

## THE HISTORY OF ROMANESQUE CLUNY AS CLARIFIED BY EXCAVATION AND COMPARISONS

It is the mission of ICOMOS not only to enlarge the appreciation of historic monuments, but also to develop the means of preserving and maintaining them. ICOMOS prevents such tragedies as the demolition (1798-1824) of the third abbey church of Cluny, taken down by uncomprehending philistines for building material. If the church were still standing it would be a superb representative of one of the most pervasive monastic institutions of the early Middle Ages — an important cultural monument, an unsurpassed masterpiece of Romanesque architecture, and one of the outstanding churches of all Christendom (Figure 1).

The problems of recovering the form and the history of a great lost monument are not simple, but they are worth solving, for "we shall never know what we *know* about these buildings *until we get it out in drawings*"<sup>(1)</sup>. Because of its technical interest, the long process of bringing the Cluny problems to solution is presented here.

Instructive studies of Cluny had been made in 1043, 1623, 1750, in 1793-1807 during the demolition, and finally by Jean Virey, (the much-respected President of the Académie de Mâcon) in 1888-92, 1910, and 1932. However, this august site had never been studied by art historians possessing professional, on-the-job archaeological training enriched by field experience in architecture and engineering. There was a need, especially, for specialists who could restore lost buildings to visual history and to general understanding (Figures 2, 3, 15).

Being able to assemble such a team, the Mediaeval Academy of America proposed such research, which was graciously authorized by the French government in 1928, after a preliminary season financed by the John Simon Guggenheim Memorial Foundation. Unfailing and favouring cooperation was received from responsible local officials during the excavations (largely by individual soundings, at intervals from 1928 to 1950) and the subsequent long period of technical studies and comparisons (Figure 4). The final publication was in a monograph — *Cluny: Les Eglises et la maison du*

*Chef d'Ordre*, Cambridge, Massachusetts, The Mediaeval Academy of America, and Mâcon, Imprimerie Protat Frères, 1968.

There proved to be witnesses for a thousand years of architectural history on this site. Older buildings were replaced piecemeal in the same general location on an ever-increasing scale; consequently the vestiges of the earliest buildings are slight indeed. However, the finds made it possible, through the careful study of analogous buildings, to present something like an equivalent of the destroyed structures.

### THE VILLA CLUNIACA, CLUNY A

Mere hints survived, of *Villa Cluniaca* and its court, given by the founder, William of Aquitaine, to the monks in 910. The Villa chapel was a little building at the head of the main court; it resembled the chapel of St. Benedict at Centula (St. Riquier) or the Carolingian church at Mals (Malles) in Switzerland<sup>(2)</sup> except that the sanctuary, tripartite like that of Mals, was relatively deeper, and was divided by walls which were cut through by openings above a parapet. We call this chapel Cluny A. (Figures 5, 10).

### CLUNY I

For the first church built by the monks (Cluny I, c. 915-27; Figures 1, 6 b) we are dependent on speculation. The Sacristy reported to the north of the second church in 1043 seems large (58 feet long) and the adjoining Shop for tailors and cobblers (45 feet long) seems strangely placed between the Guest House, the Galilee, and the Cemetery for lay folk (Figures 8, 11). Sir Alfred Clapham proposed that the Sacristy plus the Shop were in effect the first church put to new uses<sup>(3)</sup>. Accepting this possibility, and with due attention to the liturgical customs of Cluny, as well as to various special features of the successor church, Cluny II, (c. 948-81) it is pos-

sible to postulate a plan for Cluny I. Its atrium is mentioned in four documents of 940 to 948 and it appears to have been copied after 963 in extensions of the priory church of Payerne (Peterlingen, Figure 6 a), given to Cluny in that year (4).

The little tenth-century church of St. Laurent, Tournus (5) though smaller and simpler, is probably a good representative of Cluny A and Cluny I in many ways (Figure 7).

#### CLUNY II AND THE FIRST REBUILDING OF THE MONASTERY (c. 948 ff)

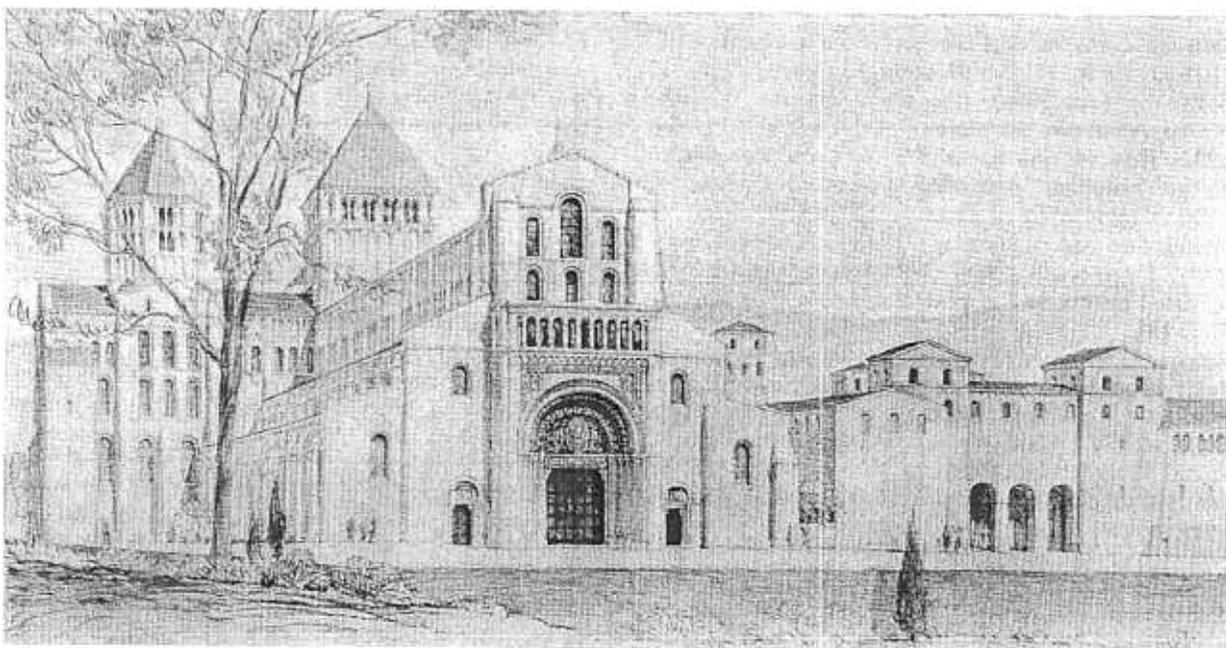
The growth of the monastery was such that a new church, Cluny II, was undertaken in 948 or shortly after. It was parallel to Cluny I, and it filled the Villa court. This means that new monastic buildings, probably in wood, had been built south of the court, and it would seem that an Annexe had been built on the east to replace the chapel called Cluny A, which was destroyed to make way for the new sanctuary (Figures 5, 8, 10 and 16). A graphic restoration of Cluny II is possible because the excavations yielded sufficient remains to establish its peculiar plan. The three towers, narthex, and atrium are known from Louis Prevost's engraving, c. 1670, just before their demolition, and by good fortune the key vertical dimension 43 feet is reported in the Farfa Consuetudinary (6).

#### THE SECOND REBUILDING OF THE MONASTERY (c. 995-1048)

This Consuetudinary has a chapter which lists the dimensions of the buildings of Cluny Monastery as they were in 1043. Whereas only two measurements (length and height) are given for the church, Cluny II, by contrast the individual monastic buildings are particularized in the Consuetudinary, and their relationship can be inferred quite easily. Very little of this has survived, even in foundations, but happily the four corners of the layout are anchored by existing and excavated remains, and a suitably thorough study has yielded a dependable general plan (Figure 11). The foot-length was identified, and it proved to be a long one — 340 millimètres. The buildings were, of course, relatively simple, and they could be effectively studied in three dimensions by means of a balsa-wood model at the scale of 1 to 200. This model is now exhibited in the Musée Ochier in Cluny, with related material. A well-studied model has the advantage of showing roof slopes and intersections which are often useful for settling details in the plan, and in the elevation as well.

Since all Cluniac monks of the whole Congregation were, in principle, professed at Cluny, the Mother House was normative — and this in a period of active monastic building. The so-called Benedictine church plan, widely distributed in western Europe, resembled the plan of Cluny II, and may show its influence. The

Fig. 2. — West Prospect of Cluny III, about 1120-25. At the right, Abbot Odilo's Guest House, Abbot Hugh's Palace, and (behind) tops of towers of Cluny II. K. J. C. *inv. et del.*



mediaeval conventual structures have rarely survived beside their churches, but a site where both a church and a monastery group related to Cluny can be traced, exists at Hirsau in the Black Forest (Figure 12). The Customs of Cluny, transmitted by Ulrich of Zell, Abbot Hugh's secretary, were faithfully followed there. Hirsau in turn became the centre of a Congregation, and through it a modicum of Cluniac influence was further spread to a considerable area in Germany (?).

### THE ROMANESQUE (THIRD) REBUILDING OF THE MONASTERY (c. 1075-1085 and later)

When Abbot Odilo began to rebuild Cluny Monastery about the year 1000, he planned for about 100 monks, but this norm began to appear insufficient later in his abbacy, and his later buildings seem to be larger in scale on this account (Figure 8). Abbot Hugh, who had about 100 monks at this accession (1049),<sup>(8)</sup> led a growing institution of 200 monks by 1080, and an imperative general rebuilding on a large scale was by then under way. At the same time Cluniac buildings were being renewed everywhere in the Congregation, and Abbot Hugh thus became one of the great builders of all time. He was one of the most influential ecclesiastics of his period (1049-1109) and, charged as he was with the oversight of hundreds of priories and other

dependencies, he was one of the most responsible administrators in all Western Europe.

