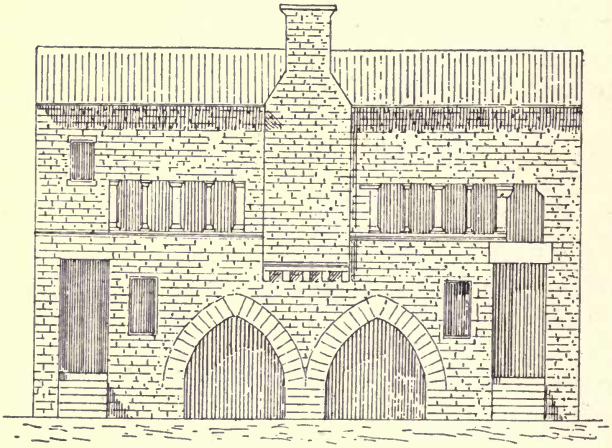


208. HOUSE AT CLUNY (TWELFTH CENTURY)

France before the twelfth century, save the vague and scanty records of ancient texts, manuscripts, and bas-reliefs. But we may reasonably infer that the houses of the period were built of wood, as was natural in a country containing great tracts of forest. We know that most of the important buildings were timber structures, which explains the fact that numbers of twelfth-century churches were founded on the sites of earlier buildings destroyed by fire.

Roman, Gallo-Roman, and Merovingian houses were arranged to suit the habits of the times; they were lighted by windows opening upon an inner courtyard, in accordance with the ancient custom of separating the women's apartments from the rest of the habitation.

But by the end of the twelfth century the urban dwelling was adapted to the needs of a family. The

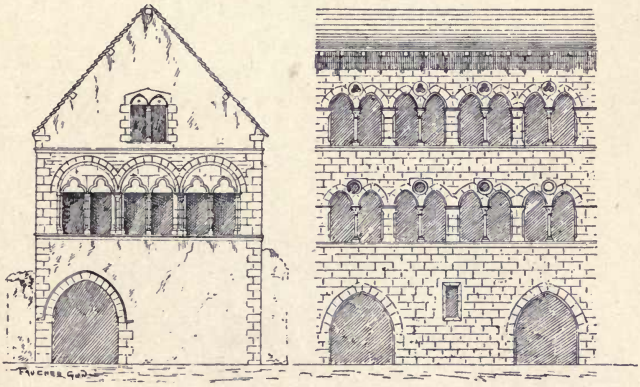


208A. HOUSE AT CLUNY (TWELFTH CENTURY)

doors and windows of the house were made to overlook the street. The building consisted generally of a hall or shop, in which a handicraft was carried on, or manufactured goods were offered for sale. It was lighted by a wide arcade of round or pointed arches, and was either on a level with the street, or raised above it by the height of some few steps. A back room, opening upon a courtyard, served for kitchen and dining-room. To the left of the façade

a little door gave access to a staircase which led to the first floor, where was a large *solar* or living-room and an apartment overlooking the courtyard. Above these were the chambers occupied by the inmates of the house.

The architecture of such houses varies according to the climate, the materials of the country, and the customs of the inhabitants. The houses had no

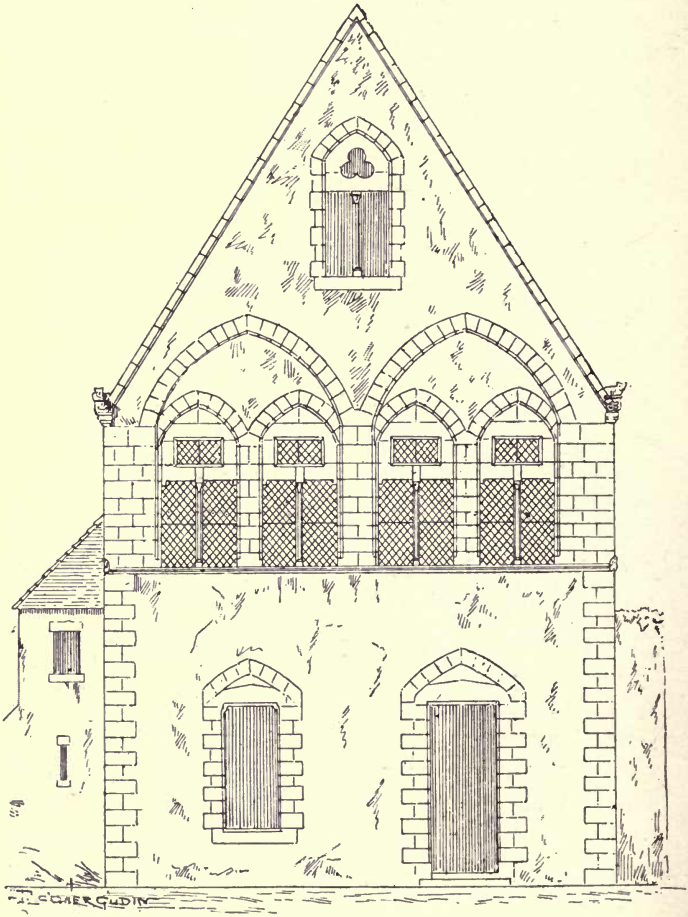


209, 210. HOUSES AT VITTEAUX (CÔTE D'OR), AND AT ST. ANTONIN (TARN ET GARONNE, THIRTEENTH CENTURY)

special individuality as long as the windows were treated merely as apertures for the admission of light; but directly these began to take on a certain elaboration, and such features as mouldings or sculptures were introduced in the façades, a system of decoration was borrowed from the neighbouring churches or abbeys of monkish architects, a consequence either of the far-reaching influence of monastic schools, or of the spirit of imitation and force of habit.

