DEVELOPMENT & CHARACTER

OF

GOTHIC ARCHITECTURE

BY

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SECOND EDITION
REWRITTEN AND ENLARGED

WITH TEN PLATES IN PHOTOGRAVURE
AND 242 ILLUSTRATIONS IN THE TEXT

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Even what has been called the osseous system, which distinguishes Gothic, exists there in a potential condition. But, the ultimate possibilities of an organic framework are not worked out in Romanesque art; this framework does not yet frankly and independently exercise its functions.

In order to gain a more correct preliminary idea of Gothic we may here briefly review some of the steps in the process by which the evolution was effected; though for a complete understanding of it, the fuller treatment which follows will be necessary. I have already alluded to the fact that a new principle was introduced into the art of building when the arch exerting side thrusts was first employed. The most economical and effective way to meet such thrusts is by some kind of external abutments. But the thrusts of arches may be neutralized in another way, namely, by downward pressure upon the walls or piers against which they operate. Both methods were employed by the Roman and by the Romanesque, as well as by the Gothic builders. In the case of a simple arched opening in a wall, the thrusts are, of course, stayed in both of these ways. The lateral masses of wall act as abutments, and the superincumbent masonry tends to overcome the outward pressures by its weight. Where a space between two parallel walls is roofed over by a barrel vault, the continuous side pressures, which would tend to overthrow the walls, are, in Roman constructions, met by thickening these walls enough to provide continuous resistance. The walls of vaulted Roman buildings are further strengthened to withstand the thrusts by loading them above the springing of the vaults. In buildings of several stories, such as the Flavian amphitheatre (Fig. 3), the abutting power of the enormously thick walls of the lower stories is augmented by the weight of the walls above. The top story has no vault, and its enclosing wall weights the walls below and contributes to the

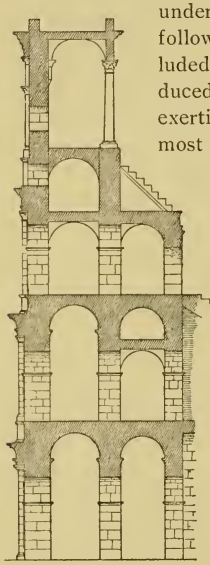


FIG. 3.

stability of the whole structure. By such massive walls, operating in this double way, the pressures of Roman vaults are much more than met, and hence the entire system is practically inert. In the case of intersecting vaults, which were introduced during the latter part of the imperial epoch, — as in the Basilica of Maxentius and Constantine, — the thrusts, instead of being continuous, are concentrated upon the four points from which their arches spring, and are met by walls set across the side aisles, as shown in the plan (Fig. 4). These cross-walls

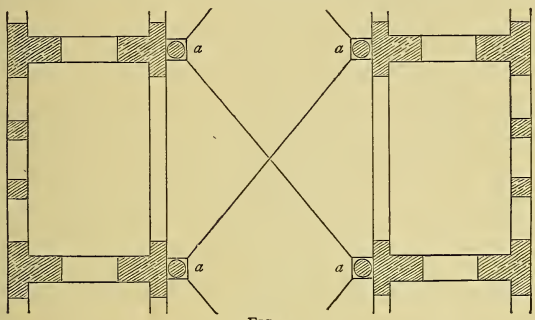


FIG. 4.

are, of course, true buttresses in disguise. The compartments of the aisles are covered by barrel vaults sprung from the cross-walls, and the axes of these vaults being thus perpendicular to the side walls of the building, no thrusts are brought to bear upon these walls, and consequently no external abutments are required. The Romans did not at any time employ the buttress as a distinct architectural member. They contrived their buildings in such a manner that the vault thrusts should be taken either by dividing walls, or by the enclosing walls so thickened as to render them sufficiently resistant by the sheer inertia of their masses.

The Romanesque builders were the first to develop the buttress as a distinct functional member. They began by breaking the outside of the wall with shallow pilaster strips (Fig. 5) placed against the internal divisions of the structure. It is true that the Romans had employed engaged columns in the outer walls, as in the Flavian amphitheatre, but these had

a purely decorative purpose, and even in the early Romanesque monuments the pilaster strip had little structural value. It did, indeed, somewhat stiffen the walls, which had not the enormous thickness of Roman walls; but it had not strength enough to bear much vault pressure. It had, however, rarely to meet such pressure except in the aisles where the vaulting was of no great span. But though it was of slight efficiency, its introduction was an important step in organic architectural development. It marked the internal structural lines, and in the later types of Romanesque, as the construction of vaulting became more general, the pilaster strip was converted into the true buttress (Fig. 6).

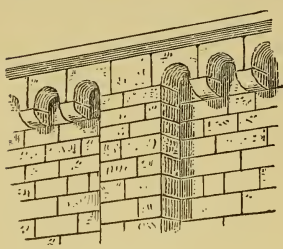


FIG. 5.

Further progress was made when the Romanesque builders of Northern France began to vault their naves. It was then found that the pilaster strip against the clerestory wall, or even a buttress like that shown in Fig. 6, was not enough to stay vaults of so much wider span than those of the aisles for which these primitive forms of abutment had been adequate. Expedients to augment the resistance of the clerestory buttress were accordingly resorted to, which were destined to yield unforeseen and important results. The earliest of these are well illustrated in the two great churches of Caen — the Abbaye-aux-Hommes and the Abbaye-aux-Dames. In the first of these buildings, the vaulting, which dates from the early part of the twelfth century, is (as will be shown in the next chapter) formed in such a manner as to exert very powerful side thrusts. To meet these thrusts the expedient was adopted of constructing half-barrel vaults springing from the aisle walls and abutting against the walls of the nave beneath

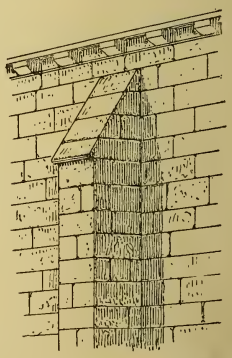


FIG. 6.

the lean-to roof (Fig. 7). These were in reality concealed continuous flying buttresses. But they were flying buttresses of bad form; for only a small part of their action met the concentrated thrusts of the vaults that they were designed to stay, the greater part of it operating against the walls between the piers where no abutments were required, and where their

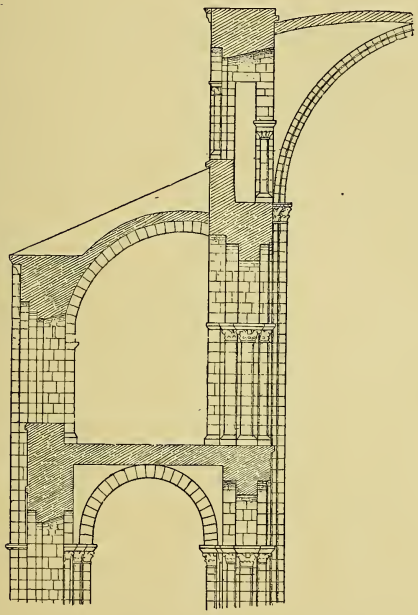


FIG. 7. — Section of the Abbaye-aux-Hommes.

own inward thrust would have been disastrous had not these walls been made excessively strong. In the Abbaye-aux-Dames (Fig. 8), whose vaulting was constructed at a little later time, a better form of buttress occurs.[1] In this case, perhaps following an initiative that had been recently taken in the Ile-de-

[1] Cf. *L'Église Ste. Trinité et l'Église St. Étienne à Caen.* Par V. Ruprich-Robert. Caen, 1864.

France,[1] instead of a continuous half-barrel vault springing from the aisle wall, separate arches were established upon the abutments of the aisle, and brought to bear against the buttresses of the clerestory on which the thrusts of the vaulting were gathered. The thrusts and counterthrusts were thus concentrated, though not as yet in the most effective manner. For the abutting arches still fell too low to offer a perfect

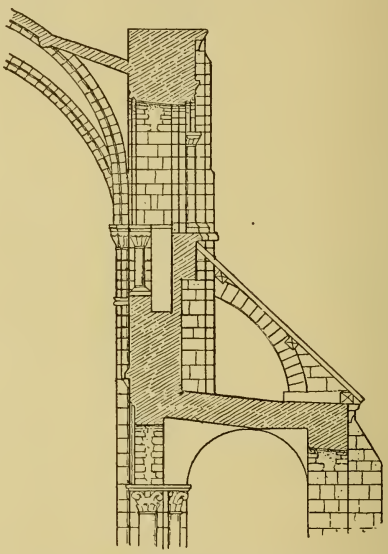


FIG. 8. — Section of the Abbaye-aux-Dames.

resistance. In the course of time they yielded, and the vaults had recently to be reconstructed. Hence, though an important step had been taken, a satisfactory solution of the problem of effectual abutments for vaulting over a clerestory had not yet been reached. The abutting arches of the Abbaye-aux-Dames are indeed rudimentary flying buttresses, but they are ill adjusted, and are not externally apparent.

[1] In the buttresses of the choir and apse of St. Germer-de-Fly described in the following chapter.

arches of a vault made it easy to raise their crowns to the levels of the wider-spanned arches. The vaulting of oblong areas had before been attended with difficulties, resulting from the fact that the height of the crown of a semicircular arch is determined by its span. In vaulting such areas, the crowns of the round arches which spanned the narrow sides would not reach the level of those which spanned the longer sides, while if full semicircular arches were used over the diagonals (on the Byzantine principle, to be considered in the next chapter), their crowns would reach above all the others. Thus (Fig. 9) the height *cd* of the arch *acb* is less than *fe*, the height of the arch *afg*, which again is exceeded by *ih*, the height of the arch *aij*. A vault constructed on such a system of arches must have an excessively domical form. To obviate this, in part, the expedient was adopted of stilting the narrow arches. That is, the level of their springing was raised by a vertical substructure, considerably above that of the greater arches, so as to bring their crowns nearer to the same height, and thus to reduce the amount of doming required. But even when thus formed, an oblong groined vault upon round arches is heavy, exerts powerful thrusts, and presents an inelegant appearance. Oblong groined vaults, though sometimes constructed, were, therefore, usually avoided by the Romanesque builders of the north, who, indeed, had rarely vaulted their naves, the portions of the building where, in Northwestern Europe, oblong compartments most frequently occur. They generally contented themselves with vaulting the aisles, the compartments of which were commonly square, and where groined vaults on round arches were easily built with security.[1] The introduction

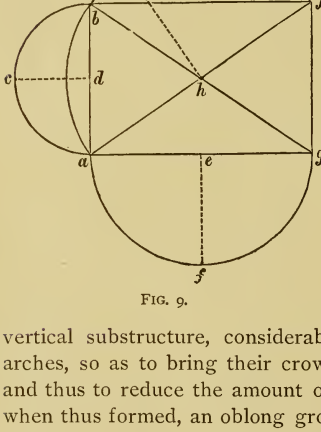


FIG. 9.

[1] The Lombard and Rhenish Romanesque builders avoided the difficulties referred to in the text by planning their buildings with square compartments in both nave and aisles, one bay of the nave embracing two bays of the aisles. This gives

of the pointed arch, however, obviated these difficulties. By means of the pointed arch it became possible to construct groined vaults over oblong compartments, without either doming or stilting, since the crowns of all the arches could be readily brought to the same level, whatever their difference of span (Fig. 10).

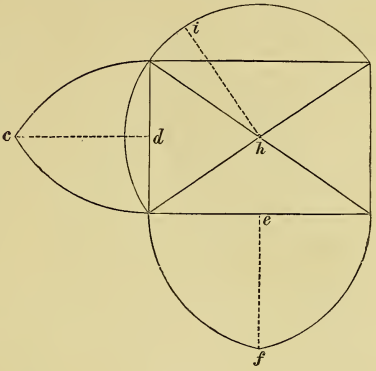


FIG. 10.

But it is important to observe that in true Gothic architecture oblong vaults over naves are never constructed upon arches which all spring from the same level, and whose crowns all reach the same height. Other exigencies, which will be explained in a following chapter (see p. 130), stood in the way of so constructing them. True Gothic vaults are always to some extent both stilted and domed. But though the full advantage of the pointed arch, in reaching any height with any span, could not be taken, its employment greatly diminished the thrusts, obviated the necessity of excessive doming, and thus yielded more elegant effects and gave a powerful stimulus to invention.

With diminished and better concentrated thrusts better forms and adjustments of the external stays were soon devised. The flying buttresses were brought to bear more directly on the points of vault pressure — which were found to extend to a higher level than that on which the arches of the Abbaye-aux-Dames had abutted. In order to reach these points, it was found necessary to carry the abutments over the aisle roofs, and thus to render them conspicuous external features. The vault ribs were now improved in form. Their profiling, though still simple, became more elegant, and their grouping was rendered more compact at the springing; while the sustaining

rise to an alternation of large and small piers in the nave, as will be more fully explained in the following chapter.

shafts, for which the best materials were selected, were adjusted in new and ingenious ways, and their bulk was reduced to a minimum. Thus an independent framework was created, and the intervening walls, now no longer needed for the stability of the fabric, were greatly reduced in thickness, and, at length, almost wholly suppressed. The small apertures of the Romanesque style were gradually enlarged until the clerestory and aisle openings entirely filled the spaces between the piers.

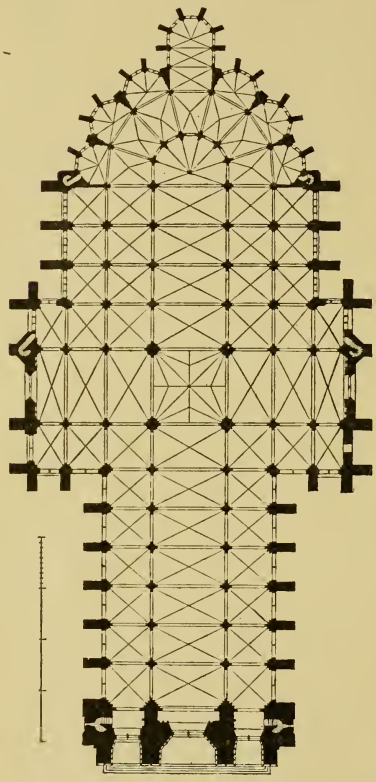


FIG. 11. — Amiens.

The general form and constructive character of a developed Gothic building may be summarized as follows: —

1. The plan (Fig. 11) consists of a central nave, the eastern portion of which forms the choir, with side aisles, sometimes one and sometimes two on each side; and with a transept usually also provided with aisles. The choir terminates eastward, almost invariably, in a segmental or polygonal apse, or sanctuary, around which the aisles are continued. Opening out of the apsidal aisles are usually a series of small chapels, the central one of which is, in most cases, more largely developed

form of support, consisting of a pilaster-like member and an engaged round shaft, apparently designed to carry vaulting. An example of this, dating it is supposed from the latter part of the tenth century,[1] occurs in the Church of San Felice near Vicenza. In the apse of St. Stephano of Verona we have what it seems likely may be the earliest extant instance of an

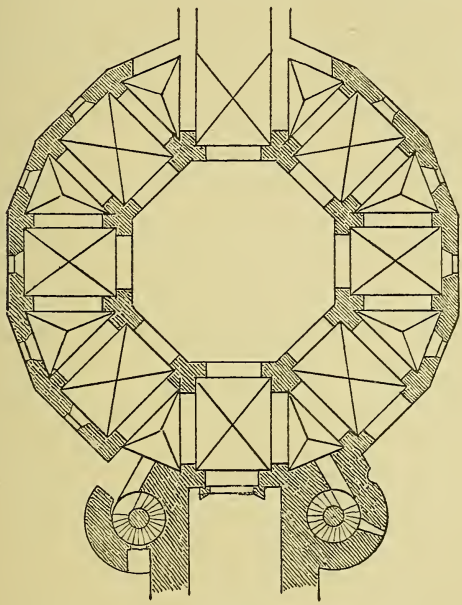


FIG. 12.

apsidal aisle; and in the vaulting of this aisle the arrangement already noticed in Aix-la-Chapelle is again carried out.[2] This curious apse is constructed out of fragments that had been rudely wrought for a still earlier building, and exhibits a

[1] Cf. Cattaneo, *Ibid.*, p. 229.

[2] The apsidal aisle itself, a feature which became so important in the later mediæval church architecture, may, it would seem, very possibly have been originally suggested by the circular and polygonal buildings with concentric aisles which had been common from early Christian times. Half of such a building would give the rudimentary form of the apse of a Romanesque or Gothic church.

a system in which the great piers supporting the larger vaulting of the nave alternate with smaller piers whose function is confined to the vaulting of the aisles. This functional alternation of large and small piers is characteristic of the early vaulted Lombard structures. It is a consequence of the employment

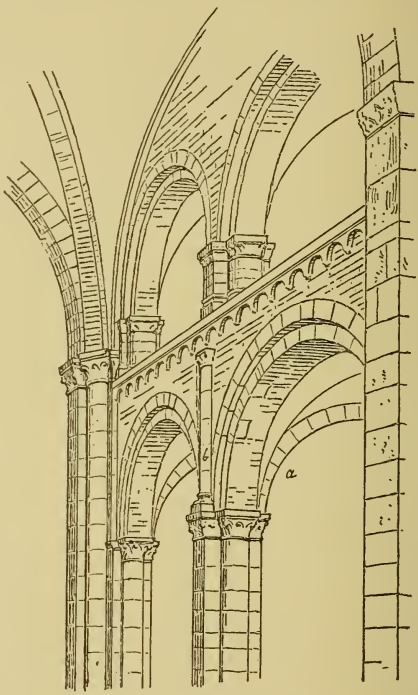


FIG. 13.—St. Ambrogio of Milan.

of vaulting in square areas where the aisles are but half as wide as the nave, and the number of vaults in each aisle is twice as great as in the nave.

It may be well to remark that two types of groined-vaulted buildings occur in Northwestern Europe during the Middle Ages, which may be called, respectively, the alternate and the uniform; the alternate type, like St. Ambrogio, having the vault com-

partments arranged as at A, Fig. 14, and the uniform having them arranged as at B in the same figure. The alternate system seems to have originated in the early Lombard Romanesque, while the uniform system appears to have been developed in Northern France. In some cases the vaulting of the later Lombard edifices has been remodelled into the form that belongs to the uniform system, while the substructure retains the alternate form — as in the Cathedral at Parma. In the Northern Romanesque and Gothic schools both types occur with almost equal frequency.[1]

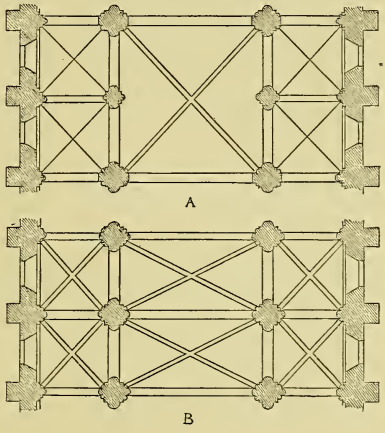


FIG. 14.

In St. Ambrogio the thrusts of the vaulting of the nave are met by heavy cross-walls built over the transverse ribs of the vaulting of the triforium gallery, and these are in turn reënforced by vigorously salient pilaster buttresses against the outside wall. The whole structure is covered by an unbroken gable roof of timber up to the rafters of which the abutting cross-walls of the triforium are carried. There is consequently no clerestory, and the abutments are effective for their purpose. Great progress in the direction of an organic system is thus manifest in St. Ambrogio. A rudimentary skeleton runs through the whole edifice, though the heavy walls of the ancient types of buildings still remain.

[1] The kind of alternation that occurs in some of the basilican churches, as in St. Prassede of Rome, San Miniato near Florence, St. Michael, Hildersheim, and others, is of a different character and from a different origin. In buildings of this class the alternate arrangement of the piers has no reference to vaulting, and vaulting does not occur. The great piers which are introduced among the columns carry transverse arches with cross-walls built over them, which divide the timber-roofed nave into rectangular compartments. There are usually in such buildings several columns, instead of only one, between every pair of piers.

ceding chapter, be also their invention. With regard to this it may be said that the date of the vaulting of the Abbaye-aux-Dames at Caen, in connection with which such a rudimentary flying buttress was constructed, is uncertain; though it was apparently posterior to that of the Abbaye-aux-Hommes, in the construction of which a half-barrel vault had been used.[1] We

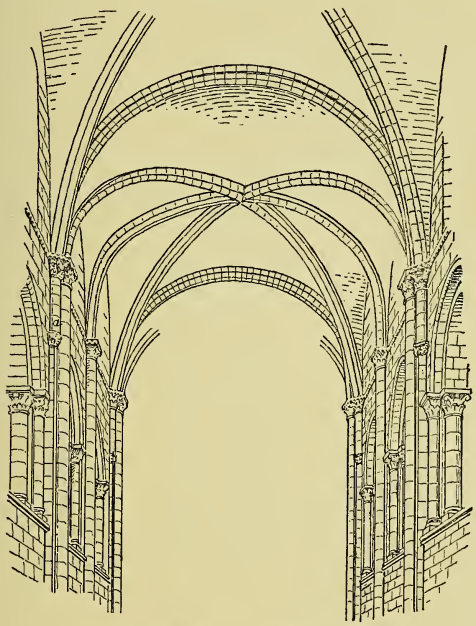


FIG. 15. — System of the Abbaye-aux-Hommes.

shall see, however, in the next chapter, that a similar form of flying buttress occurs in the transitional church of St. Germer in the Ile-de-France, which may be of earlier date; and, since the Norman architects in general showed little structural inventiveness, it is not improbable that the idea carried out in the buttress system of the Abbaye-aux-Dames was derived from the examples of the fertile designers of the Ile-de-France.

[1] Cf. V. Ruprich-Robert, *L'Église Ste. Trinité et l'Église St. Étienne à Caen*, Caen, 1864, p. 37.

reached here by the beginning of the twelfth century. This final condition may be studied in the Church of St. Étienne of Beauvais. Of the primitive edifice portions only of the nave

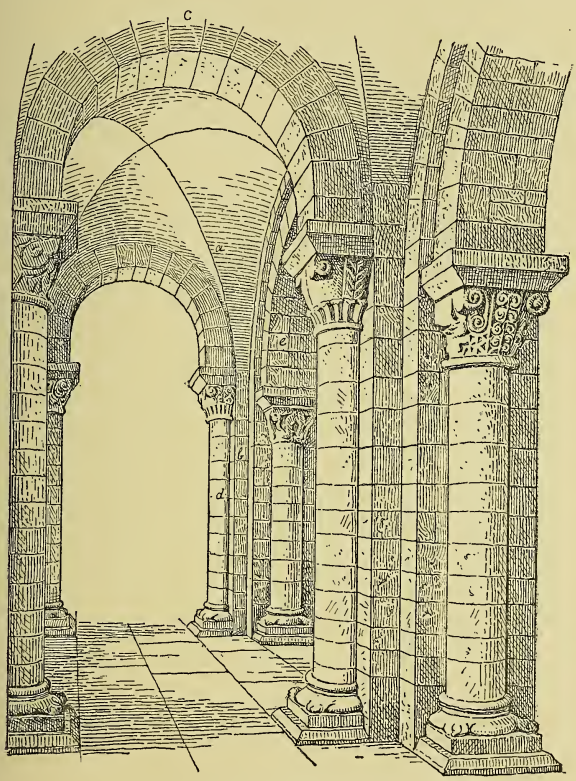


FIG. 16. — Morienval.

(Fig. 45, p. 105) remain, and although this nave was several times remodelled in parts during the twelfth century, the character of the original design is clearly traceable. This is most fortunate, since St. Étienne is, with, I believe, only one exception, — that of St. Louis of Poissy, — the only Romanesque structure

The primitive form and the historic value of the Church of St. Louis of Poissy have been so far destroyed by remodellings and recent reconstructions and restorations as to render a complete understanding of its original character nearly im-

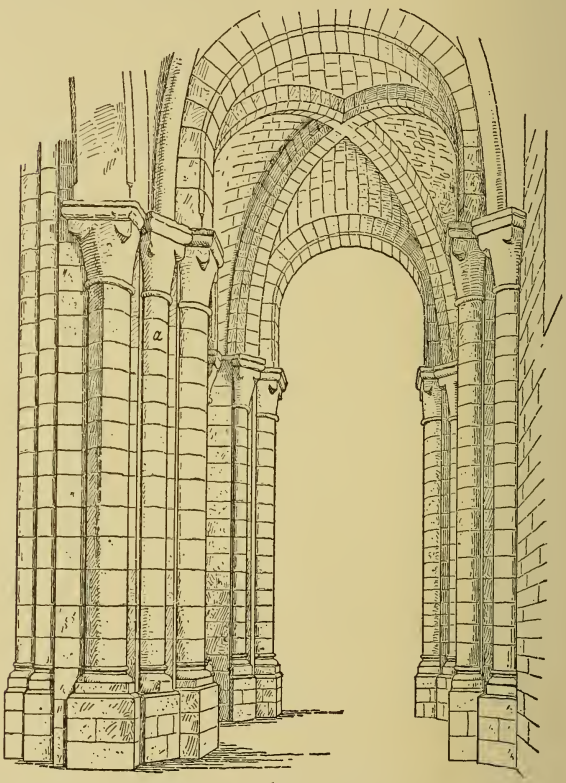


FIG. 17. — St. Étienne, Beauvais.

possible. Hence its precise place among the monuments of the Ile-de-France, that were quickening with the germs of the Gothic spirit, can hardly be determined with fulness. It seems clear, however, that, though subsequent in date to St. Étienne of Beauvais, the earlier portions of it were less advanced in

responds of corresponding form, sustain the transverse and diagonal ribs.

Few other vaulted Romanesque structures have survived in the Ile-de-France. After the beginning of the twelfth century, the transition into Gothic was here so rapidly accomplished that the larger structures of the early decades of this century cannot be classed as Romanesque. Our examination of the

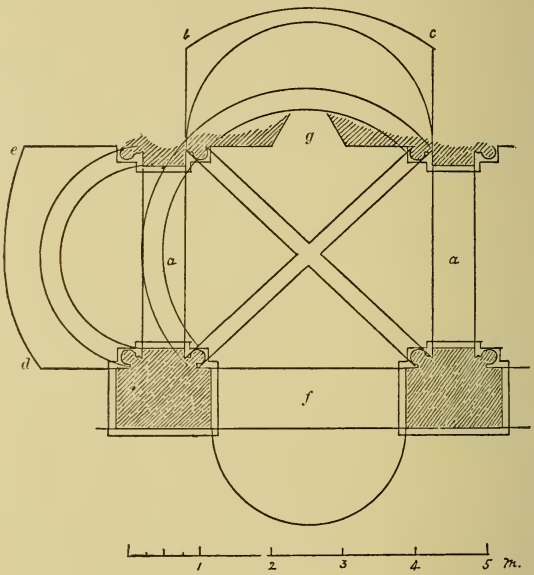


FIG. 18. — Aisle Vault of Béthesy St. Pierre.

sources of Gothic, therefore, ends here, while we proceed, in the next chapter, to consider the transitional and early Gothic developments.

It may here be well to define the sense in which the term transitional, as distinguished from Romanesque, on the one hand, and early Gothic, on the other, is used. Broadly speaking, the organic Romanesque, of all varieties and from first to last, is, as we have seen, an architecture of transition. In a more specific sense, what we mean by the transitional architec-

illustrates the form and the structural members of this vault,[1] which is marked *a* on the reduced plan of the apse given at A. It will be seen that the narrow archivolt *a* in the plan B, whose elevation is given at *a'*, is pointed in order to bring its crown up to nearly the same level as that of the wider-spanned round arch *b*, whose elevation is given at *b'*; and that the transverse arch *c*, situated at *b* in the plan A, is more acutely pointed for the same reason; while the transverse arch *d* assumes the form of an

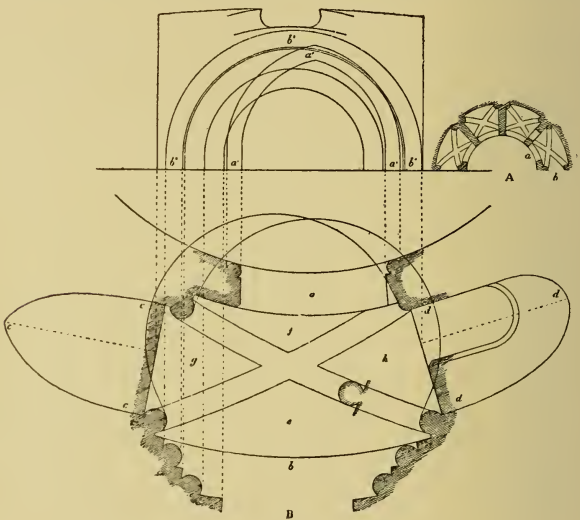


FIG. 19.

irregular ellipse. That structural exigencies alone led to the use of the pointed arch there can thus hardly be a doubt, and this is further manifest from the distorted shapes of the arches *c* and *d*. These distortions clearly result from the position and the form of the longitudinal ridge of the vault. This ridge has to pass through the point of intersection of the diagonals, and to follow the curve of the apse. The point of intersection is not midway between the inner and outer sides of the compartment, but is,

[1] I am indebted for this diagram to Mr. G. F. Newton, who kindly took the pains to go for me from Paris to Morienval, and secure the data which my own notes had not fully included.

The aisle vaulting of the neighbouring Church of Béthesy St. Pierre, for instance, which was constructed apparently at about the same epoch, is, as we have already seen (p. 55), Romanesque rather than transitional Gothic. For while the profiling of the vault ribs is of a slightly more advanced character, no innova-

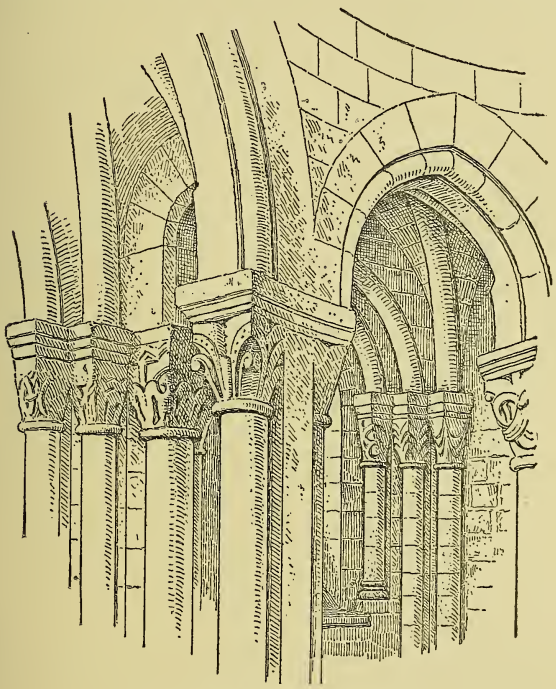


FIG. 20. — Apsidal Aisle of Morienval.

tions on Romanesque principles of vaulting occur. The same may be said of the diminutive Church of Noel St. Martin, near Villeneuve-sur-Verberie (Oise). The vaulting in this case, however, has one feature worthy of notice that does not appear in either Morienval or Béthesy, namely, the longitudinal rib. This member (which exists, as we have seen in the Lombard vaulting of St. Ambrogio of Milan) does not occur in any other

rough way the crowns of the narrow arches are brought to nearly the same level that is reached by those which span the longer sides of the vault.[1]

The rounding off of the crown of the arch of the vault itself, a repetition of the form given to the crown of the arch of the narrow cell of Morienval, looks like a survival of the Roman-

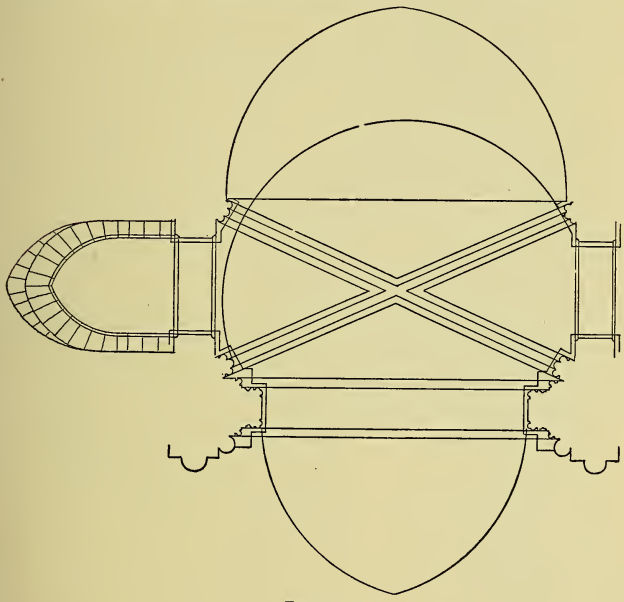


FIG. 21.

[1] In the first edition of this book it was mistakenly affirmed that early Gothic vaults are always much domed because the groin arches naturally reach to a higher level than the other arches of the vault. This has been generally maintained, and even so trustworthy a writer as M. Lefèvre-Pontalis makes, in his recent admirable work, *L'Architecture Religieuse*, etc., p. 106, the following statement: "Pendant quelque temps encore la clef des doubleaux fut toujours placée beaucoup plus bas que celle de la croisée d'ogives." Not only, however, have the aisle vaults of Bury the form described in the text, but even in Morienval the side arches are but slightly lower than those of the groins, while in the choir of St. Germer, as we shall presently see, the crowns of all the vaulting arches are on about the same level; and it would be easy to cite many other instances of the same form of vault in buildings of this epoch. But while this is often the case, it is also true that the vault surfaces are invariably arched more or less from rib to rib, and their ridges are never quite level.

esque habit[1] — as if the builders could not readily bring themselves to accept the perfectly pointed form. The extrados of the great archivolt, being of two orders, rises above the level of the intersection of the diagonals, the same altitude is given to the arch against the wall, and hence the ridges of the cross-cells

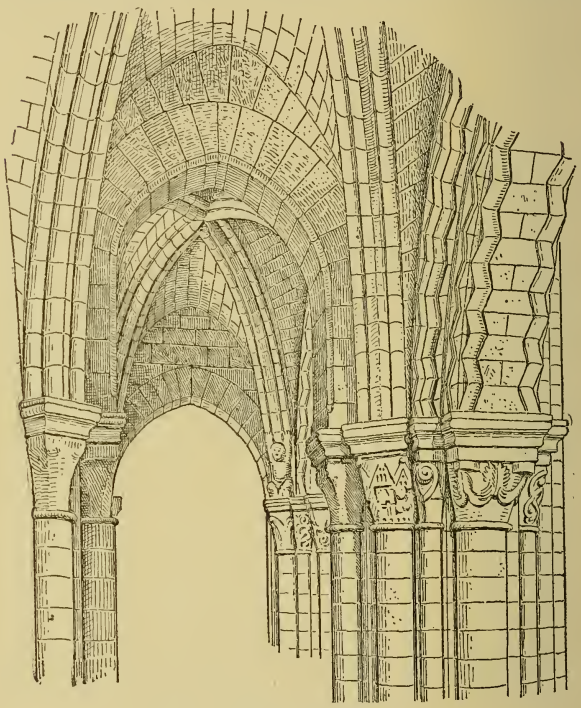


FIG. 22. — Bury, Vaulting of the Aisle.

[1] Another, and apparently much earlier, instance of the same treatment of the narrow cell of an oblong vault occurs in the Romanesque Church of Chatel-Censoir (Yonne) figured by M. Enlart in his instructive pamphlet entitled *Notes sur les Sculptures executées après la pose du XI^e au XIII^e Siècle*. Paris, 1895. The vaulting here has no groin ribs, and the general character of the work is that of the eleventh century. If this vault be a part of the original construction, it affords an instance of the approximation to the form of the pointed arch antedating that of Morienval.

rise from the centre of the vault to the crowns of the archivolt and longitudinal wall arch respectively, instead of descending from the centre as they generally do. Though the longitudinal rib is still lacking, and the whole construction shows inexperi-

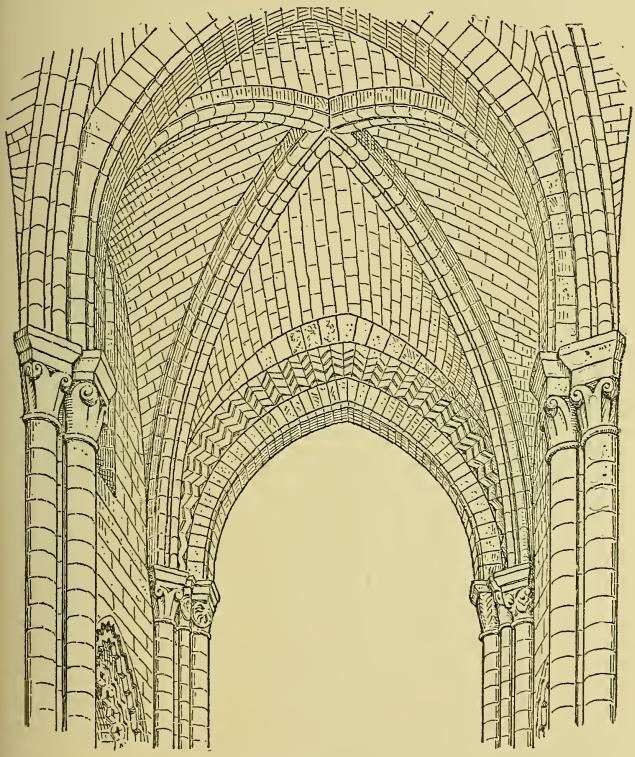


FIG. 23. — Bury, Vaulting of the Nave.

ence, this vault marks an advance on Morienval. In the nave (Fig. 23) we have the general scheme of St. Étienne of Beauvais repeated with pointed arches in the vaulting — even the groin ribs being pointed.[1] This is apparently one of the earliest

[1] The groin ribs, as well as the transverse ribs, are not seldom pointed in very early, as well as in later, Gothic vaults.

crowns to the level of the intersection of the diagonals, and hence, as there is no stilting, the vault is very domical in form. The presence of the longitudinal rib, together with a considerable degree of skill and precision of workmanship, seems to mark this construction as posterior to the others thus far noticed, and we may regard it as illustrating a slightly more advanced stage of progress. That it is subsequent to Bury, yet not far removed

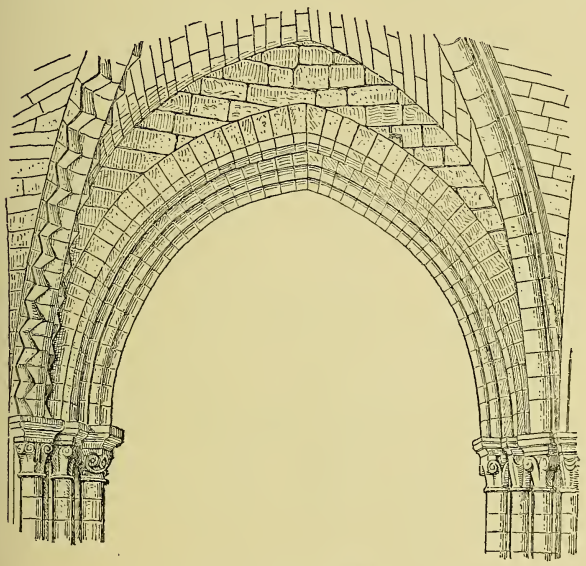


FIG. 24.— St. Leu d'Esserent.

from it in date, would appear from the character of its profiling, as well as from its greater mechanical perfection.[1] Still another of the small monuments quick with the germs of Gothic life that belong to the early decades of the twelfth century is the curious and puzzling choir of St.-Martin-des-Champs in

[1] I do not profess to establish the chronological order of these very early buildings with any absolute sureness. The precise order is very uncertain; but while it is so, an illustration of the general progress of Gothic development may be none the less correctly gathered from them.

of the builders. A comparison of this work with that of other buildings of the same region dating from the first half of the twelfth century seems to justify the belief that the east end of it was erected not much later than the year 1130.[1] We may begin our examination of this most instructive monument with what is certainly the earliest part of it, — the vaulting of the apsidal aisle. Here we find a great advance on the

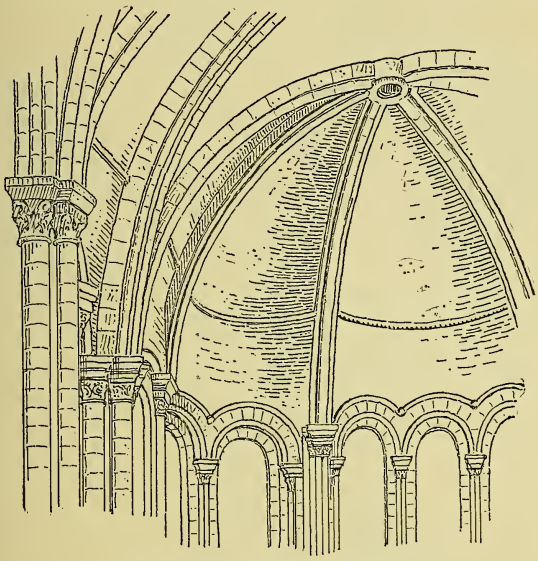


FIG. 25. — Apse of St. Martin-des-Champs.

apsidal aisle of Morienval. The scale of the work is much larger, and the marks of groping experiment and executive awkwardness, so conspicuous in Morienval, are but slightly apparent. The vault and its supporting members exhibit a surprising degree of constructive knowledge and of mechanical skill in the use of new forms, as well as power in beautiful

[1] M. Eug. Lefèvre-Pontalis, "Étude sur la Date del' Église de Saint-Germer," *Bibliothèque de l'École des Chartes*, vol. xlvi. p. 492, says: "Nous croyons pouvoir fixer l'époch de sa construction d'une manière très précise entre les années 1130 et 1150." He then produces evidence in favour of the earlier date.

architectural design. Was this the first apsidal vault constructed after that of Morienval? The question may not be answered. It would seem, however, that more than one experimental structure must have intervened. It is hardly conceivable that a composition so beautiful and so perfect should have been produced without many previous trials; but no earlier

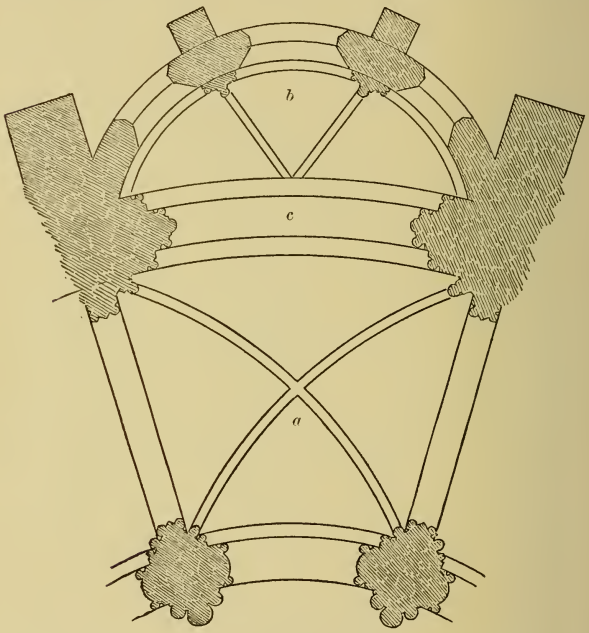


FIG. 26.—St. Germer-de-Fly.

vaults of the kind seem to have survived. It therefore appears safe to suppose that after Morienval we have in St. Germer the oldest existing apsidal aisle vaulted on the rudimentary Gothic principles. In this vaulting (Figs. 26 and 27) we find a complete system of ribs, in which few distorted lines or awkward adjustments occur, sustaining a slightly domical vault of elegant form. The diagonal ribs still follow, in plan, the curved lines that are naturally produced by the cross-penetrations of an annular

groined vault, though the form here, as in Morienval, differs in other respects from that of a geometrically generated vault — as will be explained farther on. The intersection of the diagonals is now at or near the centre of the compartment (*a*, Fig. 26), the inner side of the transverse rib is not embedded, as in Morienval, at the impost, and each rib has its own supporting shaft in the compound piers and responds, except the inner

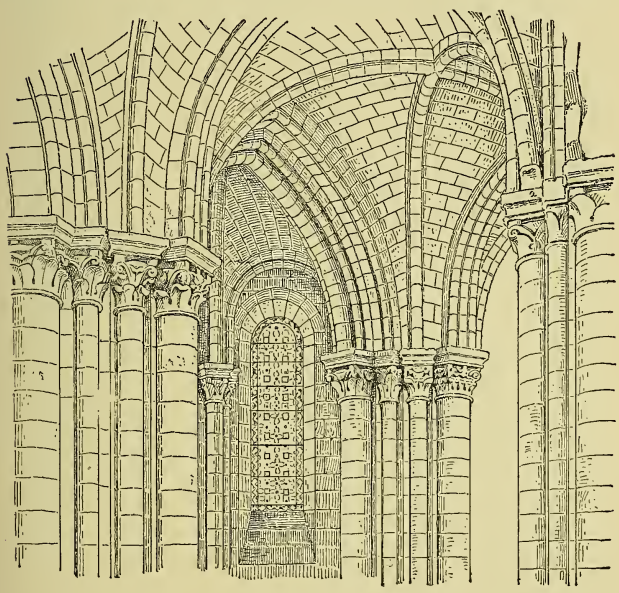


FIG. 27. — Apsidal Aisle of St. Germer-de-Fly.

branch of the diagonal which rests on the capital of the shaft that carries the transverse rib. The small chapel which opens out of this bay, seen in the illustration (Fig. 27) to the left of the further respond, is worthy of notice as having a vault somewhat resembling that of the apse of St.-Martin-des-Champs, while it shows some advance on that design. In plan (*b*, Fig. 26) it is a segment of less than half a circle, and the vault is divided into three cells by two ribs converging on the crown of the arch that separates the chapel from the aisle. This vault is rendered

less domical than that of St. Martin by the stilting (Fig. 27) of the wall arches. These wall arches still, however, retain the semicircular form, and the window opening is likewise round arched in the plainest Romanesque manner. These primitive features, together with the curved plan of the diagonal ribs in the aisle compartment, and the robust, though not inelegant, proportions of the whole design, appear to justify the belief that the work is anterior to that of St. Denis; and thus an important link in the chain of structural progress leading from Morienval to the work of Suger.