The Romanesque rebuilding of Cluny (Figure 15) was what we should expect of such a man — it was excellently designed, wisely programmed, amply financed, and carried through for fully 45 years on a grand scale without the hesitations which were so common in mediaeval building. We may sense that the quarrying and supply, the transport, the preparation of the site, and the erection of the buildings were all one integrated operation. This explains the great speed of the work — five large conventual buildings in ten years (1075-1085). They aggregated nearly 200 metres in length: the Dormitory enlargement (c. 1075-1076), the Hospice (1076-1080), the Refectory (1080, 1081), the Infirmary (1082, 1083), and the Church of St. Mary of the Cloisters. (1083-1085)<sup>(9)</sup>.

### THE GREAT CHURCH, CLUNY III « Fundatio », 1088

The functioning constructional organism which produced these buildings was then (unless we are greatly mistaken) directed at once to the creation of a veritable capitol church for the whole widely ramified Congregation of Cluny. In 35 years (1085-1120) the builders achieved the largest Benedictine church and one of the most beautiful, the largest monastic church, the largest French

Fig. 3. — East Prospect of Cluny III. At the left, the Church of St. Mary, the dormitory, Cluny II, Cemetery Chapel of Our Lady. K. J. C. *inv. et del.*

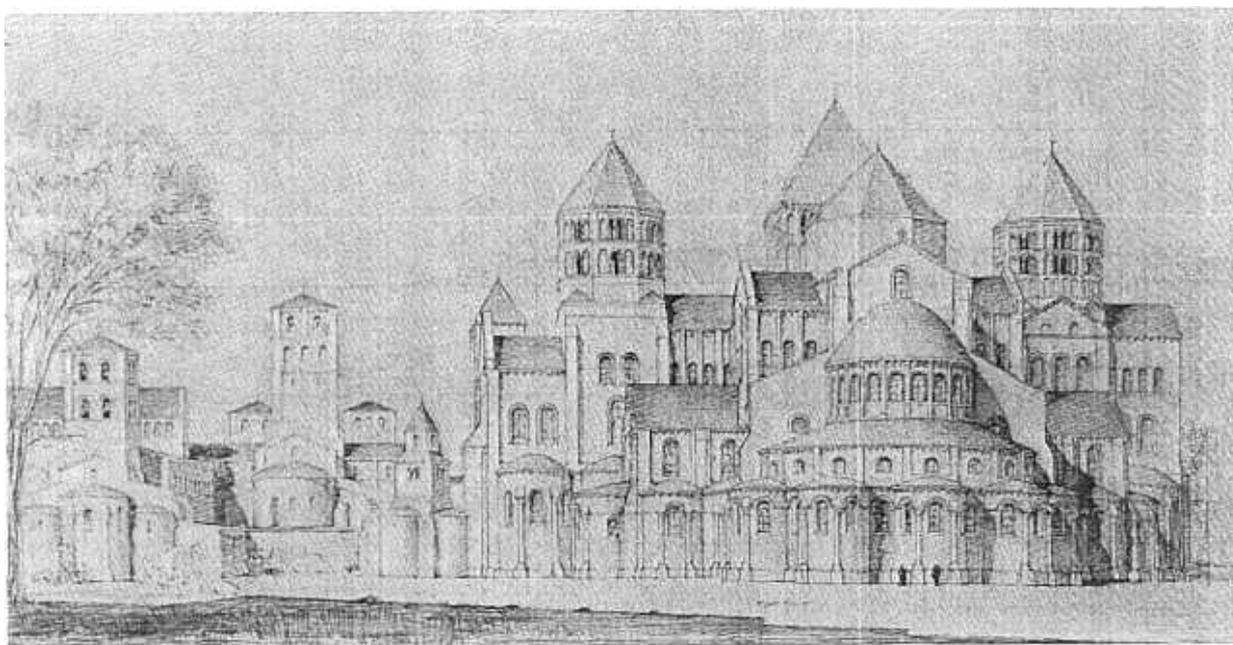
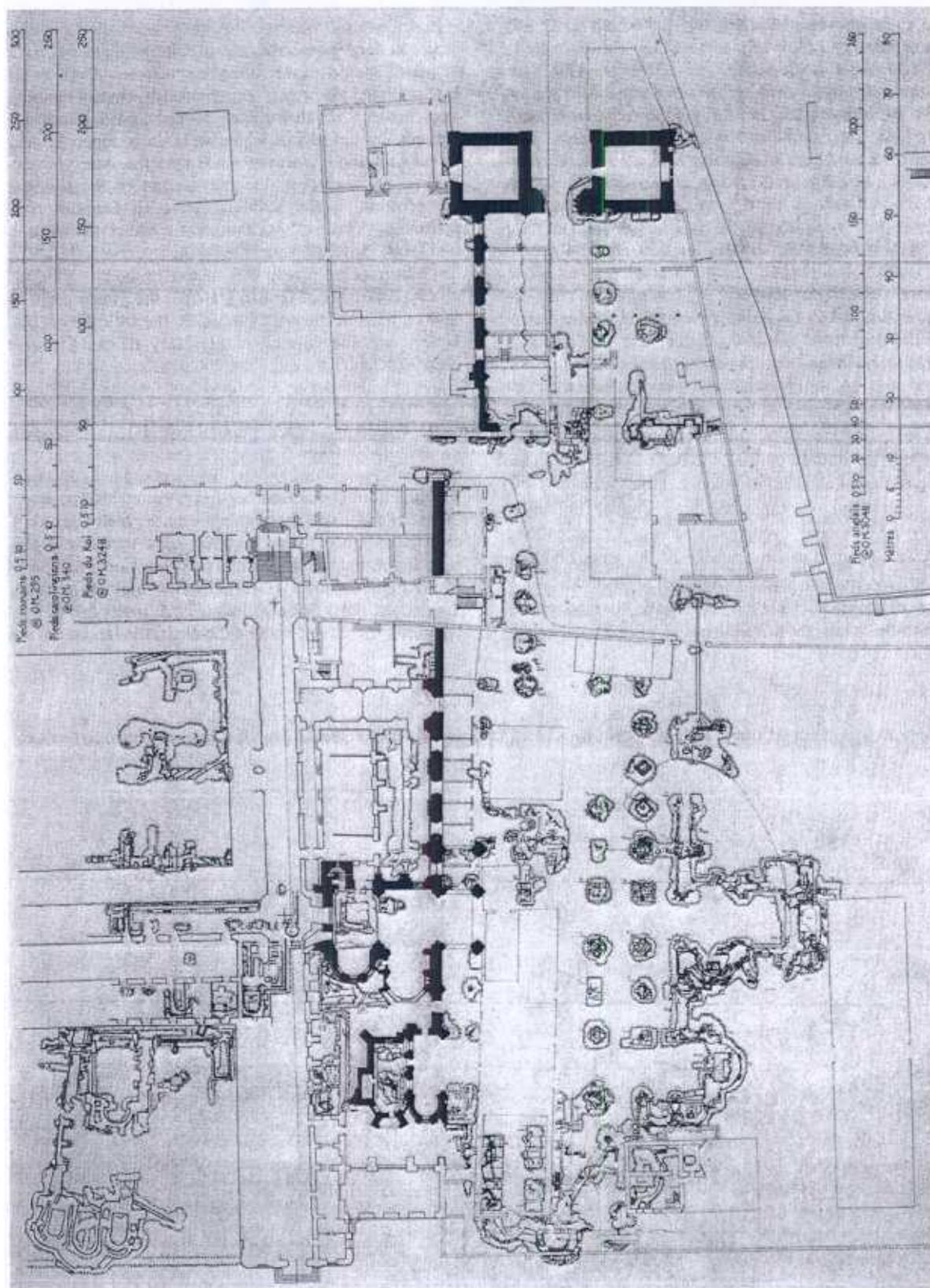


Fig. 4. — Excavations of the Mediaeval Academy of America at Cluny, 1928-1950. Frédéric Palmer and K. J. C.