Certain houses at Cluny, which date from the

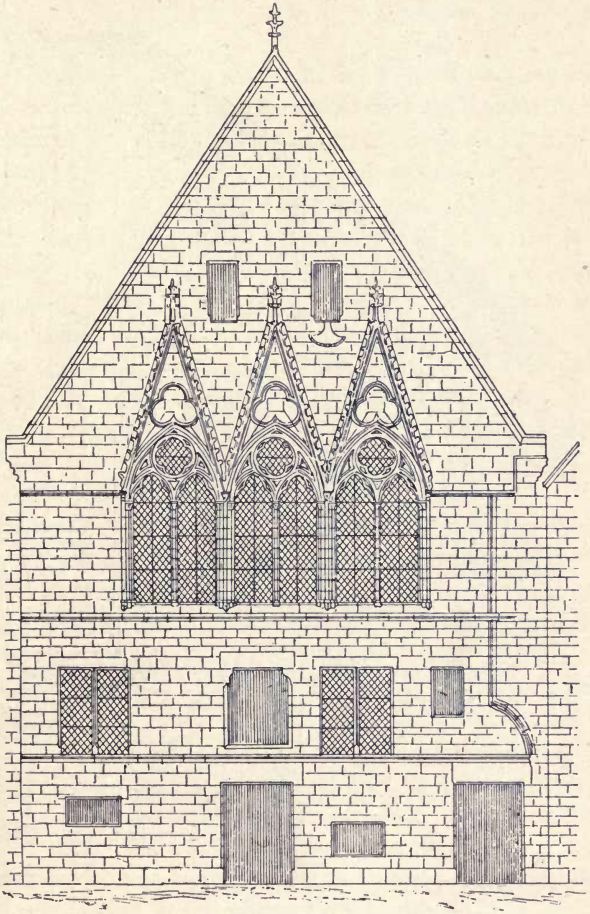
twelfth century, exemplify the style. They are built



211. HOUSE AT PROVINS (FOURTEENTH CENTURY)

almost entirely of stone. The arcading recalls

various details of monastic buildings which the con-



212. HOUSE AT LAON (FOURTEENTH CENTURY)

structors very naturally took as models.

The same may be said of the other houses, of

213. HOUSE AT CORDES. ALBIGEOIS (FOURTEENTH CENTURY)

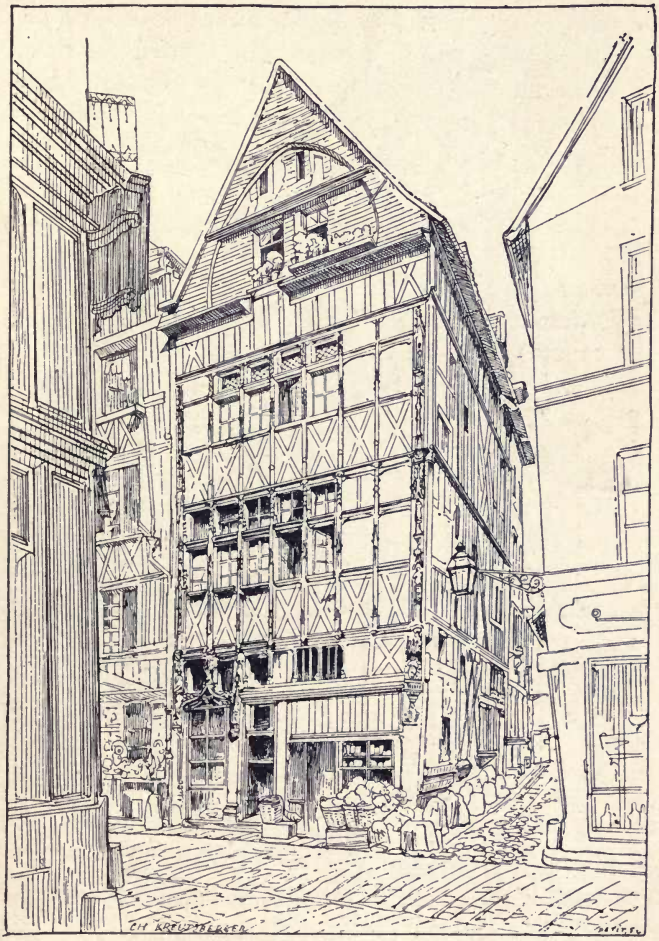
which we give drawings as illustrating the urban

able to allow a narrow passage or space between.