Passing into the choir, the eye is met by what we have good reason to believe was the first great Gothic apse (Plate I) ever constructed. Its lofty vaults, its stately piers, and its superimposed arcades combine to produce an impression of great beauty. The vault of this apse is divided into five cells by strong and richly ornamented ribs that converge on a centre against the crown of the transverse rib of the adjoining rectangular vault of the choir. The wall arches (of unusual thickness because the clerestory wall is thinner than the wall beneath) are stilted and pointed, and their crowns rise to a height a little above that at which the converging ribs meet. Thus the domical form of the vault as a whole, which is so excessive in St.-Martin-des-Champs, and is still so considerable in the apsidal chapel of this same building just noticed, is avoided. But the crowns of the cells are slightly arched, and their surfaces are in all parts sensibly domical. The Gothic apsidal vault is thus already developed here with substantial fulness. The piers of the apsidal system are, on the ground story, composed like those of the apse of Morienval, with the addition of three shafts for the high vaulting. They each consist of a core composed of square-edged members, the whole having a wedge-shaped section with curved inner and outer sides conforming with the curve of the apse, and engaged round shafts to support the various archivolts and vaulting arches (Fig. 28). The ground-story members are

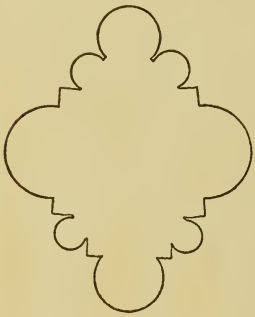


FIG. 28.

APSE OF ST. GERMER-DE-FLY.
Second quarter of twelfth Century.

crowned by a group of capitals, but the high vaulting shafts rise unbroken to the springing of the vaults. The abaci of these capitals conform in plan with the trapezoidal section of the pier (Fig. 29), and thus a conoidal or a twisted intrados, which would result in the archivolt from the use of the square abaci, is avoided.[1] The main vaulting shafts are proportioned in size to the ribs which they respectively support, they are compactly grouped, and are banded by the triforium string, and again at the level of the abaci of the triforium capitals. This banding gives a sense of secure incorporation with the pier, and is, at the same time, pleasant to the eye. The wall ribs are stilted by small shafts resting on the clerestory string, but owing to the great size of the converging ribs, against which they are closely placed, they do not fall directly upon the corresponding members in the sustaining shaft group below. The clerestory string is of unusual character, consisting of a projecting ledge carried on corbels, and forming the abaci of the capitals of the smaller vaulting shafts (Fig. 327, p. 80).

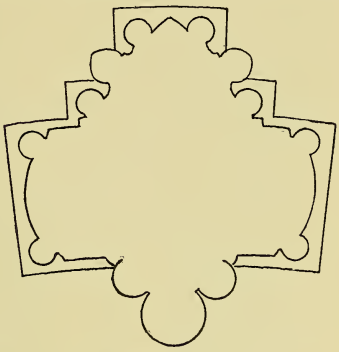


FIG. 29.

The vaulting system of St. Germer is uniform throughout. The compartments are oblong, and the execution is skilful in all parts. The vaults have the perfectly Gothic form which will be explained farther on, though the ribs are unusually heavy. In the choir (an exceptionally short one, having but a single bay) the eastern branches of the diagonal ribs are not provided with supporting shafts, but are carried on corbels fashioned into the forms of bullocks' heads, and placed just above the impost of the transverse rib (Fig. 30). This is an awkward arrangement, though it is at the same time an interesting instance of the manner in which structural difficulties were frankly over-

[1] Cf. Viollet-le-Duc, s.v. *Voute*, p. 490. The impost of the apse of Morienval has the same trapezoidal form, and it is frequent in Gothic apses of all epochs.

come by the readiest and least objectionable means. To have introduced an additional shaft for the support of this rib would have given an unsymmetrical form to the pier, which would have been still more awkward. In later Gothic designs the apsidal vault ribs do not, as we shall see, converge on the crown of the transverse rib of the choir, but on a point farther eastward. An additional rib is then inserted on each side, springing from the easternmost piers and abutting the thrusts of the other ribs. In such cases a shaft is inserted to carry the additional rib, and a corresponding shaft on the opposite side carries the groin rib of the choir vault, which is here carried on a corbel. In other early systems, where the apsidal vaulting is designed like this of St. Germer, the easternmost choir vault is made tripartite (as will be explained farther on), as in the Cathedral of Noyon. When this is the case, no groin ribs, of course, have to be provided for in the easternmost pier, and no awkwardness of arrangement is produced. Throughout the rest of the building the diagonal ribs are supported on separate shafts rising from the pavement.

FIG. 30. — St. Germer.

It is especially worthy of notice that these vaults of St. Germer, the earliest Gothic vaults on a large scale, have the oblong form with the crowns of all their sustaining ribs at nearly the same level. We shall find this to be the case frequently, though (as already remarked, p. 65, note) it has gener-

ally been supposed that these characteristics belong exclusively to the more advanced stages of Gothic construction.

St. Germer has a vaulted triforium gallery — apparently the first (in Gothic buildings) of that series of such galleries which assume their grandest development in the Cathedral of Paris. This feature is, of course, derived from Lombard and Norman Romanesque monuments such as St. Ambrogio of Milan and the Abbaye-aux-Hommes at Caen. Here, curiously, it retains

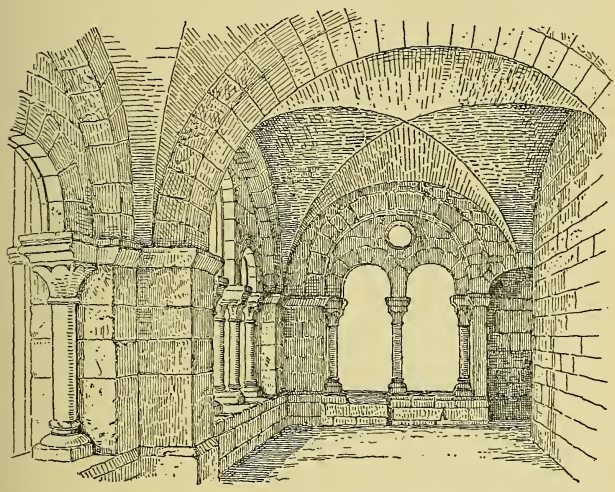


FIG. 31. — Triforium Gallery of St. Germer-de-Fly.

the Romanesque form in all its structural parts. Its groined vaulting is of the most primitive type derived from the Roman models with the addition of strong transverse ribs separating the compartments from one another, as shown in Fig. 31. But the internal openings (as shown in the general view of the apse, Plate I), though round arched, are in other respects of early Gothic character. They are each divided by coupled shafts into two smaller openings spanned by a larger arch, and their tympanums are pierced each with a circular opening, in some cases cusped, in others variously ornamental. These are remarkably early instances of compound openings and piercings,

They occur in the arcades of the ground story and clerestory — where they have to perform the function of vault ribs as well as

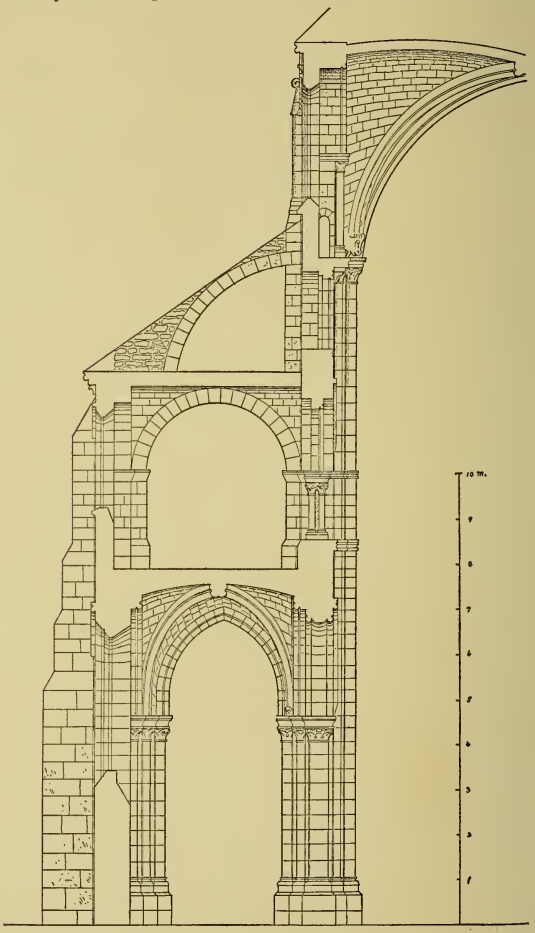


FIG. 32. — Section of System of St. Germer-de-Fly.

of archivolts — and in the transverse and longitudinal ribs, but not elsewhere.

The aisles are double and foreshadow the vast and magnificent aisles of Paris, Chartres, and Amiens. The work shows few signs of hesitation or experiment, and bespeaks the sureness and executive precision of builders who had already attained a high degree of understanding and skill. Here (Fig. 34) we have a modification of, and an improvement on, the arrange-

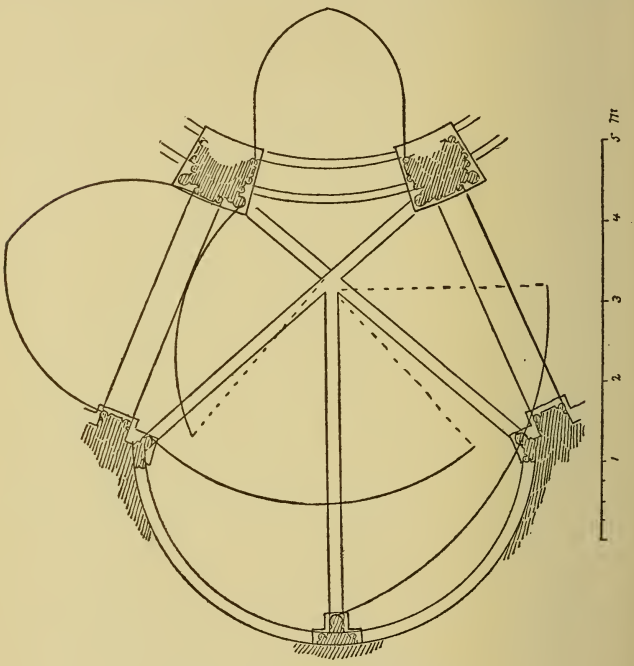


FIG. 33.— Vault of Apsidal Aisle, Pontoise.

ment of the vaulting just noticed in Pontoise. The chapel and the adjoining bay of the aisle are in the same manner united under one vault by the omission of the dividing arch, and the extension of the rib *c* to the intersection of the diagonals. But the ill-proportioned length given to this rib in the vault of Pontoise, and the unequal dimensions of the triangular cells which there result, are avoided here in St. Denis by an innovation that

established the distinctively Gothic arrangement of diagonal ribs in apsidal aisle vaulting — that, namely, of disposing their opposite branches (which as in Pontoise are straight in plan) so that they meet at an angle. The point of intersection may be thus placed wherever the architect chooses. It is here near the centre of the vault, and the cells are by this means rendered nearly

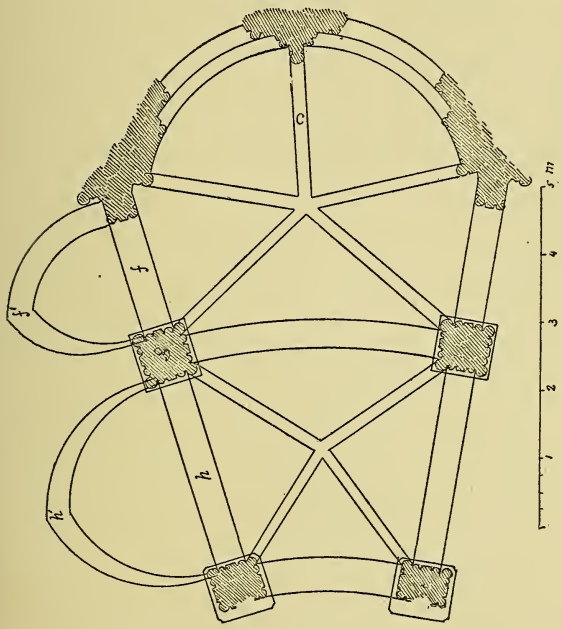


FIG. 34. — Vaults of Apsidal Aisles of St. Denis.

equal in area. This vaulting has a full system of ribs, all of which, except the diagonals, are pointed. Here also, apparently for the first time, the window openings of the chapels have pointed arches concentric with the structural arches of the vaulting. It is noticeable, too, that these openings are much enlarged, their archivolts forming sub-arches to the vault ribs.

Although the difficulties that had embarrassed the earlier builders, and had led to the awkward forms of the apsidal

resemble those of St. Denis; but in the structural principles of its vaulting the two monuments have little in common.

The apsidal aisles of the Cathedral of Sens, which are nearly contemporaneous with those of St. Denis,[1] while having considerable likeness to Poissy, exhibit a much more advanced construction. The vaults have here the domical form, are provided with groin ribs, and have the pointed arch on the narrow side of each compartment. In the groin ribs the same adjustment occurs that we have noticed in St. Denis — the opposite branches of each rib meeting in plan at an angle, and bringing the inter-

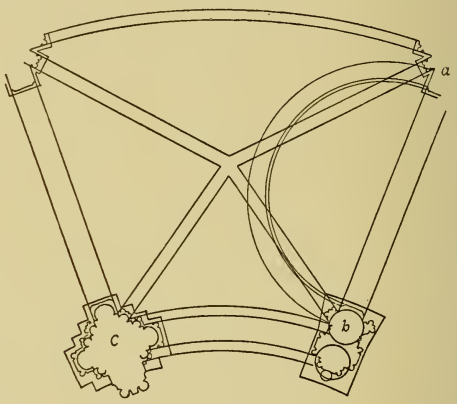


FIG. 35. — Vault of Apsidal Aisle of Sens.

section near the middle of the compartment (Fig. 35). If Sens be, as some writers suppose,[2] anterior to St. Denis, then this innovation may be due to its architect. In the adjustment of the arch on the long side of the vault, the architect has followed the designer of Poissy. The shaft group, also, is composed like that of Poissy, and thus has no member for the support of the diagonal rib. The diagonal rib here inserted rests, therefore, on a corbel placed just above the impost of the transverse rib (Fig. 36) as in the choir of St. Germer (Fig. 30). Another characteristic of this vaulting is the manner in which the inner branches of the transverse ribs are provided for by separate

[1] Cf. Anthyme Saint-Paul, *Op. cit.*, p. 138.
[2] *Ibid.*, p. 139.

supports in the great piers. The easternmost two of these piers consist of coupled round columns ranged in line with the direction of the transverse rib — as at *b*, Fig. 35; while the other two are composed as at *c* in the same figure. Ample space is thus afforded for the impost of each arch, and no interpenetrations, or distortions of the vault surfaces, occur.

It is impossible to be precise in chronological sequence, but the cathedrals of Noyon and Senlis must, it would seem, have followed very soon after Suger's work at St. Denis. They are, beyond doubt, nearly contemporaneous buildings,[1] and illustrate the progress that had been made by the middle of the twelfth century. Both of these churches were designed on a considerable scale. They have apsidal aisles, radial chapels, and vaulted triforium galleries. In their proportions and structural features they show a free exercise of the inventive talents of those secular builders who were already beginning to take a leading part in architectural works, finding scope for their genius in the communal cathedrals that were now rising in quick succession in the newly chartered towns.

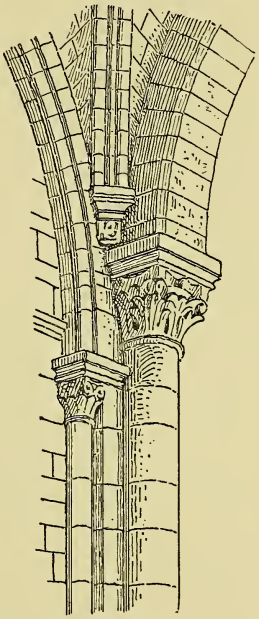


FIG. 36. — Sens.

Noyon had been one of the first cities to organize a commune, and it had done so under the fortunate circumstance of its bishop having taken an initiative in the work, so that from the first there was harmony between the ecclesiastical and civil authorities,[2] which was not always the case else-

[1] M. Vitet has shown (*Notre-Dame de Noyon*, par L. Vitet, Paris, 1845) that the earliest portions of Noyon must have been begun as early as 1150, while Senlis is supposed by M. Lefèvre-Pontalis (*Bibliothèque de l'École des Chartes*, vol. xlvi. p. 492) to have been begun about 1156.

[2] A. Thierry, *Lettres sur l'Hist. de France*, p. 223 *et seq.*

of a much later period. The pier system is alternate, and the forms of the piers show that the primitive vaulting must have been constructed on the sexpartite plan which had been evolved in the Abbaye-aux-Hommes at Caen. But the architectural progress of the time must have been shown in the improved form and execution of the vaults, which were probably the earliest sexpartite vaults ever constructed on Gothic principles. Hardly any vaults of this form are extant in the Ile-de-France of a date earlier than those of the choir of the Cathedral of Paris — which were completed about 1177.[1] The sexpartite vaulting

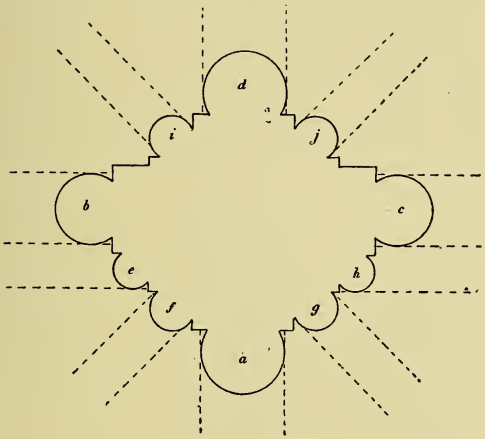


FIG. 37. — Senlis.

of Caen seems to have been, as we have seen (p. 48), developed largely by chance in altering the building at a period considerably later than that of its original construction. The vault supports there, having been derived from the Lombard models, were not intended for such vaults as they now carry. But here in Senlis nothing was fortuitous or unforeseen. The vaults and their supports were simultaneously conceived, and were in all respects parts of an organic whole. This is shown by the piers still extant, though not a stone of the primitive vaulting remains in place. The section of the main pier is shown in Fig. 37. The

[1] Cf. V. Mortet, *Étude Historique et Archéologique sur la Cathédrale et le Palais Épiscopal de Paris*, Paris, 1888, p. 43.

arches the forms are needlessly inelegant. In Senlis, on the other hand, the logical design and skilful execution of the piers just described, together with the admirable execution and design of aisle vaulting, make it appear certain that here there were no

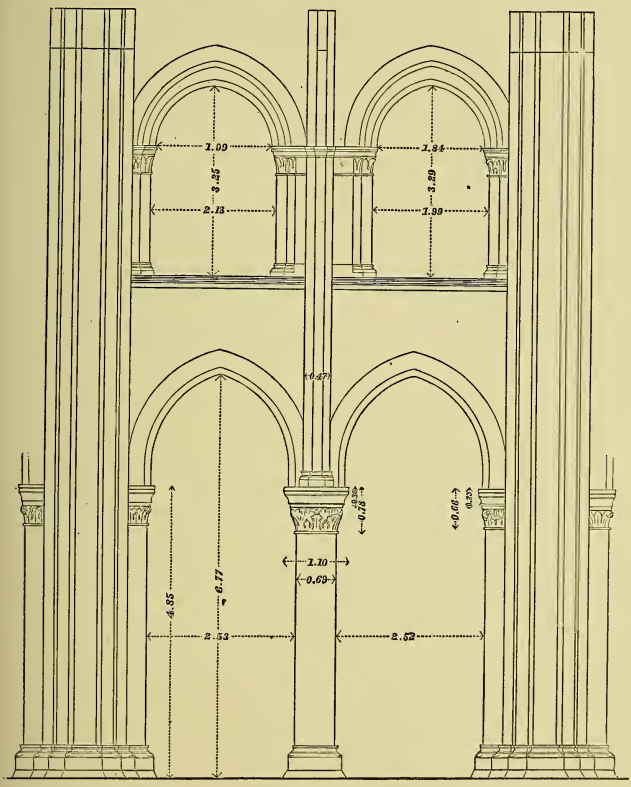


FIG. 38. — Senlis.

such defects. The architect of this monument had a perfect understanding of his vaulting scheme in all its parts, and of the means by which it should be carried out. His ground plan was laid out, and the forms of his piers were determined with rigor-

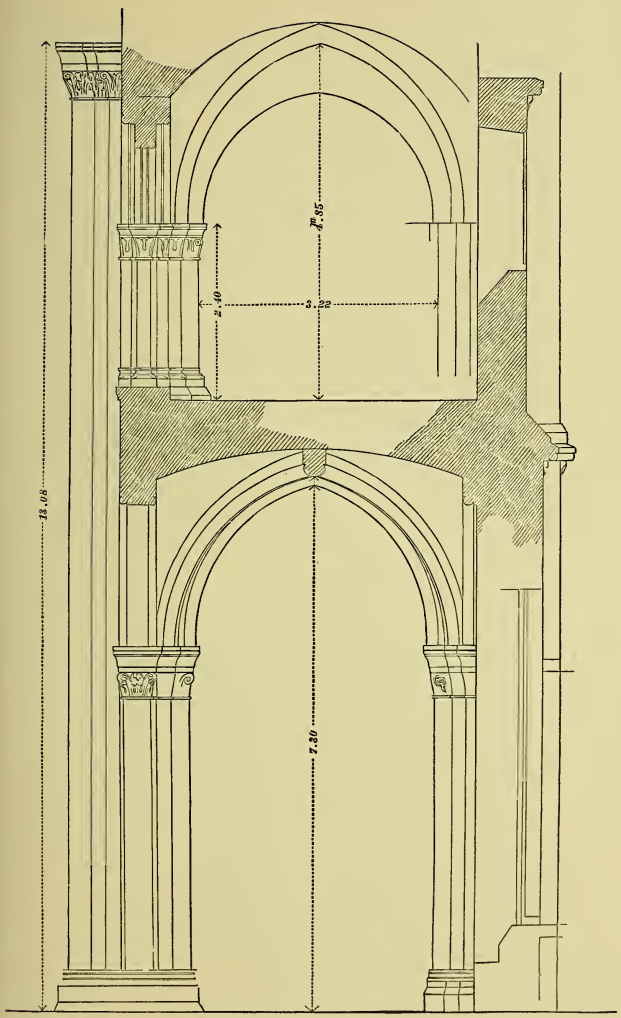


FIG. 39. — Senlis.

are large, and a few of them are slightly pointed, but the most are round-arched.

It may here be remarked that we have reached the time of

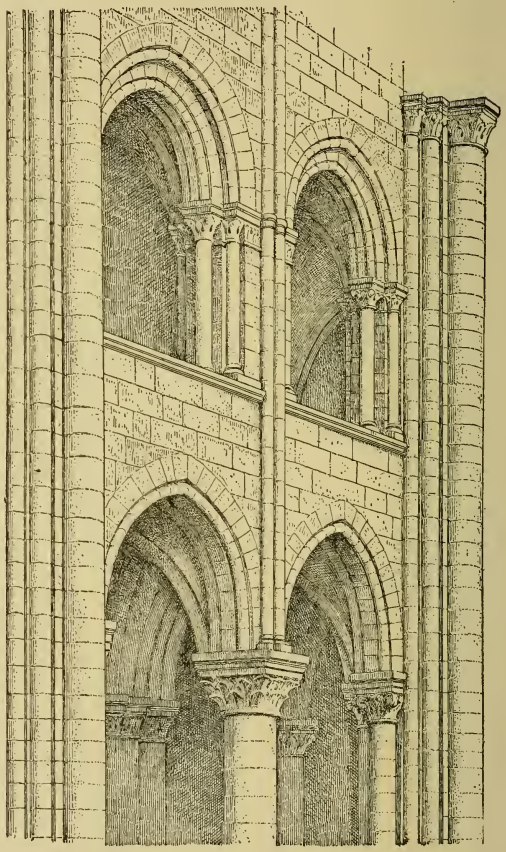


FIG. 40. — Senlis.

greatest perfection in masonry, and nowhere do we find skill in the manipulation of carefully selected material more admirably exhibited than in the Cathedral of Senlis. After 1130, for a

period of perhaps sixty years, the vaults, piers, and walls of the Gothic buildings are unrivalled for fineness of facing and precision of jointing. They are in this respect in striking contrast

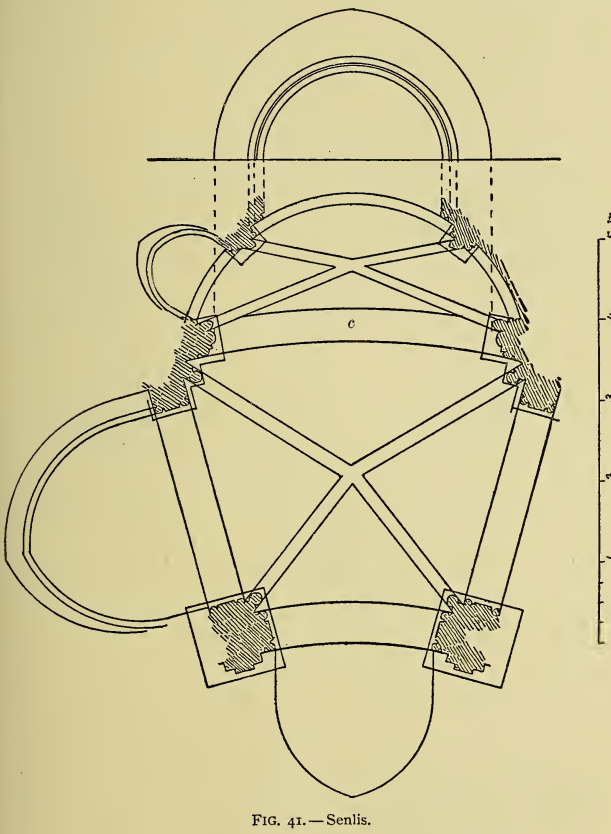


FIG. 41.—Senlis.

to those of the larger constructions of the thirteenth century, which are often rough-jointed and rudely faced.

We have already noticed that the churches of St. Germer and Noyon exhibit a nearer approach to Gothic character and expression within than without, and the same is true of Senlis.

The interior is frankly Gothic in its structural features, while what remains of the original exterior is almost as completely Romanesque as that of St. Germer. External features, in the Gothic system, are a consequence of internal structure, and in the process of development they are the last things to change. The change begins at the very heart of the fabric

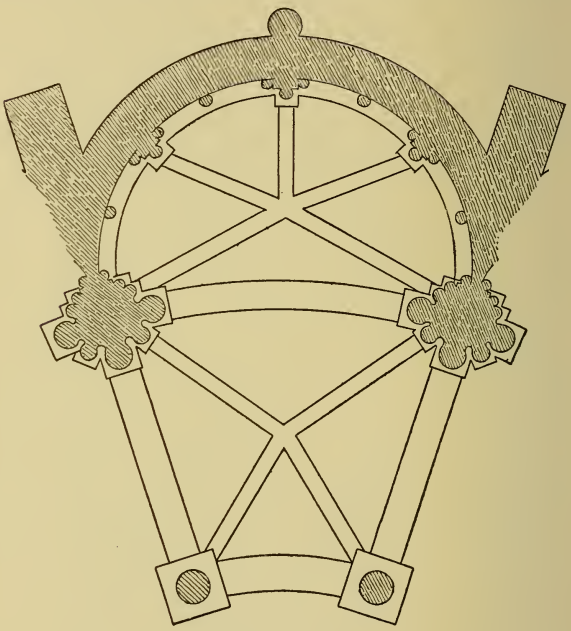


FIG. 42. — Noyon.

and gradually works outward till every part is reached. The new principle is first seen operating imperfectly in the diminutive vaults of Morienval; it works with more sureness in the vaulting of Bury, Berzy-le-Sec, and other small buildings; then in the high vaults of St. Germer, Noyon, and Senlis, it makes further advances and creates for itself an appropriate system of supports; and thus it moves on, as we shall see, in this creative fashion until the full development is accomplished.

though this short shaft is imperfectly supported by the lateral shaft of the main vaulting group. The springing of the longitudinal rib from a corbel without any shaft at all, as here in St.-Germain-des-Prés, is rare.

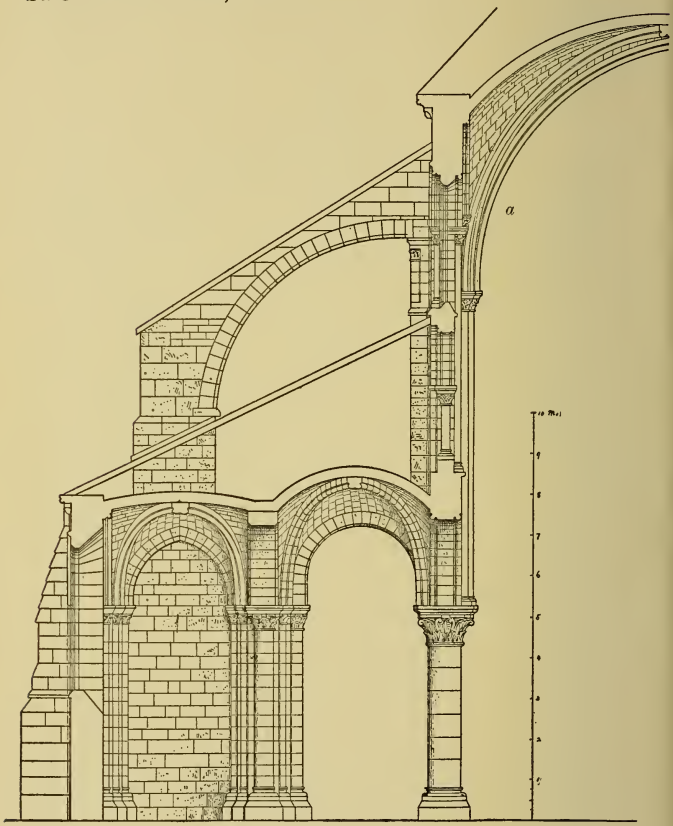


FIG. 43. — St. Germain-des-Prés.

A curious and unusually puzzling mixture of round and pointed arches occurs in the structural parts of this choir. The longitudinal ribs of the high vault, the ground-story archivolts, and the transverse ribs of the aisle vaulting are round, while the

having but three shafts from the pavement, with the shafts of the longitudinal ribs brought down to the triforium ledge (Fig. 44). The lateral vaulting capitals are set diagonally, and the diagonal ribs, as well as the transverse and longitudinal ribs, are pointed. The thrusts of the vaulting are met by heavy walls and piers (which seem to be those of the original Romanesque works) without reënforcement by flying buttresses. Although it has the appearance of a remodelled interior, this choir of Gournay is a beautiful work of art; and the Gothic portions of it are wrought with the mechanical precision that is rarely wanting in the French monuments of the early period.

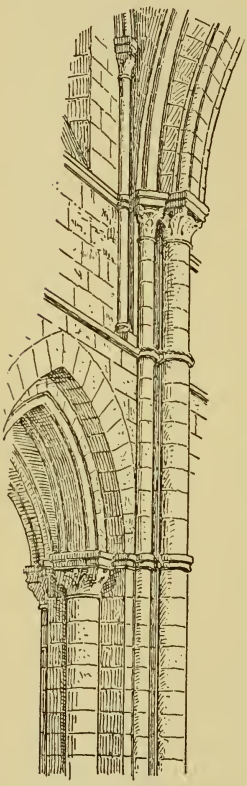


FIG. 44. — Gournay.

The vaulting of the nave of St. Étienne of Beauvais (Fig. 45) appears to have been reconstructed in the Gothic form some time after the middle of the twelfth century. Here, as at Gournay, the diagonal ribs are pointed, and the vaults are well adjusted to the Romanesque substructure — which, as before remarked (p. 52), is far advanced in organic design. Since, apparently, no longitudinal rib was used in the primitive vaulting, and consequently no shaft for such a rib was incorporated in the group of the vaulting shafts, the longitudinal rib of this Gothic vaulting is placed on a small shaft in the clerestory, which is supported by a part of the capital that carries the diagonal rib. This mode of supporting the longitudinal rib was much employed during the second half of the twelfth century, as, for example, in the Cathedral of Paris. At the time of the reconstruction of the vaulting other changes appear

to have been made. Among these was the introduction of the triforium arcade substantially reproducing that of St. Germer.

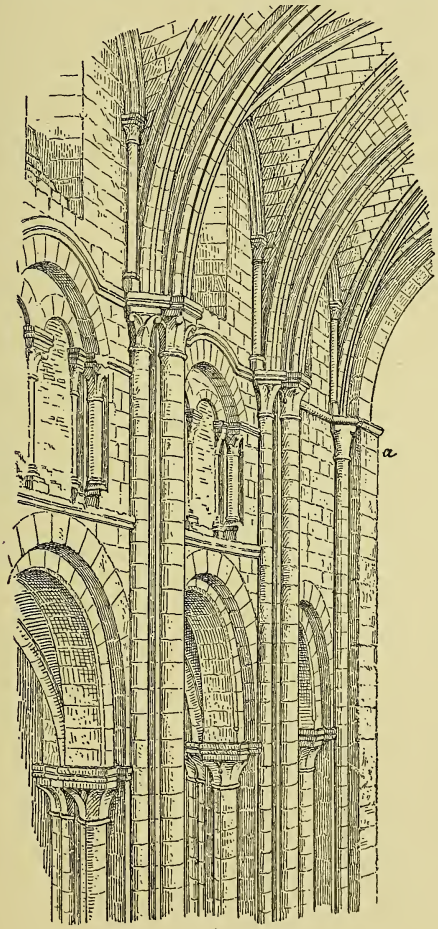


FIG. 45. — St. Étienne, Beauvais.

That this triforium was an interpolation there can hardly be a doubt; for the easternmost bay of the nave, which is more

nals, each a small shaft, which rises in the clerestory to carry the longitudinal rib whose springing is at a higher level — an adjustment of great significance, as we shall presently see. In the intermediate piers the arrangement at the springing is different. In each of these the central shaft only has a capital at the level of the springing of the larger vault ribs. The side shafts rise above this to the higher point of springing of the longitudinal ribs, where they receive their capitals. Figure 46

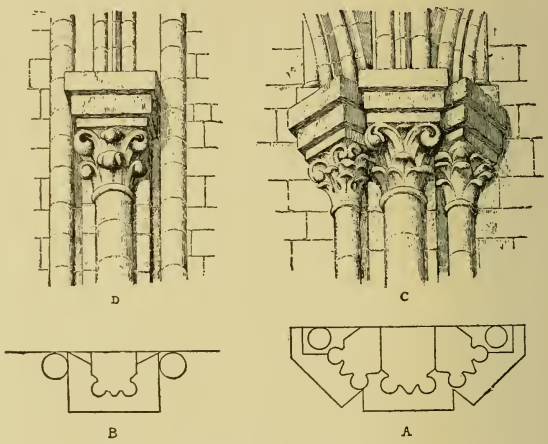


FIG. 46. — Vaulting Imposts, Choir of Paris.

will illustrate these features. In this figure A is the plan of the group of abaci of the capitals of the main vaulting shafts, and the sections of the three ribs which they support; B is the plan of the abacus of the intermediate capital with the section of the intermediate rib, and the sections of the side shafts. C is a perspective elevation of the main group, and D is a perspective elevation of the intermediate group. It will thus be seen

designers and followed by the Romanesque builders of France, as in St. Étienne of Beauvais) was the usual adjustment followed by the early Gothic architects so long as the vaulting ribs retained a square section. With a change in the form of the ribs the manner of placing the capitals was correspondingly changed — as we shall see farther on.

that here in the choir the main and the intermediate groups of vaulting shafts differ in accordance with their respective functions.

But in the nave, which appears to have been completed, all except the extreme west end, by about 1196,[1] the imposts exhibit no such alternation of form in correspondence with the demands of the sexpartite system of vaulting. There are here

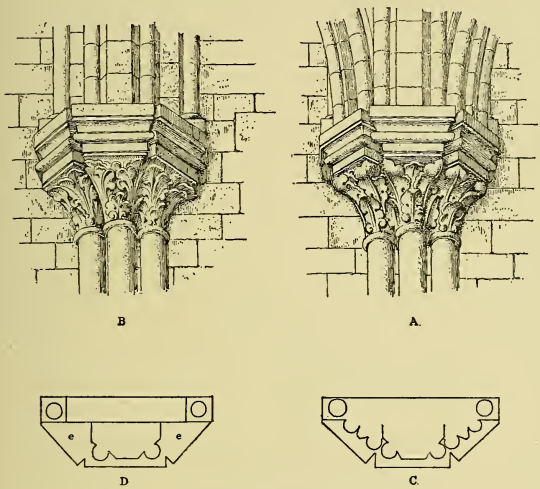


FIG. 47. — Vaulting Imposts, Nave of Paris.

three capitals in each group at the main springing level (A and B, Fig. 47), an arrangement which would be suitable for a uniform system with quadripartite vaulting, but which is ill adapted to the six-celled vaults actually employed. For while in the main group (C, Fig. 47) the abaci are fully utilized, — having to support the three principal ribs of the vault and the bases of the small shafts which carry the longitudinal ribs,— the lateral abaci of the intermediate group have the larger portions, *e*, in the plan D, of their surfaces unoccupied, since no diagonal ribs spring from this group. This

[1] Cf. Mortet, *Ibid.*, p. 46.

is both illogical and unpleasing. The only rib which springs at this level from the impost B being the intermediate transverse rib, the central shaft which supports it is the only one that requires a capital here. The side shafts ought to rise unbroken, as they do in the intermediate group of the choir, to the higher point of springing of the longitudinal ribs. A still further defect of the nave system is found in the vaulting shafts themselves, which are not graduated in size in conformity with the unequal weight and bulk of their respective loads, but are all of the same magnitude. They are, however, remarkable for their slenderness, which is rendered possible by their being composed of only a few lengths (in most cases but five) of strong *cliquart* standing free, though close to the pier, as shown in the section Fig. 48.

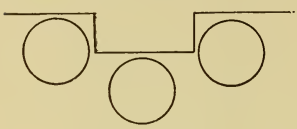


FIG. 48.

In the fine neighbouring Church of Mantes, a construction contemporaneous with Paris, which it much resembles, we have another instance of sexpartite vaulting. In this case the vaults and their supports are better related to each other; though the system, for the most part, still fails to exhibit a perfectly logical embodiment of the sexpartite idea. For while the piers are alternately massive and slender, as at Noyon and Senlis, their vaulting shafts are not, as in the earlier monuments, alternately varied in number in conformity with the vault ribs. They are arranged in groups of three in each pier. Those of the main piers, however, start from the pavement, while the intermediate groups rest on the capitals of the ground-story piers, which are single round columns. The shafts of the main groups are larger than those of the intermediate groups, and each main group has the central shaft engaged with a pilaster. There are three capitals at the main impost in each pier, and the longitudinal ribs are supported, as in the nave of Paris, by small shafts resting on the lateral capitals. The western main pier of the westernmost sexpartite compartment[1] is more logically designed. Here the support of the longitudinal rib starts from the triforium ledge,

[1] The bay at the extreme west end, between the towers, has here, as in most other cases, a vault of the oblong quadripartite form.

and rises continuously to the level of the springing of this rib (Fig. 49). The vaulting shafts of the intermediate piers of this compartment rise, like those of the main piers, from the pavement. In the vaulting of Mantes the intermediate transverse rib is round arched, so that in order to get its crown up to the intersection of the diagonals it has to be stilted to nearly the height of the springing of the longitudinal rib.

FIG. 49. — Mantes.

Sexpartite vaults occur again in the Cathedral of Laon, a building also nearly contemporaneous[1] with the nave of Paris. Here we meet with yet another arrangement of vault supports. The ground-story piers of Laon are, like those of Paris, single round columns whose capitals support the vaulting shafts. But instead of three shafts in each group, an arrangement that does not, as we have seen, conform logically to the sexpartite principle, we have here five shafts in the main groups and three in those of the intermediate piers. An independent support in the main system is thus provided for each rib in the vault (Fig. 50). In other words, the system of Laon is the same as that of the choir of Paris, except that the shafts which carry the longitudinal ribs rise, with the other shafts of the pier, from the ground-story columns, and, in both main and intermediate piers, pass up, without capitals at the main impost level, to the springing of these ribs. The system above the ground story is thus perfectly logical; but the architectural composition as a whole is rendered somewhat unsatisfactory by the heaviness of the shaft groups in comparison with the proportions of the monocylindrical lower piers. It should be remarked, however, that in the two westernmost bays of the choir, which are the earliest and finest parts of the structure as it now exists, the vaulting shafts are more compactly grouped, and are less heavy in effect. But in these bays the shafts of the longi-

[1] Cf. Quicherat, "L'Age de la Cathédrale de Laon," in his *Mélanges d'Archéologie et d'Histoire*, Paris, 1886, p. 147; and Viollet-le-Duc, s.v. *Cathédrale*.

tudinal ribs have capitals at the main impost level, as well as at the higher point.

The Cathedral of Bourges, constructed for the most part during the first quarter of the thirteenth century,[1] also has sexpartite vaulting with a peculiar system of supports. The piers are gigantic round columns reaching to the springing level. Embedded in the spandrels of the ground story and triforium arcades, they project beyond the surfaces of these last by something less than a quarter of their bulk. They do not differ in

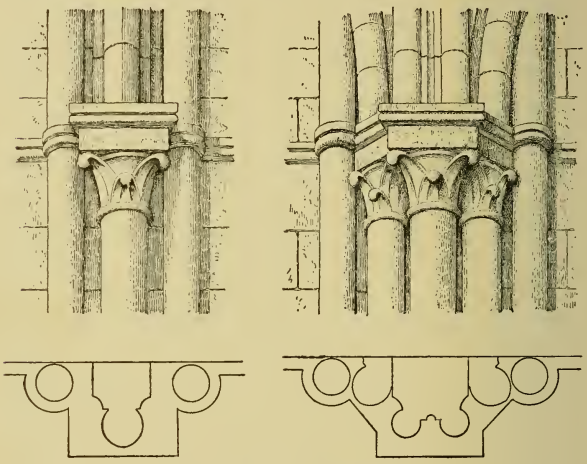


FIG. 50. — Imposts of Vaulting, Laon.

magnitude in obedience to the demands of the sexpartite form of vault, nor is there, on the ground story, any difference between the main piers and the intermediate piers as regards the number and arrangement of the engaged shafts incorporated with them. Above the imposts of the great arcades, however, the main piers are furnished with additional shafts inserted to support the diagonal ribs. The shafts do not differ in size in accordance with their varying functions, nor are they gathered, in the usual manner, into compact groups; they are separated by widely spaced intervals about the great cylindrical surfaces

[1] Cf. Viollet-le-Duc, s.v. *Cathédrale*, p. 294; and s.v. *Architecture*, p. 235.

ment, as at Meaux, and supports resting on the capitals of monocylindric columns, as at Paris, occurs. The eastern part of the choir, which has no aisles, is designed in the first manner,

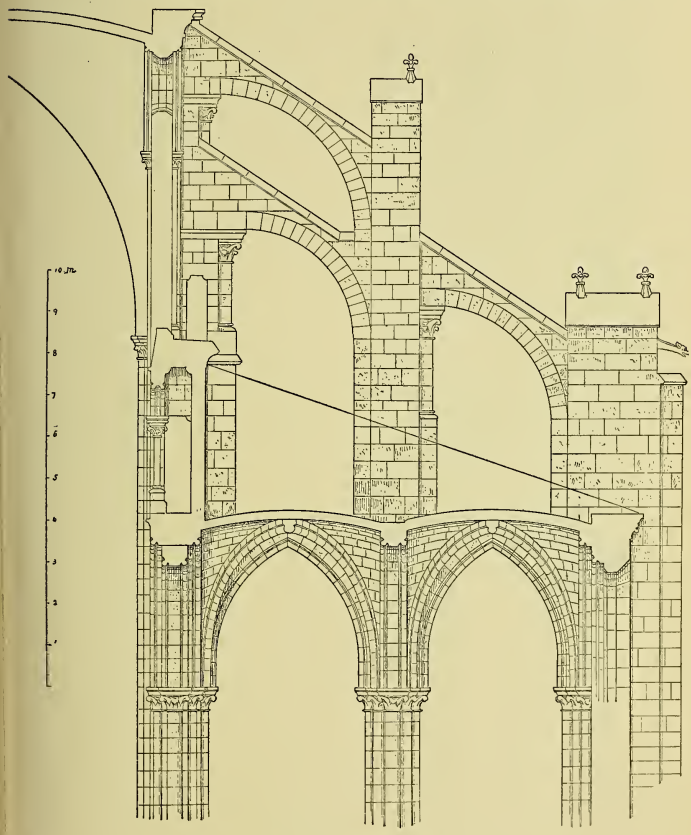


FIG. 51. — Section of System of Meaux.

while the piers which divide the two western bays, where short aisles occur, and two piers of the transept, are of the latter form. The choir and transept, having only very short aisles near the

crossing, do not require flying buttresses; but the nave, consisting of but two bays, has flying buttresses of early form, well adjusted to the thrusts of the vaulting. As in most monuments of the twelfth century, the clerestory and aisle openings are still comparatively small, and the enclosing walls yet retain much of the Romanesque solidity. But the Gothic skeleton is perfectly developed throughout, and the whole design is of that pure, and even severe, type which the finest work of the twelfth century rarely fails to exhibit.

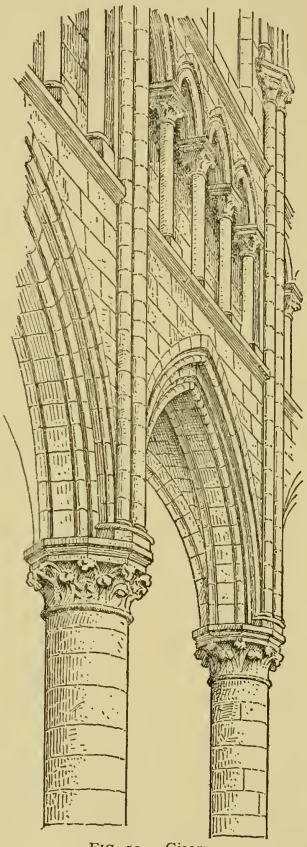


FIG. 52. — Gisors.