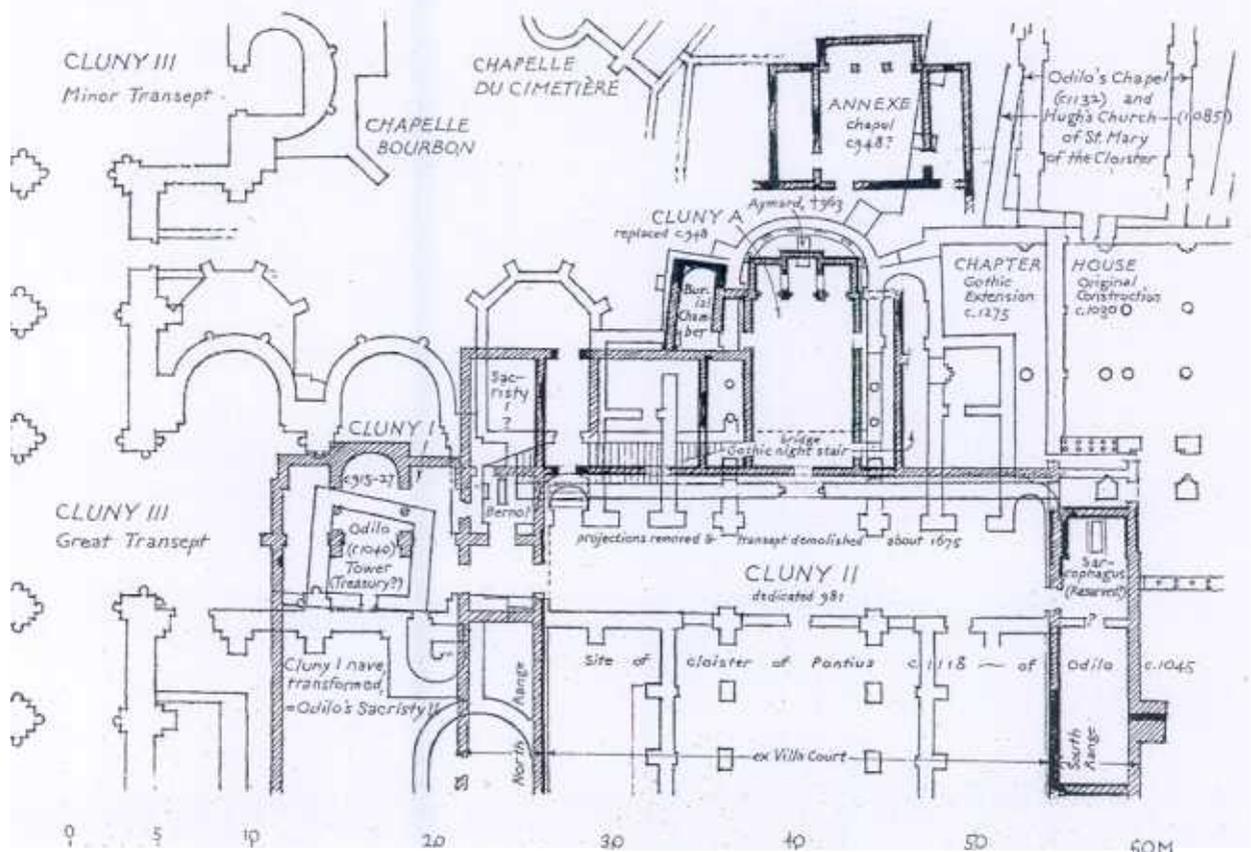
church, the largest Romanesque church. A later narthex (c. 1145-1225) brought its length to 187.31 mètres. Whereas the work on the monastery had a coefficient of advance (purely statistical) of about 20 mètres per year, the coefficient for the much more elaborate church was (understandably) only 4 1/2 mètres per year (Figure 16).

The procedure was intelligent: since in 1085 the choir of Cluny II, dimensioned for 200 monks, was crowded with 250, the abbot first undertook what amounted to a spacious church of the central type, intended as the chevet of the future Cluny III (Figure 15). The beautiful apse and sanctuary bay (Figure 21) contained the altars which were dedicated in 1095. Next toward the west came an ample first transept. Buttrressing the latter, there are, in the still existing aisle wall, heavy ladder-like through-stones, obviously intended to steady the transept, until, in the sequel, construction advanced to the choir bays, which had ample space for 300 monks. This new choir brought the length of the chevet to 52.50 metres, which would be about 11 years' work (1086-7-8 to 1098-99) according to the statistical coefficient (10).

The great transept followed (about 1097-1103). It is a mistake to suppose that this was the earliest work on the church, including two false starts, for according to this ill-considered hypothesis (11) the great transept, a purely processional and ceremonial element, would be built before the choir which was so imperatively needed because of crowding in Cluny II. By 1098, when, in our view, the offices were transferred to the new choir, there were about 280 monks. The chronology which delays the transfer to 1113 entails the presence of 315 monks and 315 fold-stools crowded into the choir of Cluny II, which was arranged for 200, and possessed an area of 162 square mètres. This allows only half of a square mètre (far too little) for each of 315 monks with a formula (Figure 16).

The long naves of Cluniac churches were chiefly for processions — a notable part of the Cluniac monastic liturgy, and here provided with a magnificent setting. The original construction at Cluny, finished about 1120, had to be strengthened by flying buttresses after a vaulting collapse of 1125. Pointed construction, transmitted perhaps from Tunisia via Amalfi and Montecassino (12) had been used to diminish thrust (Figure 20), but as

Fig. 5. — Tenth-century Constructions revealed by the Excavations and detailed studies. Shown in relation to Cluny, I, II, and III. K. J. C. inv. et del.



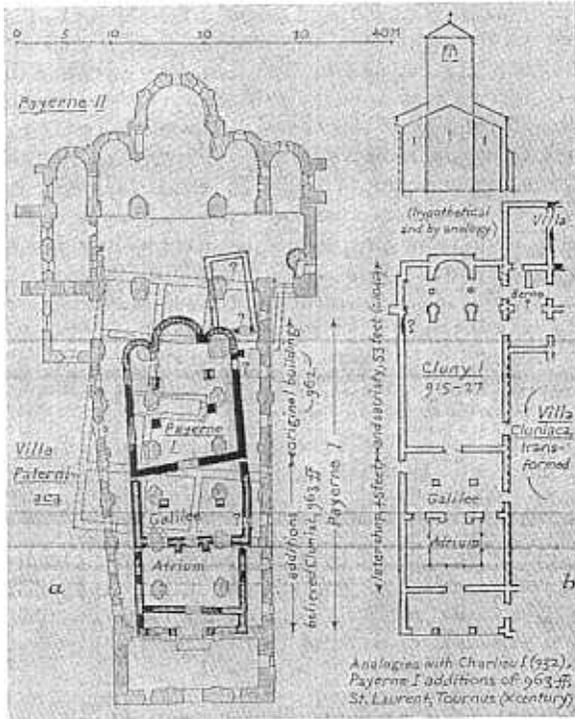


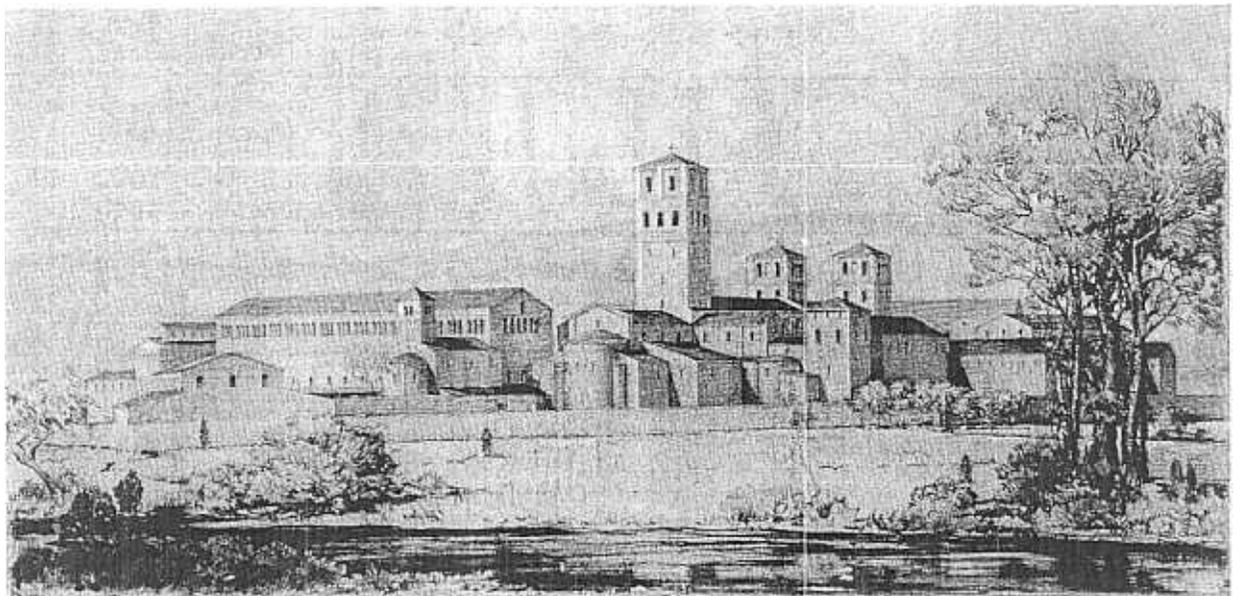
Fig. 6 (a). — Payerne, showing the *Villa Paterniaca*, Payerne I, and Payerne II (excavations). After A.-A. Schmid.

(b). — Hypothetical Restoration of Cluny I, based on Analogies. K. J. C. *inv. et del.*

Fig. 7. — St. Laurent, Tournus (10th century). Belfry hypothetically restored by K. J. C.



Fig. 8. — Cluny II and its Monastery, as of c. 1043. K. J. C. *inv. et del.*



Professor Harley McKee has shown the profile chosen for the nave vault was not stable. The remedy, heavy flying buttresses applied about 1130, was further developed in Gothic architecture.

Entrance was given into the nave from the west by an elaborate carved and painted portal 14.45 m wide and 18.50 m high — the first one (c. 1106-8-10) on so grand a scale (Figures 17, 18, 19, 20). The excavations yielded fragments which permitted identification of its largest remaining sculptured figure, a St. Peter in the Museum of the Rhode Island School of Design at Providence (Figure 19). This had been acquired in 1920 without indication of provenience (18).