214. HOUSE AT MONT ST. MICHEL (FIFTEENTH CENTURY)

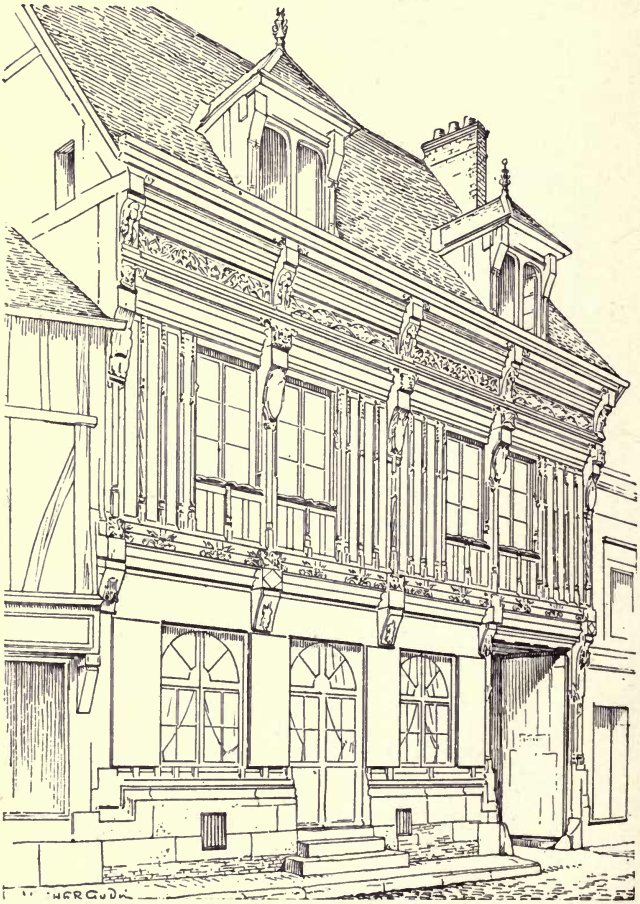
This was not merely a concession to the vanity of the citizen, to his desire to make his independent

gable a feature of the street. It was also a pre-



215. WOODEN HOUSE AT ROUEN (FIFTEENTH CENTURY)

cautionary measure against fires, which were frequent



216. WOODEN HOUSE AT ANDELYS (FIFTEENTH CENTURY)

and disastrous in cities built mainly of wood, and

possessing but very rudimentary appliances wherewith to meet such a catastrophe.

The fifteenth and notably the sixteenth centuries were marked by the building of a new class of dwellings, the *maisons nobles*, or town-houses of the nobles, who, down to this period, had lived entirely

217. HÔTEL LALLEMAND AT BOURGES (END OF THE FIFTEENTH CENTURY)

in their fortified castles. These great seignorial mansions differ essentially from the houses of the citizens. The *hôtel* occupied a considerable space, in which a courtyard and even gardens were included. The house of the citizen or merchant was built flush with the street, whereas the *hôtel* was placed in an inner court, often richly decorated, and the street-front was devoted to stables, coach-houses, servants'

lodgings, and the great entrance which gave access to the court and the main building.

The names at least of some famous Parisian *hôtels* of the fourteenth and fifteenth centuries have survived, such as the *hôtels* des Tournelles, de St. Pol, de

218. JACQUES CŒUR'S HOUSE AT BOURGES. VIEW FROM THE PLACE BERRY (FIFTEENTH CENTURY)

Sens, de Nevers, and de la Trémoille, the last destroyed in 1840. The Hôtel de Cluny, which dates from 1485, is a very curious example, and of remarkable interest, as having been preserved almost intact.

Several great houses of the same period still exist at Bourges. Among others, the Hôtel Lallemand,

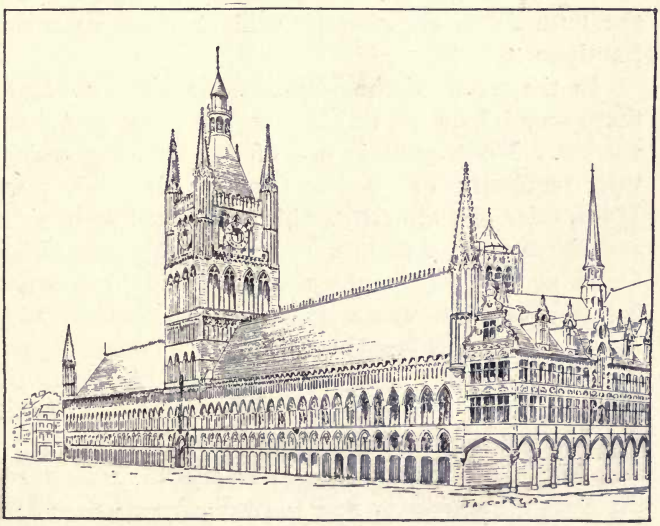
communes were sunk in poverty, and so over-

219. TOWN-HALL OF PIENZA, ITALY (END OF THE FOURTEENTH CENTURY)

whelmed with dues and taxes that they had no margin for communal buildings.

dependency, as Réalville or Monréal; others point to privileges conferred on the town, as Bonneville, La Sauvetat, Sauveterre, Villefranche, or even La Bastide, and Villeneuve.