In the beautiful nave of Lisieux we have a quadripartite system, in which round columns occur exclusively on the ground story. The main vaulting shafts rest, as usual in this type of pier, on the capitals of these columns, while the shafts of the longitudinal ribs are brought down only to the triforium ledge. The small, but exquisite, choir of Gisors affords another example of the same general scheme carried out in a still purer style. This choir (Fig. 52) may, in fact, be taken as one of the finest existing monuments of the early Gothic style, in which the ground-story pier has not yet received its final organic development.

These various examples serve to show how great are the minor differences exhibited in the early Gothic buildings. No two of them have precisely the same arrangements of structural parts; yet they all manifest a substantial unity of purpose, and

defective in affording no independent supports from the pavement for the various members of the superstructure. Such a column did not partake of the organic composition that now characterized every other part of the structure. Its use implied a partial return to a radically different mode of building which had become obsolete. Attempts to improve it were made, and a new and strictly functional form was soon devised, a very early, perhaps the first, example of which may be studied in the nave of the Cathedral of Paris.

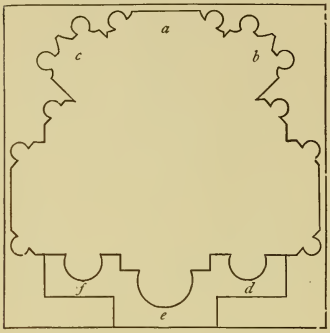


FIG. 53. — Impost of Choir, Paris.

The first step in the change appears to have been connected with a new adjustment to its load of the form of the abacus of the great capital of the round column, an adjustment rendered necessary by the employment of two arch orders in the great arcade, instead of one. In the choir of the same cathedral the arches of this arcade are of one order, on the choir side, and of two orders on the side of the aisle, as shown in the plan (Fig. 53). The transverse rib *a* of the aisle vault is so wide that the diagonals *b* and *c*, which are also rather wide, leave little of the abacus surface unoccupied on the aisle side; while the bases of the vaulting shafts *d*, *e*, *f*, on the opposite side, are so much spread out that the square abacus which carries this compound load fits it sufficiently well. But in the nave (Fig. 54), where the great

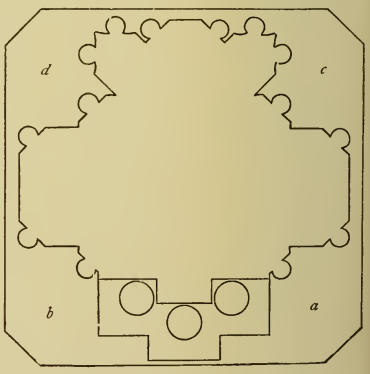


FIG. 54. — Impost of Nave, Paris.

arches are of two orders on both sides, and where the vaulting shafts and the ribs of the aisle vault are smaller and more compactly grouped, the square abacus is not so well fitted to its load. Large portions of its surface, *a*, *b*, *c*, and *d*, are left unoccupied, although its corners are cut off, in order, apparently, to diminish this useless surface. With this result the builders appear not to have been satisfied, and a better adjustment was soon reached as the result of a series of experimental changes, which finally gave the lower pier a more organic correspondence with the superstructure, and produced what may be regarded as the typical form of pier of the developed Gothic style. In this form of pier the vaulting shafts receive independent support from the pavement, and the logic of the transitional compound pier, in a measure lost by the use of the single column, is recovered, while the excessive bulk of the early form is avoided.

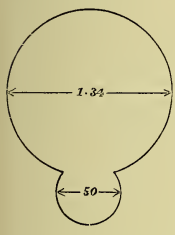


FIG. 55.

The first modification in the nave of Paris occurs in the sixth pier counting from the transept. Here a smaller shaft is incorporated with the great round column to carry the weight of the vaulting shafts (giving the section, Fig. 55), corresponding additions are made to the great capital and to the base, and larger portions are cut off from the corners of the abacus, as shown in the plan (Fig. 56). This was, however, but a partial improvement. It provided an independent support for the vaulting shafts of the high vaulting, but it left the archivolts and the ribs of the aisle vaulting without such supports. The added shaft could not be happily incorporated with the

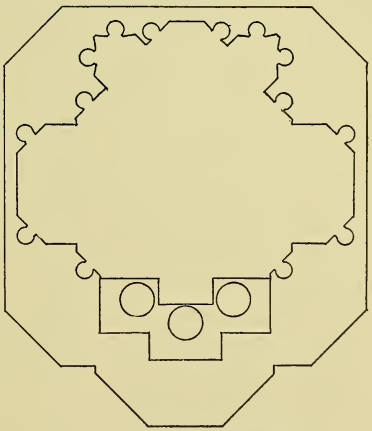


FIG. 56.— Impost of Sixth Pier, Paris.

original column, and the abacus is still ill adjusted to the load. These faults were immediately recognized. It was seen that if the vaulting shafts were to have separate support in the lower pier, the other members rising from it ought to be supported in like manner. Accordingly in the seventh and westernmost pier, this new idea was carried out, and an organic pier was produced which furnished the model that was thenceforth employed, with many variations of proportions and details, and which attained its highest perfection in the naves of Chartres, Amiens, and Reims. The section of this pier is shown in Fig. 57, its abacus surface with the plan of the imposed load in Fig. 58, and a perspective view taken from the opposite triforium in order to show as much as can be seen of the upper surface of the abacus and of the form of the load is given in Fig. 59. It will be seen from the plan that the abacus of the capital of the great central column is now circular, that the abaci of the capitals of the subordinate shafts are square in agreement with the sections of the sub-archivolts and the transverse rib of the aisle vault which they respectively support, and that the engaged column which supports the vaulting shafts has a segmental projection which forms a moulded band but not a proper capital, the reason being that no arch springs from it. The vaulting shafts which rise from it are crowned with capitals at the springing of the vaults. It will be observed that the plan

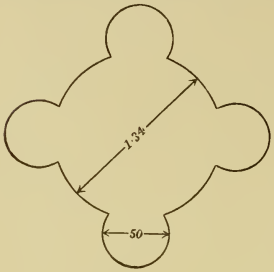


FIG. 57.

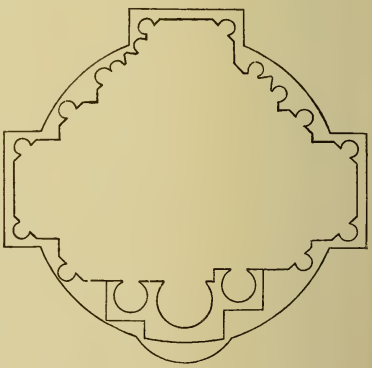


FIG. 58.— Impost of Seventh Pier, Paris.

of the impost is unsymmetrical, one of the lateral vaulting shafts advancing forward of the other. This is caused by the necessary thickening of the arcade spandrel on that side in order to reënforce the great piers of the western towers which adjoin

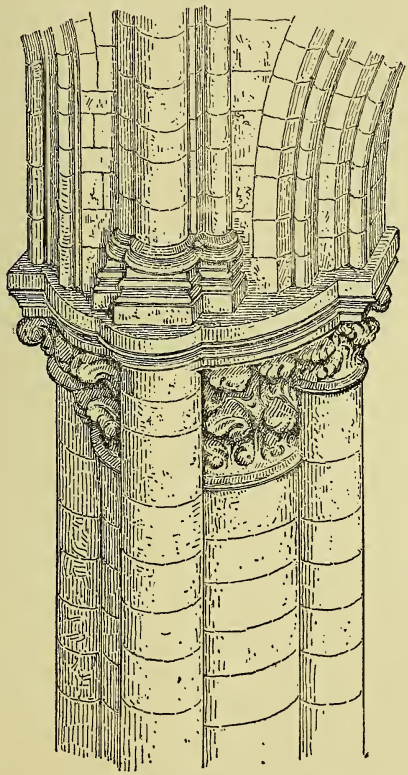


FIG. 59. — Impost of Seventh Pier, Nave of Paris.

this bay. The adjustment of this compound abacus to its load could hardly be improved. There is even less unoccupied space here than on the square abacus of the choir already examined. The form of the whole, as exhibited in the perspective

elevation, is admirable. The smaller capitals, proportionately diminished in height, are finely incorporated with the central capital, and the whole composition is remarkable for beauty and organic expression.

An exceptional form of pier occurs in one bay of the nave of the Cathedral of Laon. In this case a round column is reënforced by five detached monolithic shafts of great slenderness, one supporting each angle of the square abacus, and the fifth being placed under the vaulting shafts (as in the section, Fig. 60). But while by this arrangement the lower pier is materially strengthened, it cannot be considered a good form, for the reason that the corner shafts are not organically adjusted to the arch orders and vault ribs.[1] It was apparently not felt to be satisfactory, and it was not perpetuated, as it could not logically be, in the Gothic system.

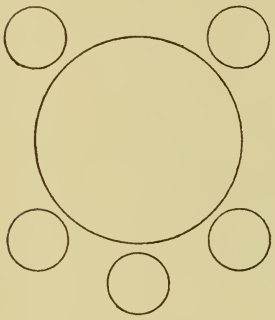


FIG. 60.

In the Cathedral of Soissons the idea embodied in the sixth pier of the nave of Paris is carried out systematically in the general scheme.[2] Here the engaged shaft, having been a part of the original design, and not, as in Paris, an afterthought, is better adjusted, and the whole system is harmonious and elegant (A, Fig. 61). The added shaft is more slender than in Paris. Instead of an independent abacus to its capital, the abacus of the great capital, which in this case is octagonal, is carried out so as to cover it. A glance at the illustration will show that the shaft is well adjusted to the superimposed vaulting shafts, and that the whole composition is a great improvement on that of Paris, represented at B in the same figure. The single engaged shaft, besides affording a visible support in the lower system for the high vaulting, has also the function of stiffening the pier in the direction of the inward thrust of

[1] Viollet-le-Duc, s.v. *Pilier*, p. 163, refers to this form of pier as a good one.

[2] This cathedral, which dates from the latter part of the twelfth and the beginning of the thirteenth centuries, is strikingly harmonious in total effect, and we shall have occasion to notice other features of it as we go on.

the aisle vaults. This single shaft occurs, also, in the apse of Reims,[1] while in that of the Cathedral of Troyes it is found together with another similar shaft on the opposite side of the pier, which carries the transverse rib of the aisle vault; and in the apse of Mantes the single shaft appears in connection with a slender coved pilaster incorporated with the cylindrical pier.

In the vaults and vaulting systems of the more advanced Gothic of the end of the twelfth and the early part of the

FIG. 61. — Pier of Soissons and Paris.

thirteenth centuries the continuity of support from the pavement upwards becomes constant, and though not every individual member of the superstructure has a support of its own from the foundation, there is always at least one shaft in the ground-story pier for each group of members above.

From the beginning of the thirteenth century the quadripartite vault, now rendered lighter than before, in its rib skel-

[1] M. Enlart, in an instructive paper entitled "Villard de Hounecourt et les Cisterciens," published in the *Bibliothèque de l'École des Chartes*, vol. lvi., 1895, cites two other instances, in Saint-Quentin and Vaucelles respectively.

tural exigencies involved would conclusively show, even if it were not proved by the fact that the same peculiarity is constant in France long before the clerestory opening is developed so as to fill the whole space beneath the vault. In fact, the

FIG. 62. — St. Leu d'Esserent.

opening occupies but a small portion of this space in all early Gothic buildings, as in Paris, Mantes, Laon, St. Leu d'Esserent, the Collegiate Church of St. Frambourg at Senlis, and many others. Figure 62, a perspective view of one bay of the clerestory

the compact pier, which is stiffened by the flying buttresses. It is therefore remarkable that so learned an authority as Sir Gilbert Scott should fail to perceive the meaning of the stilting of the clerestory arch, and should so far err as to affirm that it did not arise from any necessity, but was adopted merely to afford space for clerestory windows.

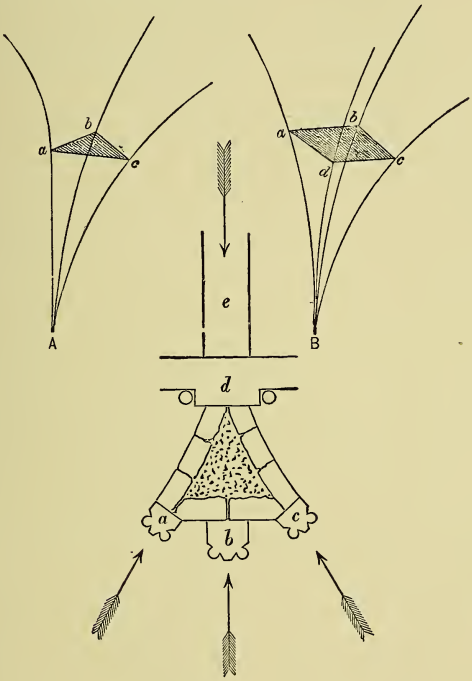


FIG. 63.

How far this form of clerestory was afterwards taken advantage of for larger openings, we shall see when we come to consider modes of enclosure. For the present we must confine our attention to the forms and adjustments of the vaults, the vaulting supports, and the general framework of the buildings in which the Gothic style was assuming its perfected forms.

tures, though the scheme is amplified and improved, and is carried out on a vastly grander scale. The general form of the vaulting is more pointed, the diagonal ribs, as well as the transverse ribs, having the pointed form, but the longitudinal

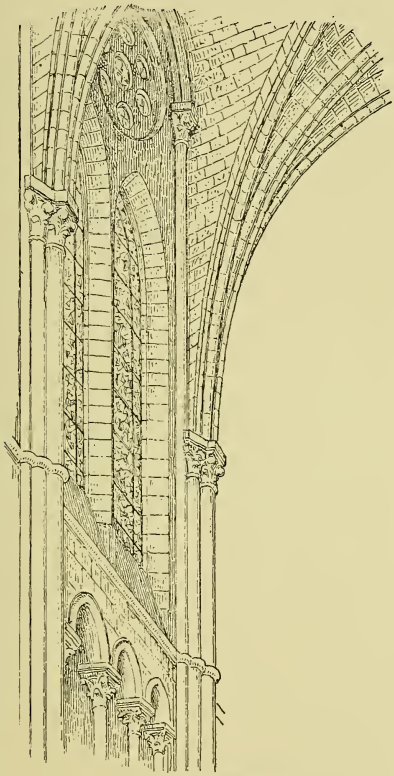


FIG. 64. — Chartres.

rib is round-arched, and its stilting is even more marked than in St. Leu, the springing (Fig. 64) being at more than half the vertical height of the vault.

The survival of this form of arch in the clerestory of a developed Gothic building affords an instructive illustration of

AMIENS CATHEDRAL
Begun in 1220.

France, being in height forty-two metres from the pavement to the crown of the vault, and in width nearly fifteen metres from

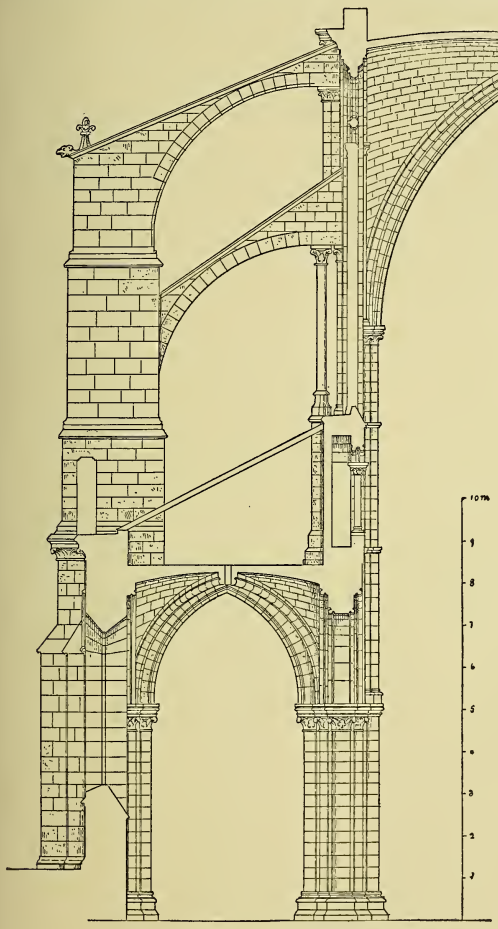


FIG. 65. — Section of System of St. Pierre, Chartres.

centre to centre of its piers, but its design is justly considered as the crowning glory of Gothic art; and it is a grand summing

up of the principles and constructive forms that had been gradually taking shape since the beginning of the twelfth century.

The concentration of the high vaulting upon the pier is here managed by adjusting the longitudinal rib in a manner somewhat different from that of the earlier constructions. The shaft of this rib (Fig. 66 and Plate 2) is not carried so high above the main impost as before, and hence it might at first glance appear that the stilting is slight. It will, however, be seen that a vertical line is maintained in the surface of the vault for a considerable distance above the head of the shaft. This is effected by allowing the rib to interpenetrate so that its extrados is not freed from the masonry of the vault shell until a point at more than half the vertical height of the vault is reached. By this means the thrusts are concentrated to the utmost, and all parts of the system are gathered into the smallest practicable compass. The main vaulting shaft is now, for the first time in piers of this type, a continuous member of the same diameter throughout, reaching from the pavement to the springing. The shafts of the diagonal ribs rest upon the great pier capitals as before, while those of the longitudinal ribs are brought down to the triforium ledge. This pier, taken as a whole, is a consummate achievement of Gothic art in which structural logic and beauty of design are joined to a degree that was hardly equalled in any other monument of the Middle Ages.

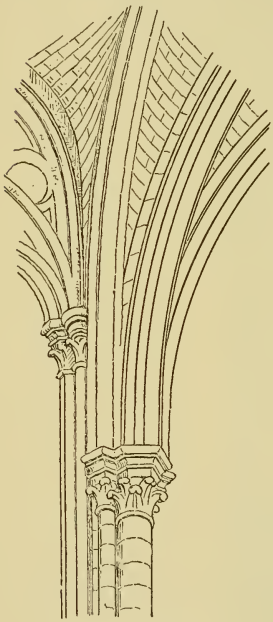


FIG. 66. — Amiens.

Throughout the system of Amiens the abaci of the capitals are everywhere admirably adjusted in shape to the sections of the ribs and archivolts which they carry; and as these sections were changed in form during the progress of the work, the

abaci of the upper portions are correspondingly different from those of the lower parts. On the ground story the archivolts and aisle-vault ribs, and consequently the abaci, have the square form that had prevailed until the close of the first quarter of the thirteenth century; while in the triforium and clerestory the sections of these members are modified so as to require abaci of various simple polygonal forms.

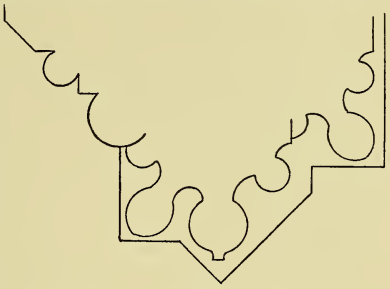


FIG. 67.

An interesting piece of structural logic occurs in the vaulting impost of the westernmost bay. In this bay the longitudinal rib is doubled for the sake of additional strength where the western towers join the nave. In consequence of this the shaft, which in the other bays carries the diagonal rib, has here to be given to the support of the extra rib; and the diagonal rib is added to the load of the great vaulting shaft which carries the transverse rib. In order to prepare the capital of this shaft to accommodate the additional rib, an angular projection is given to the abacus, producing an unsymmetrical form. This will be better understood from the impost plan (Fig. 67), and the perspective elevation (Fig. 68). Thus were the Gothic builders ever ready to admit any irregularities of form that structural exigencies demanded; and it is remarkable that they so managed these departures from regularity that they rarely failed to produce an harmonious total effect.

FIG. 68. — Amiens.

for instance, instead of being cylindrical has a somewhat elliptical section, with its longer axis at right angles to that of the building. The main vaulting shaft is more deeply embedded in this main body of the pier than are the archivolt shafts; while on the side of the aisle a broad pilaster with a group of three engaged shafts occur. The entire section (Fig. 69) gives a form that stiffens the pier[1] in the direction of the thrusts, which in a system of such extraordinary height might have caused deflection in piers of the usual shape. In the transept, however, the second pier from the crossing on each side is like the piers of Amiens, and very elegant in form. The elliptical form is not needed in this position because the pier comes between the more massive pier at the crossing and another massive one intended to support the tower with which the aisle of the transept was designed to terminate. These stronger piers take the main thrusts and relieve the one between them considerably. Thus we have here another interesting illustration of the logic of Gothic design in which uniformity of parts is unhesitatingly disregarded where structural necessity does not demand it. The piers of the apse have, as usual, no lateral shafts; but in front they have each a single slender shaft as at Soissons and Reims; while on the side of the aisle they are powerfully reënforced by three engaged shafts carrying the ribs of the aisle vaulting. Another noticeable feature of this system is the abacus of the great pier capital, which, instead of a square or octagonal form, has a broken plan which exactly corresponds with the impost section. These nice adjustments are managed in such a way as to show that the designer of this building was at once a sagacious constructor and a consummate artist. All those parts of the system which belong to the original fabric are remarkable alike

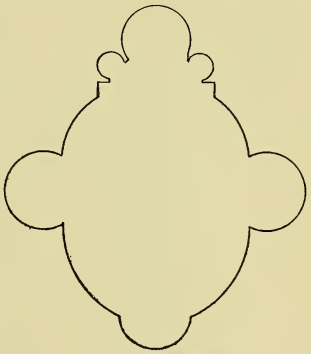


FIG. 69. — Beauvais.

[1] I refer to the main piers of the existing sexpartite system. These alone, in the straight part of the choir, belong to the original construction.

for mechanical fitness and for beauty of design. That so great a master should not have taken every precaution against imperfect execution, and should not have been content to work upon a safe and reasonable scale, is much to be regretted.

The aisle system of Beauvais is peculiar and worthy of notice. The vaulting is very acutely pointed, and the longitudinal rib (Fig. 70) is stilted in an unusual way. This rib has no supporting shaft, but is made to penetrate the diagonal rib just below its haunch; and as the longitudinal rib of an aisle compartment is not the narrowest arch in the vault (as it is in the clerestory), and as the diagonal is acutely pointed, the relation to each other of the curves of these two arches is such that no perceptible wind in the vault surface results.

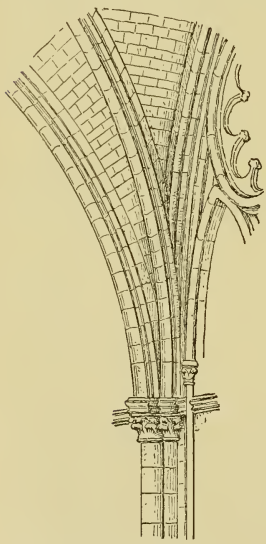


FIG. 70. — Beauvais.

We have now enough considered the leading types of forms and adjustments in the internal vaulting systems of the great French churches of the best epoch, and we may pass to the consideration of the forms of the external supports which complete the skeleton of the Gothic structure. We have seen (p. 78) that the builders of the choir of St.-Germer-de-Fly introduced an abutting arch against the piers of that early structure; but that this was placed beneath the aisle roof, and that it was thus both ineffective and invisible. It is impossible to say how soon after this the true Gothic flying buttress springing over the roof of the aisle was brought into existence; but one of the earliest remaining examples of this important and characteristic member of the Gothic system is that of the Church of St. Martin of Laon. The pier buttress (*a*, Fig. 71) is here a plain, square-edged mass of masonry reënforced by the flying buttress (*b*) which springs from the great buttress of the

aisle (*c*). The flying buttress is a plain half-arch heavily loaded with masonry brought up to a right line which slopes a little less steeply than the chord of the arc, and is covered by a flat coping. The massive lower buttress (*c*), which rises through the aisle roof, is prepared to receive the flying buttress by the set-off (*d*), and being carried over the transverse arch of the

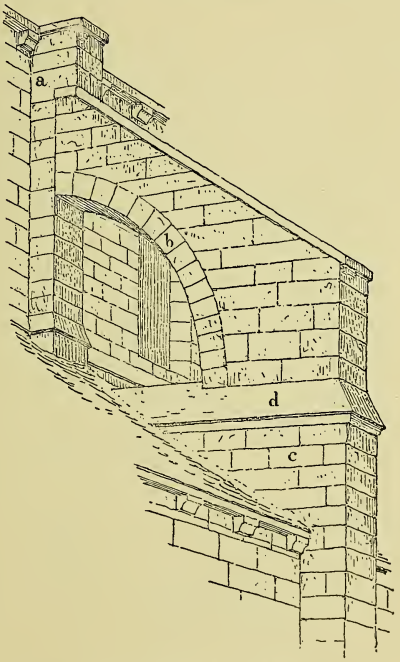


FIG. 71.—St. Martin, Laon.

aisle, it abuts against the pier at the springing of the vaults. The vaults are thus effectively braced above and below; but the construction is needlessly heavy. More lightness and elegance of form were attained in the nearly contemporaneous flying buttresses of the choir and apse of St. Germain-des-Prés (Fig. 43, p. 100). Here the intrados of the arch is bevelled on each edge, and the pier buttress has an engaged shaft with a

fine capital of the early type. This is perhaps the earliest instance of a shaft in this position, which became a constant feature of the developed Gothic. Flying buttresses of still lighter construction occur in the apse of St. Leu d'Esserent (Fig. 72), which dates apparently from about 1170. The pier buttress does not in this system rise above the head of

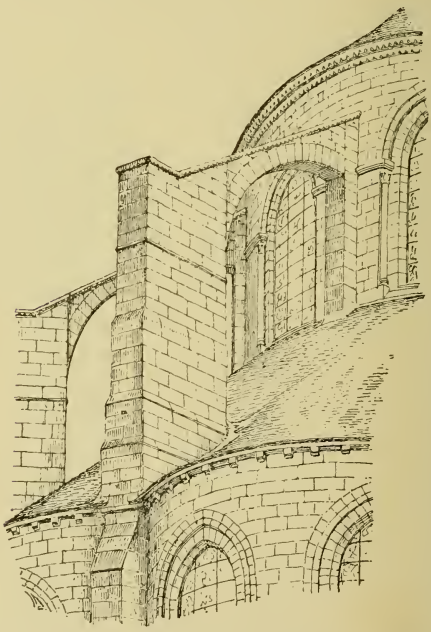


FIG. 72. — Apse of St. Leu d'Esserent.

the abutting arch. The curved wall of the apse presents, therefore, an unbroken surface above this level, while below it the arrangement is like that of St. Martin of Laon. The outer buttress has three set-offs and rises to a considerable height above the roof of the aisles before the arch, which penetrates its inner face, is sprung. The straight slope is not here continued to the outer face of the buttress, but in-

tersects the flat coping, with which the outer portion of this buttress is finished at a considerable distance within the edge. In this case no portion of a lower abutment is visible above the aisle roof.

Some improvements upon these forms are shown in the buttresses (Fig. 73) of the nave of the same building, which is a

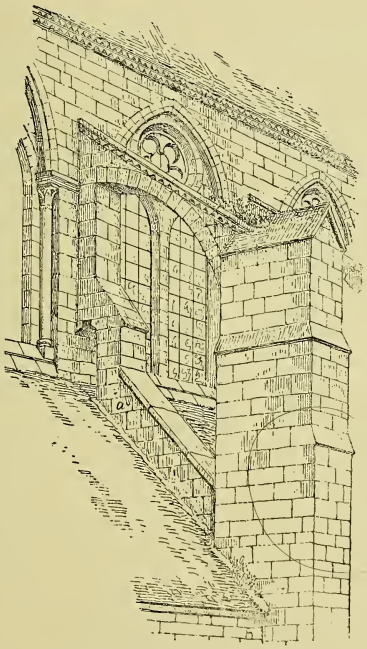


FIG. 73.— Nave of St. Leu d'Esserent.

little later in date. The buttress of the apse, by the number and depth of its set-offs, has a slightly sloping general outline, as if the builders had considered that this form gave increased efficiency. The same inward inclination of the outer face of the upright buttress occurs frequently, though not constantly, in other early buildings. It was found, however, that this was unnecessary; and accordingly the outer faces of these buttresses

considerably below this level, while its superimposed masonry reaches higher than in St. Leu; and instead of a shallow pier buttress reaching only as high as the arch, there is a vigorously salient one carried up to the top of the clerestory wall. The flying buttress is thus brought to bear upon a line (already in part fortified by a pier buttress) rather than upon a point. What is the form of the structure under the aisle roof, I do not know; but as this nave has a high vaulted triforium gallery, there is probably an abutment of some kind carried over its transverse arches to meet the pier at the springing of the vaults. It may be added that this buttress system has proved effectual. The vaults appear to have stood securely for more than six hundred years. The straight sloping back of the flying buttress, as well as the top of the upright buttress, here assumes the gabled form; and a small finial upon the gable marks perhaps the first attempt to render pleasing by ornament this important functional member. But while the flying buttress of Noyon is an improvement on those of the preceding form in offering resistance to the vault thrusts for a greater distance up and down the pier, it is not altogether an improvement architecturally. It has not the elegance of most other early Gothic buttresses. It is even heavier than that of St. Martin of Laon.

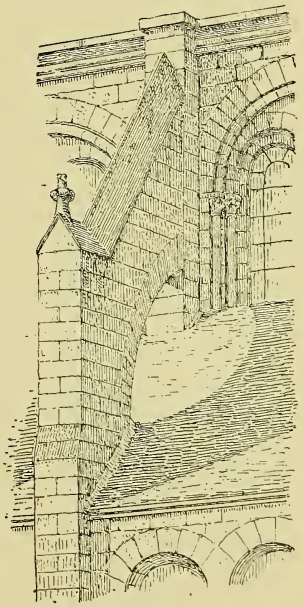


FIG. 74. — Nave of Noyon.

In the apse and choir of Soissons, which dates from about the beginning of the thirteenth century, still further improvements in the form of the flying buttress were made. Here (Fig. 75) two arches were established in the original design, and these

are so adjusted that the thrusts of the vaulting are completely met. The lower arch abuts against the springing, and the upper one meets the pressures of the haunches. Thenceforth the employment of two arches in the buttress system became practically constant. The top of the inner half of the great outer buttress here at Soissons is carried up above the back of the flying buttress, adding by its weight to the stability of the whole. The upper surfaces all have the gabled form, and over each gable end an elaborate finial is placed. The pier buttress has an engaged shaft with base and capital under each arch — as in the earlier instances of St.-Germain-des-Prés of Paris and St. Remi of Reims.

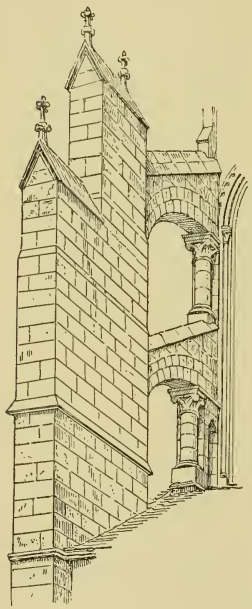


FIG. 75. — Apse of Soissons.

The magnificent buttress system of the Cathedral of Meaux, which is nearly contemporaneous with Soissons, has (Fig. 51, p. 121) the double form that is necessitated by the existence of double aisles — as in the original system of the Cathedral of Paris already described (p. 112). At Meaux the inner part of the system has two arches as at Soissons, while the outer part has but one arch.

Not long after were constructed the grand and unique flying buttresses of the Cathedral of Chartres, in which the two arches are connected by an elegant shafted arcade. These are at once powerful abutments and effective architectural features.

But the finest development of the flying buttress, in a single-aisled building, is that of the nave of the Cathedral of Amiens (Fig. 76); while the fullest expression of the Gothic spirit in this member as adjusted to a double-aisled construction is found in the choir and apse of Reims (Fig. 77).

The evolution and adjustment of the pinnacle, which is a

conspicuous feature in the developed style, was rapid after the advantage of weighting the top of the buttress was recognized. At Chartres, where the superimposed weight terminates in the form of a truncated pyramid on an oblong base instead of a gabled coping like that of Soissons, we get what appears to be one of the intermediate steps of this development. But at Chartres, as at Soissons, the weighting mass of masonry is placed over the inner portion of the buttress. It was, however, presently seen that it would be more effectual if placed farther out. Accordingly at Amiens it is set flush with the outer face of the buttress. Here the form was originally (as shown in Fig. 76)[1] that of an upright rectangular mass of masonry, ornamented on each face with a shafted arch and a richly sculptured cornice, crowned with a steep pyramid having crocketed angles, and terminating in a finial. The Gothic pinnacle here stands forth in its most monumental form, and in essential completeness. But the inventive faculties of the Gothic artists were fertile in variations upon this feature (in which, as in all other features of the system, constructive and ornamental functions are admirably combined), and among the grandest products of their inventive skill are the magnificent pinnacles of the apse of Reims (Fig. 77), which date from about the

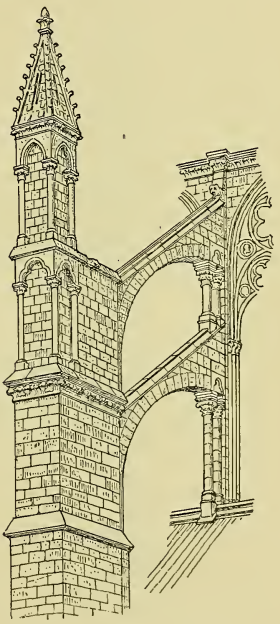


FIG. 76. — Nave of Amiens.

[1] The upper portions of the buttresses of the nave of Amiens have been remodelled in the Flamboyant style with exception of the one next to the transept, which retains its original character in all but the pinnacle. This pinnacle, though altered, is of an earlier and more simple type than the rest; and it seems to justify the restoration given by Viollet-le-Duc, s.v. *Cathédrale* (Fig. 20, p. 329), from which that of my illustration is taken. The rest of the illustration is drawn from a photograph.

middle of the thirteenth century. In the design of these the inner portion of the top of the buttress is capped with a gable, while the outer portion consists of an open shafted canopy, surmounted by a massive octagonal pyramid with four lesser pyramids covering the angles of the square base on which they rest. Thus were the forms of the external supports, no less than those

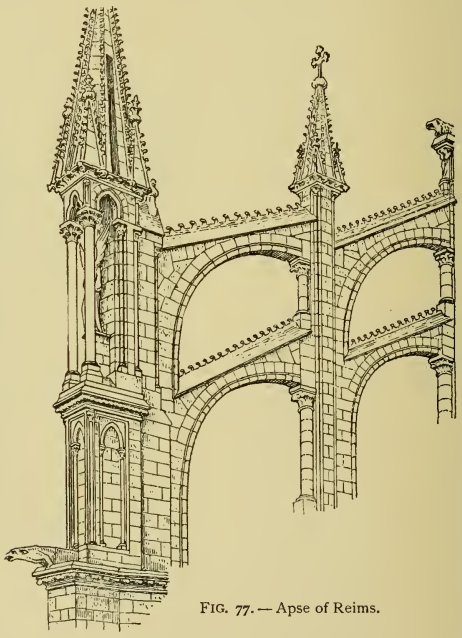


FIG. 77. — Apse of Reims.

of the interior, gradually developed as the structural exigencies of the system were more and more perfectly apprehended, and in such a manner that architectural beauty, as well as functional fitness, was ever secured. These hard-working abutments thus became at length the most strikingly ornamental features of the Gothic exterior, insomuch that their important mechanical office has been sometimes lost sight of. In French Gothic, however, after 1160 the stability of the structure is absolutely dependent upon them.

not readily perceive that this is really a building whose stability depends primarily not upon its walls, but upon its framework.

Early in the thirteenth century the original vaults of this nave, which had been completed towards the close of the preceding century, were damaged by fire and had to be repaired.[1] It would appear, indeed, that their lateral cells were wholly

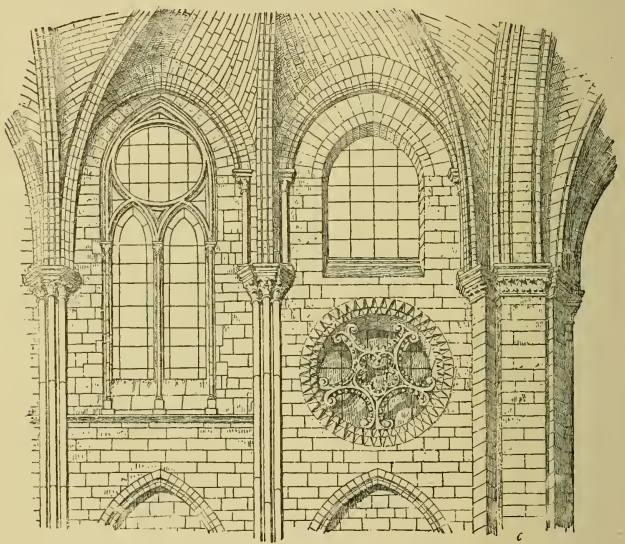


FIG. 78. — Clerestory, Nave of Paris.

reconstructed and somewhat changed in form; for the original longitudinal ribs, which remain in place, are considerably below the present vault surfaces[2] (as may be seen in Fig. 78). Con-

[1] Cf. Viollet-le-Duc, s.v. *Cathédrale*, p. 292.

[2] They are so in some, though not in all, of the bays. Indeed, great and very puzzling variations occur in the different bays of this clerestory. For instance, in the first five bays on the north side of the nave, counting from the transept, the original longitudinal ribs are surmounted by other arches, in each of which the extrados is more acutely pointed than the intrados, which follows the form of the original rib, — thus giving a more pointed shape to the vault cell. But the sixth, seventh, and eighth bays have their old ribs raised by stilting to the new level. In the sixth and seventh bays the outline of the window head is not concentric with its archivolt, but is rendered more pointed by a singular filling in between the tracery and the archivolt, — as in Fig. 79.

temporaneously with this repairing and remodelling of these nave vaults, great changes were making in other parts of the building, chiefly in the clerestory, in conformity with developments that had elsewhere taken place. Among these developments was the enlargement of apertures, and their subdivision by mullions and simple forms of tracery. The clerestory apertures of the nave of St. Leu d'Esserent (Fig. 80) show the first step in this direction — which consisted in the grouping of two pointed openings with a circular one under an enclosing pointed arch. The rudiments of this form of compound opening reach back to times anterior to those of all Western Romanesque art, though they rarely, if ever, occur in any variety of Western Romanesque. Adumbrations of it are found in the architecture of Central Syria as early as the sixth century — as in the Church of Qalb-Louzeh, where two round-arched openings are grouped with a circular one (Fig. 81), but without an embracing arch. In the later Byzantine style the same grouping frequently occurs with the addition of the embracing arch, as in Fig. 82, from a small church in Athens. In the transitional Gothic it first, perhaps, appears internally, as in the triforium of St. Germer (Oise), and later in the triforium of the nave of Noyon, — where a trefoil takes the place of the circle in the piercing of the tympanum. In the clerestory of Noyon two round-headed windows are placed side by side, while the tympanum above remains solid. But now a new and far-reaching development of these germ forms had begun, the progress of which was most rapid. In the openings of the clerestory of the nave of St. Leu, coupled pointed arches are surmounted by an open circle having a thinner plate, or panel, of stone pierced with a six-foiled opening. The plane of masonry pierced by the main openings is in retreat from the face of the clerestory wall, and a moulded and shafted arch flush with this wall throws the whole design into two orders. The scheme is very beautiful in its monumental simplicity. Similar openings, with more enriched archivolts, occur in the nearly contemporaneous clere-

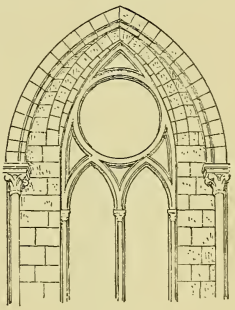


FIG. 79.

story of the choir of Soissons. In such examples we have the beginnings of the typical Gothic opening in which a large space is subdivided by mullions and tracery of graceful forms and elegant profiles; and in these members no less than in other parts of the Gothic building, constructive exigencies were, as we

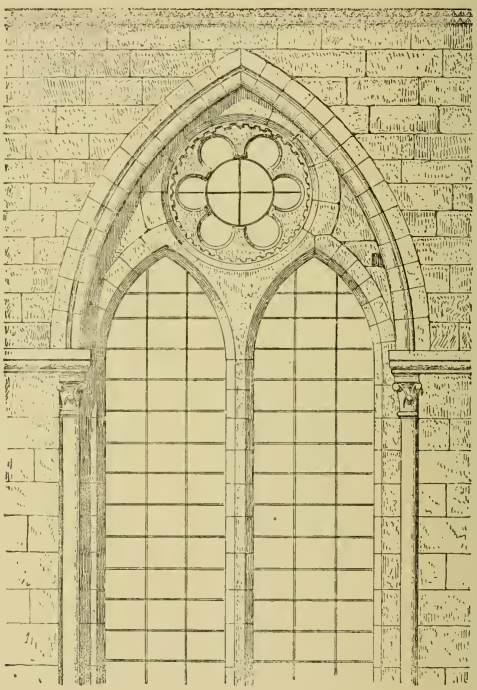


FIG. 80. — St. Leu d'Esserent.

shall presently see, the moving cause of change in the forms. Even the enlargement of the opening was due primarily to the nature of the construction rather than to any original desire for great size, though the value of magnitude was doubtless more and more appreciated as constructive development went on.

The apertures of the clerestories of St. Leu and of Soissons were followed almost immediately by those of the apsidal

chapels of the Cathedral of Reims (Fig. 83), which date from about 1212; and, though designed on the same general scheme, have an entirely new character. For here, instead of a solid tympanum with a circular piercing, we have the earliest form of tracery proper produced by building up an open framework of two pointed arches and a circle enclosing a sexfoil. Thus, instead of grouped openings, as at St. Leu and Soissons, we have a great single opening divided by slender bars of stone. These bars are not finished with flat surfaces, as if the openings were merely cut through the former plain tympanum, but are worked into agreeable forms, giving sections composed of rounds and hollows associated with fillets (Section *b*, Fig. 184, p. 335). The rounds or roll mouldings become shafts by the addition of bases and capitals on the jambs and mullions. Thus was the so-called plate tracery converted into true Gothic or bar tracery.[1]

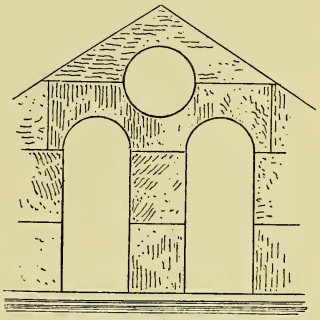


FIG. 81. — Qalb-Louzeh.

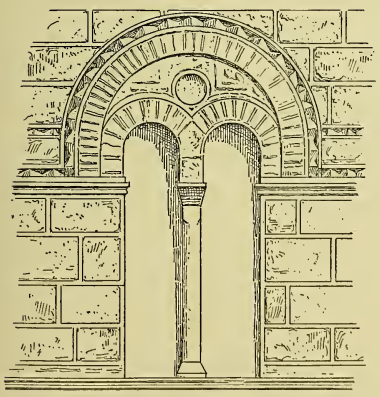


FIG. 82. — Byzantine Church in Athens.

The great change referred to above, which was wrought in the clerestory of Paris soon

[1] M. Demaison, in an instructive article entitled "Les Architectes de la Cathédrale de Reims," published in the *Bulletin Archéologique* for the year 1894, refers to the Abbey Church of Orbais as having openings like those of Reims of an earlier date. The Church of Orbais was begun, he finds, about A.D. 1200, and presumably by the same architect (Jean d'Orbais) who designed the earlier portions of Reims.

after its first completion, consisted mainly in substituting enlarged and divided openings, like those of the apse of

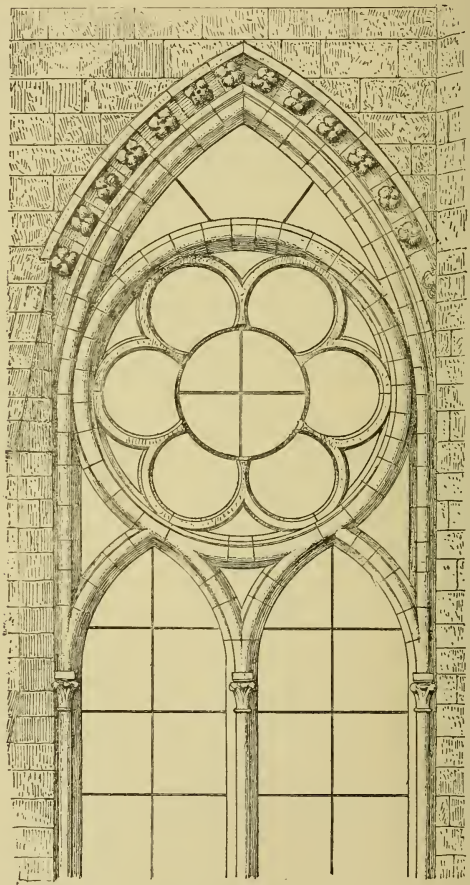


FIG. 83. — Apse of Reims.

Reims, for the smaller ones of the primitive design. But these new openings of Paris mark one further step in the

AMIENS CATHEDRAL.
Clerestory of Nave

the half-domed vault survives with the addition of salient ribs. But it is not a good adjustment, for the thrusts of these ribs are against the transverse rib at a point which is not strengthened by any abutting members. Where the transverse rib is very heavy, as in St. Germer and the small earlier churches to which ribbed apses are adjusted, the structure may be secure; but with the lighter ribs of the more advanced monuments it is less so. And whether actually secure or not, this mode of adjustment is objectionable, because it does not afford visible evidence of stability. In the apse of Noyon, which is perhaps the next earliest Gothic apse on a large scale now extant, we have a different arrangement in which effective abutment is secured. Here, as in St. Germer, the vault is divided into five cells, by ribs converging on the transverse rib of the first bay of the choir, but they are met by two abutting ribs rising from the opposite direction. In order to effect this abutment the first rectangular vault of the choir is made tripartite. That is, instead of the usual diagonal ribs of such a vault, which would intersect in the centre of the

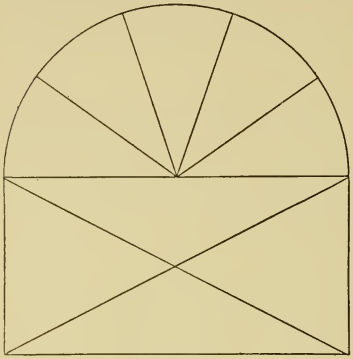


FIG. 84. — St. Germer-de-Fly.