### PROBLEMS CONNECTED WITH CLUNY III

The oldest text in praise of the great church (c. 1120) is the most succinct and the best — "*ut capaciore sit magnitudine, an arte mirabilior, difficile judicetur*". The text points up the principal difficulties posed to modern scholarship for solution, since a knowledge of monastic life and advanced training in architecture and engineering are very necessary to apprehend so exceptionally great a work, and the pictures surviving from the 15th, 17th, and 18th centuries were made by men who did not fully understand Romanesque architecture, of the great building. Fortunately the late 18th century drawings do not suffer from the distressing ineptitude of the earlier works, and these later pictures offer much which a specialist trained in structure and draughtsmanship can fruitfully interpret.

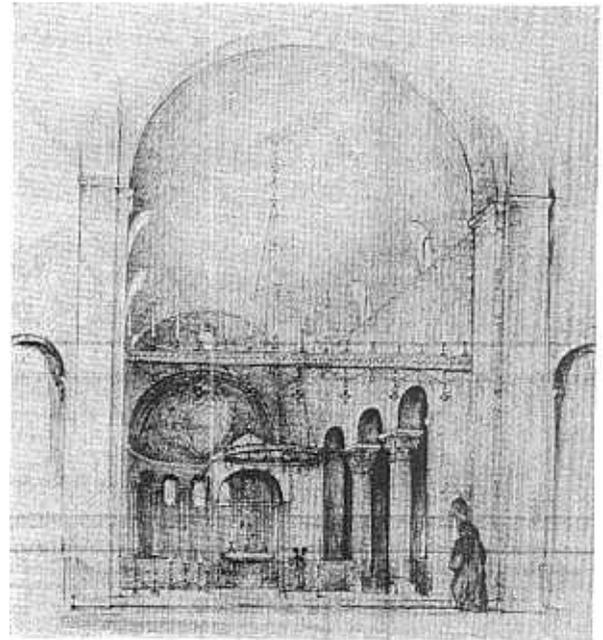
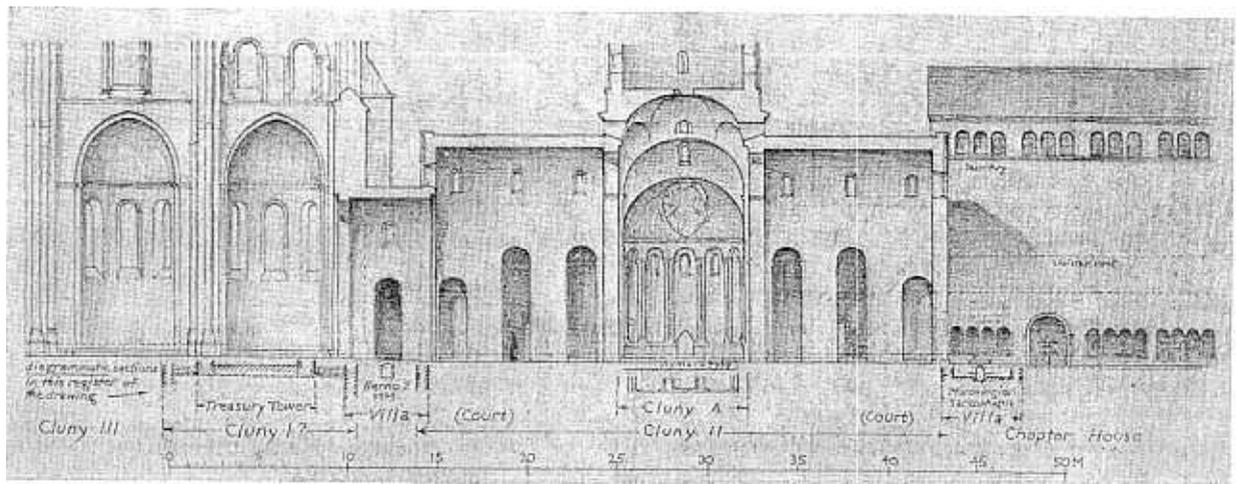
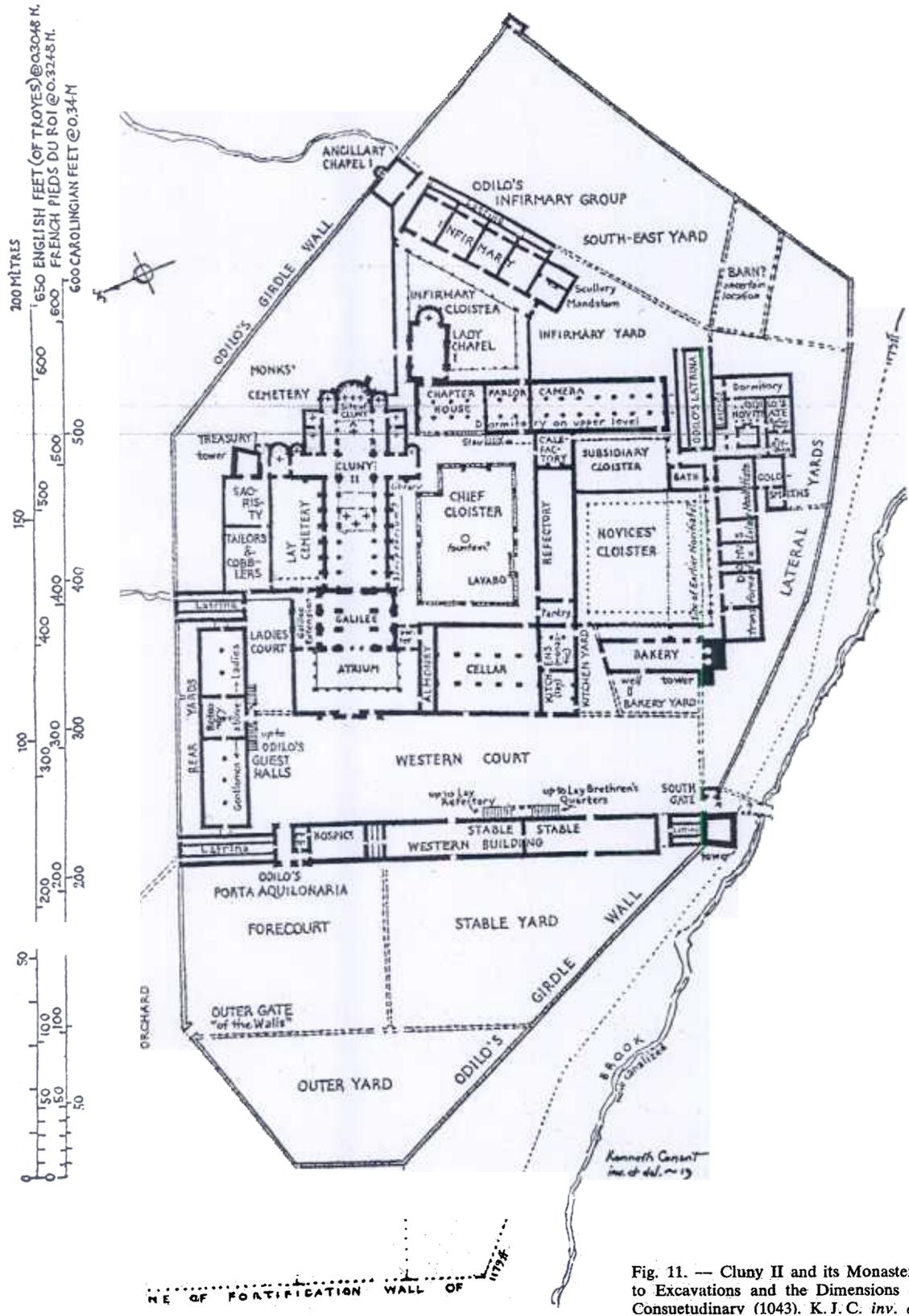


Fig. 9. — Hypothetical Restoration of Sanctuary of Cluny II. K. J. C. inv. et del.

Fig. 10. — Section through remains of *Villa Cluniaca*, Cluny A, Cluny I; Restored Section of Transept of Cluny II; Restored Elevation of Chapter House and Dormitory of Abbot Odilo; section of existing South Arm of Great Transept of Cluny III. K. J. C. inv. et del.