A third class borrow the names of French and occasionally of foreign provinces or towns. Anthyme

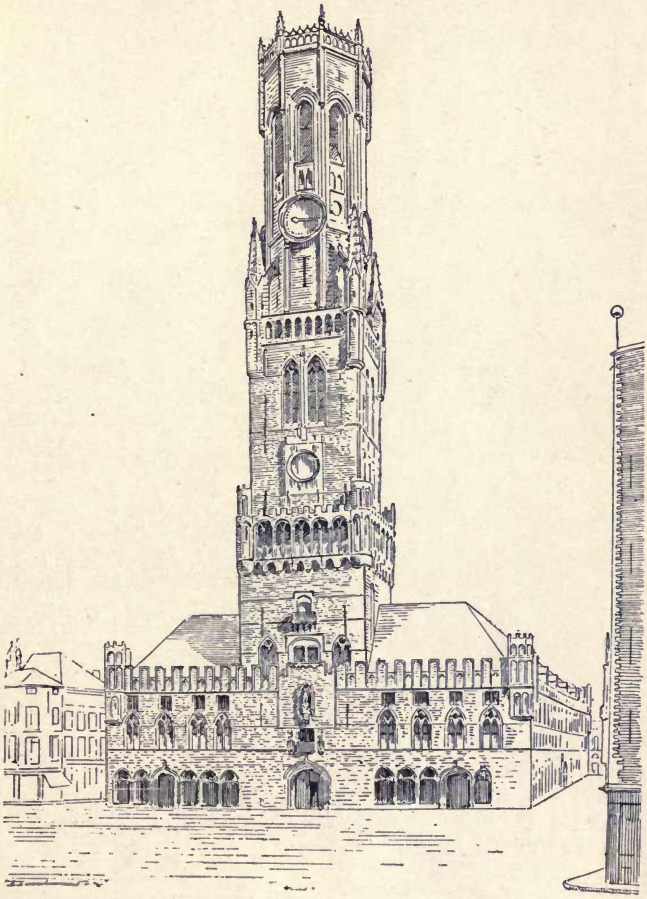


220. TOWN-HALL AND BELFRY AT YPRES (BELGIUM)

St. Paul gives a list of such in the *Annuaire de l'archéologie française*,—Barcelone or Barcelonnette, Beauvais, Boulogne, Bruges, Cadix, Cordes (for Cordova), Fleurance (for Florence), Bretagne, Cologne, Valence, Miélan (for Milan), La Française and Francescas, Grenade, Libourne (for Leghorn), Modène, Pampelonne (for Pampeluna), etc.

A new town or *bastide* is usually rectangular in

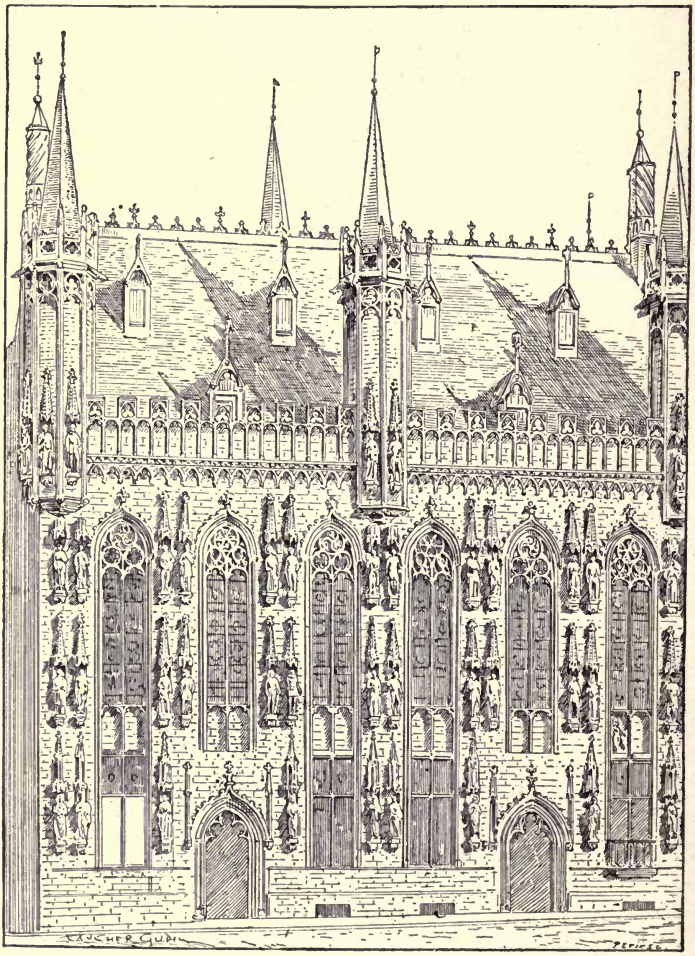
proximity tended greatly to their mutual disadvantage."[1]



221. MARKET AND BELFRY AT BRUGES (BELGIUM)

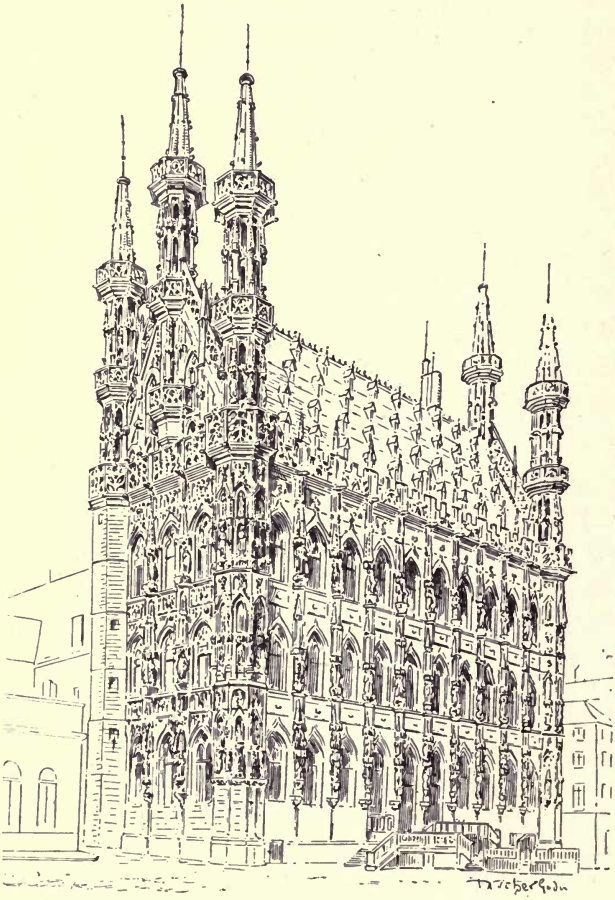
[1] Anthyme St. Paul, *Histoire Monumentale de la France.*