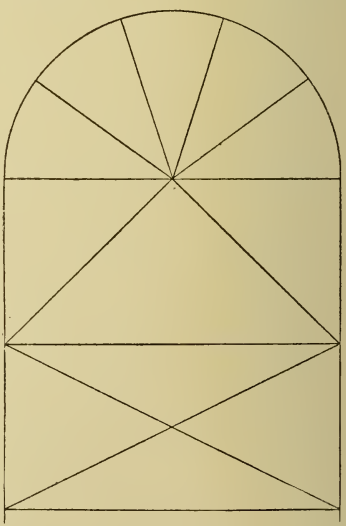


FIG. 85. — Noyon.

compartment, oblique ribs are sprung from the western piers only, and are brought to bear on the crown of the eastern transverse rib (Fig. 85). A similar arrangement occurs in the Church of St. Leu d'Esserent and in the cathedrals of Auxerre and Rouen.

The vast and majestic apse of the Cathedral of Paris followed soon after that of Noyon; and it furnishes another type of structure in respect to the relationship between the vault of the apse and the vaulting of the choir. The apsidal vault of Paris is, like that of Noyon, in five cells, with its ribs intersecting in the same manner on the first transverse rib, and abutted as before by ribs in the adjoining rectangular bay brought to bear against their thrusts. But in this case the arrangement is a natural one, which it is not in Noyon. For in Noyon the system of vaulting in the choir is quadripartite, and hence the ribs of the vault adjoining the apse could not naturally furnish an abutment for those of the apse. In order to effect the abutment this vault had to be made tripartite — architectural uniformity being sacrificed, in a truly Gothic spirit, to constructive exigency. But in Paris (Fig. 86) the vaulting is sexpartite, and the plan is so arranged that the apsidal vault joins the half of a sexpartite compartment at the intermediate transverse rib. This half-vault is naturally tripartite, and so its ribs intersect at the point on which the apsidal ribs meet, and the needed abutment is secured. The same arrangement occurs at Sens and at Bourges; and for a sexpartite system no better arrangement could be devised.

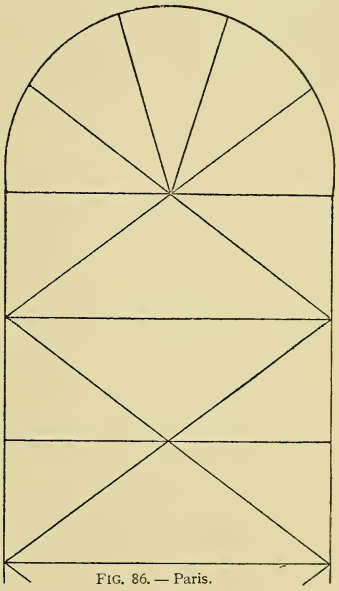


FIG. 86. — Paris.

But for quadripartite vaulting, as at Noyon, this arrangement, though logical and effectual in point of construction, is not a good one, because it needlessly breaks up the uniformity of the choir vaults. The marked disparity which it occasions between the easternmost compartment of the vaulting and the other compartments was a defect which the builders were not slow to correct. A better adjustment of the apsidal ribs joining a quadripartite system was developed at Chartres (Fig. 87) and afterwards perfected at Amiens. It will be seen that at Noyon (Fig. 85) the plan of the apse is about semicircular,

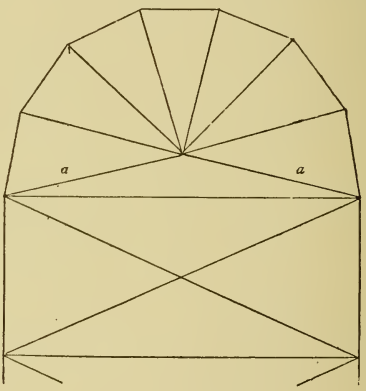


FIG. 87. — Chartres.

so that the ribs of its vault are of equal length, being radii, and thus naturally meet on the crown of the transverse rib which is at the centre. At Paris (Fig. 86) the form of the apse is an arc of more than a half-circle, hence its centre is eastward of the crown of the transverse rib. Nevertheless the apsidal ribs meet, as before, on that crown. In order to effect this they have to be lengthened, and are necessarily of unequal length. At Chartres the plan of the apse is a polygon set out on about a half-circle, and thus the crown of the transverse rib is near the centre of the curve; but the apsidal ribs are not brought forward to this point, they are made to intersect on a point considerably eastward of the centre. This is done in order to allow place for two additional ribs which

spring from the piers that carry the transverse rib and, converging on the point where the other ribs meet, effectually meet their thrusts. By this means the stability of the vault of the apse is rendered independent of the vaulting of the choir. The awkward expedient of constructing a tripartite vault for the sake of abutment was thus no longer necessary; and the vaulting of the choir could henceforth be uniformly quadripartite. The introduction of the two additional ribs gave the apsidal vault eight, instead of five, cells; and the plan of the apse thus

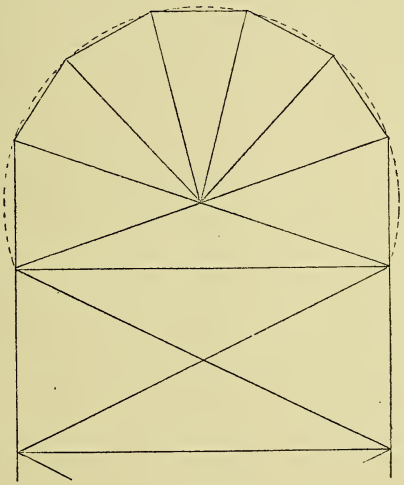


FIG. 88. — Amiens.

became a polygon of seven sides. This was a great improvement, but a completely satisfactory form of apsidal vault was not yet reached. For the placing of the point of intersection backward of the centre still necessitated an awkward inequality in the lengths of the ribs. A final solution of the difficulties, in this part of apsidal vault construction, which had embarrassed the earlier builders was reached at Amiens. In the plan (Fig. 88) of this great apse, the polygon is set out on an arc of more than a half-circle, and thus room is gained for the abutting ribs without removing the point of intersection from the centre. These ribs, and all the other ribs of the vault, are radii of the arc; and

necessitating those of the exterior; and that the Gothic expression is given to the exterior by the large structural features, while as yet no corresponding modification of lesser details takes place (Figs. 89 and 90).

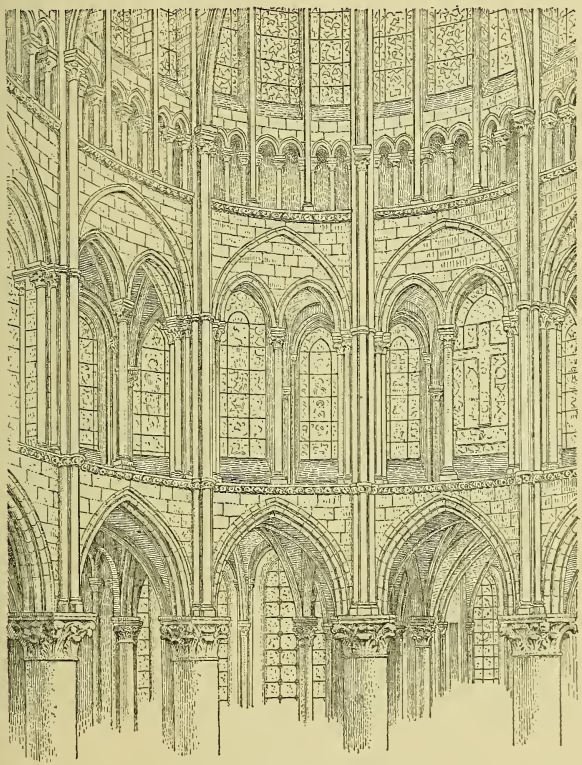


FIG. 89. — St. Remi, Reims.

We have seen (pp. 62, 71) that the vaulting of the apsidal aisle presented difficulties which had embarrassed the early constructors. These difficulties, which grew out of the curved trapezoidal forms of the compartments to be vaulted, were at

length, as we have also seen, wholly conquered in the apse of St. Denis. In addition to what has been thus far shown concerning such vaults, one or two further illustrations of the flexibility of the Gothic system may be given here. In the Cathedral of Paris the double aisles are continued around the apse, and the trapezoidal vault compartments of the inner and outer aisles

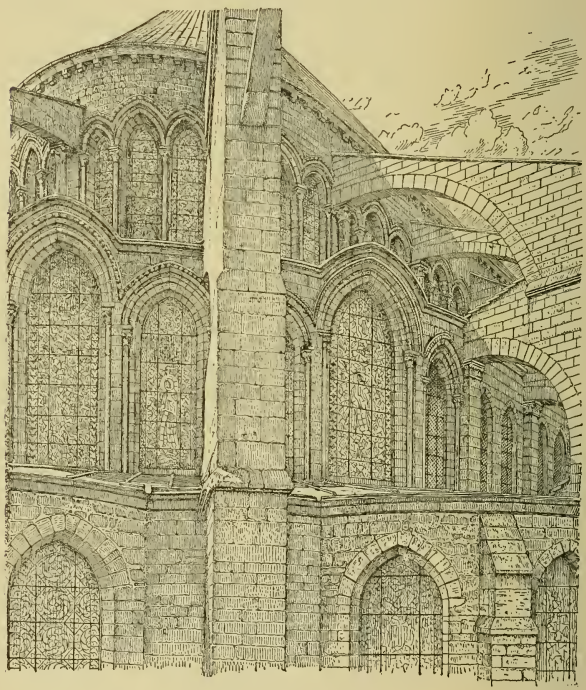


FIG. 90. — St. Remi, Reims.

thus adjoin each other concentrically (Fig. 91). This gives a great length to the side A of the outer compartment which, on the usual method of vaulting such compartments, would have proved awkward to manage on account of the excessive height to which a single arch would reach. To avoid the necessity of such an arch, the architect of this apse adopted a novel and

ingenious method whereby all of the arches of the curved sides of the vaulting are rendered of nearly equal span. This result is obtained by dividing the longest side of the inner compartment into two parts by the introduction of a pier B, and the longest side A of the outer compartment into three parts by the introduction of two supports at the points A′. No intersecting diagonals are employed in the vault, but in place of them ribs are sprung from the piers C to the pier B; and from the piers BB′ to the piers A′, thus dividing the inner compartment into three, and the outer compartment into five, triangular

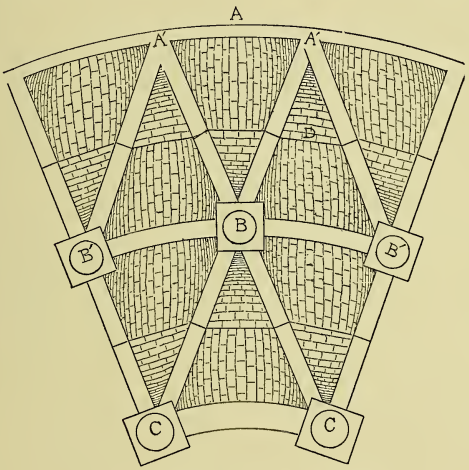


FIG. 91. — Paris, Vaults of Apsidal Aisle.

cells of nearly equal magnitude. These cells are then vaulted over in the following manner: starting from the angle A′ of the cell BA′B′, arched courses of masonry are carried across from rib to rib until the crowns of these ribs are reached in the line D, then starting at the angles BB′ similar courses are sprung, in a direction perpendicular to the first, from the rib BB′ to the diagonals B′A′, A′B′, until the crowns of these diagonals are reached, after which they abut against the line D of the first system, and thus fill in the triangle. Every part of each cell is sensibly domical; and the irregularities of surface, resulting

The plans of nearly all large French churches include transepts. Bourges, among cathedrals of the first magnitude, is exceptional in having none. In the Romanesque and in early Gothic churches the transept, though often largely developed,

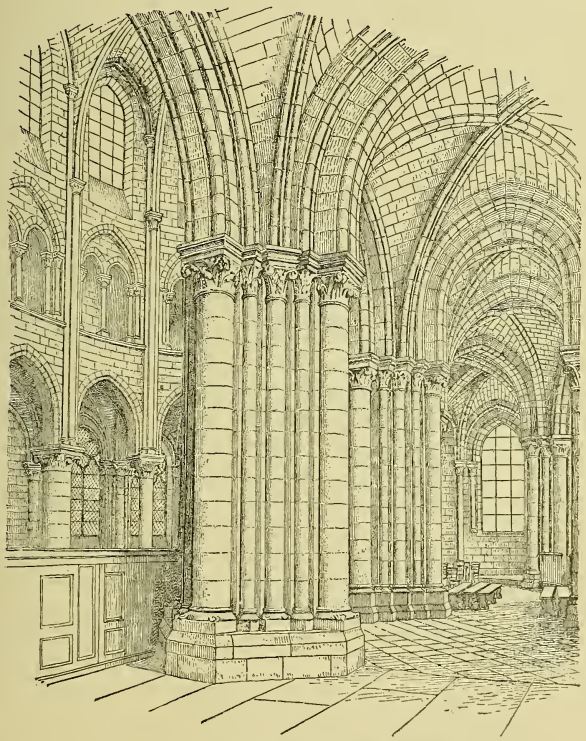


FIG. 92. — Apsidal Aisle of St. Leu d'Esserent.

is generally near the east end. But in the developed Gothic style the choir is greatly extended in length, and the transept is thus brought forward toward the west end. The forms and arrangements of transepts are very various. In some large buildings, as in the Cathedral of Paris, the transept is of slight projection. In others, as in Noyon and Laon, it is more de-

Romanesque period. An interesting instance of an early Romanesque façade with such towers is afforded in the Abbaye-aux-Hommes at Caen (Fig. 94). The towers are here marked by vigorous pilaster buttresses of two orders, which rise without set-offs to the level of the horizontal cornice, above which they are carried up, without buttresses, three stories higher.[1] The façade is in three stories, marked, between the buttresses, by

FIG. 93. — Champagne (Seine et Oise).

plain string-courses. In the ground story three round-arched portals of moderate dimensions, each of three orders, open into the nave and aisles respectively. In the central bay three round-arched windows of two orders occur in each of the upper stories; and a single one of the same kind opens through the wall of each of the upper stories of each tower bay. A low gable over the central bay, with a diminutive arched opening in

[1] These towers are now crowned by Gothic spires of the thirteenth century. The original tower roofs must have been in the form of low square pyramids.

its face, completes a design which, though well composed, is simple even to baldness.

The development of the façade was less rapid than that of other parts of the building, and it was not until the end of the twelfth century that the Gothic impress was distinctly set upon it.

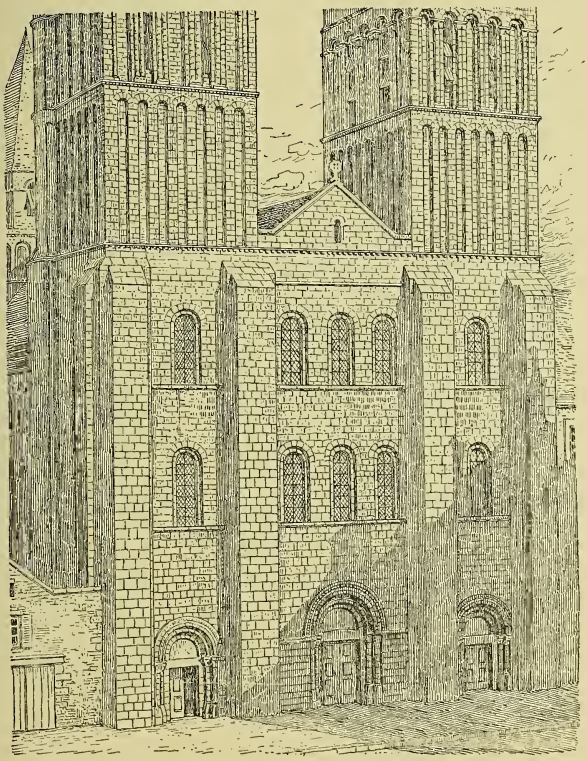


FIG. 94. — Abbaye-aux-Hommes, Caen.

The germs of the Gothic front are, however, plainly visible in the Church of St. Denis, where the larger dimensions of the deeply recessed portals, the presence of the pointed arch in some of the openings, the large wheel window, and the sculptured enrichments constitute a wide departure from Romanesque design.

A further approach to the Gothic type is found in the façade of the Cathedral of Senlis (Fig. 95), which dates from the second half of the twelfth century. Although in its main elements it is almost the same as the front of the Abbaye-aux-

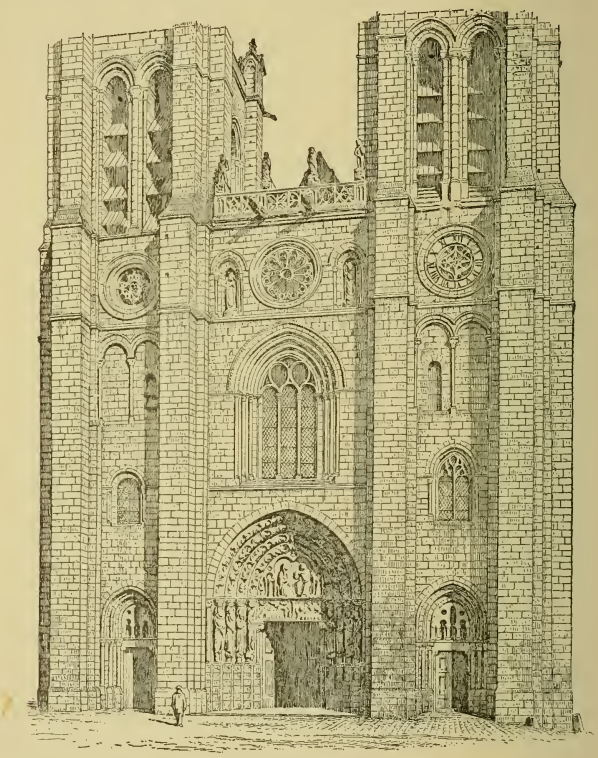


FIG. 95. — Senlis.

Hommes, its features are richer, and it has a new expression which bespeaks the vigorous Gothic genius. Here similar square-edged tower buttresses of two orders divide the front into three bays. The central bay is divided into three stories by simply moulded string-courses, the upper one of which

breaks around the towers and their buttresses. On the ground story the whole width of this bay is occupied by a splendid recessed portal of five orders with pointed arches. This is, perhaps, the earliest of those unparalleled portals which became such magnificent features of the developed French Gothic. Over this portal is a great pointed arched opening of four orders, which must, it would seem, originally have included some simple dividing members, but whose present shafts and tracery cannot belong to the original design. In the third story is a small circular opening of three orders, also filled with tracery of a later date, and on either side of it a pointed niche of two orders with a statue in each. A smaller pointed door-

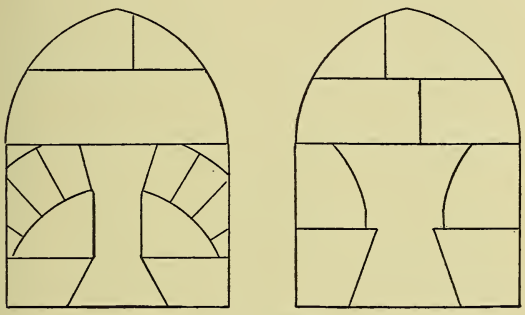
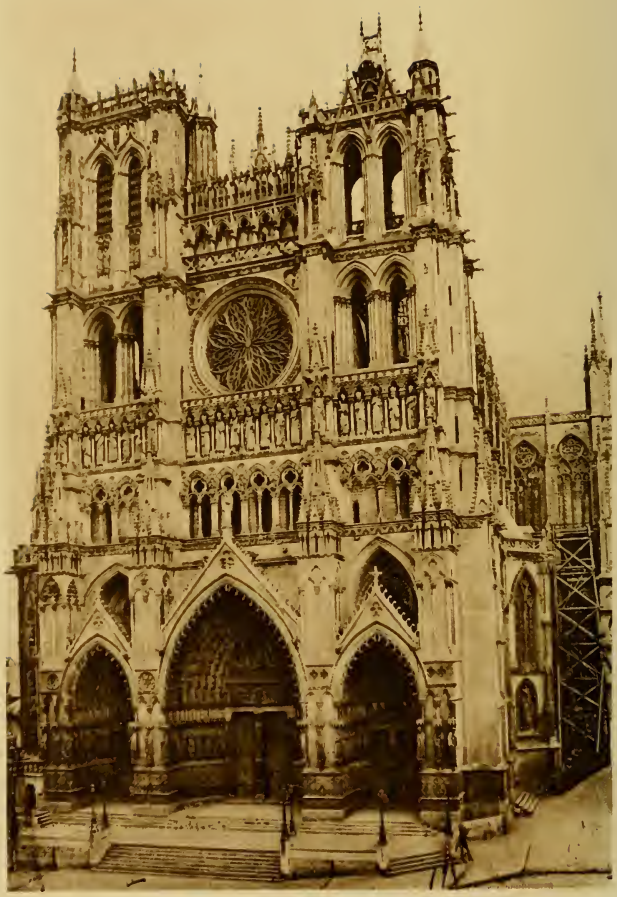


FIG. 96. — Senlis.

way of four orders, with a stilted arch and a pierced tympanum of curious design, opens through the ground story of each lateral bay. The tympanums are in two planes — the inner one being solid; and the jointing of the masonry (Fig. 96) exhibits, in each, a curious and ingenious method of supporting the lintel. The opening next above the portal in the south tower bay is of two orders, with pointed arches, while the corresponding place in the north bay is occupied by a smaller window having a round arch. Above each of these openings the wall is embellished by an obtusely pointed blind arcade of two arches on slender shafts, and over these again, a small circular opening in each bay on the level of the circle of the central bay. One of these is now filled with a clock dial, and the other has tracery of a late pattern. The

PARIS CATHEDRAL
Façade begun in 1205



AMIENS.
Thirteenth Century.

about the middle of the eleventh century. In Normandy more acutely pointed pyramids occur, dating from an early period; but they are still on a square base, as at St. Contest (Calvados), where a small round-arched dormer, surmounted by a gable, breaks each side near the base (Fig. 98). In the Ile-de-France, however, the true spire, which is octagonal in form, surmounts the square tower early in the twelfth century, as in the small churches of St. Vaast de Longmont, Chamant (near Senlis), St. Leu d'Esserent, and others. Of these Chamant (Fig. 99), if it be in reality as early as it appears, is especially interesting because it exhibits features which were afterwards magnificently amplified in the unique spire of the Cathedral of Senlis. These features are: acutely gabled dormers with pierced tympanums, one on each of the four faces of the octagon that are even with the tower walls, and small openings above in each of the eight faces. Few, if any, spires of earlier date than these had been constructed; and from such simple types the progress was surprisingly rapid. Innovations, which were generally improvements, quickly followed each other until the typical Gothic spire was produced. There were difficulties, too, of no small magnitude to be overcome. To manage the transition from the square plan of the tower to the octagonal plan of the spire, so as to secure both stability and beauty, was not an easy task at a time when there were no precedents to guide the constructors. Thus these early spires, when regarded as experiments in untried forms of design and construction, may well call forth our admiration; though when compared with subsequent achievements, we recognize the points in which they fail.

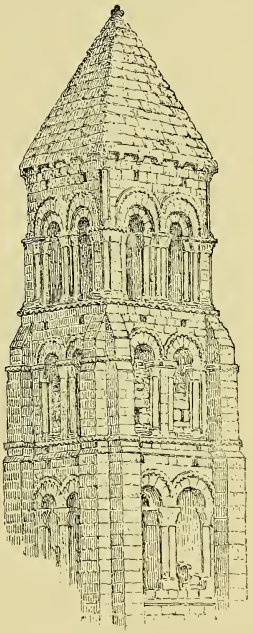


FIG. 97. — Morienval.

The adjustment in Chamant of the octagon to the square is but partially successful as an architectural design. The transition is too abrupt. The upper story of the tower is not well prepared to carry a spire; there is a lack of organic connection between the two parts.

Great improvements were made in the tower and spire of the Abbey Church of the Trinity at Vendôme (Loir-et-Cher). The angle buttresses are here carried up to the cornice of the belfry story with which the square tower terminates, and between this and the spire a tall vertical octagon story is interposed. Open circular turrets with pointed conical roofs cover the angles of the square belfry, and a pointed opening of two shafted orders surmounted with a gable adorns each cardinal face of the vertical octagon. This octagon is crowned with a bracketed cornice from which the spire rises without any subordinate structural or ornamental features. The tall polygonal drum and its engaged turrets form an elegant and aspiring group, but the junction of the spire with the octagon is not as well managed as it might be. The unbroken level line of this junction is not in harmony with the soaring spirit that was seeking expression. Still greater improvements were, however, very soon made, and the typical Gothic spire was brought into existence at one further stride, in the Cathedral of Chartres. The south tower and spire of this monument (Fig. 100) were constructed between 1140 and 1160. In this case the polygonal drum has a square turret, with a shafted opening in front and a steep pyramidal roof, set over each of the tower angles against each oblique face of the drum. These turrets, rising directly over the buttresses of the substructure, continue their vertical lines and thus happily unite the drum with the tower. A pointed arched opening

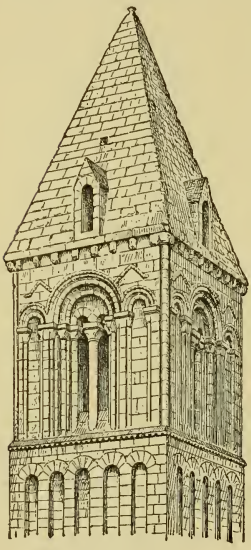
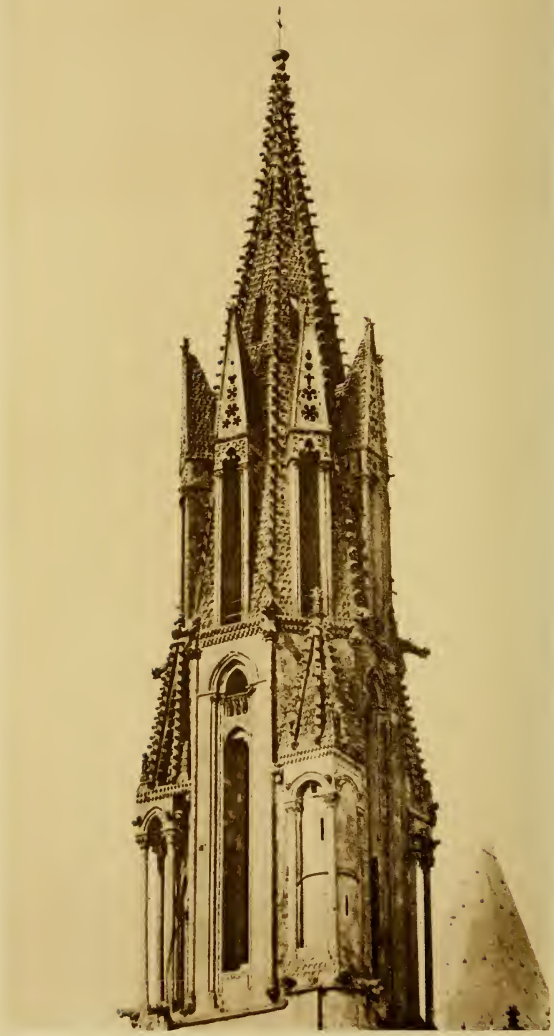


FIG. 98. — St. Contest.



SPIRE OF SENLIS.
Middle of thirteenth Century.

in each cardinal face of the drum is surmounted by a high and steep gable, which rises through the drum cornice and abuts against the base of the spire. The apexes of the pyramids of the angle turrets likewise rise above the cornice of the drum, and thus the level line, which is so marked in Vendôme, is broken up, and the composition as a whole has an organic and aspiring expression. As in the spire of Vendôme, coursed three-quarter rounds adorn the angles, and a similar moulding is carried up the middle of each face. The spire of Chartres has a monumental nobility and purity of style that are hardly equalled in any other Gothic spire of the twelfth century.

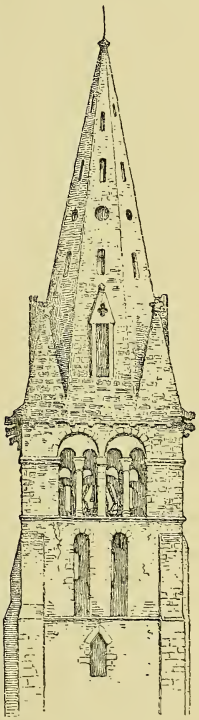


FIG. 99. — Chamant.

The small Church of Vernouillet (Seine-et-Oise) has over the crossing a spire of great beauty, dating apparently from the latter part of the twelfth century. In this composition the octagonal drum is omitted,[1] but the development of the pinnacles and gabled dormers, and the manner of their grouping in relation to the main body of the spire, indicate advanced powers of design. Elegant open shafted canopies of square plan here support the pinnacles of the tower angles, and are set even with the tower walls, while shafted dormers, with steep gables, rise against the cardinal faces of the spire. The lines are all well carried up — those of the tower buttresses being continued by the shafts of the pinnacles; while the inclined lines of the crowning members lead the eye in the direction of the spire itself, which rises through the subordinate group with admirable effect.

The spire of the Cathedral of Senlis (Plate VI), erected early

[1] Though the octagonal drum is omitted from the design of the exterior of the spire of Vernouillet, it nevertheless exists inside, as shown by Viollet-le-Duc, s.v. *Clocher*, p. 327.

in the thirteenth century, marks the culmination of pure Gothic art in this feature. In point of organic design it possesses all of the merits of the spires of Chartres and Vernouillet, while for grace of outline, soaring expression, and beauty of details it is unequalled by any other spire of the Middle Ages. In this case the octagonal drum is much taller than at Chartres, as are the proportions of all other parts of the structure. The pinnacles over the angle buttresses are here, as at Vernouillet, set even with the tower walls, and consist of three slender shafts which reach to about one-half the height of the drum, and carry pointed arches surmounted by acute skeleton pyramids richly crocketed. The axes of these pyramids are not vertical, but are inclined inwards against the oblique faces of the octagon. Their outlines thus lead the eye up to the inclined lines of the spire, and their apexes rise above the drum cornice high enough to break up its horizontal line. A tall, pointed, arched opening pierces each cardinal face of the drum, and a dormer of slender proportions, with an acute pierced gable and rich, though not over-elaborate, design, is set against each face of the spire, which is pierced on each side, above the dormers, with two narrow rectangular openings and a circle between them. Slender engaged shafts rise against the angles of the drum, and crockets adorn the angles of the spire.

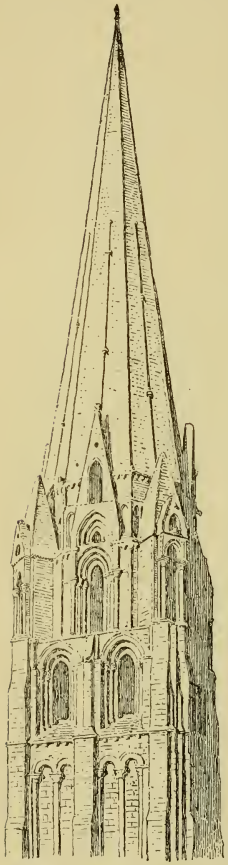
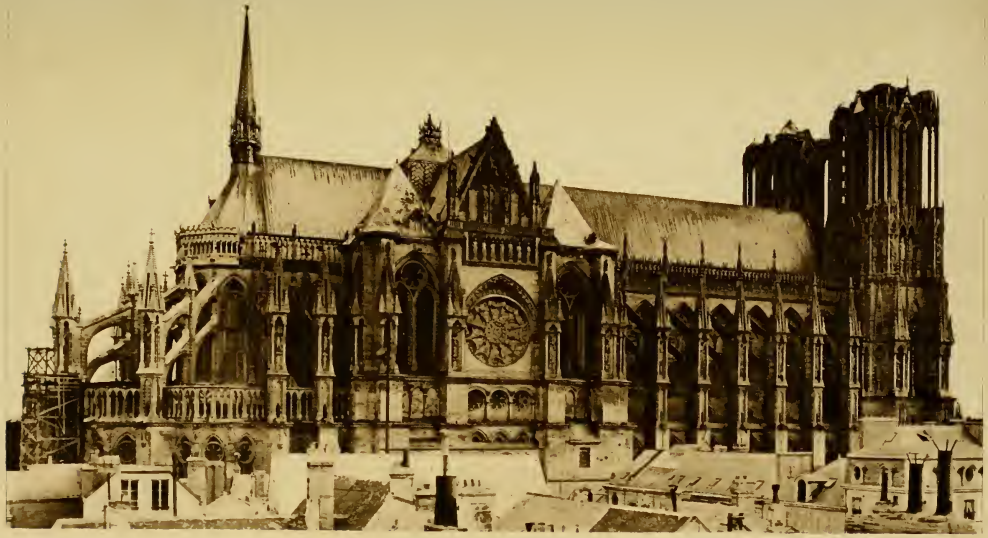


FIG. 100. — Chartres.

In these spires the oblique walls of the octagon are sustained by squinches in the reëntrant angles of the tower; and these, with the loads they carry, help to consolidate the fabric,

SAINT-LEU-D'ESSERENT.
Second half of twelfth Century.



REIMS CATHEDRAL.
Thirteenth Century

by their being banded by the original triforium string. But if vaulting to correspond with these shafts was ever carried out, it was afterwards destroyed. The existing vaults of the nave are of late English construction, and of a character that does not harmonize with the earlier parts of the building. The heavy Norman triforium has a feature that is uncommon in England, though it is constant in the French Gothic; namely, a wall within the arcade screening off the space over the aisle

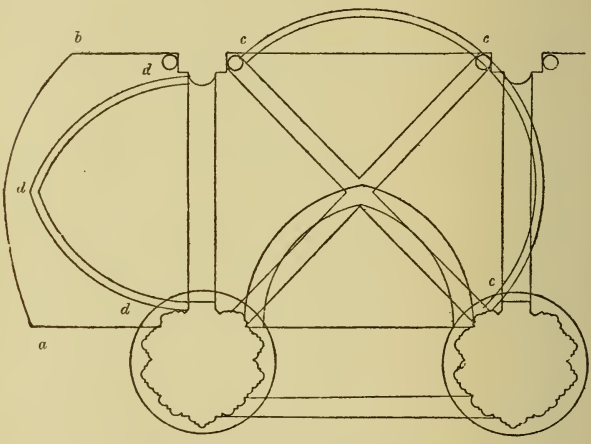


FIG. 101. — Vault of Aisle, Malmesbury Abbey.

vaulting. In the pointed architecture of England the triforium is usually open, exposing to view the timber roof of the aisle.[1]

With such approach to transitional Gothic character as it has, Malmesbury Abbey is, in England, an isolated work of its kind. No earlier buildings seem to have led up to it, and no further developments grew out of it. It is not, therefore, like St. Denis of France, a link in a continuous chain of structural progress. It is apparently a partial imitation by the Norman builders of the new mode of vaulting that was developing in France. The Norman elements remain largely unchanged — even in the interior system — which is not organically fashioned

[1] See p. 208.

throughout. Let us give its Anglo-Norman builders all the credit that is due for an early attempt to follow in the path that had been opened across the channel; but we cannot fail to see that they were not really imbued with the spirit, and governed by the principles, that were transforming the architecture of the Ile-de-France.

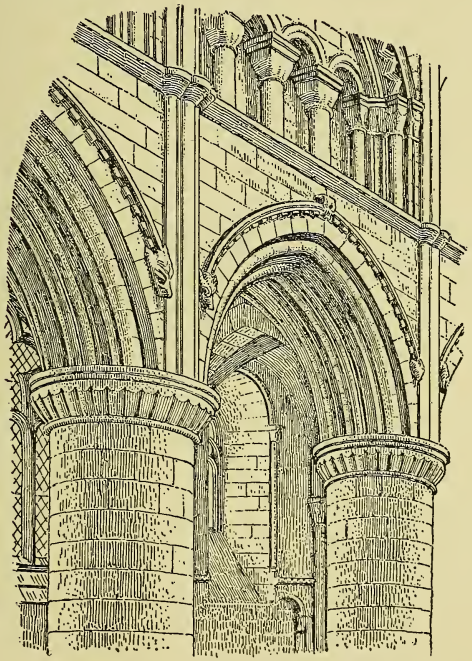


FIG. 102. — System of Malmesbury Abbey.

The buildings which immediately follow Malmesbury show, in the manner of their construction, less, rather than more, of transitional character. The early abbey churches erected soon after the middle of the twelfth century hardly depart in any essential manner from the older Norman modes of building. The pointed arch occurs, indeed, in most of them, but it is without structural necessity in vaulting, and without architectural

consequence in the general system. The vaulting that occurs in these churches is often of the most primitive kind. The aisles of Fountains Abbey, for instance (Fig. 103), which date from about 1150, are covered with a series of pointed barrel vaults carried on heavy transverse round arches — as in the nave of St. Philibert of Tournus (described on p. 41). These transverse arches (which spring from a lower level than the

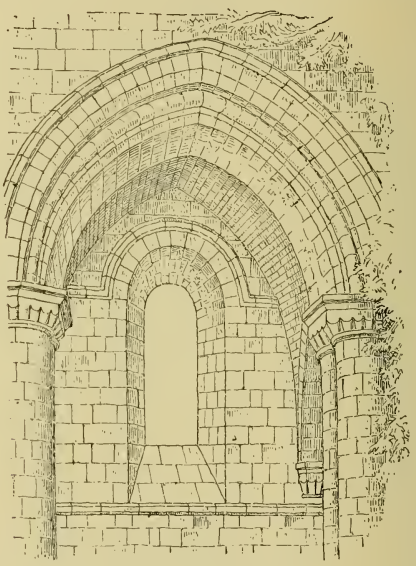


FIG. 103. — Fountains Abbey.

great archivolts) rest on corbels let into the piers and the aisle wall respectively. The piers themselves are bulky round columns of masonry, each having two engaged shafts on the aisle side. These shafts have no connection with the vaulting, but merely support the corners of the great abaci — which are square on the aisle side, while they are polygonal on the side of the nave in conformity with the shape of the impost section. Figure 104, a plan of the abacus laid over a section of the pier, will explain the arrangement. The nave of Fountains was neither

vaulted nor intended for vaulting. Its massive walls, carried on pointed pier arches, are unbroken by structural members, and there is no approach to Gothic character in any part.

The aisles of Kirkstall Abbey, which belong to about the same epoch as Fountains, have groined vaults on pointed arches with transverse and diagonal ribs. The piers are composed of small round members grouped about a circular core, and are crowned each with an octagonal capital. These small members have no strict relationship either to the aisle vaulting, or to the great arch orders. As in Fountains, there are no responds against the aisle wall — the vaulting here being supported on corbels. No nave vaults are provided for, and the design above the pier arches is substantially the same as that of Fountains. It will be seen (Fig. 105) that the organic pier of Romanesque and Gothic art does not exist in Kirkstall any more than in Fountains. In both of these buildings it is merely a ground-story support, and has no organic composition whatever.

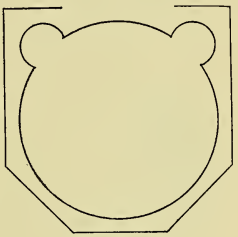


FIG. 104.

It may be remarked in passing that the masonry of vaulting in England, not only at this time, but also during the whole period of pointed design, is usually different from that of France; and is often, as here at Kirkstall, composed of broken flattish stones, of irregular sizes, wedged together as in primitive Norman vaulting — the surfaces of the vaults being finished with a coating of plaster. Light vault shells, of well-faced and finely jointed stones like those of the French Gothic, though often found in the larger English cathedrals of the thirteenth century, are rare before that time.

Many other instances of the use of the pointed arch, with and without vaulting, may be found in the Anglo-Norman architecture of about the middle of the twelfth century; but they are generally devoid of constructive significance. Thus far in England, though the cathedrals of Senlis and Noyon were now in process of building across the channel, nothing of a more advanced character occurs. But, on the contrary, such important works as the naves of Peterborough and Ely, and many

other large churches, were still constructed in the unmodified Norman style.

No important structural modification of an entire system appears to have been made in England till William of Sens began that rebuilding of the choir of Canterbury to which I have already referred. And even this building, though a very beautiful one, is not so fully Gothic as the choir of the Cathedral of Paris, which had been begun more than a decade earlier. But the choir of Canterbury (Fig. 106) was the real beginning of what Gothic there is in the pointed architecture of England. From it, as the main source, is derived, in so far as structural elements are concerned, what is known as the early English style. This choir has five bays, and is vaulted with one quadripartite and two sexpartite compartments. These vaults are constructed on a full system of ribs, of which those of the transverse arches only are pointed. The longitudinal rib is much stilted, the surfaces are domical, and the resulting forms give the work a substantially transitional Gothic character. The larger ribs are carried on slender monolithic shafts, which rest on the capitals of the ground-story piers, which are, alternately, round and octagonal columns. The longitudinal ribs rest on small shafts rising from the clerestory ledge. Thus there are only three shafts in the main pier groups, and only one in the intermediate pier. This arrangement, which rarely occurs in the Gothic of France, is found (as we have seen, p. 119) in the Cathedral of Sens — the architect's native town. We shall presently see that the single vaulting shaft, here used logically to support the single intermediate transverse rib, became frequent in the pointed

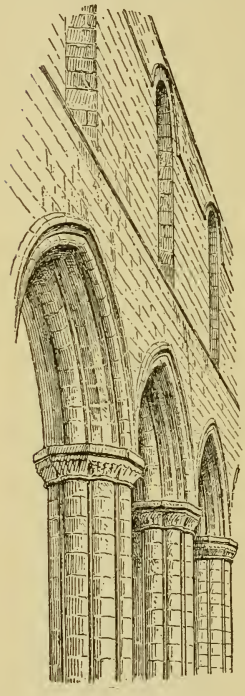


FIG. 105. — Kirkstall.

architecture of England, but that it is often made to carry all the ribs in quadripartite vaulting. The great pier arches are pointed and of two orders profiled like contemporaneous

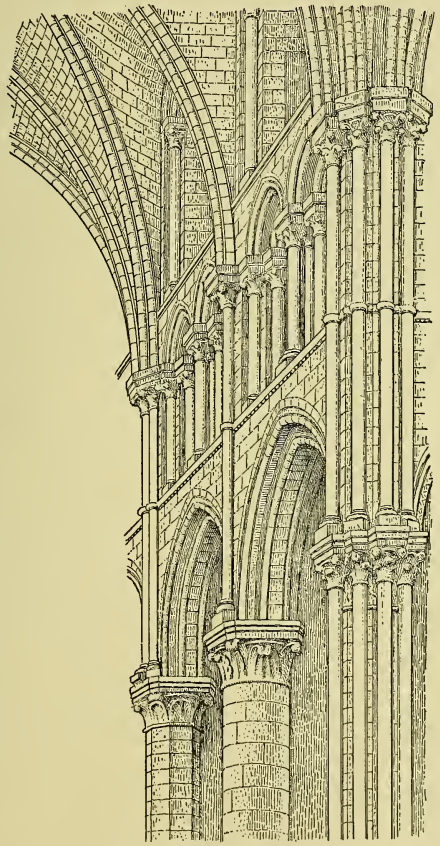


FIG. 106. — Choir of Canterbury.

French archivolts, the triforium has both round and pointed arches of two orders (also with French profiles) on monolithic shafts, and the clerestory has a passageway in the thickness of

The Cathedral of Chichester, like that of Canterbury, was originally a Norman structure of the end of the eleventh century. In the year 1186 it was extensively damaged by fire and immediately thereafter repairs were begun which involved the entire rebuilding of the two easternmost bays. At the same time the whole nave was vaulted with oblong quadripartite vaults on ribs and pointed arches. All of the ribs are gathered on the single round abacus which covers a group of three capitals that crown the slender vaulting shafts. In the piers which divide the newly constructed eastern bays we already meet with some peculiarities of adjustment which frequently occur, as we shall see, in the subsequent pointed architecture of England, and which differ materially from those of the true Gothic. In these piers the vaulting shafts rest on corbels placed just above the great compound capitals of the ground-story arcades, and thus have no connection with the lower piers. The lower pier (Fig. 107) is composed of a central round column of coursed masonry, with four widely detached monolithic shafts which are adjusted to the arch orders of the ground story only.[1]

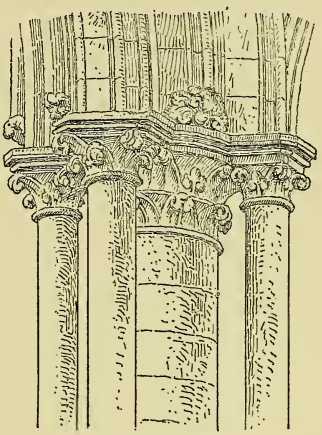


FIG. 107. — Chichester.

The great distance from the central column at which the lesser shafts are here placed gives the pier a character in marked contrast with that of the Gothic pier in which the grouping of members is compact and organic, as in the pier

[1] Sir Gilbert Scott, *Rise and Development of Mediæval Architecture*, vol. ii. p. 142, speaking of the multiplication of arch orders, says: "This gives us our clustered columns, which are, in fact, the mere decoration of the receding orders of the piers." It is true that clustered columns in England are usually nothing more than this; but in Gothic the grouping of members in the pier arises primarily from the exigencies of vaulting.

sept the choir is prolonged to the extent of four bays, and is terminated by a second transept, a construction which, with the exception of a portion of the eastern side, is a work of the first quarter of the thirteenth century. The main characteristics of this plan are French, and conform very closely with those of the original apse of the Church of St. Martin of Tours, which was laid out in the eleventh century.[1] That the plan of the east end of Lincoln was not of native English origin seems to be further shown by the peculiarity of the oblique sides which connect the apse with the transept. The same peculiarity

FIG. 108. — Plan of Apse, Lincoln.

occurs in the French east end of Canterbury in the portion which is embraced by the towers of St. Anselm and St. Andrew; and it looks as if this feature in Lincoln had been derived from this source.