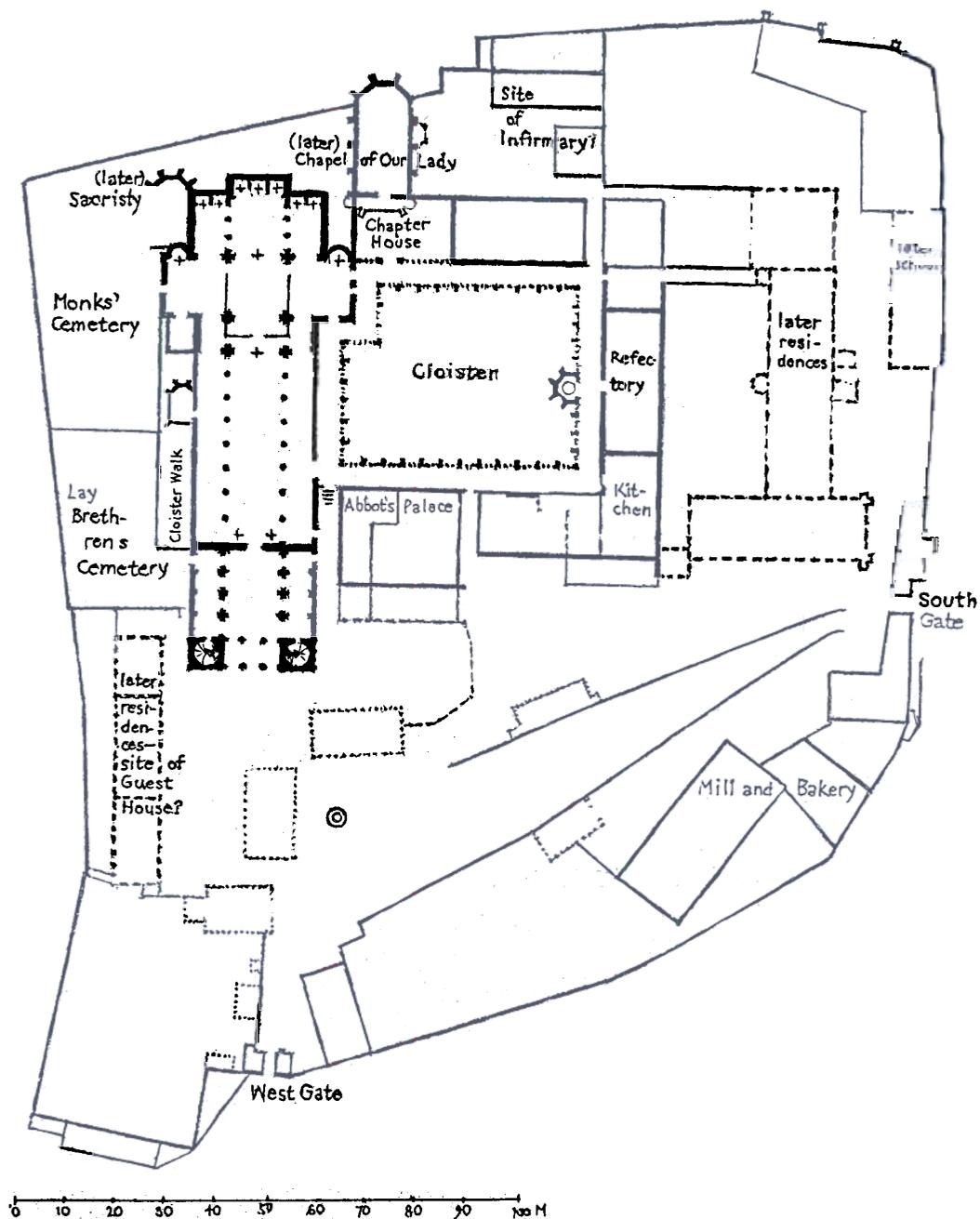




NE OF FORTIFICATION WALL OF 1174

Fig. 11. — Cluny II and its Monastery, according to Excavations and the Dimensions of the Farfa Consuetudinary (1043). K. J. C. inv. et del.

Fig. 12. — Hirsau: Restored Plan of the Church and Monastery (Mettler, Hempel, Weizsäcker, K. J. C.). K. J. C. del.



**THE EXCAVATIONS**

Excavations were required, however, to bring this material into focus. We found that almost all of the facing stones and the large blocks had been taken away for re-use after the demolition (1798-1824), but the rubble and mortar hearting of the walls had simply been flung down and spread about, raising the grade round about by one or two mètres (more at the west). Often the walls and piers were preserved up to the new level, with quantities of small carved stones interspersed in the fill.

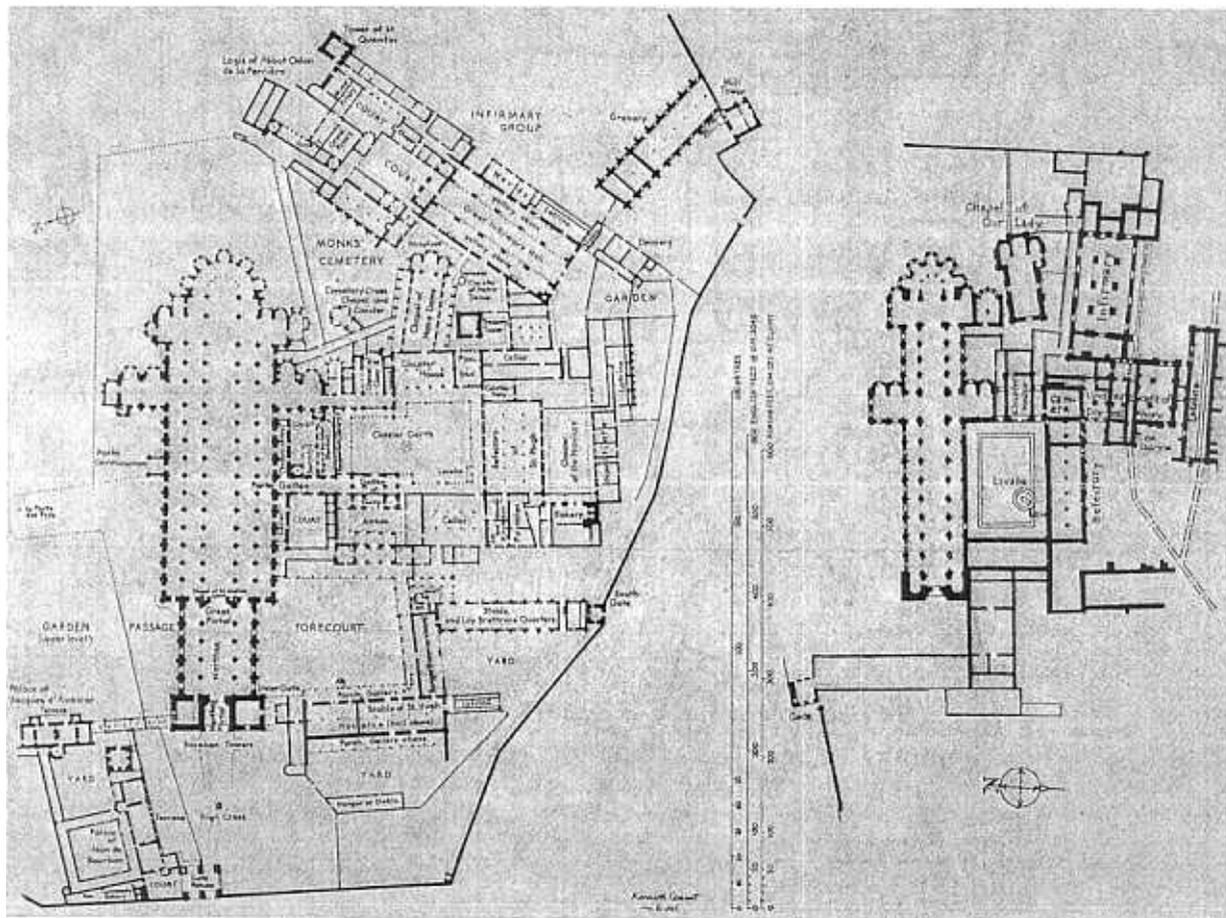
The problem of dealing with these very numerous small carvings was solved by a devoted volunteer group led by Mr. Richard Wingate Lloyd. The fragments were

all dated and numbered for reference to the Day Book of the excavations. After this they were positioned in open boxes, with appropriate labels and rulers. Then they were photographed directly from above box by box, at uniform scale. Thus a convenient graphic index was created, sufficient for most purposes. Including more general views, the photographs number well over 2000. These are available for study in the Salle Jean Virey of the Municipal Archives at Cluny.

Since 1950 the fragments have been moved from their original place in the basement of the Musée Ochier. Some have been placed in a gallery of this museum, others in the Musée du Cellier, and still others in the lapidary store in the adjoining Tour du Moulin. A few have meanwhile been lost to indelicate visitors.

Fig. 13. — Cluny III and its Monastery, with Gothic Additions Restored Plan based on Excavations and Dimensions reported in 1043, 1623, 1750, 1793-1817, and 1950. K. J. C. *inv. et del.*

Fig. 14. — Lewes Priory. Restored Plan, based on Ruins and various Excavations. Sources, Breakspere and Godfrey. Gothic additions are included. K. J. C.



## THE MEASUREMENTS

The archives of the Salle Jean Virey contain, besides our Day Books, hundreds of our dimensioned architectural sketches of individual excavations. These drawings supplied the detail for our master plan of Cluny III, drawn at scale 1 : 100 with exemplary care by the mission's architect, Mr. Frédéric Palmer, who has the professional degree from Harvard University. The scale of 1 : 100 is necessary in view of the great amount of detail, but the size of the drawing, 1 1/2 mè-

tres by 2 mètres, made it impractical to reproduce in the monograph. The whole monastery at the suitable scale of 1 : 200 requires a sheet measuring 4 square mètres. The plans are freely available at the Salle Jean Virey to learned visitors who will instantly see why, on account of the magnitude of the buildings, the conventional fold-outs were undesirable in a book. We published the key dimensions and convenient analytical plans at 1 : 2500, 1 : 2000, and 1 : 500 in our monograph.