It is worthy of remark that civil architecture had



222. TOWN-HALL OF BRUGES (BELGIUM)

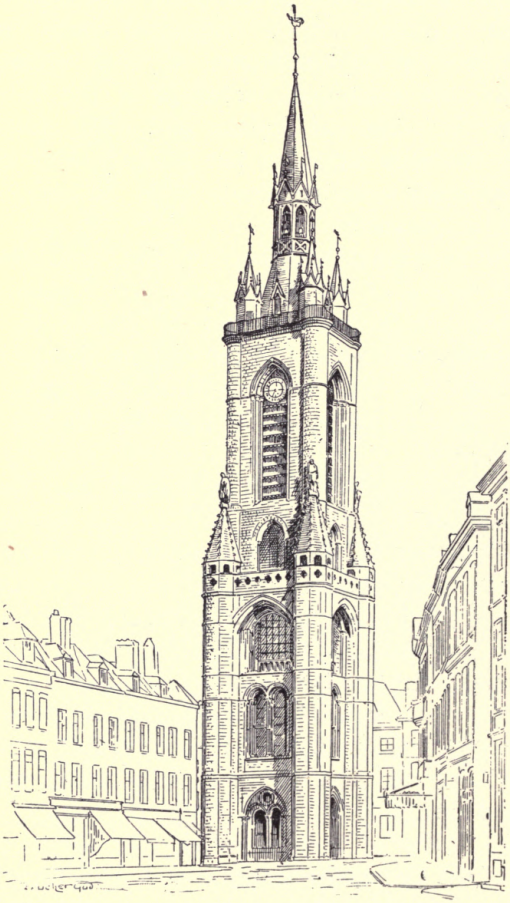
municipal hall occupies the first story, together with



223. TOWN-HALL AT LOUVAIN (BELGIUM)

a smaller apartment in the tower. The second story is divided in the same manner.

municipal halls, crowned by the lofty belfry, the original height of which was 350 feet.



224. BELFRY OF TOURNAI (BELGIUM)

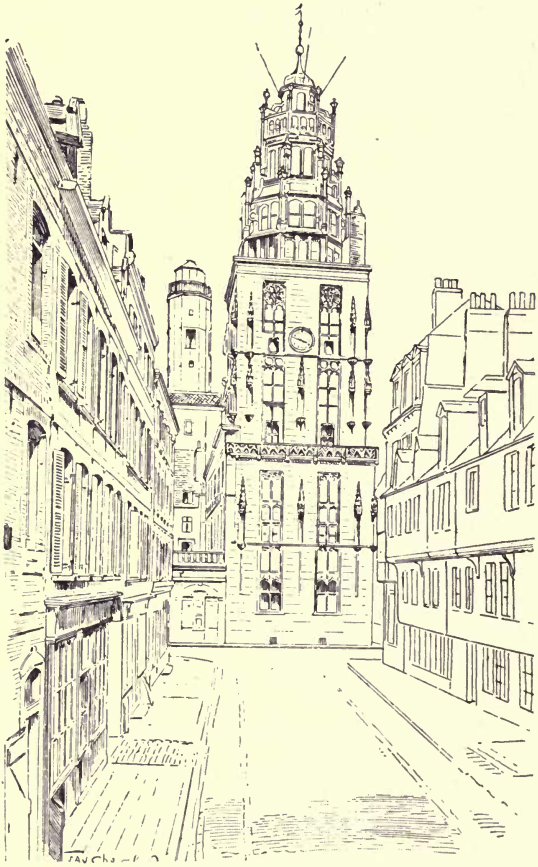
The *hôtel de ville* or town-hall of Bruges, which

replaced an earlier municipal building in the *Place du Bourg*, dates from between 1376 to 1387. Its