Lincoln Cathedral is vaulted throughout. This is often not the case in important mediæval churches in England, and the fact is itself an evidence that no original Gothic movement had place in this country; for it is in vaulting, as we have seen, that the Gothic developments primarily arise. The vaulting of Bishop Hugh's choir has peculiarities which are difficult to describe in words, but the diagram (Fig. 109) shows the plan of one compartment, and the perspective elevation (Fig. 110) of the

[1] This plan was discovered in the course of excavations made in the year 1860, and an illustration of it is given in the *Bulletin Monumental*, vol. 40, p. 147.

clerestory shows the general form of the vaulting conoid. It will be noticed in the plan that the axes of the lateral cells are set obliquely, so that these cells do not meet each other in a point at the crown of the vault; but that they intersect the longitudinal ridge at different points, separated from each other by a distance equal to about one-third of the width of the compartment. This produces two smaller cells which together form an elongated diamond-shaped compartment set diagonally, and four other narrow triangular divisions. Such a form of vault is without meaning from a structural point of view, and is equally without value on any æsthetic principle. It seems to show plainly that the builders of Lincoln were not, as has been supposed, devel-

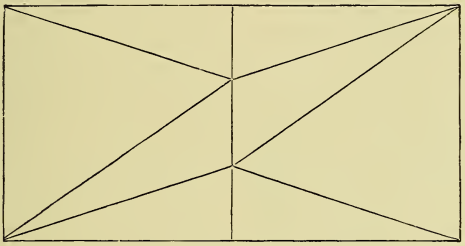


FIG. 109.

oping an original structural system. For builders working in a spirit of structural invention would hardly go so far out of the path of constructive necessity in search of mere singularity of design. Gothic vaulting had, as we now know, been substantially perfected in France long before the choir of Lincoln was begun, and the men who contrived this work were certainly acquainted with French models. In principle these vaults do not differ materially from plain quadripartite vaults with a Gothic rib system. In addition to the ribs here which have real functional use, others are inserted which are structurally superfluous. The first of these is a longitudinal ridge rib, — apparently the first instance of the introduction of this useless member, which, however, subsequently became a characteristic feature of vaulting in England, — while the second is the second rib in the pair which are substituted for the usual single diagonal. The longitudinal rib is imperfectly developed, and consists of a mere

moulding against the clerestory wall. This longitudinal rib springs from the same level as the transverse and diagonal ribs, and hence the vaulting conoid does not narrow inward in the manner that gives an effective concentration of the vault thrusts against the pier, as in true Gothic. On the contrary, the vault here widens out against the clerestory wall in a way that seems to have been purposely sought, since the longitudinal arch has a slightly cusped shape, which increases the width of the conoid.[1]

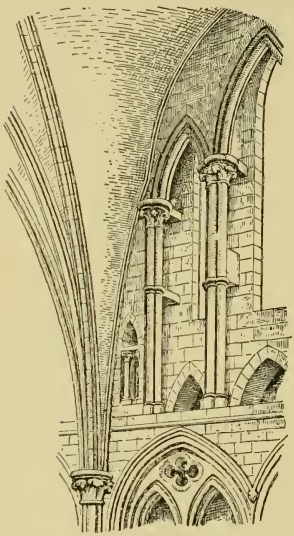


FIG. 110. — Choir of Lincoln.

The upright supports of this vaulting consist of a single vaulting shaft against each pier, upon whose capital all the vault ribs are gathered. This vaulting shaft started originally from the pavement, and was banded at half the height of the ground-story pier, at the impost of the great arcade, and also at the triforium ledge.[2] The lower piers vary in their details, but are substantially alike in general composition. They each consist (section, Fig. 111) of a central octagonal column, of coursed masonry, with four

[1] It ought to be said that the vaulting of the east transept is purer, and more Gothic, than that of the choir. The useless ridge rib does not occur here, nor any other superfluous ribs. This suggests the possibility that the existing vaults of the choir may possibly be of a later epoch than the rest of the system. It can hardly, however, be much later, since the character of the work, including the profiling, differs little from that of the parts which certainly belong to the original construction. Mr. Parker, *Introduction to Gothic Architecture*, p. 102, states that the choir of Lincoln had originally "wooden roofs and flat ceilings." This seems very unlikely; it is a conjecture unsupported by evidence, and it is contradicted by the character of the entire system.

[2] At present these vaulting shafts do not rise from the pavement, but are carried on ill-designed corbels inserted in the wall above the imposts of the great arcade. This damaging alteration was made in the fourteenth century in order to gain space for the existing stalls.

of its sides channelled. Against each of these channelled sides is set a slender monolithic shaft. One of these rises to carry the high vaulting, and the others carry respectively the aisle vaulting and the sub-orders of the great archivolts. Unlike the pier of Chichester, this pier of the choir of Lincoln has a functional relationship with the vaulting similar to that of the westernmost pier of the Cathedral of Paris, which it resembles in its structural composition, though in proportions and ornamental character it is very different. The whole system is sufficiently shown in the section (Fig. 112). The pier as a whole is composed much like a French Gothic pier, having a buttress (*a*, Fig. 112) incorporated with it from the level of the triforium. This buttress is reënforced by an arch (*b*) thrown across the triforium, and a flying buttress (*c*) springing over the aisle roof. The united pressures of the central vault and the aisle vault are taken by the great outer buttress (*d*) set against the respond pier of the aisle. The total scheme has a good deal of Gothic character mingled with features (the vaulting conoid, the superfluous ribs, etc.) that are not of true Gothic form. Apart from the points in which it fails to be Gothic, the structural elements of this work are plainly the result of French influence, while the ornamental details, which shall be considered in a future chapter, are mainly of Anglo-Norman character.

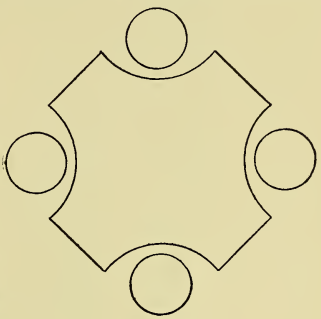


FIG. 111.

At the transept crossing the piers show most unmistakably the influence of the work of William of Sens at Canterbury. These piers are, in fact, structurally identical in the two buildings, except that the Lincoln piers on the east side contain two shafts each (*a* in A, Fig. 113) that have no functional office. With this exception they consist in each building of a massive central column surrounded by detached monolithic shafts — each one of which sustains a rib of the vaulting. These shafts

are of two superimposed groups, the first group having their capitals at the level of the springing of the ground-story arches,

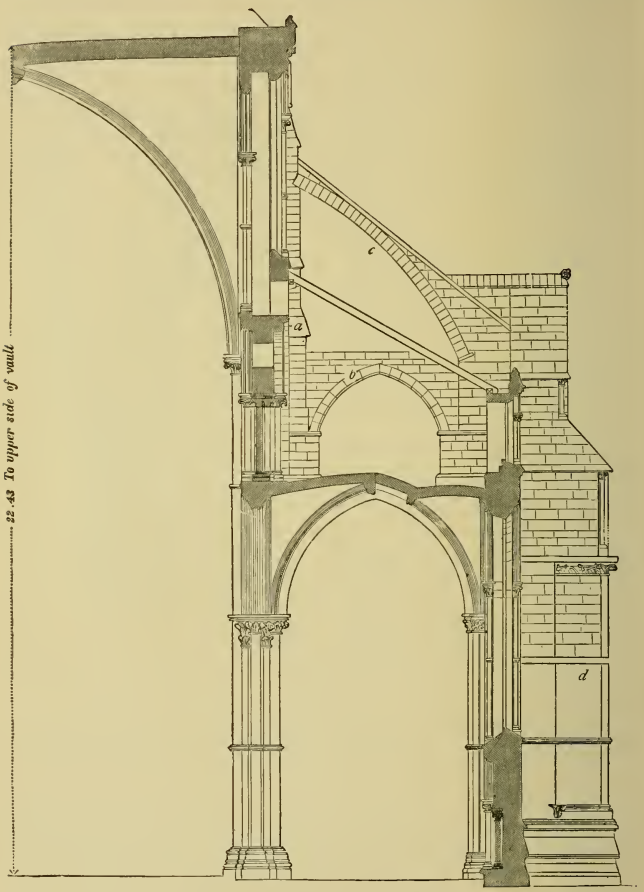
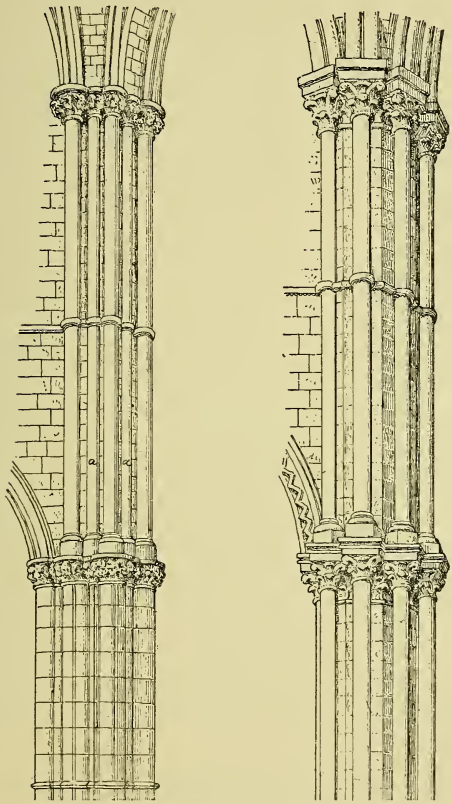


FIG. 112. — Section of Choir of Lincoln.

and the second reaching to the springing of the high vaults. But while at Canterbury (B in the same figure) the bases and capitals are of the French type, — the capitals having square

abaci and Corinthianesque foliage, and the bases square plinths, — those of Lincoln are of the Anglo-Norman type, the capitals having round abaci and the bases round plinths. The useless



A B

FIG. 113. — Lincoln and Canterbury.

shafts occur, however, in the Lincoln piers, only on the east side of the crossing; and these evidently do not belong to the original work of the time of Bishop Hugh. They are of a character which corresponds with the work of the Presbytery,

of the pointed arch in their design, but rather for decorative ends than as the result of structural necessities, and by the development of peculiar features in the vaulting and the members connected with it, which add nothing to the strength, but much to the intricacy, of the construction. Among the most important as well as among the earliest of these is the nave of Lincoln, erected between 1209 and 1235. The employment in vaulting of ribs having no necessary function, which we find first in the choir of the same church, reappears in the nave,

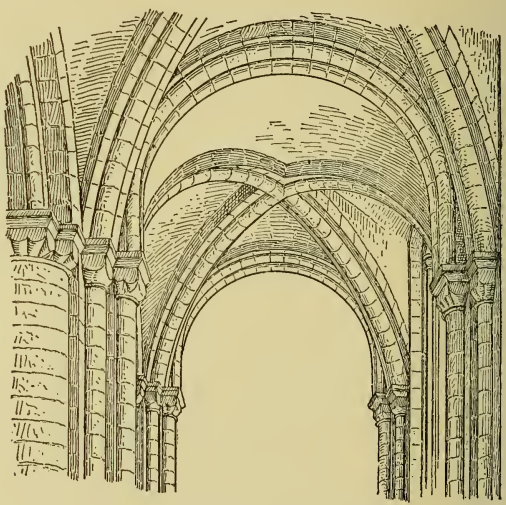


FIG. 114. — Aisle vault of Peterborough.

where numerous superfluous ribs are introduced. This practice seems to have had a singular fascination for the English builders; and the predilection for such ribs gathered strength as the native taste asserted itself more and more until, in the so-called fan vaulting of the perpendicular style, — the first style of architecture that can properly be called English, — the rib system becomes a complicated network forming elaborate panelling on the surface of the vault.

In the vaults of the nave of Lincoln there are six unnecessary ribs in each vaulting compartment; namely, four *tiercerons*,

a in the plan, Fig. 115, and two *liernes*, *b* in the same figure. The longitudinal arches have an approximately elliptical form, and they spring from a level not much above that of the springing of the transverse and diagonal ribs, in consequence of which the vaulting conoid (A, Fig. 116), midway between the springing and the crown, has the section shown at B in the same figure. Thus here again the vault thrusts are not gathered upon the pier in the true Gothic manner. It will be seen also, in the section B, that the ribs of these vaults are so arranged as to give a convex curve to the surface of the vaulting conoid. This peculiarity marks an early step in the direction of that fan vaulting which, as just remarked, subsequently became a

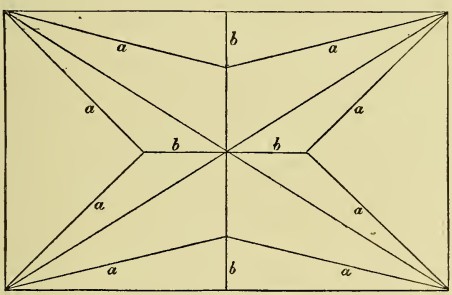


FIG. 115.

conspicuous feature of English pointed design. The rib system of the nave of Lincoln is mainly supported by the wall, which it penetrates, rather than by the vaulting shafts below. These vaulting shafts consist, in each pier, of three very slender and compactly grouped members which rise from a corbel placed just above the great ground-story capital. They are too slender to be effective even to the eye; and are thus, like the vaulting shafts of Byland and Whitby, rather decorative than structurally necessary features. The grouping of members in the lower piers has reference to the arch orders of the ground-story arcade and to the vaulting of the aisles only; they are entirely unrelated to the high vaulting. These lower piers are of three varieties, whose sections are given at A, B, and C, respectively, in Fig. 117. The small detached shafts of A and B are in two monolithic sections, and are bonded with the pier

by a projecting band at their junction. The engaged shafts, with the keel fillets of the section C, are built up in courses with the main body of the pier. These are, indeed, pretty sections, and the actual piers are objects of much beauty, but their want of connection with the vaulting excludes them from the category of strictly Gothic forms. The clerestory is again of the Anglo-Norman type, which retains a good deal of solid wall beneath the arch of the vault. Both it and the triforium differ from those of the choir in their proportions and ornamental details only.

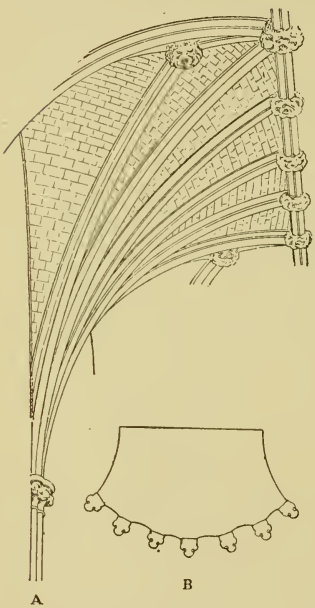


FIG. 116.

All the interior arcades of this nave have hood mouldings, which increase the effect of multiplicity in the lines of the arches — an effect that was evidently pleasing to the Anglo-Norman taste even as early as the time of the construction of the archivolts of Malmesbury. The vaults of the aisles are in five cells (as are those of the choir also) — a half-intermediate transverse rib on the wall side dividing into two parts what would otherwise have been a single cell. This half-rib is carried by a monolithic detached shaft resting on a corbel placed just above the string-course which runs along the wall at the level of the window sills. The main transverse ribs of the aisle vaults are carried by responds consisting of five closely grouped monolithic shafts, while a cusped arcade is carried along the aisle wall.

The buttress system of the nave of Lincoln is, like the internal system to which it belongs, largely wanting in structural efficiency and completeness. The clerestory wall is unbroken externally by pier buttresses. It has a continuous

shafted arcade of alternate groups of three wide arches opening into the nave, and three narrow blind arches. The central blind arch in each group occupies the place that would be taken by a pier buttress in any logical buttress system, and against the wall enclosed by this arch the head of the flying buttress abuts, with the effect, to the eye, of piercing the wall. The level of this abutment is but little above the line where the aisle roof meets the wall, and the very small pier buttress — which rises through this roof to the intrados of the abutting arch — is hardly noticeable in a general view of the building (Fig. 118). A comparison of this clerestory with that of the nearly contemporaneous clerestory (Fig. 76, p. 151, and Plate III) of the nave of Amiens will afford an instructive illustra-

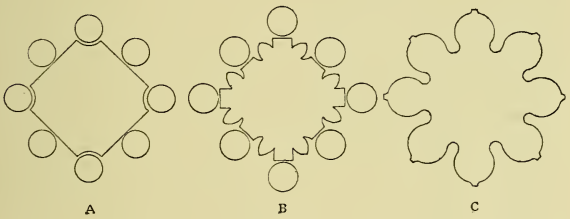


FIG. 117.

tion of the difference between Anglo-Norman pointed construction and that of the true Gothic, in this important part of an edifice.

The Cathedral of Salisbury is commonly considered as exhibiting the early English style in its purest form, and it is therefore an important building for comparison with the new architecture of the Continent. The structure was begun in 1220, contemporaneously with the nave of Amiens, and the two buildings may be taken as fairly typical of the respective styles. The nave of Salisbury is roofed with quadripartite vaults of greater simplicity than those of either the choir or the nave of Lincoln. The rib system contains none but functionally necessary members, and in this system, as well as in the forms of the vault surfaces, there are many points of likeness to French vaulting. The most important of these is that which results from the forms of the longitudinal arches which rise for some

distance in a line more nearly approaching a vertical than is common in England, and give something of that concentration of thrusts, and those necessarily twisted surfaces, that characterize the true Gothic. Figure 119, a perspective view of one of the vaulting conoids, will illustrate this. In this vaulting the longitudinal arch is provided with a more pronounced rib than is usual in English buildings. An important structural defect, however, will be noticed in the absence of upright supporting members for the rib of this arch. The longitudinal ribs have no visible supports whatever; they penetrate the vault surfaces at a considerable height above the springing, and leave the reëntrant angles, formed by the vault and the clerestory wall, exposed to view.

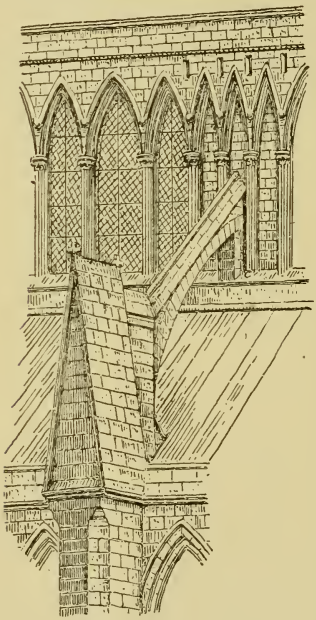


FIG. 118. — Nave of Lincoln.

Below the vaulting a wide departure from Gothic principles of design is manifest. There is no connection between the vaults and the lower stories of the structure. The extremely short vaulting shafts rest on corbels situated far above the springing of the triforium arches; and thus no continuous upright members embrace even two of the stories of the edifice, and there would be hardly less of an organic structural system if the vaults were carried on corbels alone. The ground story and the triforium are continuous arcades without division into bays, and the unbroken string between them makes a pronounced horizontal line from end to end of the nave. The design has no features below the clerestory that would convey the idea of a vaulted structure. The clerestory is heavily walled in, as is usual in England, and is lighted by the

customary threefold openings. Thus here as elsewhere in the English pointed architecture of the thirteenth century the openings remain merely windows in walls, while in the contemporary Gothic of France the whole clerestory space is occupied by one vast opening, as in Plate III. The triforium consists of a very obtusely pointed arch of three orders encompassing two lesser arches, each again embracing two still smaller ones. The great encompassing arch is necessarily so depressed as to accord ill with the more acute forms of those with which it is associated, and its slightly curved sides form awkward angles at the springing. The great arches of the ground story, like most of the other arches throughout the building, are equilateral — that is to say, the centres of their curves are in the angles of the bases of equilateral triangles, and are thus at the points of springing. This form of arch, or one closely similar, generally prevails in France. It is also very common in England — as in the Chapel of the Nine Altars at Durham, the Presbytery of Ely, and in many of the abbey churches — as Tintern, Bridlington, Netley, Rievaulx, Whitby, Byland, Kirkstall, and others. But the distinctively Anglo-Norman type is rather the lancet form, the centres of whose curves lie beyond the points of springing, right and left — as in the smaller arches of the nave of Lincoln, and the pier arches of Westminster Abbey. The arch sections of this nave are rounded in conformity with the usual Anglo-Norman custom, and the archivolts are everywhere provided with hood moulds. The

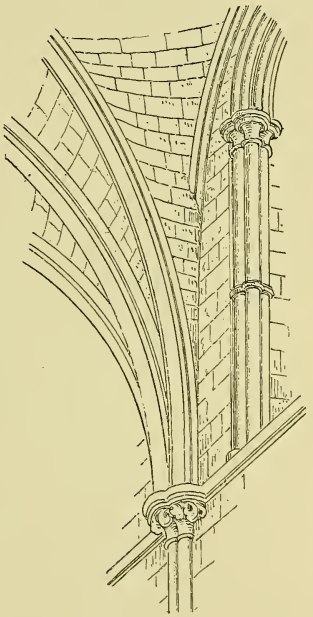


FIG. 119. — Salisbury.

resides in its heavy walls as much as that of any Romanesque structure. I have likened Salisbury in point of structure to Durham; Wells is in some points strikingly like an even earlier Norman building — the Abbaye-aux-Dames at Caen.

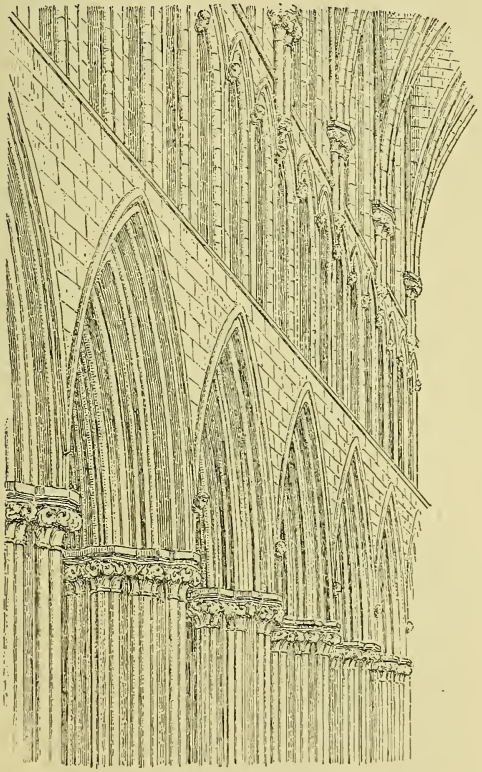


FIG. 120. — System of Nave of Wells.

This likeness is partially illustrated by Figs. 120 and 121, — portions of the interiors of Wells and the Abbaye-aux-Dames respectively. It will be seen that the triforiums are almost identical in character, that the imposts in both buildings are

continuous — that is to say, there are no capitals or mouldings at the springing of the arches — and even the sections

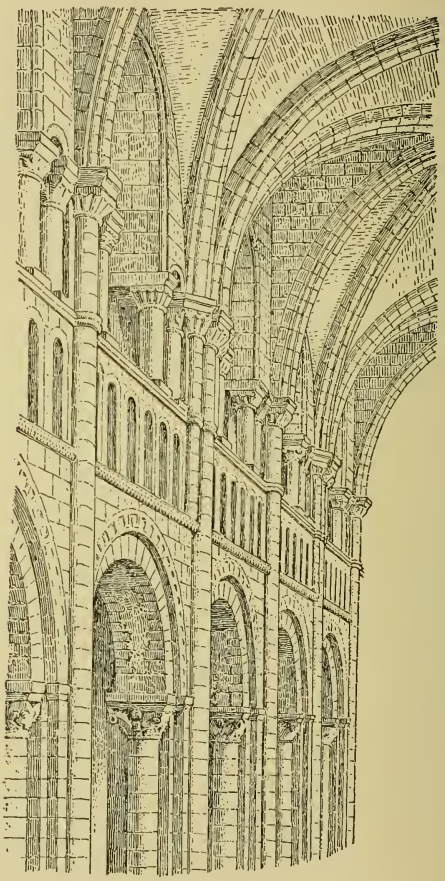


FIG. 121. — System of the Abbaye-aux-Dames.

of the jambs and arches are the same. If the drip mouldings were removed from the triforium arches of Wells, the only

The supporting shafts, though corresponding in number with the three functional ribs of the vault, do not each sustain a rib, as in the French Gothic. The architect was satisfied with an impost having a general conformity in the form of the compound support with that of the load, and did not feel the necessity of a strictly functional relationship between the individual parts of each. The vaulting shafts are as usual stopped upon corbels not far below the triforium string; and the larger members of the lower piers are consequently again arranged with reference to the orders of the pier arches only, while very slender shafts are inserted between the larger ones, for which there are no corresponding members in the archivolt. Here,

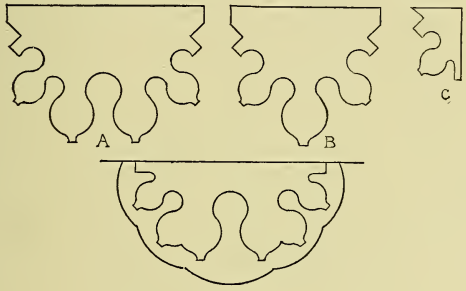


FIG. 122.

then, once more, as almost constantly in Anglo-Norman pointed architecture, the employment of structural members was largely governed by ornamental motives without a logical regard to structural propriety.

The clerestory of this Presbytery is a variation of the early pointed Norman type, and consists of four open arches in each of the two planes — the inner plane having in addition two lesser blind arches filling the wall spaces on either side (Fig. 123). The triforium and lower arcade differ in decorative treatment only from those of the nave and choir. Externally there is no pier buttress whatever — not even a pilaster strip — either above or below the head of the flying buttress. The wall space between the clerestory openings is very wide, and is adorned with two tall shafted niches, between which, against the face of the wall, the flying buttress is brought to bear (Fig. 124).

The nave of Lichfield, which must be nearly contemporaneous with the Presbytery of Lincoln, differs in some features from the buildings already noticed, though it is not fundamentally different in structural principle. Its vaults exhibit the peculiarity of having no proper transverse ribs. In place of them two ribs in the positions of *tiercerons* spring from each

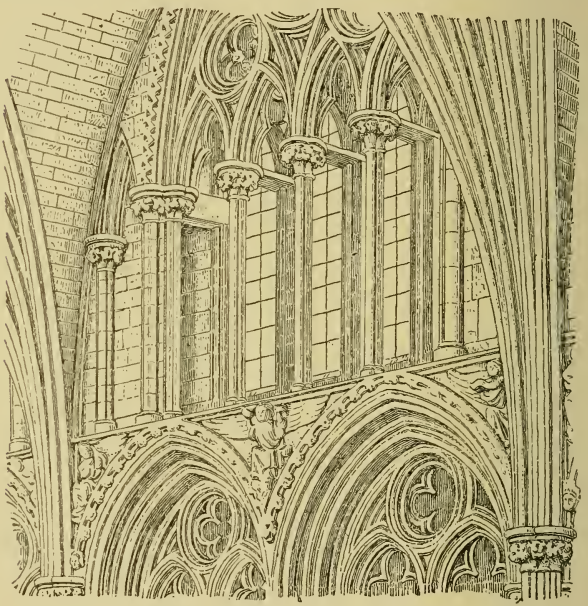


FIG. 123. — Presbytery of Lincoln.

pier. This would be a bad arrangement from a structural point of view were it not for the presence of a longitudinal ridge rib, an otherwise useless member, which affords abutments to the crowns of these diverging arches. It is an indefensible arrangement by which nothing is gained; and it furnishes another of the many evidences of the Anglo-Norman lack of a fine sense of either structural or artistic propriety. Diagonals and longitudinal ribs, cross-*liernes*, and a secondary rib in each cross-cell are included in the framework of this vaulting. All of these

ribs (except, of course, the ridge rib and the *liernes*) spring from the level of the clerestory string. There is thus no narrowing inward of the vaulting conoid, giving concentration of thrusts against the pier. Three vaulting shafts do duty for eight ribs, but these shafts rise from the pavement and give a degree of Gothic expression which is not common in the pointed architecture of England until the perpendicular period. The clerestory

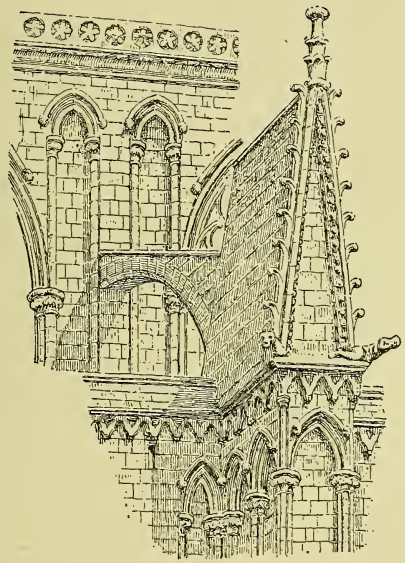
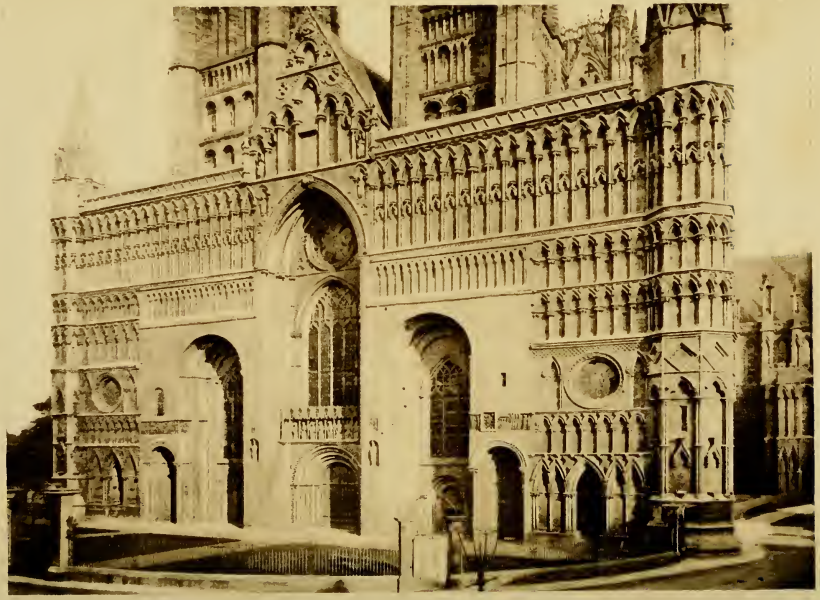


FIG. 124. — Presbytery of Lincoln.

of Lichfield is unusually low, and consists of a single opening (with geometric tracery) having the peculiar form of an equilateral triangle with three curved sides. The whole edifice is excessively heavy, though, as in so many other cases, the effect is lightened by multiplication of mouldings.

Such are the structural characteristics of the early and middle pointed architecture of England in so far as concerns the longitudinal bays both external and internal. There is no need of further examination of them. Nothing, I believe, is to be



LINCOLN CATHEDRAL.
Twelfth and thirteenth Centuries.

mullion into two smaller lancets. This tower is hardly equalled in beauty by any other in England; and it is certainly one of the stateliest in Europe.

Few, if any, spires were constructed in England during the twelfth century, and on a large scale they appear to have been rarely erected during the entire early pointed period. Large existing spires, like that of Salisbury, are, for the most part, not of earlier date than the fourteenth century. On a smaller scale a few spires remain dating from the thirteenth century. Of these the spire of Ringstead Church, Northants, erected about the middle of the century,[1] is a good example. The management of the transition from the square plan of the tower to the octagon of the spire is, in such constructions, very admirable, and it is, I believe, peculiar to England. Instead of starting the octagon directly from the square top of the tower, a four-sided pyramid is interposed, which the octagon intersects. By this means no unoccupied spaces occur at the angles of the tower; and the design is both constructively good and artistically agreeable.

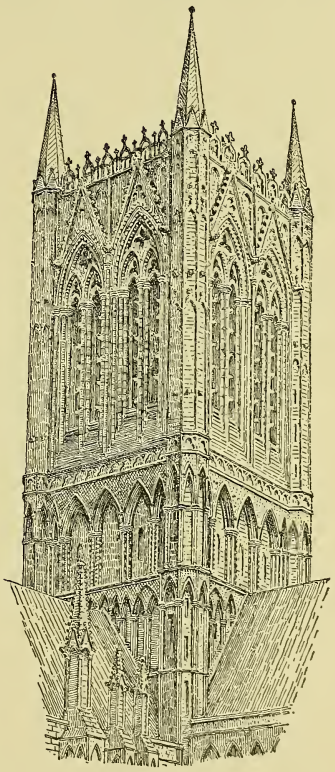


FIG. 125. — Lincoln.

Before closing our examination of the pointed architecture

[1] According to Mr. Parker (*An Introduction to the Study of Gothic Architecture*, p. 155) the date of this church is circa 1260.

an almond-shaped member beneath a square one. The piers retain the Romanesque character, and the vault supports generally consist of a pilaster, corresponding in size with the transverse rib which it carries, with a round shaft on either side of it for the

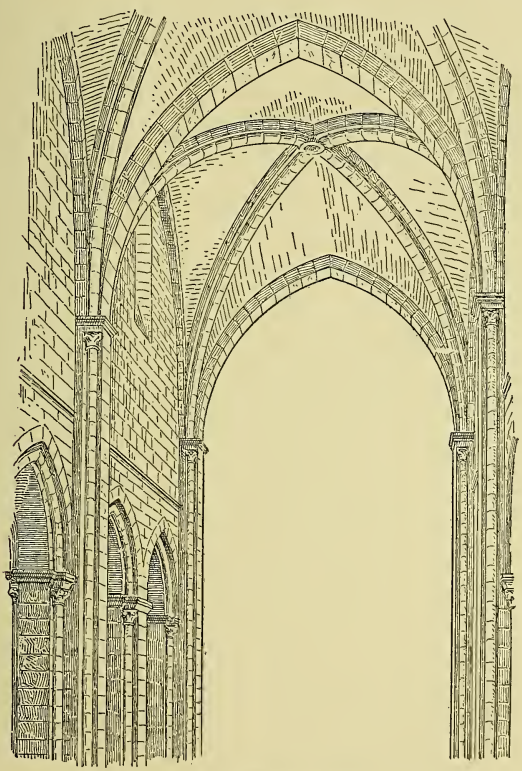


FIG. 126. — System of Bamberg.

support of the diagonals, and a second square member for the longitudinal ribs. In some of the piers the round shafts are omitted, and the three vaulting ribs are awkwardly gathered upon a simple pilaster of two orders. The easternmost bay has a sexpartite vault, and the bay next adjoining it has an

tresses of effective form, though on account of the shortness of the nave only one of these occurs on each side.

The vaulting is sexpartite on an alternate system of supports, and the whole interior design bears a close resemblance

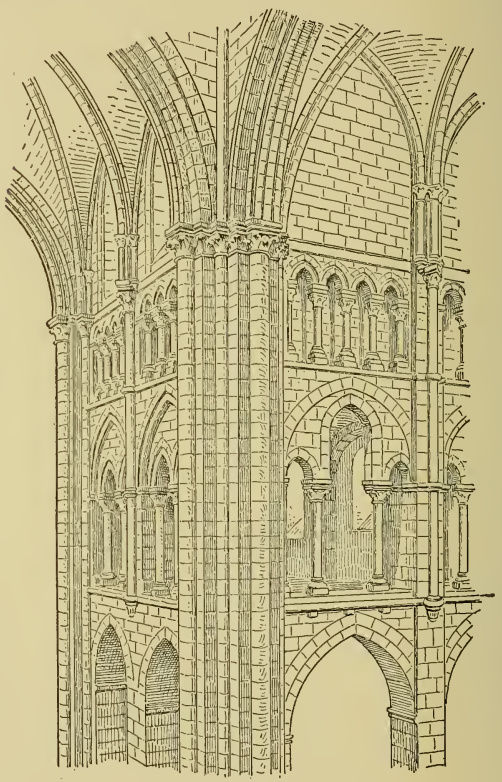


FIG. 127.—System of Limburg.

to that of the nave of the Cathedral of Noyon, which justifies the inference that its architect was directly influenced by that monument.[1] All of the vault ribs are pointed, the vaults are

[1] Dehio, *Op. cit.*, pp. 496, 497, supposes it to be derived from Laon and not from Noyon. The likeness is, however, much closer to Noyon. The main piers, having

it also is divided in elevation into stories corresponding to those of the nave. But the nave in this case, having an aisle, has also the usual triforium, which, like the ground story and clerestory, is carried around the aisleless apse. The ground story of the Liebfrauenkirche is of great proportional height, and it is probably because of this that the usual triforium arcade is omitted. The absence of the aisle in the apse makes the walls between the clerestory shafting unnecessary, and the open character of the whole design is thoroughly Gothic. All of the vaulting capitals are placed at the same level, and while the longitudinal rib does not appear to spring at precisely this level, there is not enough stilting to have any appreciable effect on the form of the vaulting conoid. In this respect the vaulting of Trier differs materially from that of Braisne, where the twisted surfaces which are essential to Gothic clerestory vaults are conspicuously developed. The Liebfrauenkirche follows Braisne in the use of a single round column on the ground story between the grouped piers of the choir and transept respectively. The capital of this pier is unlike anything French of the best period. It is low, with a round abacus, and does not prepare the column to carry its load in a manner agreeable to the eye. In fact, only a part of the load is carried by the capital. The three vaulting shafts are stopped on an ill-designed corbel at some distance above, while a single short shaft, resting on the abacus, is interposed (Fig. 128). It is true that in some instances vaulting shafts are carried on corbels in the French churches. But I believe these are always shafts in heavy piers, like those of the crossing, where space is needed on the ground story. This is the case in the crossing piers of

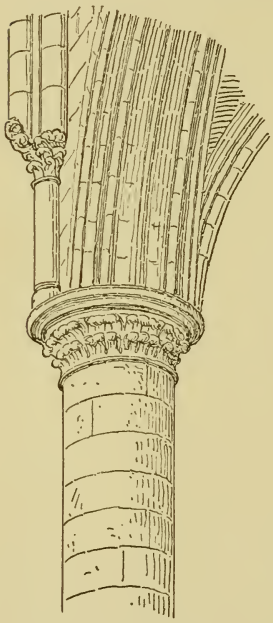


FIG. 128. — Liebfrauenkirche, Trier.

Braisne. Such an adjustment is rare, however, even in such piers, and nothing like the stopping of a group of shafts above a capital will be found in French Gothic architecture. In the piers of Braisne which correspond with those of Trier in which this awkward arrangement occurs, the deep and well-formed capitals of the ground-story columns are corbelled out so as to provide ample space on their abaci for the stately shafts which rise from them (Fig. 129).

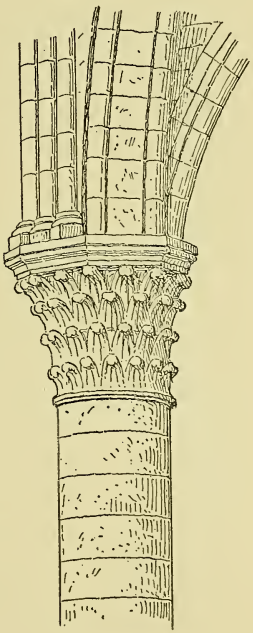


FIG. 129. — Braisne.

In the upper parts of the exterior the Romanesque characteristics persist. The clerestory wall has no buttresses of any kind, and the upper story of the lantern over the crossing is equally wanting in Gothic features. The apse is well buttressed in Gothic form, and the chapels externally closely resemble those of the Cathedral of Reims. Thus while the Liebfrauenkirche is quite Gothic in some parts, it is, on the whole, very imperfectly so.

A curious type of pointed design of this epoch in Germany, which again shows the persistence of Romanesque principles of construction, is that of the east end of the Cistercian Church of Heisterbach (1202–1233?). This monument is in ruin, but enough remains to show its whole system. It bears a singular resemblance to Gothic design in its proportions and general form, without having any Gothic structural character whatever. The vault of the apse[1] is a pointed semidome with a semblance of Gothic form resulting from a division into shallow cells with filleted arrises, but no ribs. This semidome rests on stilted round arches supported on free-standing shafts which rest on the cornice of the ground-story arcade, and on the en-

[1] Dehio and Von Bezold, *Op. cit.*, Plate 200, Fig. 1.

clerestory vaulting arches, it is even more like the best Gothic design in France. As in Trier, the apse of Marburg is divided into two stories, though it has no aisles to call for such division; and since the nave, also, is without division into stories this arrangement is without justification on the score of architectural harmony. The nave and aisles of St. Elizabeth are of equal height, a mode of construction peculiar to the later pointed architecture of Germany. Other churches of this form are the

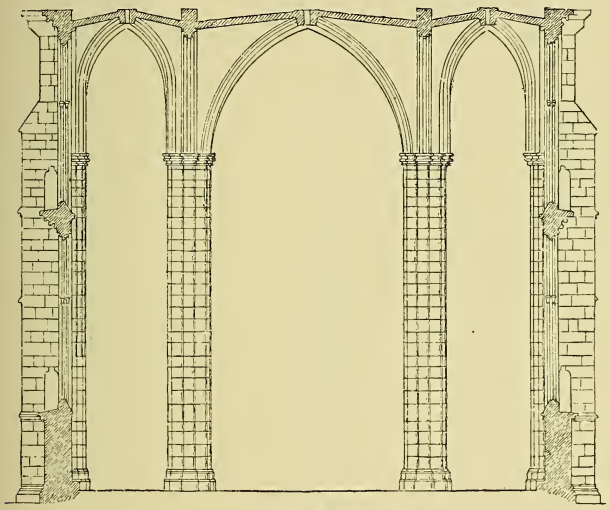


FIG. 130.— St. Elizabeth, Marburg.

Kreuzkirche at Breslau, St. Sebald at Nuremberg, and St. Mary at Mühlhausen. This peculiar form gives an ill-proportioned section (Fig. 130) such as could hardly be found in the true Gothic region of France. The Church of St. Nazaire of Carcassonne has, however, aisles of equal height with the nave; but in general in France, in the comparatively rare instances where the aisles are carried up so high as to prevent a clerestory, they are enough lower than the nave to secure an agreeable proportional relationship of the parts, as in the Cathedral of Poitiers. (Fig. 131).[1] But while the Church of St. Elizabeth of Marburg

[1] This figure is copied from Viollet-le-Duc. In a few exceptional instances in the

thus consists of but one story throughout, its enclosing system is, like that of the apse, divided into two stories, which is a needless violation of expressional integrity.

The most complete carrying out of the Gothic structural system which occurs at this epoch in Germany is found in the nave of the church of SS. Peter and Paul at Neuweiler. This nave has oblong quadripartite vaulting with stilted longitudinal ribs, well-adjusted pier supports, and effective flying buttresses of early Gothic form.

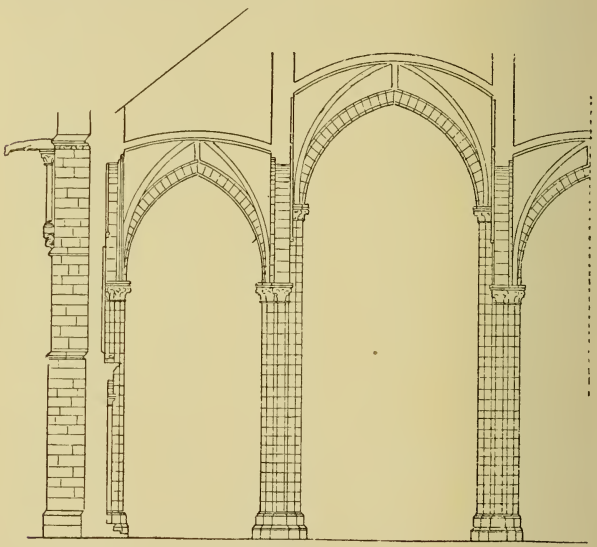


FIG. 131. — Poitiers.