Fig. 15. — Cluny III (right) Chevet as in 1098, showing at left (from top to bottom) Hospice, Lay Brethren's Building, Palace, Cluny II with Almonry, Cellar, Bakery, and (nearer) Refectory and Novitiates : (adjoining apse of Cluny II) Dormitory, Church of St. Mary, Cemetery Chapel; (foreground) Infirmary, Priory. Restoration, based on plan dimensions, descriptions of 1043, 1623, c. 1710, and pictures of 1670, 1714, 1773. K. J. C. *inv. et del.*

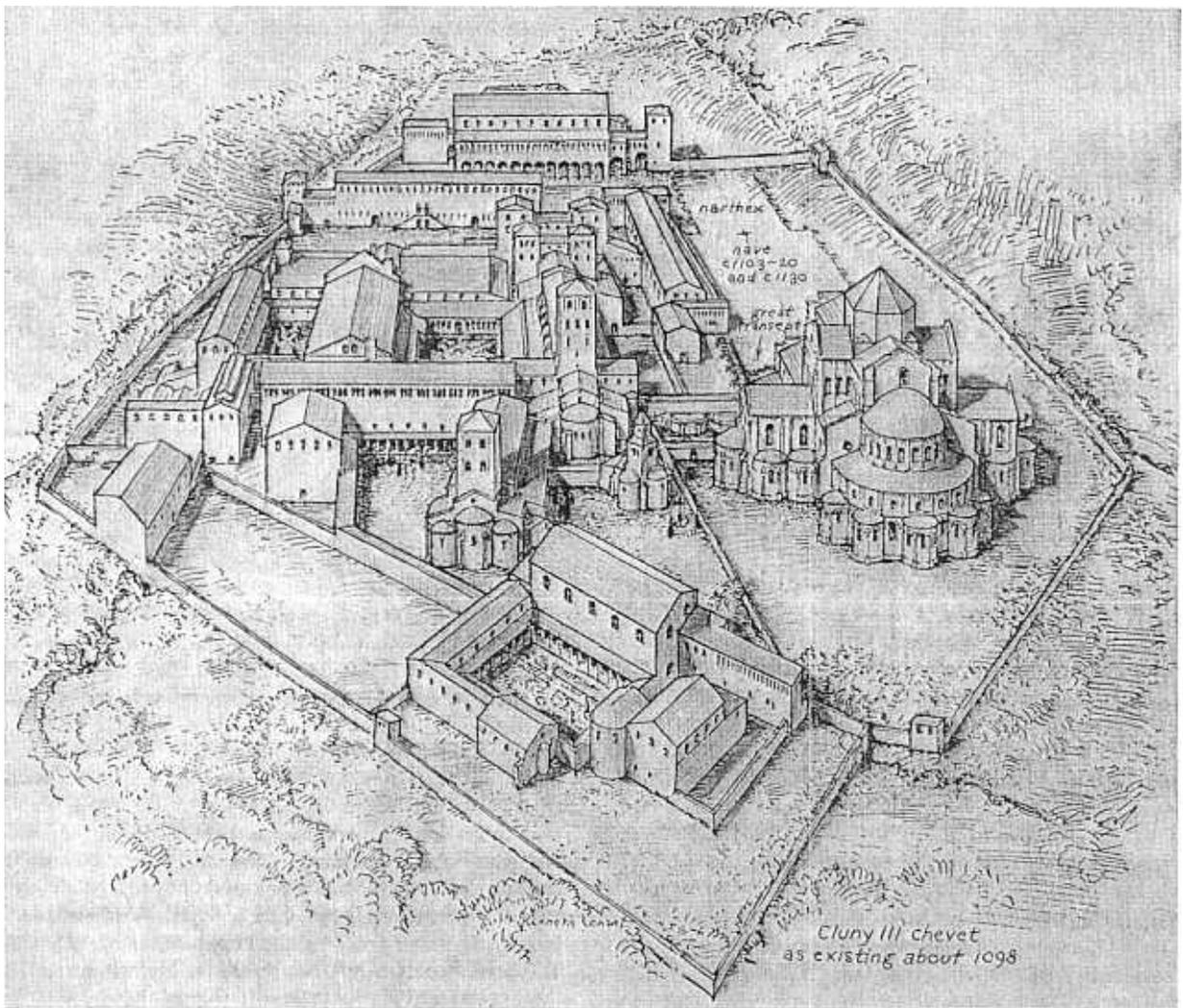
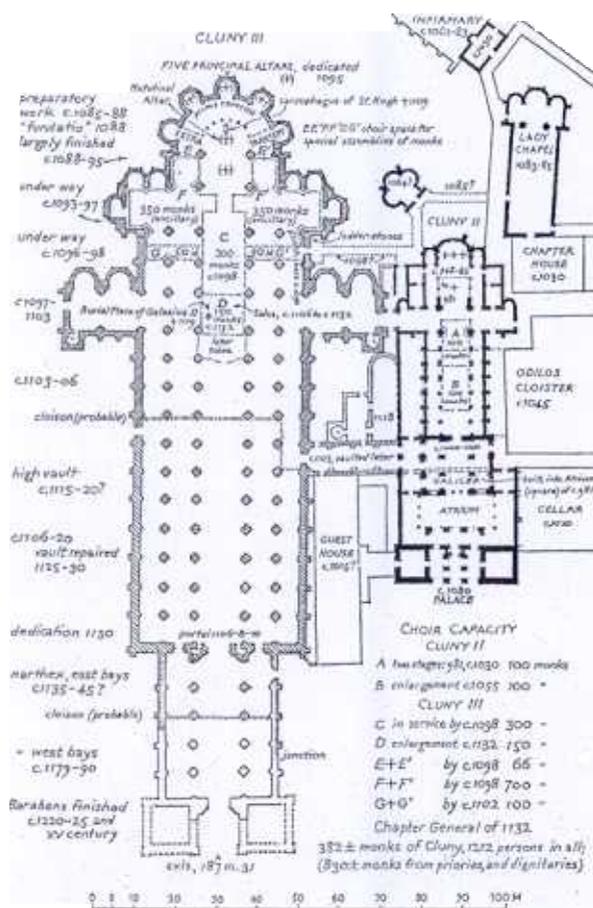


Fig. 16. — Chronological Abstract of Cluny II and Cluny III. Choir areas and Capacity. K.J.C. *inv. et del.*



## PRACTICAL ASPECTS OF THE CONSTRUCTION OF THE GREAT CHURCH

This building, "Cluny III" proved to have been laid out with quite surprising regularity. The engineers' work was far more precise than was customary in mediaeval building. Thus the engineers were clearly an élite, like the administrators, architects, sculptors, and masons. The inevitable deviations (Figure 23) which we studied with great care, were of the order of 6 to 10 centimètres. The usual instruments — cords, gonéomètre, square, perch, measuring stick and rule — must have been used with uncommon skill. The levelling devices were less accurate.

The precision of Cluny III made it possible for us to explore the mind of the architect, and study his methods. Here again the tolerance was becomingly small, never more than 10 centimètres. For our verticale we measured the east wall of the existing south arm of the great transept, and our work was subsequently corroborated by official measurements taken on the west side. We also employed surveyors on the difficult task of determining the *net length* of the main axis, which proved to be 186.92 mètres, or, with the plinths, 187.31 mètres. The slew of the façade of the Barabans and the plinths of the exterior engaged columns of the central absidole increase the *overall* dimension between perpendiculars to 187.76 mètres<sup>(11)</sup>.

There are two axial inflections in Cluny III, and these may be intentional, though the question is debatable. The inflections result from a long bay on the north side of the choir, and another in the narthex. The original building, without the Barabans, measured 177.33 mètres on axis, just over 601 Roman feet. On the north side the lengths add up to 602 and on the south side 600 Roman feet.

## SYSTEMATIC DIMENSIONS

Many vertical dimensions, and certain other horizontal dimensions are very close to even feet of 295 (or perhaps 295.05) millimètres — an average Roman foot. It is quite clear that the present cloister level is 206 millimètres below the church designer's zero or datum level, where the foundation was regularized (as was usual) in the form of a plinth on the outside and a wall bench on the inside. The principal vertical dimensions of the nave wall were very close to 25, 40, 55, 67, and 80 Roman feet above this basic bench level in the eastern part of the building. The nave sloped upward toward the west, and the point of the high vault was calculated from a slightly higher level — 100 Roman feet above the pavement at the Great Portal, and equally 100 Roman feet above the dwarf wall which sustained the famous ambulatory columns (Figure 22).