225. BELFRY OF GHENT (BELGIUM)

architectural character differs entirely from that of

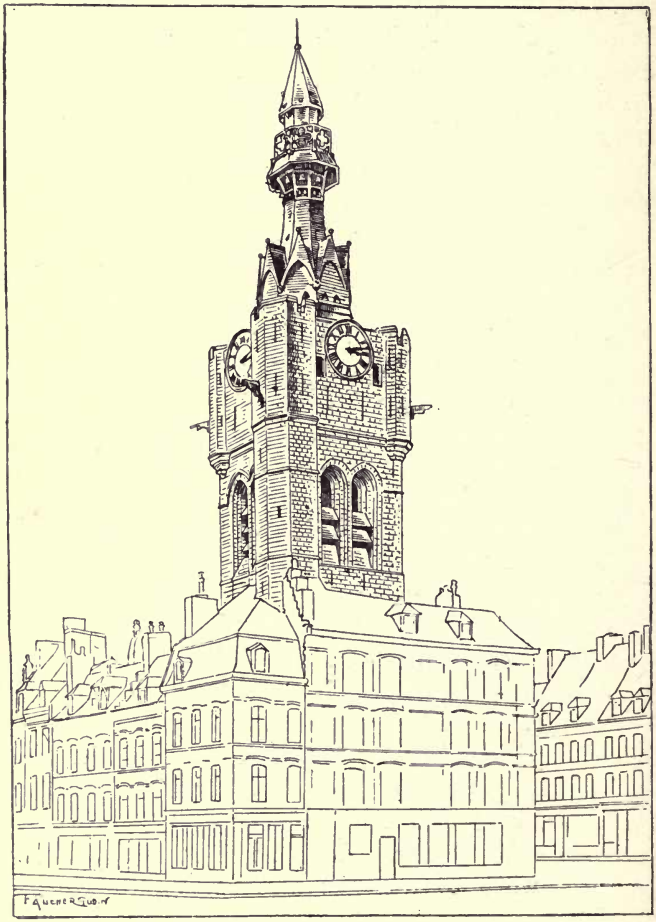
We shall find examples of these early municipal



226. BELFRY AT CALAIS (FRANCE)

buildings among the isolated belfries of Belgium, such as that at Tournai, founded in 1187, and

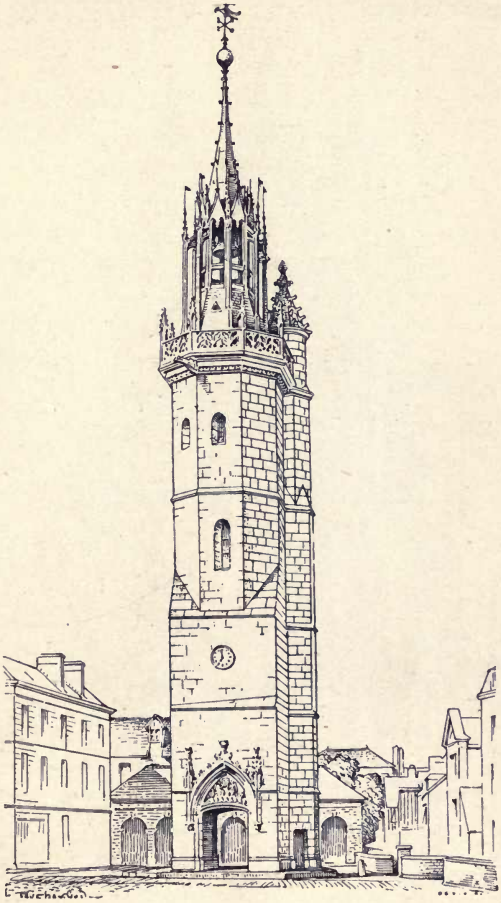
thirteenth century, a square dome was added some



227. BELFRY OF BETHUNE (FRANCE)

hundred years ago. But the great bell of the fourteenth century has been preserved.

The belfry of Évreux retains its fifteenth-century



228. BELFRY OF ÉVREUX

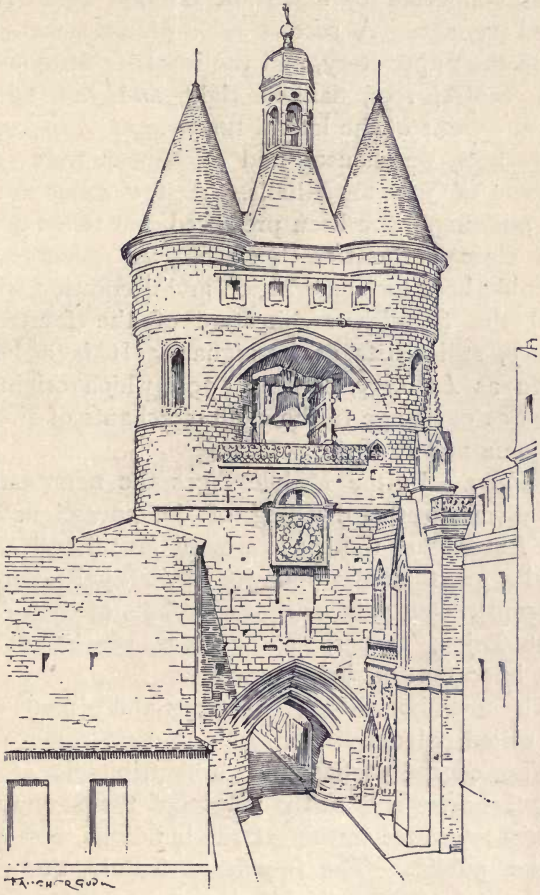
character almost in its entirety. That of Avignon, a monument of the close of the fifteenth century, was

happily spared when the town-hall was replaced by a modern structure.