Other German churches of the early part of the thirteenth century — Bacharach, Bonn, Basle, the nave of St. Sebald of Nuremberg, Gelnhausen, and others, have many Gothic features which often closely resemble the best French types, but in few of them are the Gothic structural system fully carried out and the Romanesque elements wholly thrown off. These monu-

*Ile-de-France something similar to this arrangement occurs, on a small scale — as in the village churches of Vernouillet and Feucherolles (Seine-et-Oise) — figured in M. de Baudot's *Églises de Bourgs et Villages*. Paris, 1867.

nal pyramid is set obliquely. This pyramid is truncated at a level above its base about equal to the width of the tower, and its sides are surrounded by a parapet. From this level the spire, whose base is smaller than the area of the substructure, rises without any auxiliary features. A strongly marked horizontal line thus breaks the continuity of the upward converging lines. The junction of the lower octagon with the tower is better managed by the placing of a pinnacle on each angle of the tower over the buttresses, and by a steep gabled dormer over each tower wall. But there is little here of that organic adjustment of beautifully designed and finely proportioned features — each having, to the eye at least, a functional office — which distinguishes French spires like those of Chartres and Senlis. But the typical spire of the German pointed style is of a different character from all those thus far noticed. It is a purely ornamental feature of open stonework, and is not at all the roof of the tower, as true Gothic spires invariably are. The spire of the west front of Freiburg is a characteristic example. The single square tower, which in this case terminates the nave, rises with solid buttressed walls to the apex of the timber roof over the vaulting. It carries an enormous vertical octagon of open stonework, which has a height nearly equal to that of the tower itself, and from this rises the skeleton spire richly ornamented with tracery and crockets. On the tower angles, against the oblique sides of the vertical octagon, are set solid vertical abutments which, at about a third of the height of the octagon, are broken up into open canopies with spiky pinnacles arranged in three successive tiers, diminishing in numbers as they ascend — their extremities falling within the

FIG. 132. — Marburg.

less fully reproduced in the Cistercian architecture of Italy — the first in churches like Fassanova, south of Rome (the earliest of the series of Cistercian churches in Italy), dating from 1187–1208, and San Galgano, near Siena, begun in 1218;

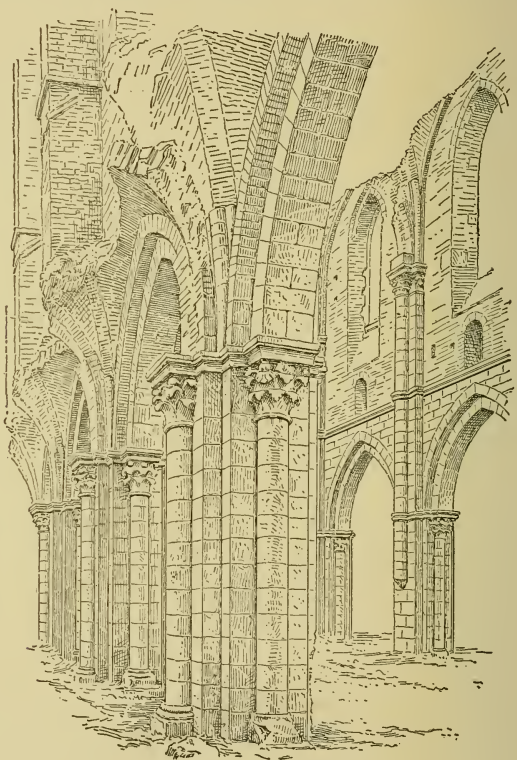


FIG. 133. — San Galgano.

and the second in the Church of San Martino, near Viterbo, dating from the commencement of the thirteenth century.[1]

The Church of San Galgano (Fig. 133), now in a state of ruin, may be taken for comparison with that of Pontigny to

[1] Cf. Enlart, *Origines*, etc., p. 237 *et seq.*

of the transverse ribs of the high vaulting; and deep pier buttresses against the clerestory walls, with others against the walls

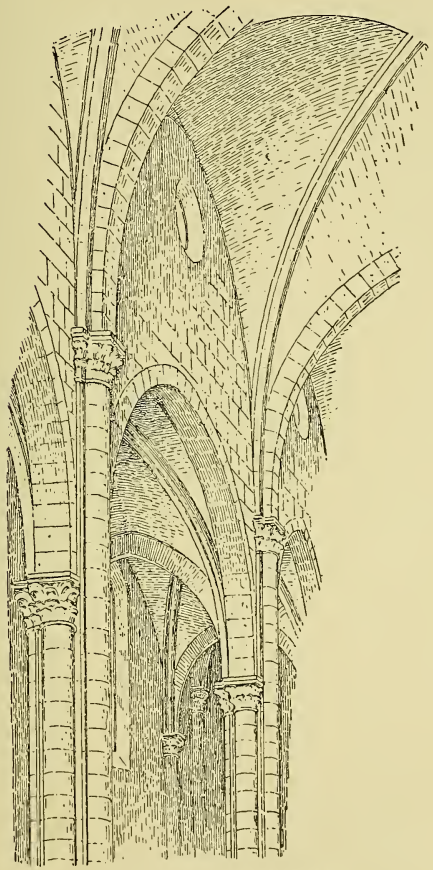


FIG. 134. — Sta. Maria Novella.

of the ground story, complete the buttress system (Fig. 135). This certainly cannot be called Gothic construction; though by it the stability of the vaulting is secured.

The main body of the Cathedral of Arezzo, dating from the latter part of the thirteenth century, so closely resembles Sta. Maria Novella in its structural form as to call for no extended notice. What may be called the Italian characteristics in pointed design prevail here equally. But the apse of

FIG. 135. — Section of Sta. Maria Novella.

Arezzo has features that are not Italian. Its plan is like that of the apse of St. Francis of Assisi, but its proportions are taller, and yet it has a less strictly Gothic form. The cells of the vault are much less developed and the vault as a whole retains more of the form of a gored semidome. The tall mullioned lancets

Christian Roman basilica with no essential modifications. But the windows are all pointed.

The building which is commonly regarded as the crowning monument of the Italian pointed style is the Cathedral of Florence. This building, as it now exists, is, however, an example of the later, and least meritorious, form of pointed architecture in Italy. Of the structure begun in the earlier style by the architect Arnolfo at the close of the thirteenth century, little remains. It is doubtful whether any part of his work was left after the remodelling to which the building was subjected in the fourteenth century.

In plan this building consists of a nave and aisles with apsidal projections north and south, forming a kind of eastern transept, an eastern apse, and a vast octagonal space enclosed by these several parts. The vaulting of the nave is in gigantic square compartments, while the compartments of the aisles are of narrow oblong shape. All of the vaulting ribs are pointed and spring from the same level, and the vaults themselves are much domed. The exaggerated height of the main arcades, already noticed as peculiar to Italy, is here emphasized to the utmost. One of these enormous arches would embrace the whole nave of a church of no mean magnitude, and yet this vast structure, as often remarked, fails to impress the eye with a sense of its real size. Nor is this want of apparent largeness of scale made up for by any considerable beauty of proportions or by any peculiar structural interest. The system exhibits, on the other hand, some singularly meaningless and illogical features. The piers, for instance, have the section shown in Fig. 136, and the vault supports are continuous from the pavement; but, as may be seen in the elevation (Fig. 137), there are no capitals either at the springing of the great arches or at the springing of the vaults. The impost is marked in each case by a band of mouldings only. Lower down an ill-composed capital (which is little more than an ornamental band of leafage and mouldings following the section of the pier) is placed. The vaulting ribs

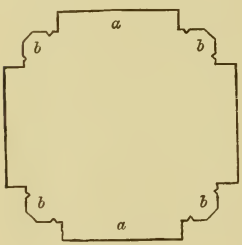


FIG. 136.

and vaulting shafts are merely the corresponding parts of the pier itself, which branch off at the imposts. This sameness of section, and sameness of magnitude, in both ribs and supports is a characteristic of the flamboyant Gothic of France (though the flamboyant profiling is different, of course), and it is a highly monotonous and uninteresting mode of design.

The Cathedral of Florence has no triforium; but the corbelled gallery, so frequent in the larger Italian churches, passes around the whole interior just below the springing of the vaults, and the low and blank clerestory is lighted with an oculus in each bay.

Notwithstanding the wide span of the vaulting, no external buttresses, other than the pilaster strips of less than usual thickness, occur in the system. The enormous side thrusts are met by the strength of the walls and by the usual Italian wall buttresses over the aisle vaults concealed beneath their timber roofs. In addition to this, however, it has been found necessary to insert iron tie-rods, — which disfigure the interior here as in many other Italian pointed buildings. The three apses have the structural character of Romanesque works, and the great dome, though a magnificent architectural design, is equally removed in form and constructive principle from Gothic art.[1]

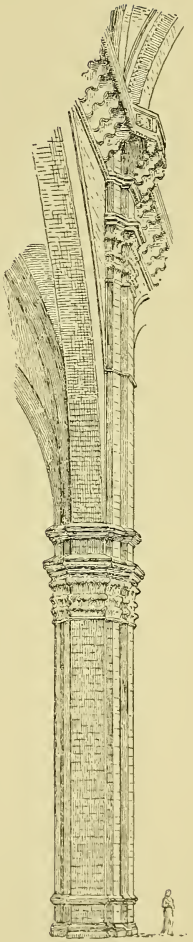


FIG. 137. — Florence.

[1] The existing dome, as is well known, was no part of the original design, or even of the remodelled design of the fourteenth century. A dome of some kind, with domed apses, may, however, have been included in the scheme of the original architect. A fresco in the Spanish Chapel of Sta. Maria Novella contains an interesting representation of a church with a dome and apses which have been supposed to illustrate the original design of Arnolfo.

ence. The magnificent campanile of the Cathedral of Florence, though unique in richness and elegance, may be taken as a characteristic example of the general structural form. It has five stories, of finely proportioned heights, marked by string-courses, of somewhat Gothic profile, which pass around vertical buttresses of octagonal section placed at the angles and reaching from the ground to the coping. The basement story is a little larger on plan than the stories above it, and thus forms an apparent foundation without which so high a structure would appear insecurely based. The story next above, which is of considerably greater height and forms a secondary foundation, has two pilaster strips on each face between the angle buttresses. The upper three stories are proportioned in increasing heights, and are pierced on each side with beautifully designed pointed openings, each divided by a mullion and tracery and crowned with a crocketed gable of great elegance. On the third and fourth stories these openings are in pairs, while on the top story one opening of very large size, with two mullions and richer tracery, occupies each face. The whole monument is crowned with a deep and elaborate cornice carried on corbels, and is covered by a low pyramidal timber roof. A steep pyramid of stone, like that of Sta. Maria Novella, is supposed, however, to have been originally intended. The universal admiration which this tower has called forth is no more than just; but it will be readily seen that such a structure is different in character from a Gothic one — although, as we have seen, the tower necessarily embodies less of what is peculiar to Gothic construction than any other part of the Gothic monument.

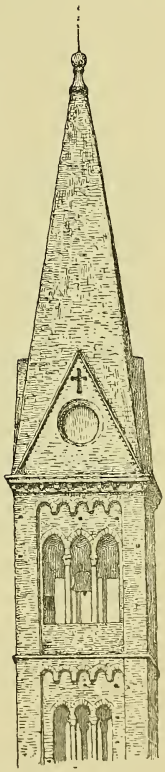


FIG. 138. — Sta. Maria Novella.

The lack of a logical constructive sense among the Italians is especially marked in those square towers of Northern Italy

which are crowned by octagonal lanterns. Of these the tower of the Scaligeri at Verona (Fig. 139), and that of St. Andrea of Mantua, are conspicuous examples. In these designs no attempt is made to effect an adjustment of the two forms such as to make them appear like parts of one whole. On the contrary, the tower is crowned with a pronounced bracketed cornice, and the lantern rises abruptly from the square area, leaving large spaces at the angles wholly unoccupied. Anything like the transitional features which in Gothic art give the sense of organic unity between the tower and its superstructure is hardly ever found in Italy. In a few instances, however, an attempt to produce a more satisfactory arrangement is made, as in the conical spire that crowns the square tower of primitive Lombard form which is incorporated with the Church of San Fermo Maggiore of Verona. But the diminutive cones, mounted on square bases, which are set on the angles of this tower, though they improve the otherwise bald composition, have little organic relationship to the spire. A comparison of this work with the old tower and spire of Chartres (Fig. 100, p. 186) will show the childishness of Italian art in the shaping and adjustment of such features. The true Gothic spire was never constructed in Italy. It is a feature that would not accord with the general character of the Italian pointed building.

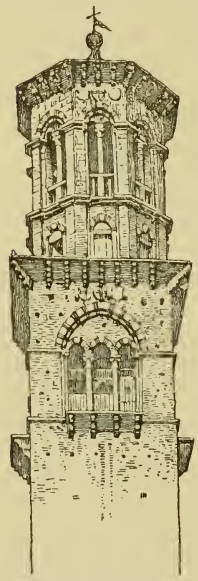


FIG. 139. — Tower of the Scaligeri.

From what has already been said, it will be seen that the general external form of the Italian pointed church is substantially like that of the basilican Romanesque edifice. It has a simple outline, unbroken by features such as pertain to the Gothic of the North. The steep gables and pinnacles often added to the façades, as in Orvieto and Siena, have no logical meaning, since they correspond to nothing in the real form of the building. In some instances such features were, in childish imitation of the Gothic, added to other parts of the Italian

appear to have something of the Gothic shape. The masonry of this vaulting is, for the most part, like that of contemporane-

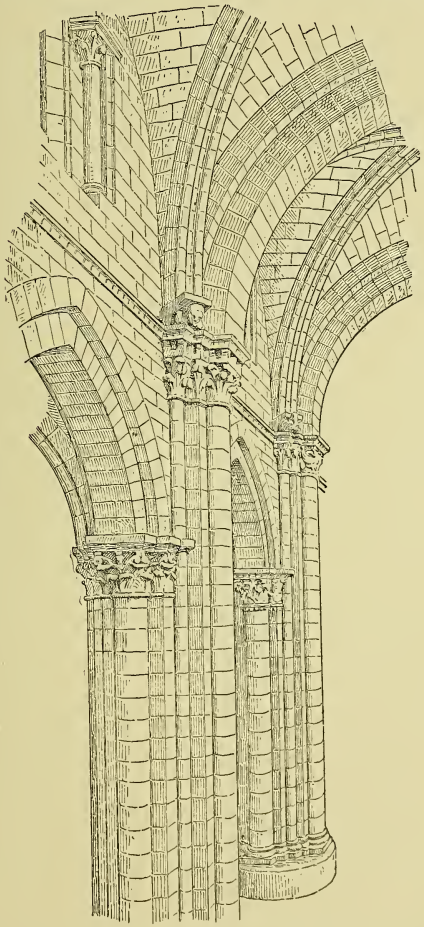


FIG. 140. — System of Salamanca.

ous French work — the courses running in the direction of the long and short axes respectively, and being roughly tapered

cipal features, arranged in the same manner, that compose the old spire of the Cathedral of Chartres; the principal modification made by the architect of the Spanish design being the shortening of the proportions of all the parts that rise above the cornice of the drum to adapt them to the form of a domical structure on a large base. The drum itself answers to the vertical octagon (Fig. 100, p. 186) on which the spire of Chartres

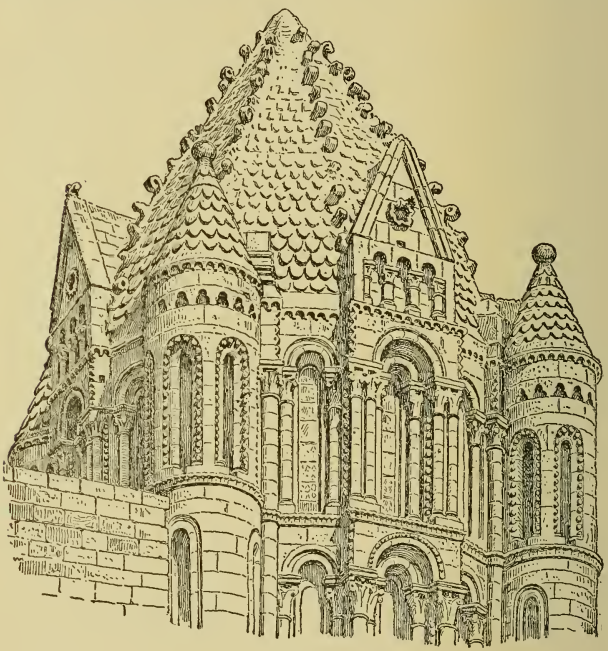


FIG. 141. — Lantern of Salamanca.

is set, the turrets correspond to the corner pinnacles, and the gabled bays to the same features, in the French design. The greater richness of ornamental details in the Spanish lantern would seem to indicate a later date than the twelfth century. Crockets on spires were hardly used in France before the thirteenth century, and it does not seem likely that such details could have been introduced in Spain at an earlier time; for

there is no evidence of the existence of an independent and progressive school of designers in Spain during the Middle Ages. The round arches which prevail throughout the composition show a conservative spirit, since the pointed form is used exclusively in the structural arches of the building which this lantern crowns. It is very possible that the lantern was begun in the twelfth century and finished in the thirteenth after crockets had come into use in the Gothic of France.

The nave of San Vincent of Avila has pointed vaulting on transverse and diagonal ribs, which resembles the vaulting of Salamanca. The same excessive heaviness of construction is noticeable here except in the transverse ribs — which are of a single order, and are no larger than the diagonals. The diagonals themselves are, however, more massive than those of Salamanca, so that the whole rib system has an unusually ponderous effect. The vertical system of San Vincent dates from the early part of the twelfth century, and is Burgundian Romanesque in character. Its piers are composed like those of Vézelay, having a vigorous pilaster with an engaged shaft rising from the pavement. The adjustment of the lateral capitals to the diagonal ribs (Fig. 142) is happily managed in an unusual way by shaping their bells so that while fitting the square section of the pilaster their abaci are set diagonally. These capitals may be contemporaneous with the vaulting, which probably dates from the latter part of the twelfth century. The vault thrusts are met by strong pilaster buttresses which rise through the triforium against the heavy clerestory wall.

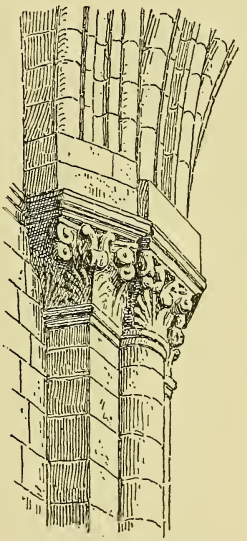


FIG. 142.

A different type of early pointed design in Spain is afforded by the Church of Santa Maria de Irache near Estella, in the province of Navarre. The vaulting here has pointed

quite Gothic. Only the necessary ribs occur in its vaulting, the longitudinal rib is stilted, and the vault surfaces have the Gothic form perfectly developed. The transverse ribs are heavier than in French vaulting — a peculiarity of construction in Spain that

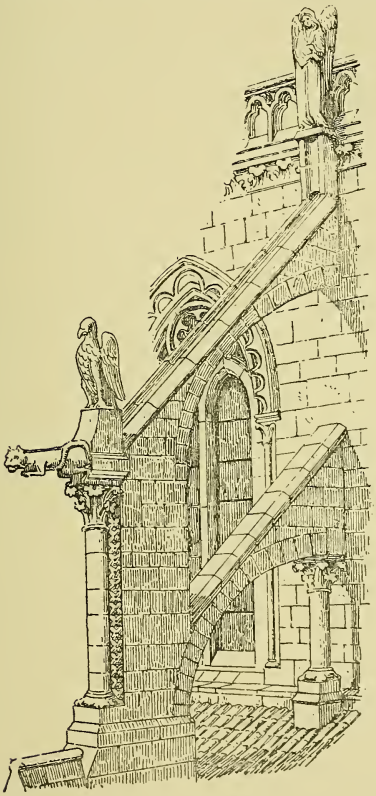


FIG. 143. — Burgos.

we have already noticed in the earlier pointed buildings of the country. The piers are composed like those of the choir of Burgos, with the improvement of an added shaft on each side of the ground-story portions, for the support of the first order

to carry a bulky load of square form, instead of a narrow architrave, is crowned with a capital of wholly new character. It is a curious combination of elements derived from all three of the classic types, modified and fused together in a creative way, and not a mere adjunction of parts taken without alteration from different forms, as was the Roman composite capital. The Doric element appears in the convex outline and in the thick

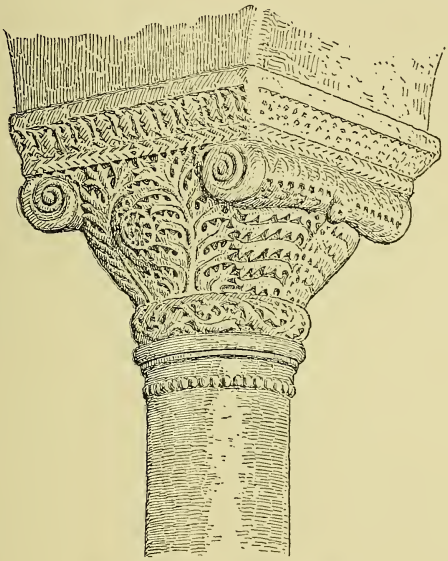


FIG. 144. — St. Sophia, Constantinople.

square abacus; the Ionic in the volutes, which are on two opposite faces only, and are connected on the other sides by the bolsters, or cushion-shaped features, that are peculiar to the Ionic capital; and the Corinthian in the height of the member. The height was needed to gain the necessary magnitude of abacus surface without producing an unsafe and unsightly inclination of the outline. The square form of abacus was needed to fit the square load, and its thickness was required to give strength to its overhanging angles. The capital thus formed is a structural member of great importance, providing a secure bed for the

the form of the Byzantine impost (Fig. 144). A later form of Byzantine capital which has a thick supplementary abacus, of smaller superficial dimensions than the first, — a type much employed at Ravenna, and occurring in the arcades of San Stefano Rotondo of Rome, — does not concern us here because it is not a type that had influence on the subsequent architecture of the Middle Ages.

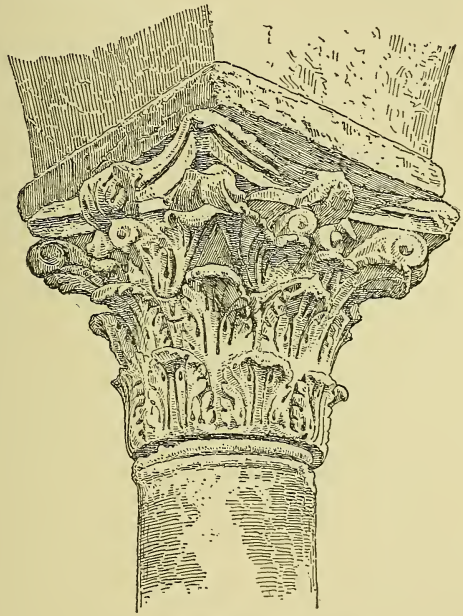


FIG. 145. — Sta. Maria in Cosmedin.

From the time of Justinian to the eleventh century hardly any architectural improvements were, as we have before seen, anywhere made. In the Lombard Romanesque a halting procedure in respect to the capital is manifest. The shafts of the piers of St. Ambrogio of Milan are, in some cases, almost as large as the loads which they carry; and while the capital, which is a rude combination of Roman and Byzantine elements, is well shaped to suit such conditions, it has little other use

than to adjust the round section of the shaft to the square form of the load. In the early Norman Romanesque this form of impost is frequent, as in Fig. 146, an engaged shaft of the north aisle of Jumièges. Better forms than this, however, were produced at this epoch, especially in the Ile-de-France, where, in the aisles of Morienval, capitals occur (Fig. 16, p. 51) which so closely resemble those of St. Sophia as to confirm the belief that a traditional, and perhaps even a direct, Byzantine influence was felt here very early in the Romanesque development.

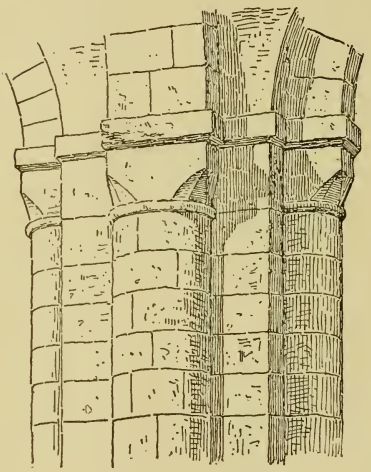


FIG. 146. — Jumièges.

In France, after the eleventh century, the practice of giving to the capital a spreading form to carry a load more bulky than the shaft became practically constant; and the degree of expansion varied considerably, according to circumstances. Where compact stone for monolithic shafts could be obtained, they were often made very slender, and yet were sufficiently strong to bear the weight that might be gathered on a broad abacus. This use of slender monolithic shafts and columns led to the production of the distinctly Gothic type of capital, early examples of which occur in the apse of the Cathedral of Senlis (Fig. 147). The general outline and proportions of the whole impost of Senlis are remarkably similar to those of St. Sophia (Fig. 144). Students of mediæval architecture have hardly hitherto enough observed the extent and the importance of the structural innovations (apart from those connected with the development of the dome on pendentives) that were made by the Byzantine architects, or the cumulative influence of these innovations on the arts of Western Europe, and more especially on the rising art

of France in the twelfth century. But so important were these innovations, and so great their influence, that I believe it hardly too much to say that the Gothic style was made possible by them. The domical groined vault and the expanded capital are forms without which Gothic architecture could not exist. But the capital of Senlis, while exhibiting so much resemblance to

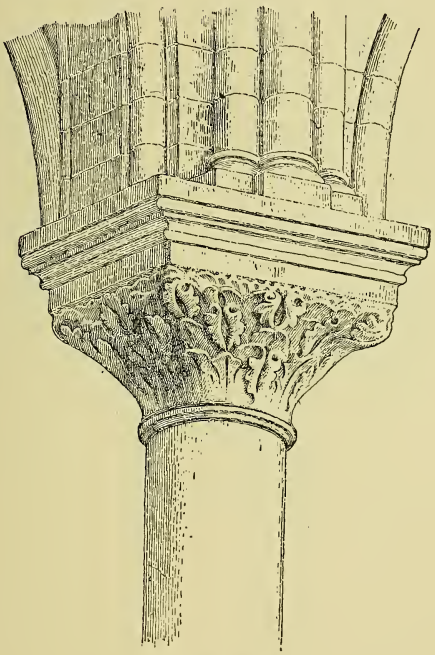


FIG. 147. — Senlis.

that of St. Sophia, is nevertheless not precisely similar. It shows modifications that adapt it to the Gothic functions and the Gothic taste. It is not merely a capital of Byzantine form inserted in a transitional Gothic building. The capital of St. Sophia would not do as well in its place. The abacus is further thickened, giving more resistance to the overhanging parts, while the bell is correspondingly diminished in height, and has a concave

outline. The resulting form is remarkable for elegance as well as for functional expression. The capitals of the sanctuary of Noyon (Fig. 148) are equally admirable in expression and elegant in form. The bell is here much deeper, and the concave profile is more distinctly marked. Of a somewhat more advanced, and richer, type, illustrating the purest and most refined Gothic art,

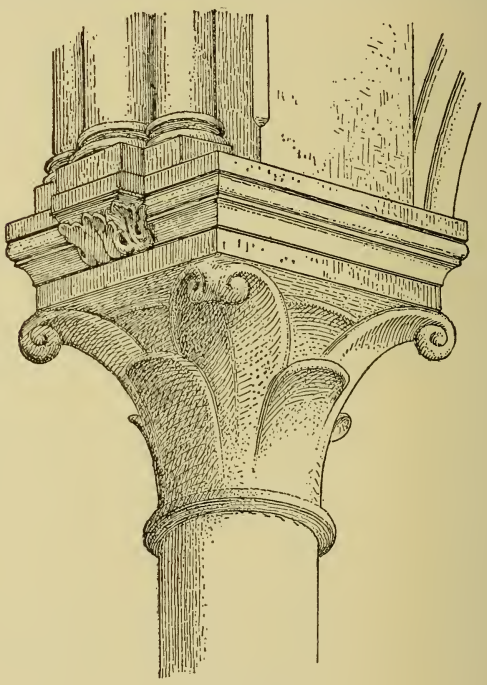


FIG. 148.—Noyon.

are the superb capitals of the sanctuary of St. Leu d'Esserent.

The supporting columns are, in all these cases, monolithic, and hence they are slender in proportion to the bulk of the load with which they are charged. Where the columns are not monolithic, but are built up of coursed masonry, their diameter is necessarily greater in relation to their height, and the capital is proportionately less expanded. The intermediate piers, for

instance, of the choir of Senlis are round columns built in courses; and they are consequently much larger, and have capitals which are considerably less spreading, than those of the sanctuary, as may be seen in the perspective elevation (Fig. 40, p. 96).

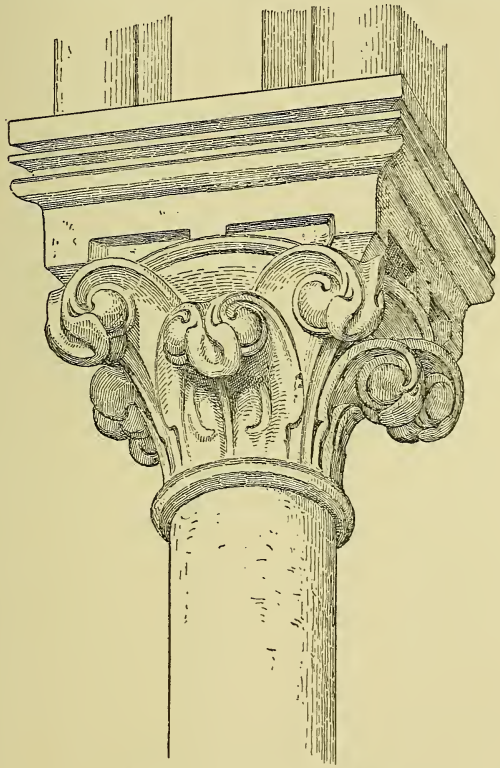


FIG. 149. — Triforium of Choir, Paris.

The round columns of the ground story of the Cathedral of Paris are, like those of the choir of Senlis, built up in courses, and the expansion of their capitals is consequently slight; but in the triforium of the choir the shafts of the arcades are comparatively slender monoliths, and their capitals (Fig. 149) are

more spreading; while in the triforium of the nave the shafts are still more slender, and the capitals (Fig. 150) are very much expanded.

In the early Gothic the volume of the load may, in some situations, appear smaller than that of the supporting shaft. A case

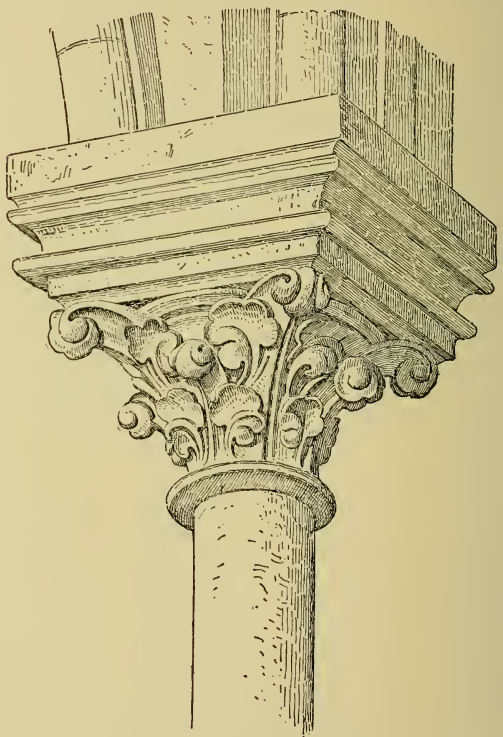


FIG. 150. — Triforium of Nave, Paris.

of this may be observed in the apsidal aisle of St. Germer (Fig. 27, p. 73), where the diagonal rib appears smaller than the shaft which carries it. A side view will generally show, however, that the rib is deeper than the shaft. In advanced Gothic it is not uncommon to find imposts in subordinate positions in which the load and the support are of the same magni-

In the early Gothic the abacus is usually square in plan, in conformity with the section of the load, which is usually square until after the first quarter of the thirteenth century. But when in the more advanced stages of Gothic design the archivolt sections became polygonal, the plan of the abacus assumed a corresponding shape, as in the upper portions of

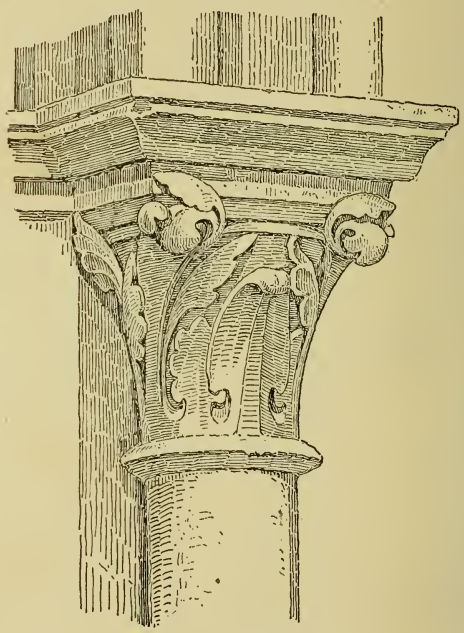


FIG. 151. — Triforium of Laon.

the nave of Amiens. The round abacus hardly occurs in the early, and early fine, Gothic of France, except occasionally where a compound impost renders it suitable, as in the great piers of Paris (Fig. 59, p. 127), and in subordinate places, as in the jambs and dividing members of the clerestory openings of Amiens, where the impost sections are round.[1]

[1] In Normandy the round abacus is of frequent occurrence in the structural parts of the architecture of the early thirteenth century.

The profiling of the abacus is comparatively simple, though a considerable variety of effect is obtained by different combinations of the simple mouldings. Starting from the plain bevelled stone of the eleventh century (Fig. 16, p. 51), the mouldings of the early Gothic abacus are but slightly salient, as in the profiles of St. Evremond of Creil (Fig. 152, *a*) and of the Cathedral of Senlis (Fig. 152, *b*). They gradually become more pronounced, as in the triforium of the nave of Paris (Fig. 152, *c*, *d*, *e*, and *f*), but never exhibit very salient members alternating with deep hollows, as in later Gothic design. The mouldings are rarely, if ever, of uniform character throughout an entire building, and they frequently vary a good deal in a single arcade. While the same profile may be often substantially repeated, it frequently happens that several different ones are found in the abaci of a given series of capitals. Thus in the

FIG. 152.

north triforium of the nave of Paris, where there are in all fourteen capitals, the four different profiles, *c*, *d*, *e*, *f* (Fig. 152), occur. Of these, counting from the transept, the profile *c* occurs in the first, second, third, fourth, and eighth; the profile *d* in the fifth, sixth, ninth, and tenth; the profile *e* in the seventh; and the profile *f* in the eleventh, twelfth, thirteenth, and fourteenth. Where the same form is repeated, more or less difference in the proportions of the parts will generally be found. The work was wrought largely with a free hand; and though beautifully finished, it rarely exhibits any absolute mechanical precision. The same member may have different thicknesses at different parts of its length, and the lines are thus hardly ever perfectly straight or precisely parallel. The execution has a character and a charm akin to that of free-hand drawing; it has nothing of the dry precision of work wrought with rigid exactness by rule and compass.

The upper member of the early French abacus has a square section, and this is retained until about the end of the first quarter of the thirteenth century. After this it assumes a curved profile, more or less like that shown at A in Fig. 153 from the west front of Amiens Cathedral, or like B from the triforium of the same building.

The outline of the bell is almost without exception a fine Corinthianesque curve. Of the capitals of the ancient orders the Corinthian only influenced to any considerable extent the art of the Middle Ages. Derived from the Roman type and logically modified in part under Byzantine influence, the Corinthianesque capital of the later Romanesque builders was an improvement on its prototype, while that of the Gothic artists of the close of the twelfth century was further developed in its functional character and refined in its profile. This type is one that admits of almost endless changes which adapt it to the varied conditions that Gothic capitals have to meet. The circular form of the bell is adjusted to the square of the abacus by crockets which take the place of the classic volutes and afford support to the projecting angles of the abacus — as in Figs. 149 and 150. The French Gothic capitals of what may be called the early fine period — *i.e.* the last quarter of the twelfth century — are among the most beautiful objects ever produced by human art. For structural adaptation, joined with subtle grace of contour, they are, in fact, quite unequalled by those of any other age or style.

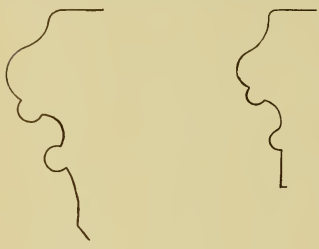


FIG. 153.

It does not come within the scope of this work to follow out the later transformations of the Gothic capital; but it may be remarked that during the course of the thirteenth century certain modifications of its form were introduced which, though not improvements, were logical adaptations to changed conditions, and which sometimes produced results that have much merit. These modifications were consequent upon changes that had been wrought in the profiles of the archivolts and vault

but the proportions of the parts are more or less changed in conformity with the new conditions, and the profiling becomes, in some cases, even more refined and beautiful than those of ancient times. The Gothic shaft having to carry more weight in proportion to its size than the classic column, and being more subject to chances of lateral movement, required a firmer and stronger base. The round ancient base resting on its stylobate

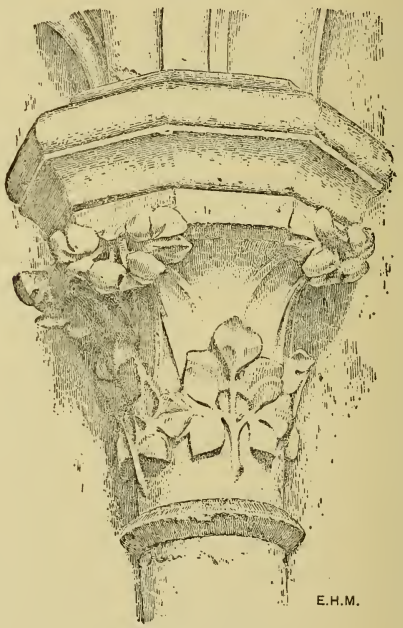


FIG. 154. — Amiens.

without the interposition of a plinth, or with a plinth of shallow proportions, suited perfectly well the simple conditions of classic construction; but the Gothic base had to be both deeper and more spreading. For if a heavily charged slender column, under conditions which render it liable to more or less disturbance of its equilibrium, be placed upon a thin plinth, sooner or later some fracture of the plinth will be likely to occur. But

if the plinth be thickened, it will remain more safe. If, in addition, a second stone, also of considerable thickness, be placed beneath the first, a secure footing for the column will be obtained. Gothic bases are constructed in this manner; they are always thick, and in most cases are composed of at least two blocks of stone. In the base, as well as in the capital, the first innovations seem to have been made by the Byzantine architects. The bases of the shafts whose capitals (Fig. 144) we have just examined have the form shown in Fig. 155, which is a wide departure from the ancient base, and, for an arched system of construction, it is an improvement tending in the direction of the Gothic base. The lower torus is here considerably deep-

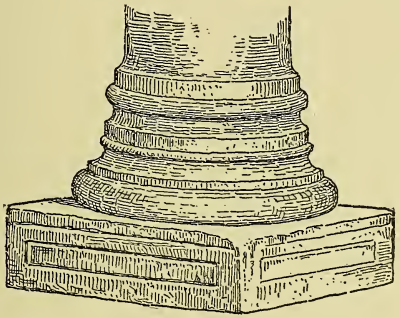


FIG. 155. — St. Sophia.

ened, and is placed upon a plinth of unprecedented thickness. Early Romanesque bases are naturally less elegant in profile than those of St. Sophia (which exhibit the subtle artistic skill of the later Greek designers), but they are usually composed of the same elements. In St. Ambrogio of Milan, for instance, the lower torus is much less salient, and a narrower plinth is used, so that the entire base has a less expanded form — as we have already seen is the case with the capital also. In early Norman Romanesque art, as in the nave of the Abbaye-aux-Hommes, rudely shaped bases frequently occur in which all trace of the Attic profile is lost; but in the later Romanesque of the Ile-de-France, as in St. Étienne of Beauvais (Fig. 156), the Attic profiling is distinct, though the contours are rude. The parts, however, already exhibit Gothic propor-

tions, and the plinths are of remarkable height. This profile is varied in the bases of St. Martin des Champs (Fig. 157); and other variations occur, with increasing elegance of contour, in the base profiles of early Gothic monuments — as in those of

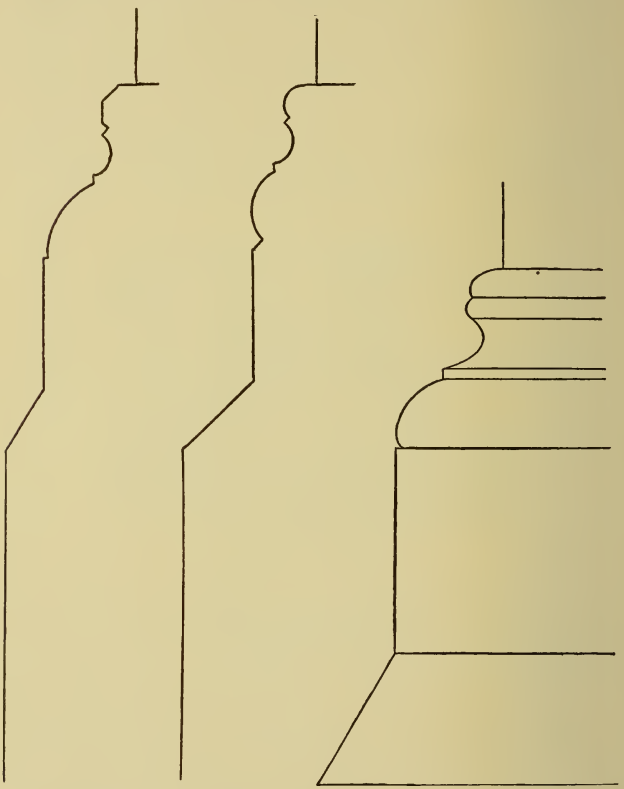


FIG. 156. FIG. 157. FIG. 158.

the nave of Senlis (Fig. 158), and the nave of St.-Germer-de-Fly (Fig. 159); while in the choir of Paris (Fig. 160), and in many other contemporaneous buildings, very subtle profiles are found, in some of which the lower torus is flattened with exquisite effect.

A conspicuous feature of the early Gothic base is the *griffe* or angle spur. This is an ornamental projection from the lower torus covering the angles of the square plinth. It assumes a great variety of fanciful and beautiful forms during the entire early Gothic period. In Fig. 160, from the choir of Paris, the corners of the plinth are cut off, leaving little room for the *griffe*. Where this is not the case, this feature becomes more developed, as in the exquisite example (Fig. 161) from the nave of Reims. While it can hardly be said that the *griffe* has a really constructive function, it nevertheless has a functional expression giving the lower torus an apparent grasp of the plinth as well as an appropriate ornament. This feature appears first, I believe, in the bases of the Lombard Romanesque designers. It does not occur on the bases of St. Sophia, nor, I think, in the later Byzantine architecture. But rudimentary forms of it appear on the rudely executed bases of St. Ambrogio of Milan. In the Northern Romanesque, however, it is rare. It does not occur in either of the abbey churches of Caen, nor in the nave of Vézelay, nor in St. Étienne of Beauvais; but in the apse of Poissy it is superbly developed, and in the early Gothic churches it is rarely absent.

Fig. 159.

The base, like the capital, is more spreading in proportion as the shaft is diminished in bulk; and the profiles of the bases of small arcades are often among the most exquisite objects which the genius of the Gothic architects produced. Of such bases none are finer than those of the triforium of the nave of Paris, of which Fig. 162 is a profile and Fig. 163 a perspective view. It will be seen that the *griffe* on the nearest corner, unhappily broken, differs from the others — affording an instance of the variety of treatment which characterizes Gothic design.

Toward the end of the twelfth century the plinth began to be diminished in magnitude so that the lower torus overhung its sides — as in the profile (Fig. 164) in the choir of Chartres. The salient angles were thus made smaller, and the *griffe* was usually omitted; though it was sometimes included, being wrought on a smaller scale. Occasionally the angles of these smaller plinths are rounded off, as in the small base (Fig. 165)

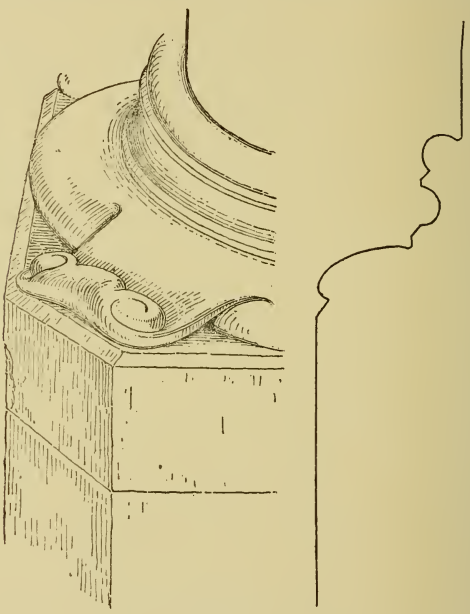


FIG. 160.

from the choir of Soissons; and at length the plinth becomes octagonal, and sometimes round, so as to present no angles that project beyond the torus — as in the westernmost piers of Paris (Fig. 166), and the piers of the nave of Amiens (Fig. 167). In these cases the *griffe* necessarily disappears altogether. While the diminished octagonal plinth has the advantage of taking up less room on the pavement, and of presenting no sharp angles, — dangerous, or inconvenient, to passing crowds, — it is less satis-

factory than the former type in all other respects. The Gothic base of the middle of the twelfth century, with its square plinth and angle spurs, is unequalled in architectural beauty by those of the later character.

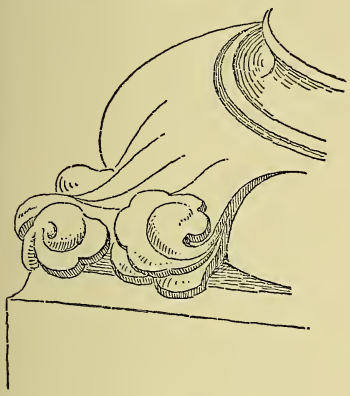


FIG. 161.

FIG. 162.

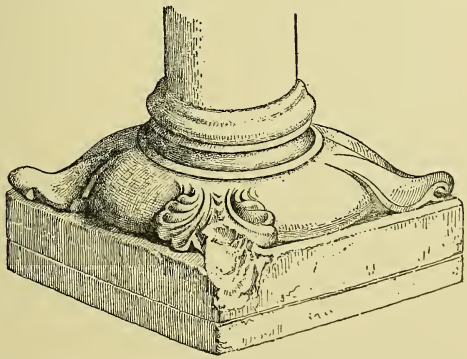


FIG. 163. — Paris.

The mouldings of the bases of Amiens are not so subtle in profile (Fig. 166) as those of the earlier period usually are; but they exhibit one interesting peculiarity — that, namely, of an extra thickness given to the lower torus of the great central column. The mouldings are thus proportioned to the

magnitudes of their respective shafts in a manner corresponding to that in which the several capitals of the head of the pier are proportioned to the same shafts, as remarked above (p. 128), of the compound pier of Paris.

The development of the profiles of string-courses in the Gothic of France forms one of the most interesting minor branches of our subject. The external string was, during the eleventh century, very simple in form, and had usually a flat, though sometimes a sloping, upper surface. The profiles

FIG. 164.

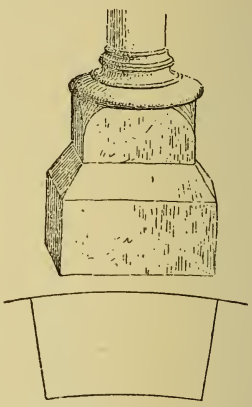


FIG. 165.