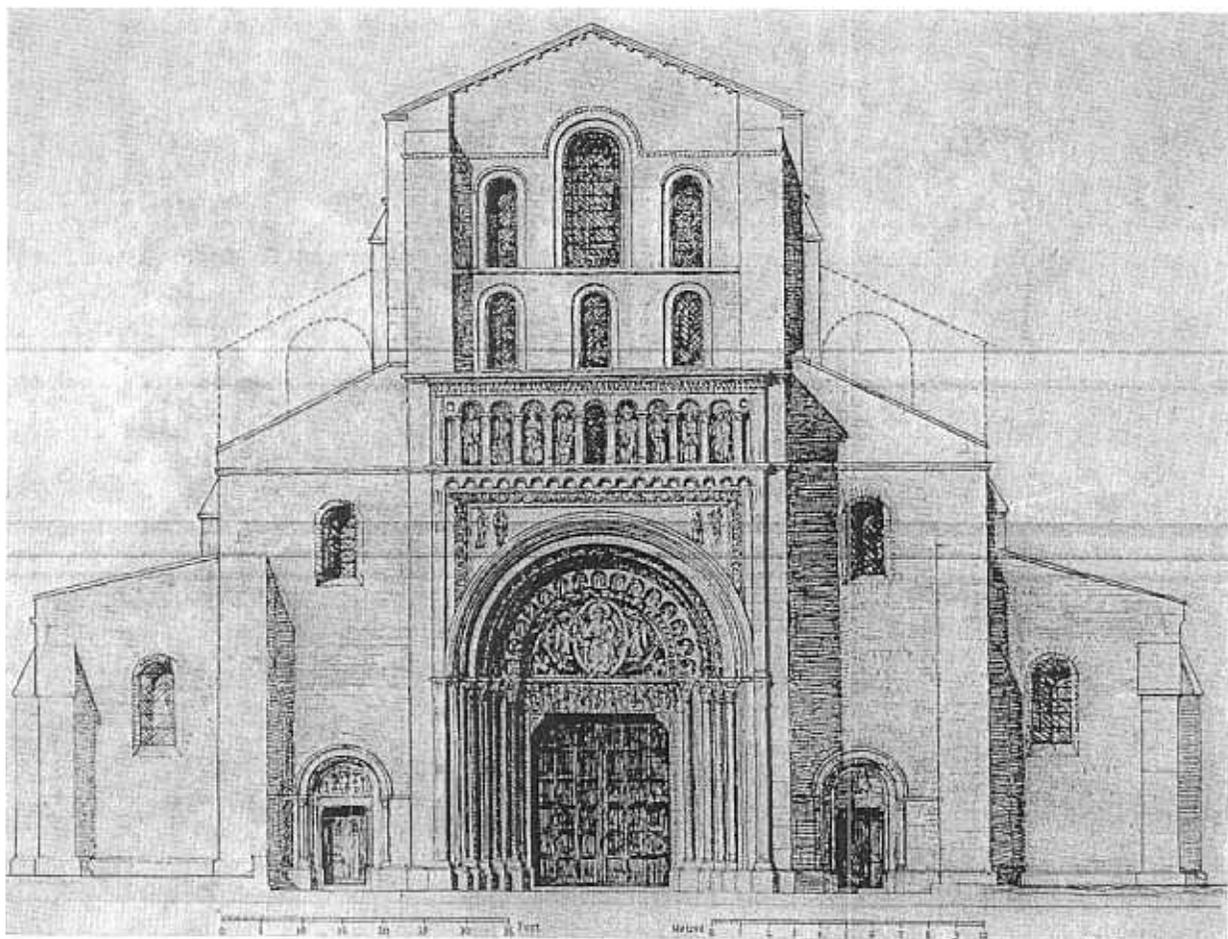


Fig. 17. — Façade of Cluny III, c. 1106-20 (before construction of Narthex). K. J. C. *inv. et del.*

Certain of the transverse dimensions proved to be regular in a similar way (Figure 23) : the sanctuary bay 100 Roman feet on plinth, minor transept 200 Roman feet externally, the major transept 250 Roman feet on the interior. The interaxial dimension of the inner aisles was 25 feet. The width of the nave, plus its piers, was 50 feet, and this was the width of the nave plus the thickness of the clearstory walls in the upper part of the building. All of these widths with a tolerance of less than 10 centimetres.

Other dimensions are clearly irrational quantities (Figure 23) and their presence corroborates the opinion of responsible students of proportion, who have for some time believed that such dimensions do occur<sup>(14)</sup>. In fact it was easy for a mediaeval architect, even working on a small parchment plan, to establish dimensions of

this sort. He might readily choose ratios of acknowledged aesthetic effect — particularly  $\sqrt{2}$  (1.4142....) and  $\Phi$  (1.6180....). These and other ratios are handily laid out with compass and square, and we note that they could be laid out with equal ease by using squares, and swinging cords, at full scale on the ground. Thus we see why, in the mediaeval manuscripts, the architect's attribute is a compass, and this is true of God as the Great Architect of the Universe. There are numerical series (3, 5, 8, 13, 21...., and 20 1/2, 29, 41, 70, 99 for instance), which produce a similar result pragmatically, and they occur in Cluny III.

There is an increasing body of knowledge of this kind regarding ancient and mediaeval architecture. Scepticism on the part of untrained critics is often generated by highly involved drawings which are really presented

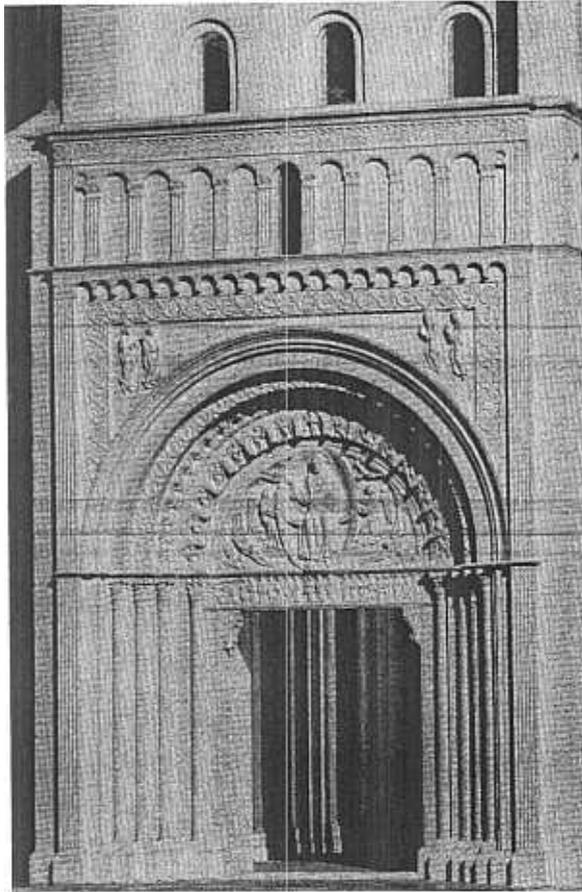


Fig. 18. — Model (original at 1:25) of Great Portal of Cluny III, made by G. and A. Latapie, sculptors. Restoration studies by Helen Kleinschmidt and K. J. C., having regard to drawings, descriptions, and scores of fragments found in the Excavations. Musée du Farinier, Cluny. G. arens, photographer.



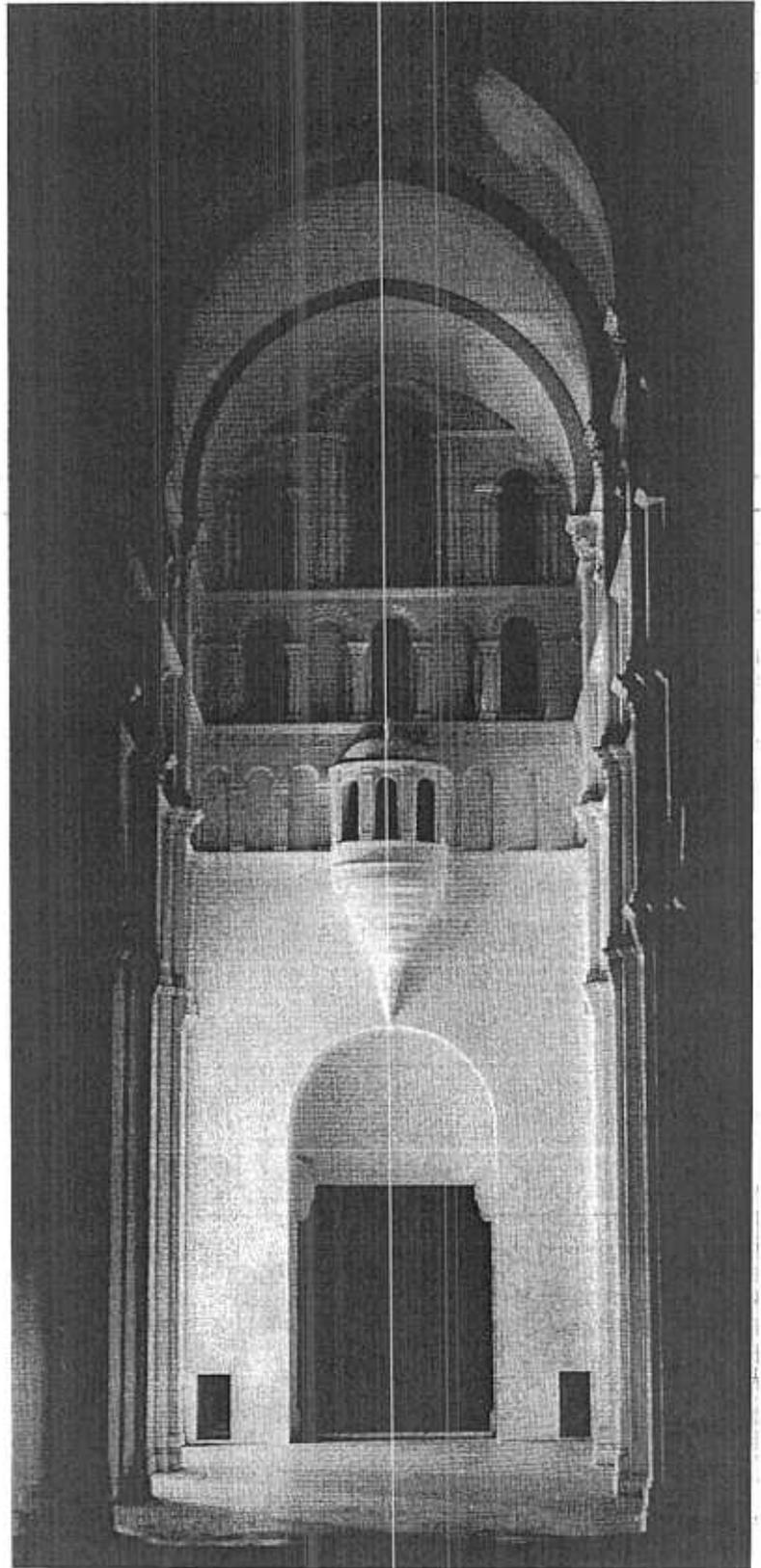
Fig. 19. — The Cluny St. Peter, from the north spandrel of the Great Portal of Cluny III. Photograph by the Rhode Island School of Design.

by the investigators for other investigators. To them these drawings are comprehensible in the same way that physical, chemical, or quantum formulas are comprehensible to specialists, though mystifying to the uninitiated. In order to make this clear I present such a diagram of the transverse dimensions of Cluny III — my Technical Recapitulation (Figure 23): This is an epitome of these same geometrical constructions, which are so much more readily understood by art historians. According to a considerable body of opinion, symbolic numbers were used in mediaeval composition, and these numbers occur in the Cluny design, though without any supporting texts to guarantee their symbolic character. However, 3 and 7 are easy to accept as symbolic, and also (doubtless because of their name) the "perfect

numbers" 1, 6, 28, 496. The chief component of the main stem of Cluny III measured 496 feet. A practical advantage of these "perfect" numbers is their easy divisibility, and in fact all of the principal projections, and certain of the basic widths of the Cluny III plan, were fractions of 496 — 248, 124, 62,  $41\frac{1}{3}$ , 31,  $15\frac{1}{2}$ .