229. BELFRY OF AVIGNON

The gate-house of the *hôtel de ville* at Bordeaux, known as the *grosse cloche*, is an example of the

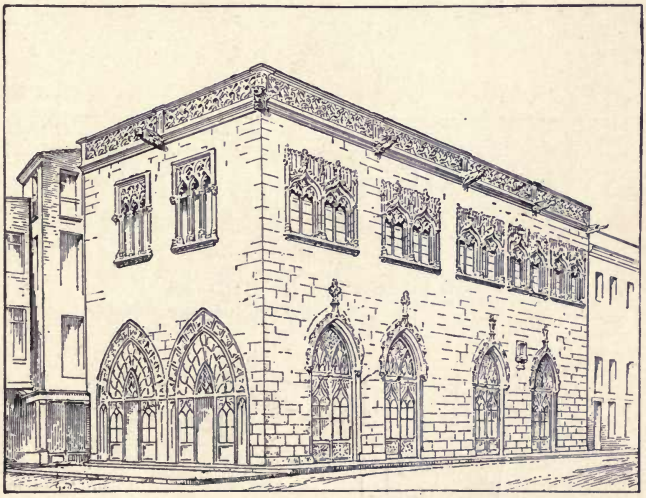
more ancient usage. Here we find the bell hung



230. BELFRY GATE AT BORDEAUX, KNOWN AS *LA GROSSE CLOCHE*

over the gateway, as already described. The belfry of Bordeaux, which appears to date from the fifteenth

always included in the plan of the palace, which consisted of the lodging of the lord and his followers; offices, often of great extent; rooms for the storing of archives; magazines, prisons, and innumerable auxiliary buildings, divided by courtyards, and in some cases by gardens.

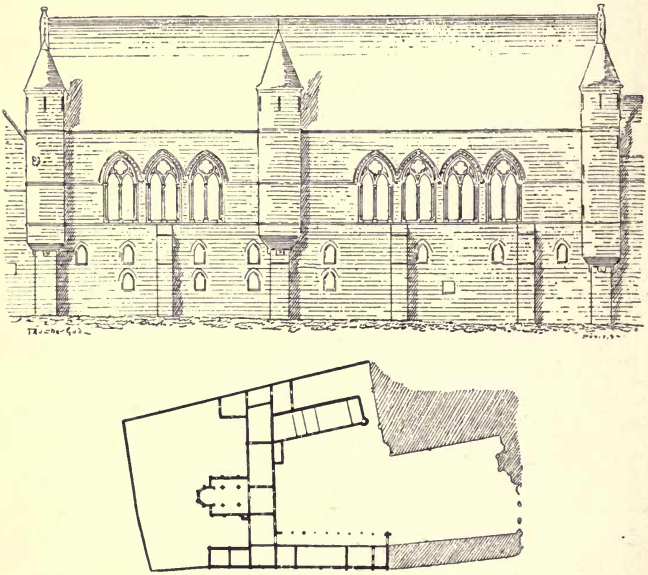


231. CLOTH HALL AT PERPIGNAN, KNOWN AS *LA LOGE*

In Paris the palace proper, which was in the Île de la Cité, consisted of buildings constructed from the time of St. Louis to the reign of Philip the Fair. From the reign of Charles V. it was specially devoted to the administration of justice.

The only remains of the buildings of St. Louis are the *Ste. Chapelle*, the two great towers with their intervening curtain on the *Quai de l'Horloge*, and the square clock tower at the angle of the quay.

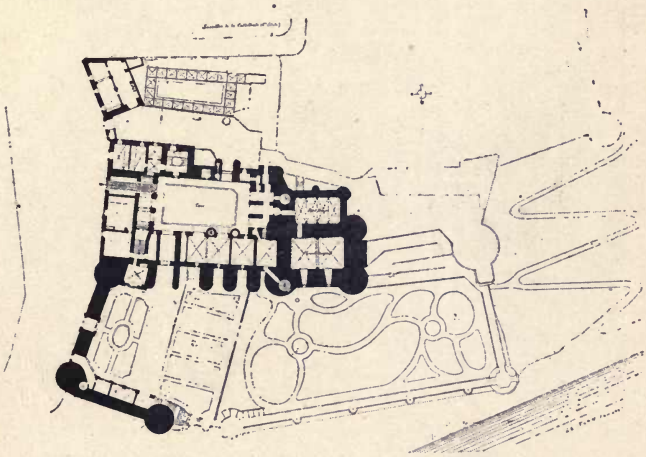
The best examples of seignorial castles are: Troyes, which was built by the Counts of Champagne. and inhabited by them till they removed to Provins in the thirteenth century; and the palace of the Counts of Poitiers at Poitiers, one of the most



232. BISHOP'S PALACE AT LAON

interesting of such buildings; it was burnt by the English in 1346, and repaired or rebuilt at the close of the fourteenth century by the brother of Charles V., Jean, Duke of Berry, to whom we owe, among other architectural works, the curious fireplace of the great vestibule, called the *Salle des Pas Perdus*, in the *Palais de Justice*.