(Fig. 168) from the small Romanesque Church of Nogent-les-Vierges, near Senlis, sufficiently illustrate their general character. In the earlier transitional buildings the same forms were retained — as at A, Fig. 169, from St. Evremond at Creil. But the early Gothic builders soon devised changes which better adapted the string to the exigencies of a Northern climate; and at the same time converted it into one of the most pleasing architectural features. The flat upper surface was objectionable because it afforded lodgement to snows in winter, and caused incessant spattering against the walls in times of rain.[1] It was seen that it must be avoided. Innovations were accordingly made, an early instance of which occurs on the exterior of the

[1] Cf. Viollet-le-Duc, s.v. *Bandeau*, p. 105.

choir of the Cathedral of Senlis shown at B (Fig. 169). Here the profile (A) of St. Evremond of Creil is modified by a sloping upper surface; while a second, deeper course, with a steeply sloping side, is placed above it — the upper wall being in retreat of that of the ground story.[1] This must be one of the first instances of those progressive changes which led to the formation of the distinctively Gothic dripstone. The sloping upper

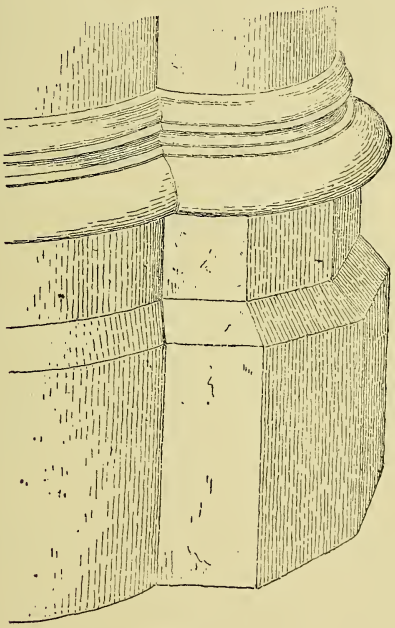


FIG. 166.

surface had, indeed, been sometimes given before this time, as, for instance, at Morienval (C, Fig. 169); but before the middle of the twelfth century it is rare. We may not be able to trace all of the successive steps of transformation, but before the

[1] This string is not now visible from the exterior, it having been removed, in the course of subsequent alterations, from those portions of the wall which are still exposed to view. But in the space over the vaults of the more recently constructed chapels on the south side of the choir, east of the old sacristy, portions of it are still in place.

close of the twelfth century the form A (Fig. 170), from the nave of St. Pierre of Chartres, was reached. An important function of the Gothic string-course is to prevent continuous washing of the walls in times of heavy rains. In order to do this effectively it must be so formed as to throw off the water quickly and completely. The form B (Fig. 169) of the string of Senlis, though an improvement on that of St. Evremond (A in the same figure), is still imperfectly adapted to this function; for its slope is a broken one, and the form of the under surface is such that water may trickle backwards and wash the roll moulding beneath continually. But in a string profiled like that of St. Pierre (A, Fig. 170) the drip is effectually cut off when it reaches the sharp edge formed by the deep undercutting.

FIG. 167.

Early in the thirteenth century this latter form was amplified — as at B (Fig. 170), the profile of the cornice of the ground story of the cathedral of Amiens, where the large hollow added beneath affords a sheltered place for foliate sculpture. The string thus becomes one of the most ornamental features of the building; the deep hollow gives a vigorous horizontal line of shadow which is contrasted by a line of light caught on the projecting round. The narrow fillet under this gives a sharp line of accent, while the regularly spaced bosses of carving in the lower hollow produce a line of exquisite enrichment. Another example (Fig. 171), from the cornice of the Cathedral of Paris, will help to show what variety was attained without adding to the leading members that make up the profiles already noticed. Hardly any two Gothic strings have the same profile; but the variations consist in changed proportions of the parts. In these developed profiles the upper surface always gives a

steep straight line, the lower edge forms a fillet at right angles to the slope, and the undercutting of the adjoining hollow is deep enough to prevent any trickling back of the drip.

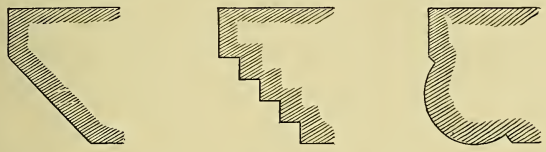


FIG. 168.

The set-offs of buttresses are profiled like string-courses, as in the set-offs of Fig. 172, all from the Sainte Chapelle of St.-Germer-de-Fly.

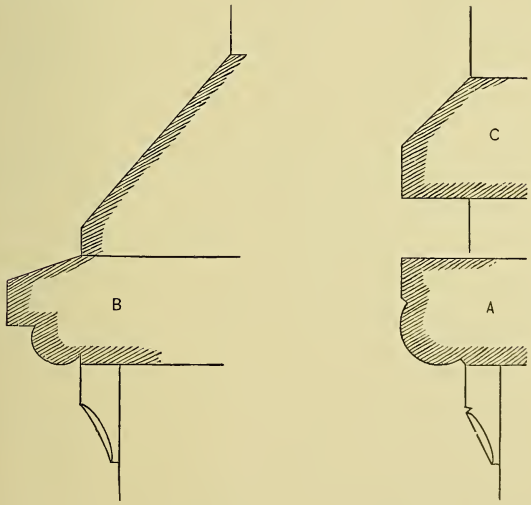


FIG. 169.

The function of the internal string is, of course, more simple than that of the external string. It is merely a pronounced bond course marking the triforium and clerestory divisions, and the dripstone profile is therefore uncalled for here. The internal string of the Romanesque architecture of the Ile-de-

France is very plain in profile — as at A (Fig. 173), from St. Étienne of Beauvais. In the transitional Gothic it becomes a little

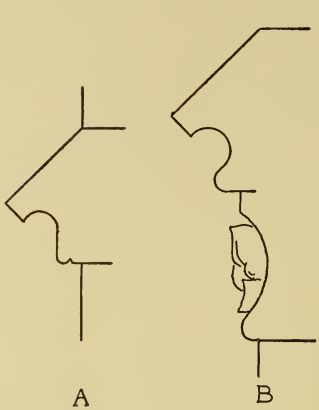


FIG. 170.

FIG. 171.

richer — as at B, from the triforium of St. Germer; C, from that of Senlis; D, from St. Pierre of Chartres; and E, from the ruined Abbey Church of Longpont near Soissons. It was found, however, that a flat-topped string placed as high as the triforium hides a considerable part of the members above it when viewed from the pavement of the nave,[1] as in Fig. 174, where if the visual angle be that of the dotted line *ab*, the portion *cb* of the vertical *c* will be hidden from view. The low bases of early triforiums, high above the pavement, might thus be completely out of sight. But if, from the point *c*, the string be cut to a sloping line so as to bring its surface nearly parallel with the

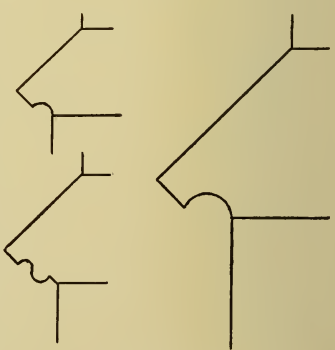


FIG. 172.

[1] Cf. Viollet-le-Duc, s.v. *Bandeau*, p. 105.

line of vision, as in the triforium string of the nave of Paris (Fig. 175), the bases will not, if set close to the edge of the string, be hidden from view. In the Cathedral of Paris, however, the triforium arches are of two orders, and the bases of the shafts of the suborders, being necessarily set back at a considerable dis-

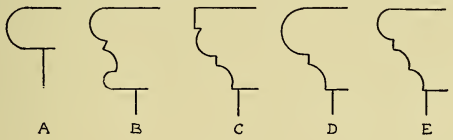


FIG. 173.

tance from the edge of the triforium ledge, are quite out of sight from the pavement, notwithstanding the slope given to the upper part of the string. This profile was, however, rarely used in the best Gothic period. For interior strings the flat top was preferred, and the bases of the triforium shafts are

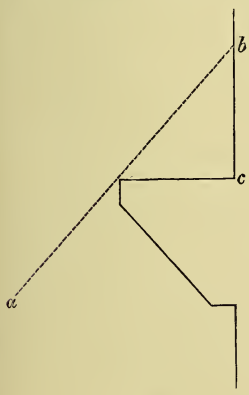


FIG. 174.

FIG. 175.

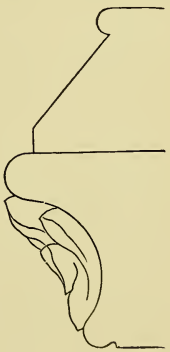


FIG. 176.

brought into view by being raised on a course of masonry. At Chartres, for instance, a vertical course of masonry rises above the string, so that the bases, which are set flush with the course on which they rest, are in full view from the pavement. In the nave of Amiens the richly ornamented string (Fig. 176) has a simple profile with the flat top. The triforium, of two orders, is here set back considerably so as to bring the face of the shaft

which carries the longitudinal rib of the vaulting into the plane of the face of the ground-story wall. This gives three orders of members in the triforium and places the shafts of the sub-orders very far back. But they are brought into view by being raised on a high course of masonry. This course is set near the edge of the string, and is profiled with a long slope, a fillet, and a round. To render the bases effective at the extraordinary height of this triforium, they are provided with very high plinths. By thus raising the members which would otherwise be hidden by the flat-topped string, the necessity for a sloping upper surface to the string itself (which too much resembles that of the external dripstone) was avoided.

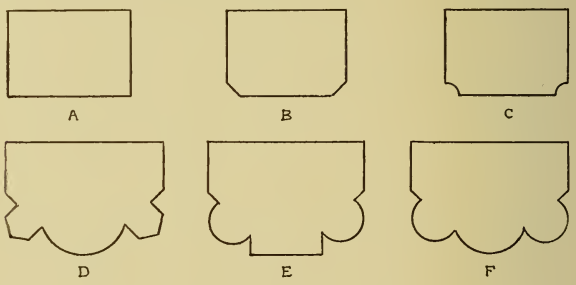


FIG. 177.

In the profiling of vault ribs and archivolts functional exigencies, though not wholly absent, were less influential than in string-courses. The satisfaction of the eye was here more largely the controlling motive of design. The characteristic profiles were developed early; and few changes were made during the period through which the style retained its integrity. The plain square transverse rib A (Fig. 177), frequently used in Romanesque vaulting, as in the apsidal aisles of Poissy, was heavy in appearance, and was little improved by the chamfer that was sometimes given it — as in B in the aisles of St. Étienne of Beauvais and the apse of Morienval, or the cove C in the aisle of Bury. In the apsidal aisle of St. Martin des Champs in Paris the profiles D, E, and F occur. These appear like so many attempts to lighten the effect of these ribs, and to produce agreeable combinations of mouldings; but the results are still heavy and inelegant. In St.-Germer-de-Fly and else-

where the transverse rib assumes the profile A (Fig. 178), which in the apsidal aisle of St. Denis has the improved form B. This last, with slight variations of the details, became the most characteristic profile for this member, and for the main archivolts, during the remainder of the twelfth century. This form of rib, or archivolt, has, it will be seen, a square section with its edges softened by the round mouldings which are contrasted by the dark lines of the deep incisions. The profiles of these incisions

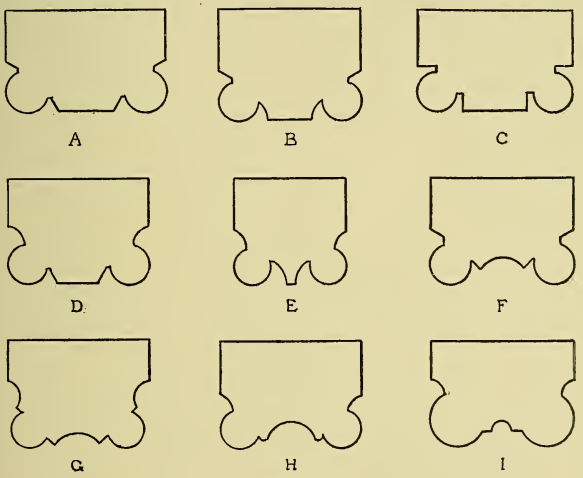


FIG. 178.

vary considerably. In the ground-story archivolts of the choir of St.-Germain-des-Prés, in some of the archivolts of Poissy and elsewhere, they are cut in at right angles to the soffit and sides — as at C, giving a strong narrow line of dark on each side of the round. In St. Denis, B, a lighter and more elegant effect is obtained by the inclined direction of the sides of the incisions, and by the curve given to those of the soffit. In the apsidal aisles of Paris the curved profile is given to the incisions of the sides, but not to those of the soffit, as in D, while in the diagonal ribs E, from the same vaulting, a still more elegant profile is produced by curving the sides of all the incisions. The diagonal ribs, being narrower than the transverse

ribs, have, when this profile is used, the flat portion of the soffit reduced to a fillet, as shown in the figure. Less common, though not infrequent, early rib profiles have a hollow in the middle of the soffit — as at F, from the choir of St. Germer; G, from St. Hildevert of Gournay; H, from the transept of Taverny near Paris; and I, from the choir of Laon.

The diagonal ribs are usually of a different profile. In the oldest Romanesque vaults of the aisles of St. Étienne of Beauvais they are rectangular with a wide bevel on each edge. In the apse of Morienval, and other contemporaneous work, they are three-quarter rounds, as at A (Fig. 179). In the apsidal aisles of St. Denis the profile is as at B, while at Senlis this form is improved by bringing the curves together in a more acute edge, and by introducing a sunk fillet, as at C. The size

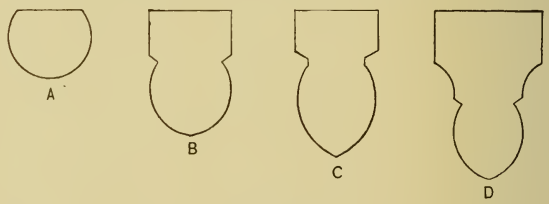


FIG. 179.

of the single round of a diagonal of this form is larger than the rounds on the edges of the square transverse and longitudinal ribs; and it may be questioned whether this gives good proportion.[1] However this may be, any objection that may be felt on this score to the earlier vaulting was avoided in the Cathedral of Paris by giving substantially the same profile (D, Fig. 178), to both diagonals and transverse ribs. The rounds of the smaller ribs were then naturally made smaller than those of the larger ones, and thus good proportion was secured. At Laon the profile D (Fig. 179) is used for the diagonals in connection with the profile I of Fig. 178. This may be regarded as an improvement on the earlier combination with the single large round on the diagonal; but the rounds of these diagonals are still too heavy. Another combination occurs in the earlier vaulting of the apsidal chapels of Senlis, where the profile C (Fig. 178) of

[1] Cf. Viollet-le-Duc, s.v. *Profil*, p. 506.

the diagonals is associated with A (Fig. 180) of the transverse ribs. The lower round of this profile is large enough to secure good proportion; but it is an inelegant form, and was not much used after the middle of the twelfth century. Variations of this profile, which were of frequent occurrence before 1150, are found in the diagonal ribs of the aisle vaults of the nave of Bury, B, in those of the eastern bay of Berzy-le-Sec near Soissons, C, and in those of the choir of Noyon, D, in the same figure; while the unusual profile, E, occurs in the sub-order of one of the transverse ribs of Berzy-le-Sec, and the form F in Ville-

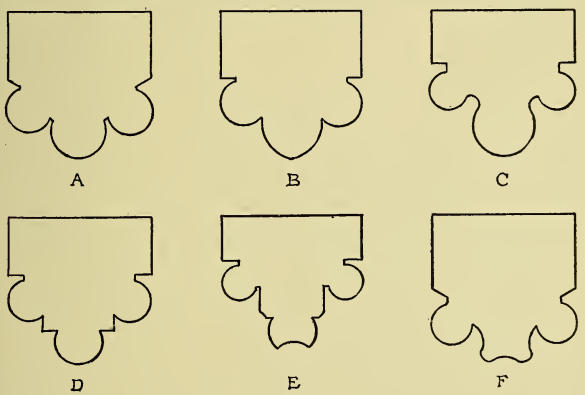


FIG. 180.

neuve-sur-Verberil (Oise). At Amiens the rib loses the square section of the more general type by the addition of a larger round member to its soffit, as at A (Fig. 181), and thus is produced what may be regarded as the perfected Gothic vault rib, which is merely a more elegant variety of the finest earlier types. The added member strengthens the rib in the direction of the downward pressure of the vault, and makes it safe to reduce its width. Great lightness of effect is thus secured, together with general harmony. This is a beautiful profile in which the rounds are effectively contrasted by the reverse curves of the incisions, and by the fillet on the soffit.

In the vaulting of the nave of Amiens this profile is employed for both transverse and diagonal ribs, and these being of different

magnitudes, and the parts of each having appropriate scale, good proportion is maintained throughout, as in the case of the more simply profiled ribs of the Cathedral of Paris. This profile was widely used in vaulting after the first quarter of the thirteenth century; and it was not materially altered during the remainder of the best period of Gothic art. Numerous variations occur, however, in the proportions and details — one instance of which is found in the choir of Beauvais (B, Fig. 181). But while the vault ribs frequently take this form in the monuments of the first half of the thirteenth century, the main archivolts retain, in most cases, the square section with the round-edge mouldings — as in the ground-story arcades of Amiens and Beauvais.

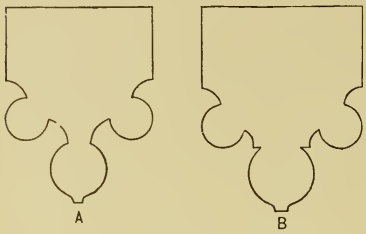


FIG. 181.

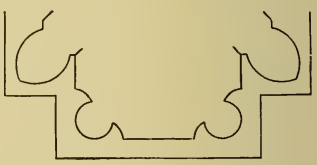


FIG. 182.

The adjustments as well as the forms of the vaulting capitals were generally determined by the profiles of the ribs. When in the early Gothic vaulting the diagonal ribs had the section shown at C (Fig. 179, p. 332), the arrangement of the supporting capitals was as in Fig. 182, an impost from the triforium of Senlis. With the employment of the square section for all the ribs the arrangement became as in Paris (Fig. 46, p. 114). But with the new rib profile of Amiens the lateral capitals had to be again set square

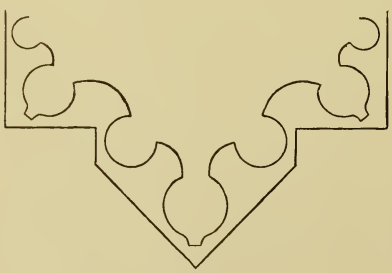


FIG. 183.

with the wall, while the abacus of the central one was placed diagonally, as in Fig. 183.

The only remaining members whose profiles call for examination are mullions and tracery. These in the early and finest periods are simple. The oldest form of mullion is a plain rectangular member with edges bevelled and a rabbet on each side to receive the glass, as at St. Leu d'Esserent (A, Fig. 184). This form is appropriate in connection with the heavy pierced tympanum of St. Leu; but in connection with tracery and as a member whose function is to support the glass of an opening with the least obstruction to the passage of light, it is not a

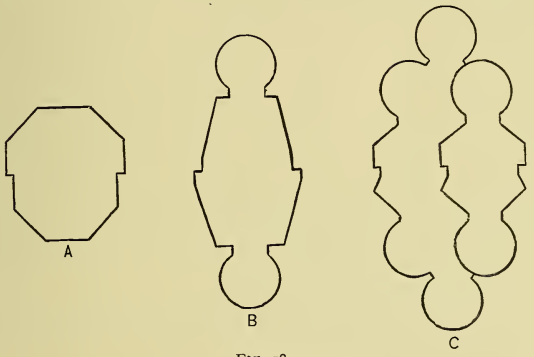


Fig. 184.

good form. The mullion has to resist the force of winds pressing inward. In large openings this force is considerable, and to withstand it, the mullion requires to be deep. But in order that it may offer the least possible obstruction to the passage of light, it is necessary that it should be as narrow as is consistent with the strength that is needed to carry the weight of the tracery with which it is charged. These exigencies were recognized by the designer of the dividing members of the apsidal openings of the Cathedral of Reims, and the mullion section (B, Fig. 184) from one of these openings established the typical Gothic form, which was but slightly modified during the best epoch, except by the addition of other members similar to those of which this section is composed, in cases where the more numerous divisions of larger openings called for larger mullions

and tracery with lighter subordinate members. The apsidal openings of Reims require but one mullion each, and all of the tracery which branches out of it has the same profile. But in the vast openings of the clerestory of Amiens, three mullions were needed, the central one of which requires to be stronger than the others. It is therefore, together with the jambs, treated as of two orders — and hence has the profile C (Fig. 184), which is an amplification of the profile of the secondary mullions whose section is given within that of the larger one. The three round members of the central mullion are carried out in the larger tracery which branches from it, while the single round only adorns the tracery of the sub-order which springs from the simpler secondary mullions. A variation of this profile occurs in the tracery of the Sainte Chapelle of St. Germer (dating from the middle of the thirteenth century), where hollow rounds take the place of the sunk fillets of the profile C. No marked further changes were wrought in the profiles of mullions and tracery until, in the declining Gothic, sharp and multiplied arrises took the place of the rounds.

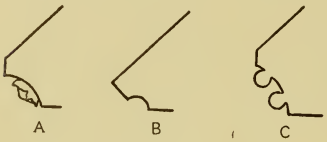


FIG. 185.

It may here be remarked that the hood-moulding does not generally occur before the thirteenth century; though in a few cases it is found in the early period — as in the choir and apse of St.-Germer-de-Fly. After 1200 it is freely employed on the outside of the building, and sometimes on internal arcades also. On the outside it has the function, though not always the profile, of a dripstone; but within its function is purely ornamental. One of the earliest instances of its external use appears in the apse of the Cathedral of Reims — where it has the profile A (Fig. 185), the hollow being adorned at intervals with bosses of foliate carving. In the clerestory of Amiens, the sloping top becomes steeper, and the hollow is diminished, as at B. In the Sainte Chapelle of St. Germer it is developed as at C, and is surmounted by an open ornamental gable.

We have now examined the most characteristic profiles of the several Gothic members in which mouldings occur, and it will be seen that during the best period of the style they are

feature of Norman and Anglo-Norman design, is joined to a bell of thoroughly French Gothic type. A glance at Fig. 149, p. 311, will illustrate this. It will be seen that the crockets here employed are altogether French in character and arrange-

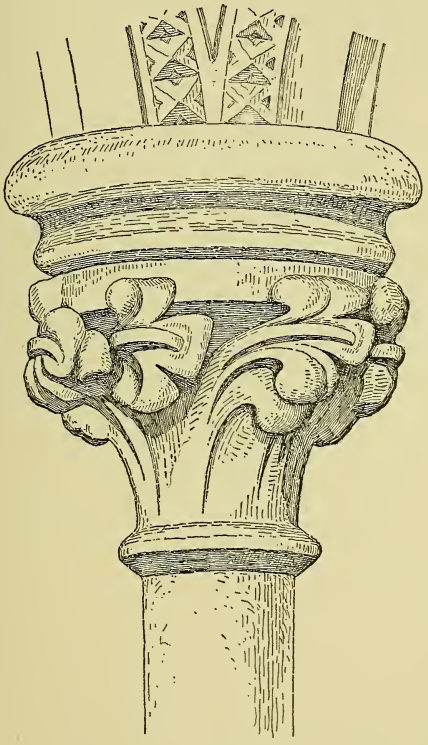


FIG. 186. — Lincoln.

ment, and have the appearance of having been wrought by French workmen, who, being required to conform to the general Anglo-Norman scheme in employing the round abacus, produced a form of capital which has not the merits of either the French or the Anglo-Norman types. Associated with the round abacus the crockets are meaningless and spoil the general out-

line, while the abacus, which is too small for good proportion, has no appearance of organic connection with the bell. The total result is awkward and unsatisfactory, notwithstanding that the crockets themselves are very beautiful, and have the refinement of execution which belongs to the finest French work, a refinement that is rarely approached in the works of Anglo-Norman carvers.

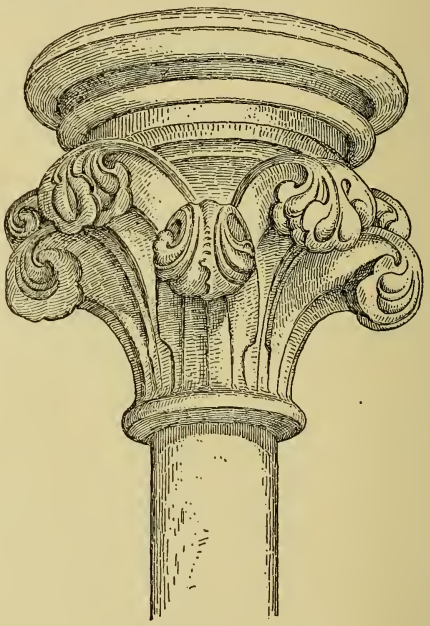


FIG. 187. — Lincoln.

Capitals of this mixed character are curiously interspersed with those of the local type in nearly all of the arcades of this early portion of Lincoln Cathedral. In the south triforium they are used exclusively in the first and second bays counting from the western transept. Other still different capitals occur in these arcades. They have crockets arranged as in the preceding examples, but they differ from them in design and execution. They appear to be English, or Anglo-Norman, imitations of the

French work. One of them (Fig. 188), from an early portion of the west transept, will serve for illustration. The general outline is better than that of Fig. 187, but the details of design and execution are not like French work — being less finished and

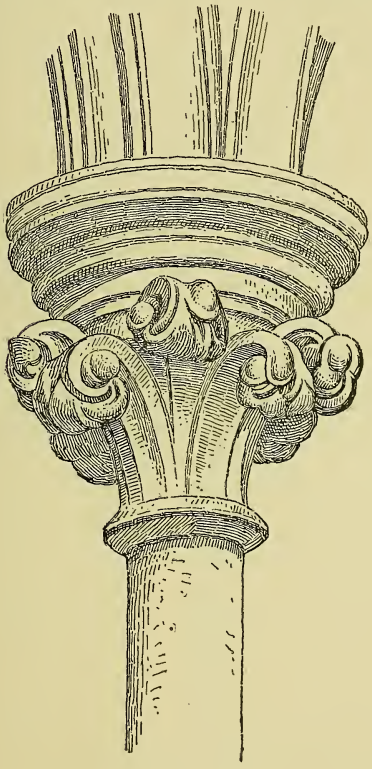


FIG. 188. — Lincoln.

having peculiar elements which will be considered, in another chapter, in connection with the subject of foliate sculpture. Figure 189 exhibits another type of frequent occurrence. It is a modification of the type shown in Fig. 186, p. 339, but hardly an improvement on that beautiful early form. The ornamentation

is redundant, and has the effect of a mere wreath encircling the bell, whose profile is largely hidden. Yet as compared with later capitals in England, it has merits. The ornamentation in itself is architectural and beautiful, and the general outline, though it has lost the Corinthianesque character, is compact and not ungraceful.

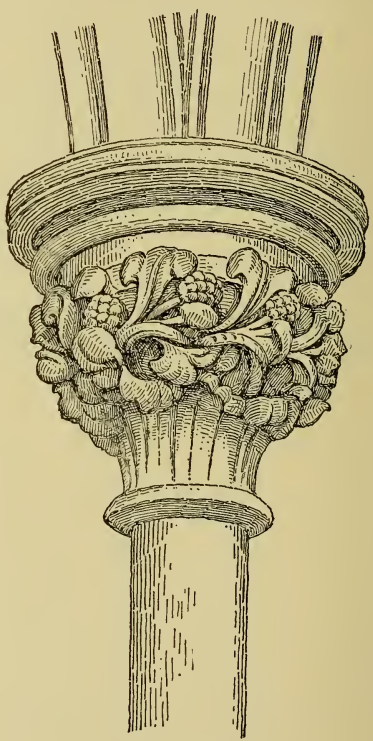


FIG. 189. — Lincoln.

Before the middle of the thirteenth century the tendency to redundance of ornament became strong; and this, quite as much as the round abacus, characterizes the later forms of so-called early English capitals. The profile of the bell is in great part lost to view in such capitals, as may be seen in Fig. 190, a

group of capitals from the arcade of the north choir screen of Lincoln. The crockets here, reaching far out from the bell, have no function, or functional expression; and, although their lines have much abstract ornamental value, they lack the monumental restraint, and the quiet beauty, of the best art.

Of still different character are the nearly contemporaneous capitals (Fig. 191) of the transept and eastern end of the nave of

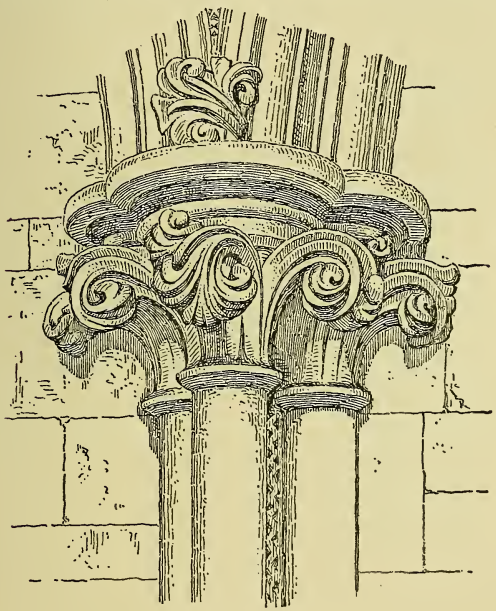


Fig. 190. — Lincoln.

Wells Cathedral. These are peculiar, and appear to be the work of a local school, whose influence is noticeable at Glastonbury also. They differ widely from anything at Lincoln, and, while in many points resembling French work, they do not appear to be wholly French. The polygonal abacus, the adjustment of the crockets, and the details of execution are conspicuously French; but the general form and excessive projection of the crockets are Anglo-Norman characteristics. The profile, irrespective of the crockets, is distinctly French.

A very common type of capital in England in the thirteenth century is the plain moulded capital (Fig. 192). This capital has no foliate ornamentation whatever, but is adorned with a series of mouldings only, and looks as if it might have been turned out on a lathe. It is extensively used in many of the most important monuments of the so-called Early English style, as in Westminster Abbey, Salisbury, Beverley, and Southwell. It is rarely a capital of good profile, and its effect is bald and monotonous in the extreme.

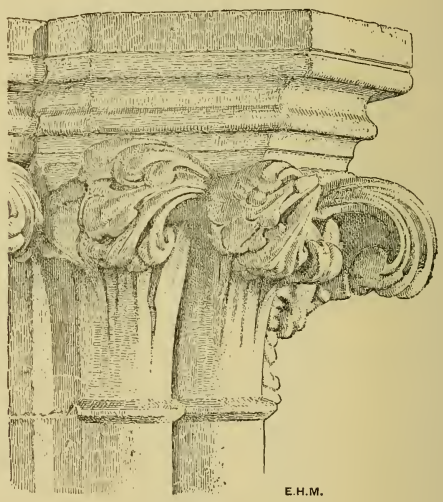


FIG. 191. — Wells.

As a general rule, nearly all of the mouldings of the abacus in England are rounded. The upper member, whether in the interior or on the exterior of the building, has more or less of the form of the drip mould, as at A (Fig. 193), from the arcade of the interior of the west transept of Lincoln. B, in the same figure, is the profile of the capital (Fig. 190) from the choir screen of Lincoln, while exceptional profiles, apparently showing French influence, are C and D, from Glastonbury and Wells respectively.

The profiles of bases in the early pointed architecture of

England are often particularly fine. In many cases they somewhat resemble those of the French Gothic, though they are generally made up of a larger number of mouldings, and these mouldings rarely have the subtle forms of the finest French models. The profile A (Fig. 194), from the choir of Lincoln, is characteristic of the best. Such profiles give a very spreading form to the base, and their hollows are deeply cut, giving strong lines of shade. The profile B, in the same figure, from the nave, and C, from the presbytery of the same cathedral, illustrate more simple types, which are often of considerable elegance. But base profiles of this fine character are not of constant occurrence. Such poor ones as A (Fig. 195), from the choir of Ely, B and C, from the triforium of the nave of Lincoln, D, from the triforium of the choir of Hexham, and E, from the clerestory of the choir of Whitby, are not uncommon.

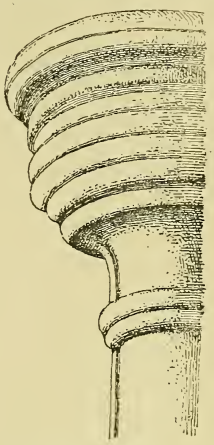


FIG. 192. — Beverley.

The square plinth, like the square abacus, is unusual in England. The whole base is commonly round in plan, and of the superimposed courses of which the plinth is made up, one

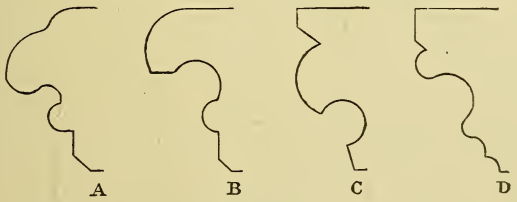


FIG. 193.

or more are usually moulded, giving a profile, as at A (Fig. 196), from the aisle of the choir of Lincoln, or B, in the same figure, from the choir of the Temple Church in London. The square plinth being absent, there was, of course, no place for the *griffe*, and thus the base lacks the variety, and the expression of firm

foothold, which give so much character and beauty to the bases of the French Gothic. In a few instances, however, the square plinth occurs. In the French work of the choir of Canterbury

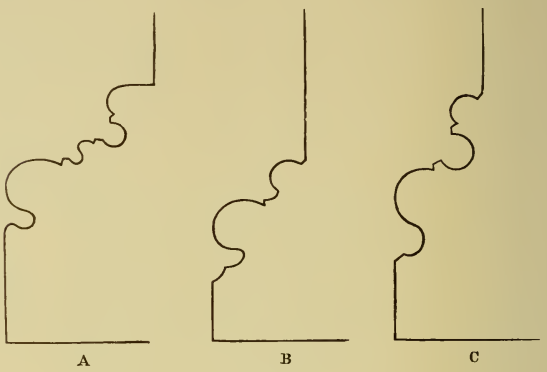


FIG. 194.

it is found, of course, and the *griffe* occurs with it. In the north porch of Wells is a shafted arcade, whose bases rest on a

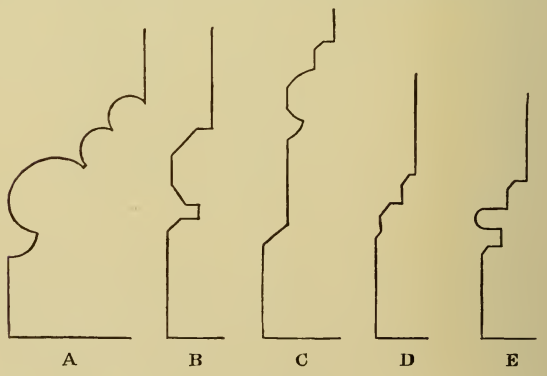


FIG. 195.

ledge which is above the eye level. These bases have square plinths, and the *griffes* with which they are furnished are appropriately placed on the under side of the torus, as in Fig. 197.

The characteristic profile of the string-course in this architecture is made up almost exclusively of curves, as at A (Fig. 198), from the choir of Lincoln. The principle of the dripstone is developed partially, but not with strict logic nor with much beauty of line. The straight, steep watershed does not generally occur, nor the sharp-edged fillet. Often, even in important buildings, the upper member has nothing of the dripstone profile. At Salisbury, for instance, the external string at the

FIG. 196.

level of the aisle window sills has the ungraceful and meaningless profile shown in Fig. 199, where the upper member is a heavy half-round. The best English string profile is that of the so-called beak moulding, B (Fig. 198), from Glastonbury. An approach to the French Gothic string profile is sometimes found in early work, as in the profile C, in the same figure, from the clerestory of the choir of Lincoln, and at Wells the curious profile D occurs, the upper part of which is like that of a French string.

In English pointed architecture during the whole of the

thirteenth century, the corbel-table is often introduced beneath the string. It occurs in Salisbury, in the Presbytery of Lincoln, and in many other equally advanced buildings.

Internal strings do not much differ from those of the exterior. A characteristic example is that shown at E (Fig. 198), from the aisle of the choir of Lincoln; and another characteristic form is shown at F, from the triforium string of the same choir.

FIG. 197.

In arch mouldings the Anglo-Norman architects displayed a singular predilection for a multiplicity of members varying in profile and separated by deep hollows. In this way a considerable effect of lightness was given to arches that were really very massive. Even in the purely Norman buildings, such as

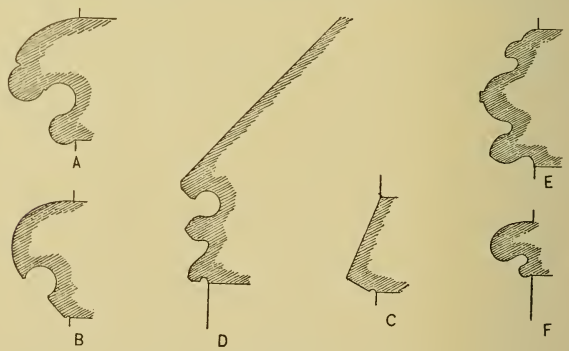


FIG. 198.

St. Albans, Norwich, Romsey, Ely, Peterborough, and many others, indications of this tendency are shown by the general employment of at least three orders in the main arcades, and each of these orders is frequently subdivided into numerous mouldings. This multiplication of orders naturally led to the rounded impost section to which the round abacus was not seldom adjusted with good effect, as at Southwell (Fig. 200). And in the early pointed style the rounded section was soon

given to each separate order by the peculiar arrangement of the rounds, hollows, and fillets into which these orders were subdivided. An early instance, among many others, occurs in the great archivolts of Malmesbury Abbey (Fig. 201). Another peculiarity is noticeable here which was also retained and amplified in the arch profiles of the early English architects, that, namely, of the depression between the rounds of the soffit of the sub-order. Both of these characteristics are developed in the

FIG. 199.

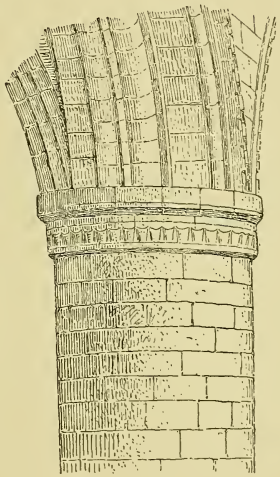


FIG. 200.

archivolts of St. Mary's Church, New Shoreham, and are still further amplified in the pier arches of the choir of Lincoln (Fig. 202).[1] In the nave of the same building the archivolts become richer by the addition of a third order; and each order here assumes an almost perfectly segmental section. Equally elaborate archivolts of the same character are found in the nave of Salisbury.

[1] I would emphasize the fact of the resemblance of the archivolt profiles of the choir of Lincoln to those of the nave of Malmesbury, because it has been erroneously affirmed by Mr. Parker and others that the choir of Lincoln is a purely English work in which no traces of Norman influence appear.

The variations of arch profiles which characterize the early pointed architecture of England are practically endless; but they need not be considered further. They are often made up

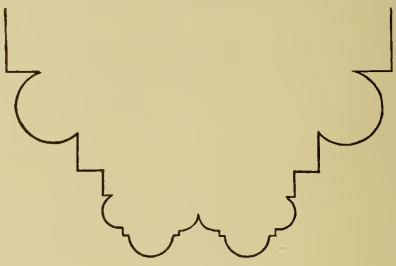


FIG. 201.

of good parts, skilfully contrasted, but they are almost always over-elaborated. The minute subdivisions and the frequent introduction of narrow fillets, which became constant by the

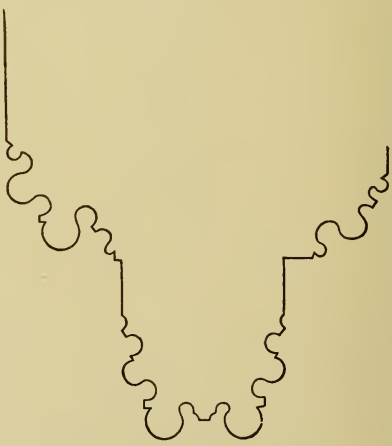


FIG. 202.

middle of the thirteenth century, produce a hard linear effect. The best English profiling is that of the earliest pointed monuments. The mouldings of Bishop Hugh's choir of Lincoln, for instance, contrast agreeably, in their greater simplicity, with the

redundant profiling of the arcades of the presbytery of the same church.

The profiles of vault ribs are not materially different from those of the archivolts. The double rounds, separated by a hollow, on the soffit are common. In the choir of Lincoln the principal ribs of the aisle vaults are almost identical in section with the sub-orders of the pier arches. In diagonals the profile (Fig. 203), from the choir of Lincoln, is characteristic. The lower member of this profile resembles the corresponding member of the rib profiles of Amiens and Beauvais (Fig. 181, p. 334); but the details are different — having the multiplicity of parts, the deep hollows, and the numerous fillets already spoken of as characteristic of Anglo-Norman work. The rectangular section of the fillet on the bottom of the lower round is characteristic of Anglo-Norman treatment, and is in contrast with the gentle curves of the sides of the French fillets. Another noticeable peculiarity of the English rib profiles is that of the joining of rounds and hollows by continuous curves, whereas in France these curves intersect sharply, giving accent to the mouldings. The fillets on the lower rounds are sometimes curved on the sides in England as well as in France — as in Fig. 122, p. 223, profiles from the Presbytery of Lincoln. The continuity of the reversed curves is here again noticeable in the joining of the rounds and hollows. This treatment appears to be of Norman origin, and is frequently met with in the profiling of the early Norman Gothic of the continent, as in Fig. 204, a transverse rib from the vaulting of the apsidal aisle of Lisieux.

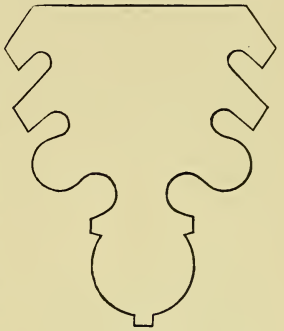


FIG. 203.

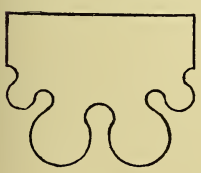


FIG. 204.

Thus a careful comparison of Anglo-Norman profiles with those of the French Gothic architects shows that they differ one

CHAPTER XII

PROFILES OF THE TWELFTH AND THIRTEENTH CENTURIES IN GERMANY, ITALY, AND SPAIN

No noteworthy changes from Romanesque models appear to have been made in the profilings of German churches during the twelfth century. In the capitals of the pointed buildings of the early thirteenth century the influence of the cushion-shaped capital of the Rhemish Romanesque architecture is often noticeable. In such capitals the lower part of the bell usually has

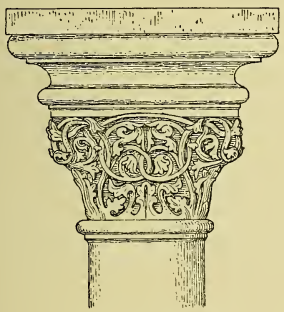


FIG. 205. — Magdeburg.

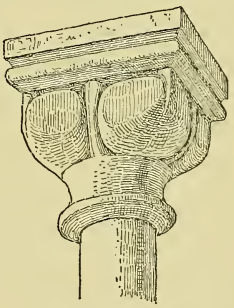


FIG. 206. — Heisterbach.

something of the Corinthianesque form, as those of the nave of Magdeburg (Fig. 205). Capitals of similar form are, indeed, frequent in the transitional Gothic of France, as in Senlis and many other buildings of the middle of the twelfth century. But in Germany they occur in monuments that were constructed more than half a century later. By the second quarter of the thirteenth century the Corinthianesque Gothic type of France was introduced, and many beautiful examples of it occur in Bonn, in Limburg on the Lahn, in St. Gereon of Cologne, and elsewhere. In the apse of Heisterbach capitals of the first type just mentioned assume very singular and curiously inelegant shapes, as in Fig. 206. These are associated with others

of more graceful outlines, while, in the upper arcade of the same apse are capitals of wholly different character, having round abaci and plain mouldings, substantially like those which are common in the early pointed architecture of England. Before 1250 the profiling of capitals becomes more peculiarly German. The bell (in large pier capitals) often becomes lower in proportion to its diameter; and while the concaved outline is retained, this outline is largely obscured by a double row of bossy leafage. The abacus, in such capitals, is round in plan, and its profiling is made up of rounded members, as in the Liebfrauenkirche of Trier (Fig. 128, p. 246), and in St. Elizabeth of Marburg. In the Liebfrauenkirche the smaller capitals have a more distinctly Corinthianesque form. Those of the vaulting shafts adjoining the apse are of the French Gothic type, while those of the smaller arcades have round abaci and a likeness to early English types. In some parts of the nave of Marburg the plain moulded capital again occurs. The influence of France is thus shown at this period in the forms of capitals, no less than in the larger architectural features; but with a subordinate influence from England, such as from the historic relations of the two countries we might naturally expect to find.

FIG. 207. — Cologne.

It was not until after the middle of the thirteenth century that the most distinctly German forms of capitals were produced, examples of which are found in the choir of Cologne Cathedral; a monument which (though purely French, as we have seen, in its structural system) is largely German in its ornamental details. Figure 207, a capital from the triforium of this choir, affords a characteristic illustration.[1] Here the bell (the most beautiful part of all fine capitals) can hardly be said to exist. The shaft itself, in effect, passes up through the neck moulding and is surrounded by two zones of leafage of a dry and graceless character. Just below the abacus this shaft expands in a short curve which is almost wholly hidden by the upper zone of leafage. The pro-

[1] Figure 207 is taken from Boisserée.

filing of the abacus is far removed in character from that of French models, and is singularly hard and poor. In the naves of Strasburg and Freiburg, French Gothic types are again reproduced, though in some cases, as in the vaulting capitals of Freiburg, with a wide departure from the grace and beauty of the best French designs.

Bases, like capitals, in the early part of the thirteenth century are, in Germany, substantially of the early French Gothic form, in some cases with the angle spur, as in Bonn, and in others without this feature, as in Limburg. In many of these bases the profiling has a degree of beauty almost equal to that of French work, as in the triforium of Limburg; but the extreme refinement of contour which is found in the finest Gothic bases of France is hardly ever to be met with in Germany. Often in the later German pointed buildings the base profiles are noticeably poor, as in the nave piers of Marburg, where a single ogee moulding takes the place of the great and little tori with the scotia and fillets of the true Gothic base.