The bishops' palaces were differently planned. They usually adjoined the cathedrals, with which they communicated either on the north or the south, according to the facilities afforded by the site. The characteristic symbol of episcopal power which, in the earlier centuries of the Middle Ages, claimed jurisdiction both in spiritual and temporal matters,



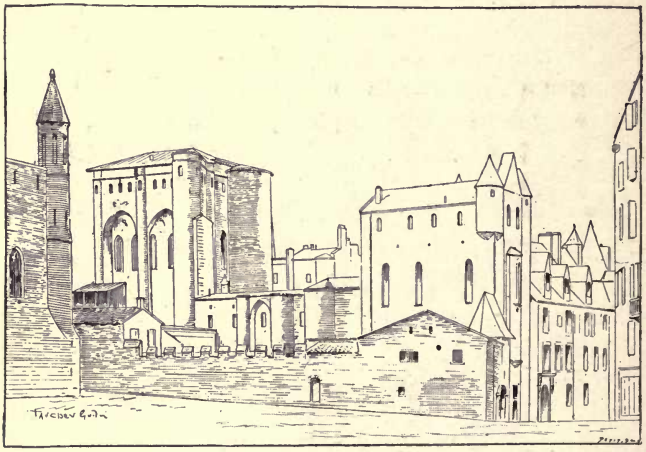
233. ARCHBISHOP'S PALACE AT ALBI. PLAN

was the great hall, in later days the synod house and the council chamber of the executive. The bishop's palace in Paris, rebuilt by Maurice de Sully in 1160, preserved this mediæval feature, which is even more conspicuous at Sens, in the magnificent annexe known as the *salle synodale* (synod house).

The canons' lodgings were also in close proximity to the cathedral, but on the side opposite to the bishop's palace. They were surrounded by an en-

closure, the gates of which were fastened at night. It was the duty of the canons to aid the bishop in his ministrations. They lived together in annexes which communicated with the cathedral by means of galleries and cloisters.[1]

The bishops' palaces were often remarkable for their elaborate construction. Fragments of the



234. ARCHBISHOP'S PALACE AT ALBI. GENERAL VIEW

primitive buildings are still preserved in the palaces of Beauvais, Angers, Bayeux, and Auxerre.

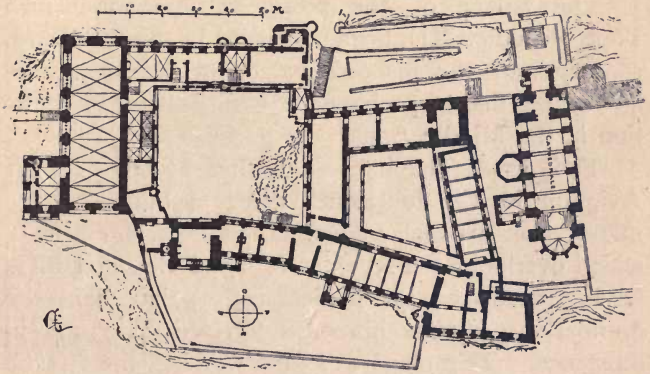
The ancient episcopal palace of Laon[2] marks a development in thirteenth-century architecture. It is a good example of that system of construction by which the palace was connected with the city ramparts and formed a secondary line of defence.

[1] See Part II., "Monastic Architecture," the cloisters of Puy-en-Velay and Elne in Roussillon.

[2] The episcopate was transferred to Soissons in 1809.

This system was also adopted at Narbonne. At the close of the thirteenth and during the fourteenth century the palace was transformed into a fortress, the importance of which bore witness to the power of its bishops. After Avignon, it is perhaps the most imposing of episcopal dwellings.

From this time onward the bishops' palaces increased greatly in size, their dimensions extending



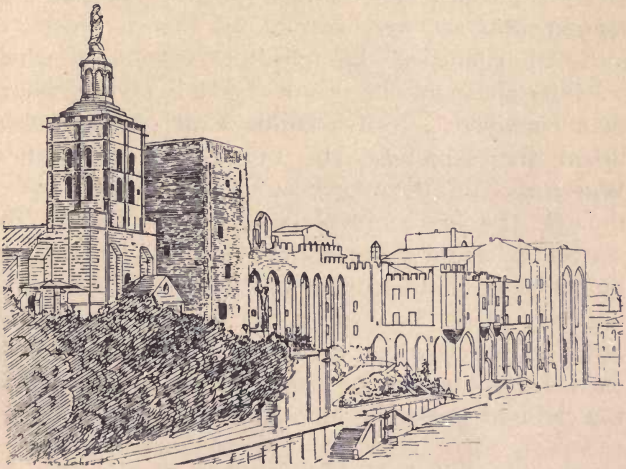
235. PALACE OF THE POPES AT AVIGNON. PLAN

proportionately with those of the great cathedrals of the period. The importance of the episcopal buildings and their dependencies was on a par with the wealth and power of their owners. Some idea of their magnificence may be gathered from the private chapel of the archbishop at Rheims, which dates from the middle of the thirteenth century.

The archbishop's palace at Albi has all the character of a feudal castle. Its buildings are protected by a keep, and encircled by walls and towers

the fortified *enceinte* of the town, some three miles in circumference.

In general conception, in the architectural skill of its construction, and in its tasteful decoration, the Palace of the Popes at Avignon bears away the palm from all contemporary buildings in Germany and Italy, where French influences were paramount.



236. PALACE OF THE POPES AT AVIGNON. GENERAL VIEW

This noble monument is absolutely and entirely French. No finer combination of religious, monastic, military, and civil types could be desired in illustration of the art we have agreed to term *Gothic Architecture*, but which might be more truly entitled: *Our National Architecture in the Middle Ages.*

Justice indeed demands this tardy homage. Our vast churches, our superb cathedrals, our mighty castles and palace fortresses, the masterpieces that