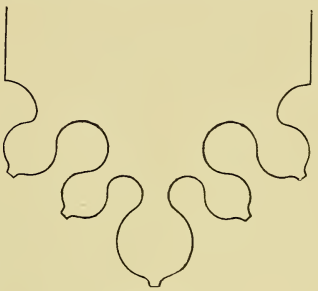


FIG. 208.

The same general likeness to French models is found in the profiles of archivolts, vault ribs, string courses, and mullions, until a very late period, when the subdivisions of mouldings are greatly increased, and sharp arrises take the place of rounded forms, as in the elaborate mouldings of the west end of Cologne. But before this latter condition is reached the pier archivolts and other kindred members often have much the same character as those of the later Anglo-Norman architecture, — the salient members having fillets, and being separated one from another by excessively deep hollows, as in Fig. 208, the profile of a pier archivolt of Cologne.

The profiles of the pointed architecture of Italy are very diverse in character. No generally recognized principles seem to have governed the designers in their production at any period. In many cases, especially in the capitals and bases of the early

Cistercian and other buildings which have the most of Gothic character, the French Gothic profiles are closely reproduced, while often, at the same time, they are widely departed from, as in the nave of St. Francis of Bologna, where the capitals of the octagonal piers are low in proportion to their height, and thus resemble those of such German monuments as the Liebfrauenkirche of Trier. In his more independent productions in this field the Italian designer displays little inventive aptitude, but follows a capricious fancy with little regard to functional needs,

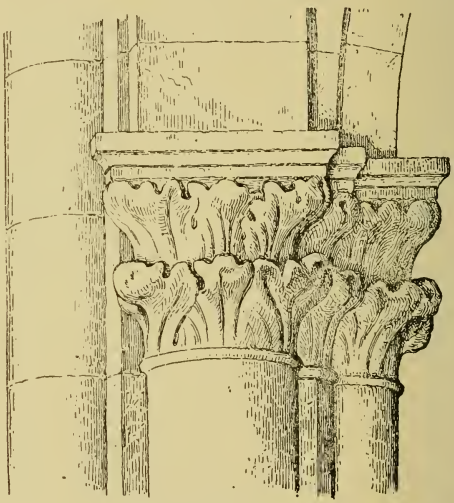


FIG. 209. — Sta. Maria Novella.

and not seldom in violation of all principles of grace and beauty. As might be expected, his native classic bent displays itself more or less constantly, though in the pointed architecture of Italy neither Gothic nor classic principles are ever consistently adhered to.

For illustration of the types of capitals and bases, which in the native pointed art have the most of Gothic form, we may take those of the nave of Sta. Maria Novella in Florence (Fig. 209). In general form and proportions these capitals lack the beauty of French models; and they have little elegance of outline.

Archivolts, and transverse vaulting ribs, in Italian pointed architecture, are commonly of plain square section without subdivisions or adornments of any kind. They may, however, be, as is Sta. Croce of Florence, of two orders of very slight projection, or they may have a plain fillet following the extrados, as in the cathedral of the same city. Nothing like the moulded sections of these members is common except in early buildings

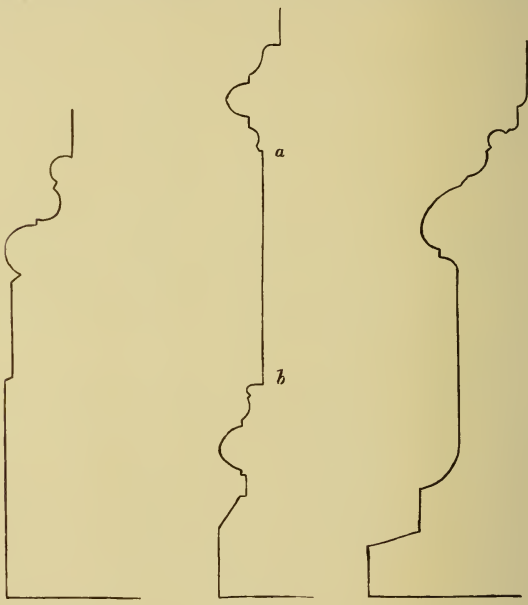


FIG. 210.

where transalpine influences have prevailed, as in the transverse ribs of St. Andrea of Vercelli, which have French Gothic profiles. Diagonal ribs are commonly bevelled, but they are rarely otherwise adorned. The diagonal ribs of the Cathedral of Florence, however, have the section shown in Fig. 211, where the introduction of the *cyma recta* is one of the many indications, noticeable in the Italian art of the Middle Ages, of the hold that classic elements of design retained on the minds of the builders.

Outside strings and cornices almost invariably exhibit the classic profiling with little essential modification. Anything like the Gothic dripstone is rare in Italy. The upper surfaces of the outside mouldings are in some cases bevelled, as in the Cathedral of Florence, but more often they are flat, even in buildings that have most Gothic character, as in St. Francis of Assisi. Frequently, as in Florence Cathedral, the main cornice is carried on corbels, and is made to support a low parapet. In the profiling of all such features classic and Romanesque characteristics predominate.

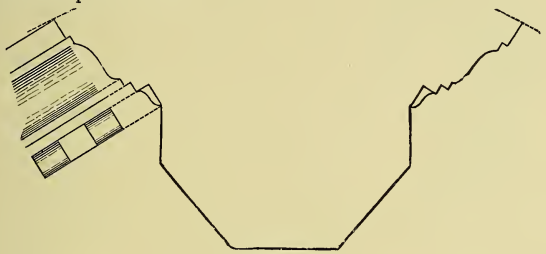


FIG. 211.

The dependence of Spain on France was as great in respect to profiling as we have seen that it was in matters of general design and construction. In early pointed buildings, like the old Cathedral of Salamanca, the capitals and bases are purely French in aspect, and must, in most cases, it would seem, have been wrought by French workmen. This continues to be the case until after about 1220, when, in the Cathedral of Burgos and elsewhere, an English influence seems to make its appearance in the substitution of the round for the square abacus, as well as in some other details. Nothing peculiar, that can be considered as the result of a native artistic influence, appears in these details at any period of pointed design in Spain. In vault ribs and archivolts a peculiar massiveness is noticeable, as before remarked (p. 284), in early buildings; and in such buildings, as in Salamanca, transverse ribs and the sub-orders of archivolts are, as in Italy, generally square without any mouldings. In respect to the general imitation of French models outside mouldings form no exception to those of the interior. So little is there in the profilings of Spain that is in any way peculiar to the country that no detailed consideration of them is necessary.

were, afforded models, in some measure characteristic, of the great art of antiquity. Upon such models the mediæval sculptors of this region naturally formed their style, just as the constructors formed their architectural system on that of the extant Roman buildings.

But the productions of the mediæval sculptors of Southern Gaul abundantly show that other sources of instruction and inspiration were also open to them in the works of Byzantine art — an art which, in its best forms, was of a far more admirable and potent character than the decadent provincial Roman art.

FIG. 212.

The principal examples of Byzantine design offered as models to the artists of the West were the manuscript illuminations and the carvings in ivory, large numbers of which were possessed by the great monastic houses of the early Middle Ages, most of which were active centres of artistic culture and production. Of these manuscripts and carvings many are still preserved in the National Library of Paris and in other great European collections. The miniatures with which the pages of these manuscripts are profusely adorned are worthy of special attention. They afford a notion of Byzantine art very different from that which is derived from the writings of Vasari, or from the formalized productions of the school of Mount Athos, and are often superior in design to the splendid mosaics of Venice and Ravenna. They exhibit little of the stiffness, inelegance, and semibarbaric rudeness that are commonly conceived to be characteristic of Byzantine work. They frequently display a remarkable degree of grace, action, and expression. Figures 212 and 213, from a Byzantine manuscript of the tenth century,[1] will convey some idea of their character,

FIG. 213.

[1] Ms. No. 64, National Library, Paris.

temples, or otherwise varied; but whatever the arrangement of locks and tresses may be, a similar regularity of details, and the same simplified and conventional treatment, are practically constant. The Greek sculptor, even of an advanced period, seems to have felt that stone does not lend itself to any imitative rendering of hair, and he took evident pleasure in making it emphatically conventional. The monumental and ornamental value of this treatment was also, it is clear, appreciated by

FIG. 214. — Notre Dame du Port.

him; and hence it does not disappear until the period of the decadence of Greek art.

With a few exceptions, as in the case of the school of Toulouse,[1] to which the sculptures of Moissac (of which the head, Fig. 216, is an example) belong, the schools of sculpture that arose south of the Loire were not progressive schools. They rarely displayed any original powers, or any fresh artistic

[1] Cf. Viollet-le-Duc, s.v. *Sculpture*, pp. 125, 126.

purpose. They were traditional schools without vitality, they gave birth to no important developments, and, although for a time their activity was vigorous, after the twelfth century they passed into decline.

North of the Loire, however, the case was different. In Burgundy the monastic carvers, by the beginning of the twelfth century, produced works which, though still not freed from the limitations of primitive artistic conditions, gave evidence of a new impulse guided by a fresh observation of nature. Of this

FIG. 215. — Olympia.

sculpture the Abbey Church of Vézelay and the Cathedral of Autun afford, in the jambs and tympanums of their portals, characteristic examples. These are, indeed, curious, and almost barbaric in general aspect; but they are also remarkable for movement and expression, as well as for a marked survival of classic qualities of composition. M. Viollet-le-Duc has called attention [1] to two figures of apostles carved on one of the jambs of the portal of Vézelay. They appear engaged in animated conversation, and their gestures are finely caught from nature. Among the smaller figures of the tympanum above these are

[1] S.v. *Sculpture*, pp. 113, 114.

some of surprising freedom of action and truth of form, though archaic conventions are still conspicuous.

The works of these early schools of the South and of Burgundy, together with those examples of Byzantine art that were common in the monastic libraries, appear to have constituted the chief sources of stimulus and guidance open to the early sculptors of the Ile-de-France, whose works soon surpassed in excellence all that had been previously done since the decline of the ancient schools of Greece. In the Ile-de-France the con-

FIG. 216. — Moissac.

ditions for the growth of a school of sculpture were, by the beginning of the twelfth century, exceptionally good. Not only was the race itself, as we have before noticed, peculiarly well fitted for artistic pursuits, and the conditions of climate favourable, but the geological formation of the country was such as to meet all the requirements of this new art. As Greece had her Paros and Pentelicus, and Italy had her Carrara, so France had, in the basins of the Seine and the Oise, her beds of *lias cliquart*, a stone of fine grain and strong substance, easily cut and suitable for delicate carving.

Of figure sculpture in the Ile-de-France we have few examples of an earlier date than the second quarter of the twelfth century. But from about 1140 remains are extant which show, together with the imperfections peculiar to an immature art, a grace and mastery of design, a truth and tenderness of sentiment, and a fineness and precision of chiselling, that are unparalleled in any other schools save those of ancient Greece and of Italy in the fifteenth century. Conspicuous among the early works of this most noble school are the statues of the north transept of the Church of St. Denis. They are life-sized figures of kings, and are ranged against the shafts of the jambs on either side of the portal. These statues possess merits never before attained in Northern Europe; though at first sight they may not impress the beholder as much superior to the early works that had been produced elsewhere in the North. On attentive examination, however, their remarkable qualities will be apparent to a discriminating and appreciative eye. If they be compared with the works of the sculptors of Southern Gaul, — as, for instance, with the statues of the cloister of St. Trophime at Arles (Fig. 217), which are even later in date, — their superior qualities will be felt. In this example it will be noticed that, notwithstanding the fine classical casting of the draperies, there is much of the rigid effect which is noticeable in the more formal types of Byzantine art. Traces of Byzantine convention in the treatment of the draperies are clearly marked. This is true especially on the breast, where the folds are suggested by simple incised lines on surfaces which are but very slightly mod-

FIG. 217. — St. Trophime.

elled. In the heads and hands a degree of angularity is apparent, and a tendency to model in planes, which bespeak a comparatively rude art. In the sculptures of St. Denis (Fig. 218) these defects do not appear. In the head and extremities there is no block-like treatment. The forms are modelled into the rounded surfaces of nature, the features are delicately wrought, the hair and beard, which are grandly massed, are subdivided into orderly locks in a thoroughly Greek manner; and while every part is delicately finished there is no over-elaboration, nor has any attempt been made to give the hard stone an undue look of pliancy. Yet the carver has wrought the important details with special care, — the thin, gently compressed lips, the light, parted mustache, and the well-formed chin. The drapery is as simple and well composed as is that of the figure of Arles; but it exhibits a superior grace of line, and although the work is wanting in the freedom and skill of later Gothic works, there is hardly any trace of the formal Byzantine conventions. The statue manifests a new spirit and a high order of genius. It already embodies those fundamental architectural qualities of design which distinguish Gothic sculpture.

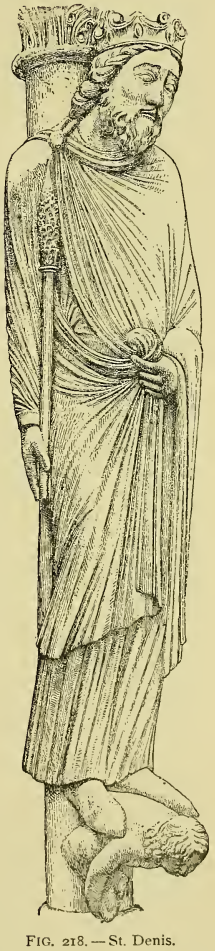


FIG. 218. — St. Denis.

The most splendid collection of early Gothic statues extant is that of the west front of the Cathedral of Chartres. These sculptures date from about the middle of the twelfth century; and though even more severely architectural in character than the figures of St. Denis, they have not the stiff and block-like effect of the sculptures of St. Trophime.

In execution they are remarkably refined and delicate. The heads display a variety and lifelikeness that indicate a close observation of nature. Each one has an air of veracity as if it were the portrait of an individual.[1] The treatment of hair and beards is at once monumental and true to nature; while the draperies, though severely conventionalized and even archaic in character, are in some cases remarkably faithful in the modelling of folds, and elegant in arrangement. In short, these statues are by no means the stiff and immobile objects which an inattentive observer might fancy them to be. Their erect and formal postures, elongated proportions, and severe modelling are largely the result of deliberate architectural purpose rather than of incapacity on the part of the carvers to give them more natural freedom of movement and more developed form. This becomes evident on attentive examination. Within the limits fixed by the conditions to which he had to conform the artist has, in each case, shown great ability and skill as a lifelike and graceful designer. Take, for instance, the statue Fig. 219. Although, in common with all the others, standing erect and facing forward, the upper portions of this figure are not wholly wanting in ease and even grace. The positions of the arms are, as compared with those of Fig. 217, both natural and apparently capable of movement. The composition of lines in the head and shoulders, the easy fall of that portion of the mantle which crosses the throat, the modelling of it over the breast and arms, and the delicate rounding of the lifted hand — all bespeak artistic powers superior to those of the sculptor of Arles. The rigid restraint of the figure is apparently self-imposed in obedience to the demands

FIG. 219. — Chartres.

[1] Cf. M. Viollet-le-Duc, s.v. *Sculpture*, p. 118.

SCULPTURE OF LINTEL, CATHEDRAL OF SENLIS.
Latter part of twelfth Century.

design traditionally transmitted through Byzantine art, but not enslaved by its technical mannerisms, the artists of the Royal Domain began with rapidly increasing proficiency to give freer play to their own imagination and observation, and to produce works of art which in all but sentiment — in which the best works of the twelfth century cannot be surpassed — remain unrivalled among the productions of the Middle Ages.

The portion of the Gothic building where figure sculpture chiefly occurs is the western façade, though other parts of the exterior are also more or less richly adorned with statues. In a cathedral of the first order, such as Paris, Chartres, Amiens, or Reims, many hundreds of sculptured figures are displayed. Gathered principally within the deeply splayed portals, there is

FIG. 220. — Paris.

often in addition, as at Paris, Amiens, and Reims, a row of colossal statues just above them extending across the entire front. And besides these are many figures, on large and on small scale, under the canopies of the buttresses, while gargoyles project from the cornices, and grotesque creatures are ranged upon the parapet.

Of all the great cathedral façades of this epoch the most important in point of sculpture is that of Paris. Begun in the very first years of the thirteenth century, it exhibits the finest work of the French carvers during the entire first quarter of that century. No other church, not even Amiens, affords so fine a display of the Gothic genius in this branch of design. As almost everywhere else in France, a great part of the sculptured enrichment

door of the west façade of Amiens. As I have already said, the artists of the early thirteenth century were able to give more freedom and natural modelling to such figures than had been the case with those of the preceding century, while maintaining that monumental character which is so essential a quality of architectural sculpture. In this Virgin of Amiens the archaisms that appear in the early statues of Chartres and St. Denis give place to a more skilful and natural execution. The head of this figure is well set, the features are regular and finely cut, and the wimple falls in graceful lines upon the shoulders. The pose of the body is unconstrained, though quiet, and the simple draperies are cast into easy folds of truthful form as well as classic elegance. Few examples of mature mediæval art exhibit more calmness or more sweetness of expression.

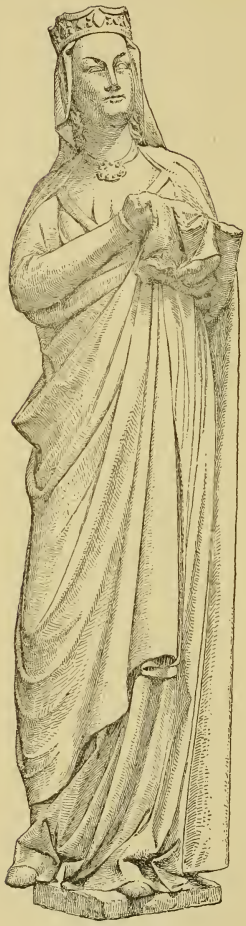


FIG. 221. — Paris.

More strikingly graceful and queenly in bearing is the statue (Fig. 221) of the Virgin in the portal of the north transept of the Cathedral of Paris. In the Virgin of Amiens just spoken of, as in the earlier Gothic statues generally, the weight of the body is supported equally on both legs. This keeps the shoulders level and produces a somewhat formal cast of draperies, as in Figs. 218 and 219, pp. 367, 368; but in this figure an easier posture is assumed. Resting mainly on the left foot, the lower part of the body of this Virgin of Paris is thrown slightly to the

tympanums of the central doorways of Chartres and Le Mans.[1] But by degrees other imaginary creations were introduced, until finally the grotesque animal life of the Gothic edifice became even more extended in range than that of the richest Romanesque monuments had been. The sparing use of grotesque sculpture extended, indeed, through the twelfth century; and the most of it had an ornamental character like that which was so abundantly introduced, during the same period, in the elaborately wrought borders of illuminated books. Figure 222,

FIG. 222. — Senlis.

from a plinth of the central portal of the Cathedral of Senlis, is a typical example of such sculpture. The manner in which this human-headed and winged monster, with a tail branching into leafage, is gathered into the space between the mouldings is ingenious and effective. On such fanciful themes an endless variety of amusing changes were rung, and in them the fertility of the Gothic imagination is astonishingly manifest.

During the thirteenth century, as I have said, the production of grotesque creatures became vastly more extended, and an imaginary fauna was created which, while it derived much

[1] Cf. Viollet-le-Duc, s.v. *Animaux*, p. 20.

its rigid lines, hard angles, and broad surfaces with a beauty akin to that which in nature clothes the hardness of the framework of the earth.

The carved foliate ornament of the Romanesque builders

FIG. 223. — Paris.

had been mainly derived from the ancient conventional designs of Roman and Byzantine art. These ancient motives had been worked over and variously modified, — in many cases rudely, in others with much ingenuity and skill, and often with lively fancy, — but for a long time with little original invention. Fresh motives, however, now began to appear, and the inspi-

ration of nature at length transformed the traditional elements into those living and beautiful forms of endless variety which are peculiar to Gothic art.

The ornamental carvers of Burgundy appear to have been the first to break away from the older types of conventional leafage. The capitals of the porch of Vézelay, begun in 1132, and those of the nave of the nearly contemporaneous Cathedral of Autun, exhibit, in the acanthus-like foliage with which they are adorned, the fresh inspiration of nature, while at the same time they retain a large measure of the older conventional character. Figure 224 exhibits a fragment of this leafage from a capital of the nave of Autun. The springy lines and energetic forms of this fragment are in noticeable contrast to the more conventional Romanesque foliate types.[1] But it was reserved for the artists of the Ile-de-France in the twelfth century to completely emancipate foliate sculpture from the Romanesque conventions, and to create wholly new types of the highest beauty.

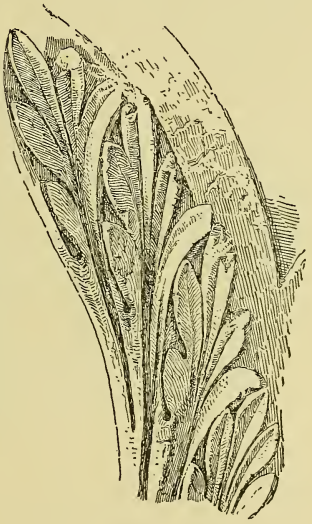


FIG. 224. — Vézelay.

In the capitals and other carved members of the early transitional buildings of France two leading types of Romanesque ornament survive, — one consisting of interlacing patterns, sometimes mingled with leafage and animal forms (Fig. 225), and the other a modified survival of the Corinthian leafage of antiquity (Fig. 226). To these may be added a third type, of less frequent occurrence in early Gothic art, consisting of human figures and grotesque animals almost exclusively. The interlacing patterns, being incapable of further development

[1] Cf. Viollet-le-Duc, s.v. *Sculpture*, pp. 184, 185.

and unsuited to Gothic taste, soon fell into disuse. The ornament consisting of figures and animals was also soon abandoned; but the Corinthianesque leafage naturally gave rise to those endless modifications which the suggestions caught from other forms of natural leafage soon prompted the fertile French carvers to effect.

Among the earliest extant instances of Gothic foliate ornament which show the fresh influence of nature are those which adorn the capitals of the choirs of St. Germer-de-Fly, and the cathedrals of Noyon, Senlis, and Paris. The derivation of these capitals from the classic Corinthian type is clearly apparent, though their forms and proportions vary greatly, and all

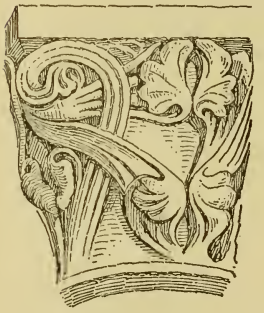


FIG. 225. — Senlis.

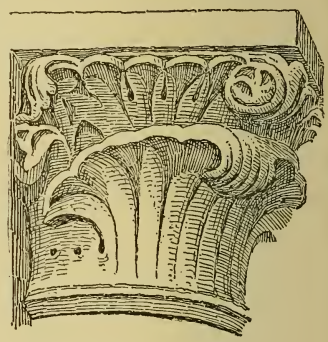


FIG. 226. — Senlis.

differ widely in appearance from the classic models. The influence of nature in the leafage of these capitals may not, at first sight, appear to be clearly marked. The broad leaf forms of the capitals of the great columns of the sanctuary of Noyon (Fig. 148, p. 310), for instance, show no very close resemblance to nature. They are, in fact, little more than refinements of traditional Romanesque types like that shown in Fig. 227, — a capital from the Abbaye-aux-Dames of Caen, which is merely a rude and simplified version of the classic Corinthian. But the refinements of form which mark this conventional leafage of Noyon, and render it superior to the Norman work, are plainly caught from nature. The vigorous curves and fine surface modellings which it exhibits are without parallel in the older

carvings wrought by workmen who derived little of their inspiration directly from living things. Almost countless varieties of capitals of the Corinthianesque type were produced in the Ile-de-France during the twelfth and thirteenth centuries, but in the leafage with which, in the early Gothic period, these capitals and other members were adorned, the broad forms of water-plants largely prevail, as in the example from Noyon (Fig. 148), in the capitals of the triforium of Senlis (Fig. 228), and those of the choir of Soissons (Fig. 61, p. 129). Richer leaf forms of monumental elegance are also abundant at the

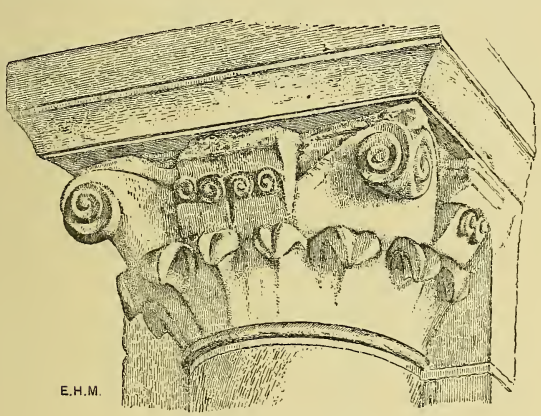


FIG. 227. — Abbaye-aux-Dames.

same time, as in the triforium of Paris (Fig. 150, p. 312), and the triforium of Laon (Fig. 151, p. 314).

In none of the earliest Gothic foliate ornament does the influence of nature do more than give a new and more vital beauty to the lines and modellings of the elements employed; but soon a more direct study of nature is apparent, and, while the art still remains nobly conventional, a fuller suggestion of organic life, and even something of specific leaf form, occurs. Thus in Fig. 149, p. 311, the crockets are formed of unfolding leaflets which are unmistakably drawn from the fields. This sculpture dates from the third quarter of the twelfth century, and the same motive is repeated under many forms through

several subsequent decades. The triforium of Paris alone exhibits a wide variety of kindred designs of the utmost beauty, all of which show that unexampled spirit of observation and invention which gave a living character to the Gothic edifice even in its smallest details.

The capitals of the triforium of the nave of Paris may be considered as marking the culmination of Gothic art in foliate design. A general unity of character throughout the whole

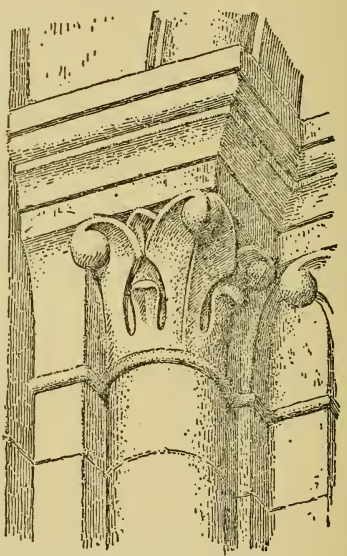


FIG. 228. — Senlis.

arcade coexists with that constant variation of details for which Gothic carving is unique. I have already (p. 315) referred to the variety in the profiling of the abaci of these capitals. The variety in their foliate ornamentation is still greater. The crockets under the angles of the abaci, of which five examples are given in Fig. 229, are of exquisite beauty and of highly architectural character. The inspiration of nature has completely transformed the traditional motives; but, while the ancient form of the volute is discarded, a reminiscence of it is

retained. No merely fanciful recasting of old elements could lead to the production of forms like these. The growing leaves of the forest and the field could alone supply the requisite models. But it required genius of a high order to lay hold of the natural elements without, at the same time, becoming entangled in a myriad of qualities and details that were unsuitable to the purposes of architectural ornament. To simplify nature and yet to preserve what is most expressive, to bring out in sculpture the full value of what nature suggests, and also to secure a lithic and monumental character, requires the most perfectly trained artistic powers. And such powers, in respect to foliate ornament, were

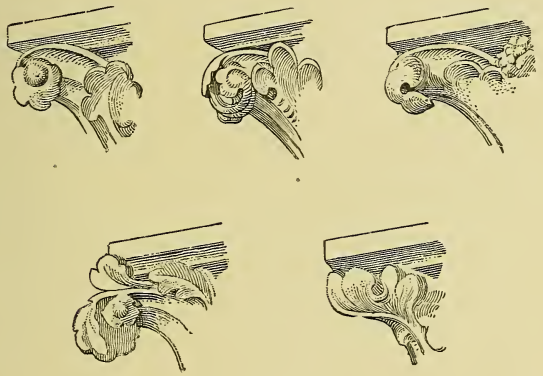


FIG. 229.

never so admirably developed, before or since, as they were by the French sculptors of the twelfth century. The mind of the carver of this time was so imbued with monumental instincts that he felt no temptation to imitate with realistic intention the finer *minutiæ* of leaf or stem. These he well understood were incompatible with the purposes of his art. But to catch a new grace from expanding bud, or broad leaf outline, his eye was ever alert. It is interesting to notice that the plant forms first employed by the Gothic artists for ornamental motives were those of springtime, — the opening buds and newly formed leaves of familiar plants: fern, arum, hepatica, plantain, and many others. It was both natural and appropriate that this spring herbage, more than any other, should stimulate the

monumental exigencies in enthusiasm for natural beauty, this sculpture has those merits which are peculiar to the works of the best Gothic carvers.

Among capitals which, though less finely wrought, show great beauty and variety of naturalistic design, are those of the Cathedral of Laon, of which Fig. 151, p. 314, from the triforium of the south transept, is one of the most characteristic. The

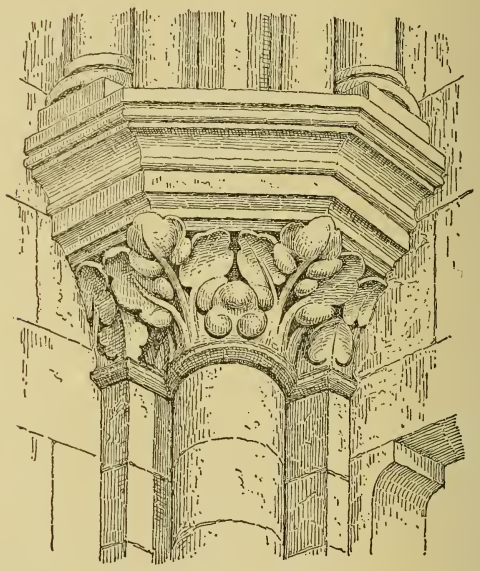


FIG. 230. — Paris.

variety of beautiful ornamental foliate motives to be seen in this triforium almost exceeds that to be found elsewhere, except in the Cathedral of Paris and the Church of St. Leu d'Esserent. They invariably show a keen enjoyment of nature and wonderful skill in the architectural adaptation of natural leaf types. The types of Laon are quite distinct from those of Paris; but they are hardly inferior to the best of those which that cathedral presents.

Leaving now the capitals, we find in the running leaf orna-

ments of the jambs and archivolts of the portals of the west façade of Paris examples of equally beautiful work. An illustration of this leafage is given in Fig. 223, p. 384, and Fig. 231 exhibits another bit of characteristic beauty. The sense of nature conveyed, notwithstanding the frankly conventional treatment, is remarkable; it is a masterly rendering of the expressive lines and forms without any undue naturalism.

FIG. 231. — Paris.

In the carving of the triforium string-course (Fig. 232) and that of the cornice of the exterior of the nave (Fig. 233) of the Cathedral of Amiens, the same monumental expression of foliate life is noticeable in leafage of a different kind. The springy contours and finished modellings of these examples are without parallel in the ornamental art of any other style or period. This foliate sculpture of Paris and Amiens is of the most distinctly Gothic type. It is the farthest removed from classic types, the most suggestive of the beauty of nature, and at the

same time it is all based, as we have before remarked, on ancient ornamental schemes of composition. No monotonous

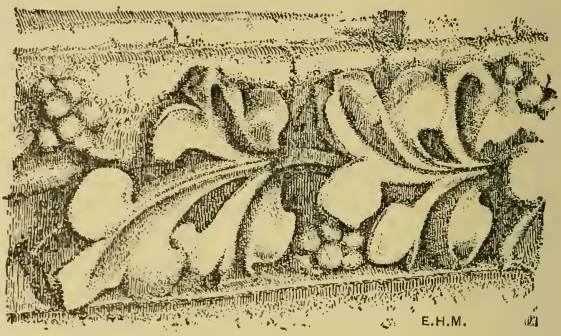


FIG. 232.—Amiens.

reproduction of formal patterns, or wearisome repetition of the same elements, is ever found in Gothic art. A perpetual

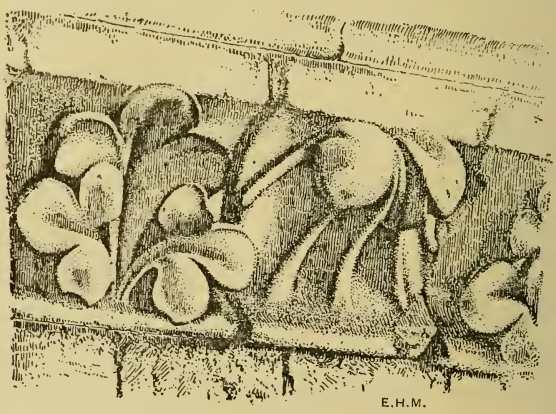


FIG. 233.—Amiens.

variety of living forms is invariably maintained, though there is a regular recurrence of sufficiently similar elements. Vitality and freedom are governed by order and sequence of design

down to the smallest details, as in the bunches of berries which alternate with the leaves of the string-course (Fig. 232); and in Fig. 231 it will be seen that the berries of the bunch in the hand of the figure fall into a regular series following the natural spiral arrangement around the supporting stem. We have in this another illustration of the kinship to Greek art which this sculpture shows in so many other points.

Such, with almost infinite variety, is French Gothic foliate sculpture. Its finest types, illustrated by the capitals of Paris and the string-courses of Amiens, hardly appear after the second quarter of the thirteenth century. From this time

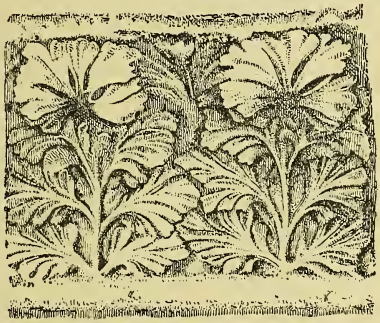


FIG. 234. — Noyon.

onward the direct imitation of nature became too much the artist's aim, and the necessary architectural adaptation was more and more lost sight of. A few further illustrations of the change from the one condition to the other may afford by contrast a better understanding of the qualities which characterize the art at its best. Figure 234, a portion of a string-course from the later works at Noyon, shows, in a marked degree, the tendency to over-naturalism which had strongly set in by the middle of the thirteenth century. There is much beauty in this design, and its execution is excellent; but it has lost the nobly conventional character that marks the strings of Amiens. The carver no longer possesses the power of monumental abstraction. He reproduces too literally and completely the finer details of nature. The close relation which had

result from any arbitrary purpose: it has its foundation in the nature of things; and the productions of the true artist become conventional (as remarked in Chapter I. p. 24) through an instinctive and unconscious obedience to the conditions under which he works.

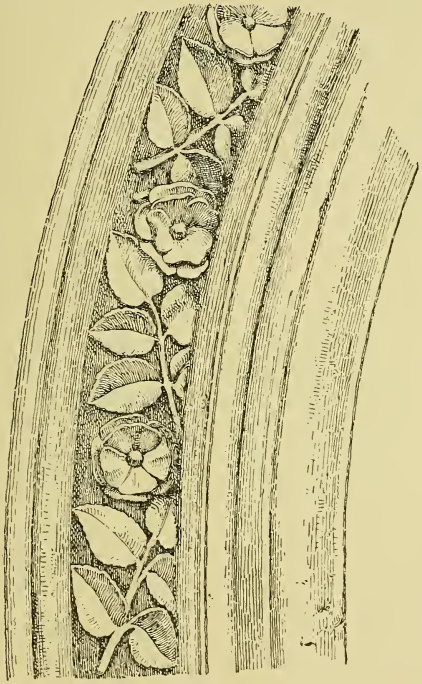


FIG. 235. — Paris.

In Chapter I. the quality of breadth was mentioned as among the leading characteristics of Gothic sculpture. This ought to be emphasized; for there is no quality for which this sculpture is more remarkable. Multitudinous as are the details which enter into the carved ornamentation of any great cathedral front, there is rarely any scattered effect in the parts or in the total scheme. An harmonious relationship of mass to mass, from

artistic power, or the beauties of form and execution, which are characteristic of the Gothic sculpture of France. Unlike that, the sculpture at Wells has little relation to the building itself. It is nowhere an integral part of the architectural scheme. It does not naturally emboss the structural forms. The jambs, archivolts, and set-offs of the buttresses are everywhere crowded with niches, canopies, and panellings for its protection and display. The façade seems to exist for the sake of the sculpture, being, as we have seen (p. 230), little more than a vast screen, with no logical connection with the building behind it. As if to enlarge the space for the sculpture the doorways are reduced in size to even less than the usual dimensions of doorways in England. The springing of the archivolts of the central portal is below the level of the base mouldings of the wall, and the capitals of the jambs are within reach of the hand. Every relation of ornament to structure, such as is peculiar to true Gothic architecture, is disregarded.

FIG. 236.— Lincoln.

Yet the sculpture itself is both grand and impressive, and much of it has considerable beauty. In grace and sentiment it is indeed inferior to the sculpture of the Ile-de-France; and it also exhibits less of those classic elements of design which we have noticed in the works of the best Gothic carvers. Its sculptors appear to have been more independent of tradition, and their work is correspondingly wanting in some of those finer characteristics which seem to depend largely upon traditional culture. But, on the other hand, a sense of nature seems to have had a large place in the mind of the artists; while, at the same time, they have kept well within the bounds of monumental art in the treatment of forms. The so-called statue of Christiana (Fig. 237) is a good example of their work. It is

grandly architectural in its severe lines; but the draperies, while showing a strong sense of reality, are singularly primitive in character. Little of the rhythmical beauty of contemporaneous French works, like the statue of the Virgin in the doorway of the north transept of the Cathedral of Paris (Fig. 221, p. 378) appears here. The treatment of the folds is almost as archaic as that of the statues of St. Denis and Chartres, which are a century earlier in date. But in comparison with such works as these this drapery shows the inspiration of reality in a more marked degree, though it is not without evidence of traditional influence, which in this figure appears in the zigzag edges of the folds beneath the right arm. The stiff and awkward forms of this right arm and hand are singular archaisms for work of so advanced a period as the middle of the thirteenth century. Yet for simplicity, veracity, and monumental grandeur this sculpture must be ranked high among the artistic achievements of the Middle Ages. It is vigorous and noble art, though wanting in the ideal refinement and beauty of the contemporaneous French work.[1]

FIG. 237. — Wells.

Perhaps the sculpture in England next in importance to that of Wells is found in the reliefs of the Presbytery

[1] Mr. Parker, in his *Introduction to Gothic Architecture*, p. 109, says: "It is scarcely possible to overrate the value and importance of the extraordinary series of sculptures with which the west front of Wells Cathedral is enriched; they are superior to any others known of the same period in any part of Europe." Such exaggerated overestimates of native works have hitherto done much to prevent the growth in England of an enlightened appreciation of the best artistic products of the Middle Ages.

met with in so-called early English ornamentation. Of such traditional elements the Anglo-Norman designers made varied use; but such invention as they exercised never quite eliminated their artificial character. The so-called stiff-leaved foliage of the early times gives little evidence of a refined artistic sense modifying the traditional conventions.

It is noticeable that the earliest foliate sculpture in England is the best, and among the finest examples are those of the capitals of Bishop Hugh's choir and transept at Lincoln. Of these none are better than those of the triforium. Yet notwithstanding their beauty, the trefoil leafage with which they are

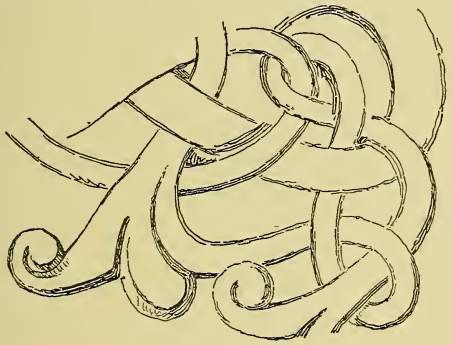


FIG. 238.

adorned shows some of those peculiarities which I have characterized as artificial. In the capital, Fig. 186, it will be noticed, for instance, that the mid-rib is a flat-sided, sharp-edged member, and that the edges of the leaflets are also sharp and hard. These peculiarities will be more clearly apparent in Fig. 239, where C is the form of the section through AB. This fillet-like treatment of leaf ribs, leaf stalks, and leaf edges is highly unpleasing to the eye of a beholder who is familiar with the delicate rounding of such details in the sculpture of France; yet, in contrast with the circular abacus and the rounded profiles of England, it sometimes has a good effect. In itself, however, it is an ugly convention. The power of conventionalizing natural forms without needlessly violating their character, the Anglo-Norman ornamentist did not possess in a high degree. I must not, however,

seem to affirm that the foliate sculpture of the early pointed architecture of England was altogether devoid of such expression of the beauty of nature as is compatible with the proper conventions of ornamental art. In the earliest times it had a great deal of such expression. The leafage of the capital we have just referred to is, notwithstanding the artificial peculiarities which I have criticised, very exquisite in expression of the vigour of growth in living vegetation, and of the graceful leaf outlines which had charmed the eye of the designer. The manner, too, in which these leaf forms follow each other around the bell, bending with pliant grace against the moulding of the abacus, is worthy of all praise. There are numerous other beautiful varieties of conventional leafage to be found on the capitals of the early choir and transept of Lincoln, and in many of them an equally fine feeling for nature is manifest. But this feeling does not long survive in the art schools of England, and its expression is never wholly unimpaired by the artificial peculiarities just noticed.

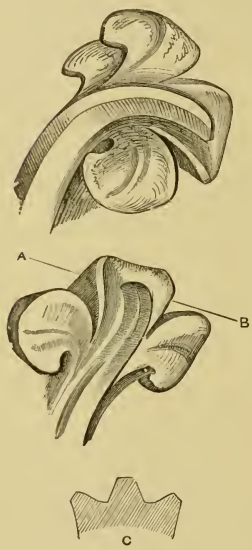


FIG. 239.

After the first quarter of the thirteenth century, the artificial characteristics become more conspicuous, and the expression of beauty caught from nature is less apparent. A good illustration of this later phase of design is afforded by the leafage of the capitals of the triforium of the nave of the same building (Fig. 240). Here the leafage takes the form of crockets, which, as we have already seen, p. 338, have little propriety in connection with the round abacus. Its lines are still in a measure graceful and suggestive of the energy of vegetable growth; but the fillet-like ribs are unpleasantly multiplied, and the leaf stalks, instead of dying away in the mass of the bell, — as in the early capital of the east transept, — remain salient and flat-

sided down to the neck moulding. Of the fine surface flexures shown in the earlier work there is scarcely any trace in this artificial foliage of the nave.

In the interior of Wells Cathedral foliate sculpture (Fig. 191, p. 344) of exceptional character and peculiar beauty occurs. Here we have apparently a mingling of Anglo-Norman and French

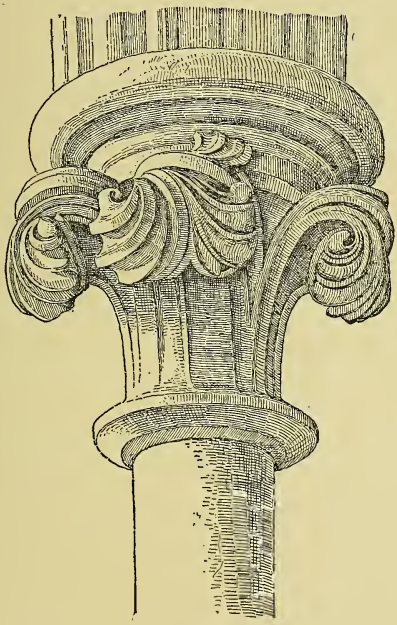


FIG. 240. — Lincoln.

influences. The excessive projection of the crockets would seem to be Anglo-Norman, while the fine surface modelling and the delicate rounding of the leaf stalks and leaf ribs is French. The fine arrangement of the masses and composition of the curves, and the graceful, flowing, and vital lines, give these capitals remarkable beauty, though the extravagant salience of their crockets injures their architectural expressiveness.

The carving of imaginary and grotesque creatures, though

of the thirteenth century a degree of skill that was not attained in Italy until the century following. Yet joined with this skill the conventions of immaturity are everywhere conspicuous. The colours are laid in almost flat fields, though modellings are suggested by pale markings to indicate saliences, and by dark hatchings to express depressions; but there is never any indication of the direction from which the light falls, and no cast shadows. The natural creamy-white colour of the vellum stands for flesh, but cheeks and lips are slightly reddened. Features are drawn in with fine lines of brown or black, and a distinct

FIG. 241.

outline of the same describes every contour and every detail. In the twelfth century the outline is usually brown, and both figures and backgrounds are light in tone; while in the thirteenth century the outlines become black, and figures and backgrounds are more intense in hue. Usually in the thirteenth century the backgrounds are quite flat, and are generally either of an ultramarine blue or of a brownish red colour. In some cases, as in a manuscript of the *Life of St. Denis* (Fig. 241), dating from the middle of this century, figures are represented with no ground under their feet. No correct expression of different planes of distance occurs, and no perspective is at-

of the beauty of the mediæval art. The modern devices of fusing and overlaying have led the designer in stained glass out of the true path; and since the thirteenth century all manner of attempts have been made to give the art a character that does not properly belong to it.

Of the vast numbers of magnificent colour designs which filled the great openings of the Gothic churches of the twelfth and thirteenth centuries, very few are extant; but yet enough is preserved to show us fully what the art was. From the middle of the twelfth century we have some fragments in the apsidal chapels of the Church of St. Denis, while the Cathedral of Chartres retains, in almost perfect condition, many noble specimens dating from the latter part of the same century. Among these last is the well-known Jesse window, which may be taken as an example of the best work of the time, or of any time. Figure 242, a figure from this window, affords an illustration of its character, so far as the delineation of form is concerned. The design is produced, for the most part, out of pure pot-metal, while white glass is introduced here and there to heighten the effect in draperies and ornaments. Each piece of glass is of one colour, so that where colour changes new pieces have to be inserted; and each separate piece is encompassed by its sustaining framework of lead. On various parts of the design thus made up, as in a mosaic, of many small fragments, the necessary details are, as before remarked, drawn with a pencil

FIG. 242.