The architect of Cluny III was apparently interested in expressions of fullness. The sum of the perfect numbers, plus 1, equals 532; the number of years in a full solar-lunar cycle, and this is the length in feet of the main stem of the axis, from the centre of the apse and including a one-foot wall bench to the reserve of the west wall of the nave. Also, since Cyril of Alexandria, 100 has been a symbol of fullness, fulfilment, or perfection.

20. Interior Cluny Latapie Musée. legend Figure West wall



Diagonal

Latapie Model. See Figure and legend Figure

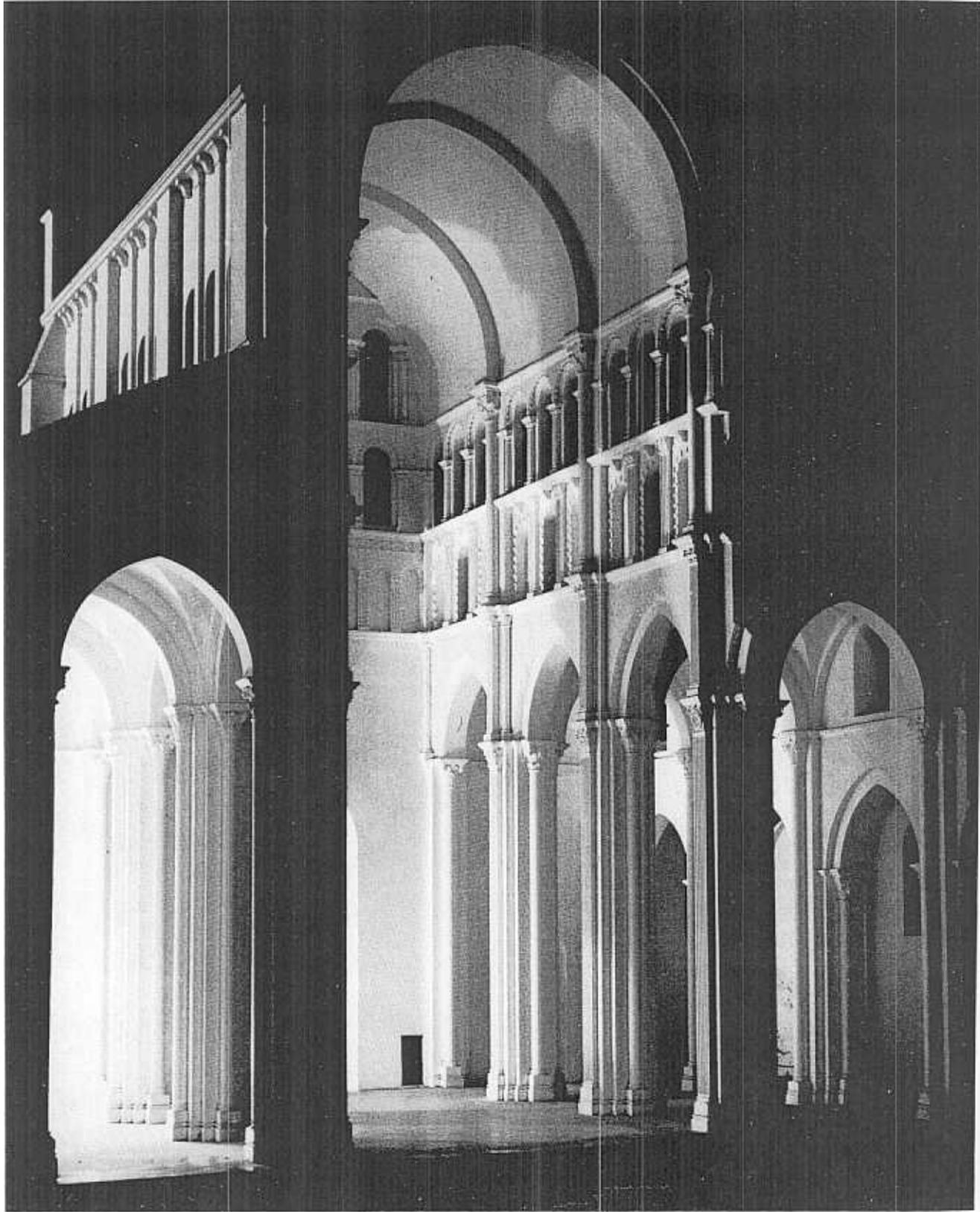
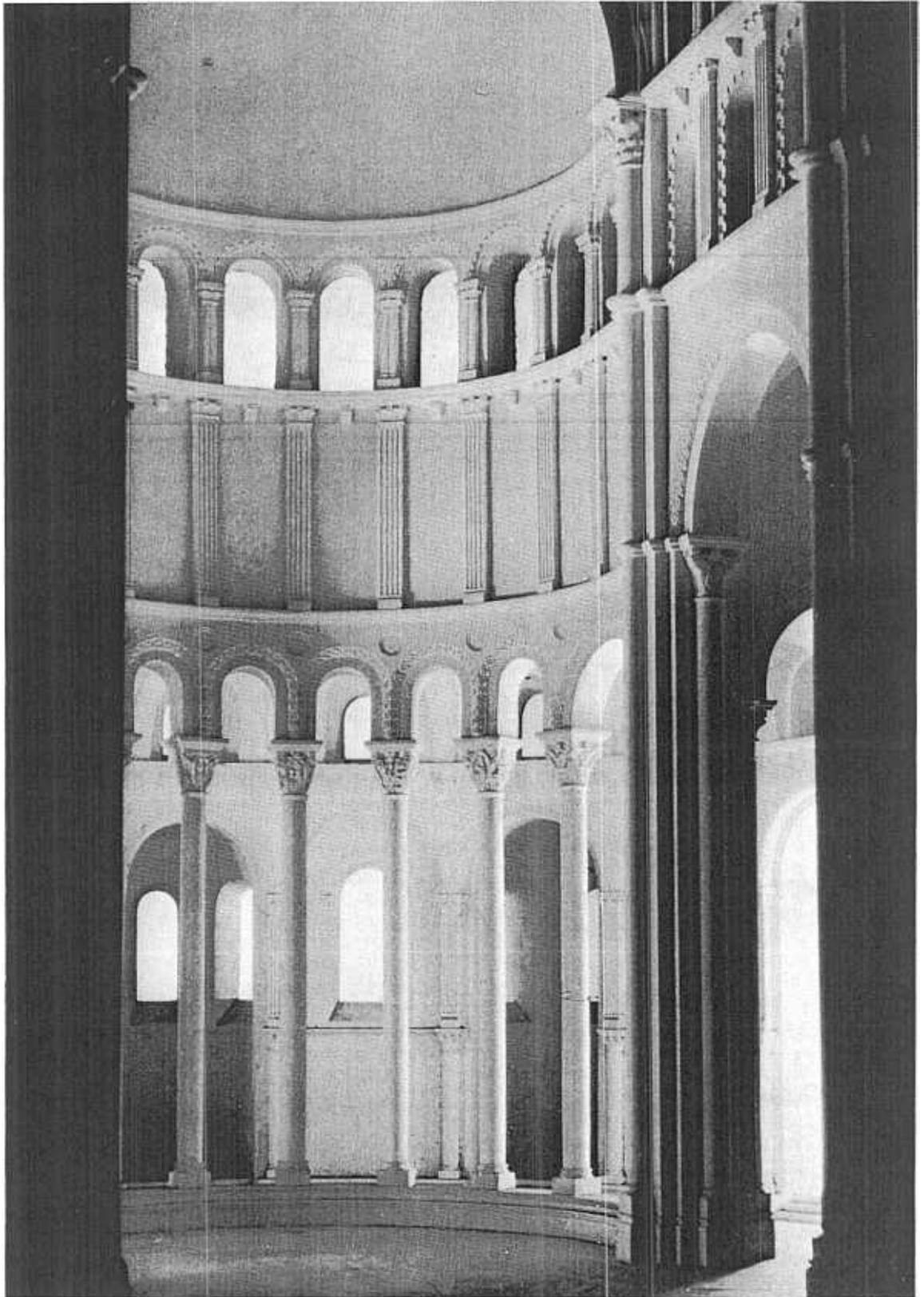
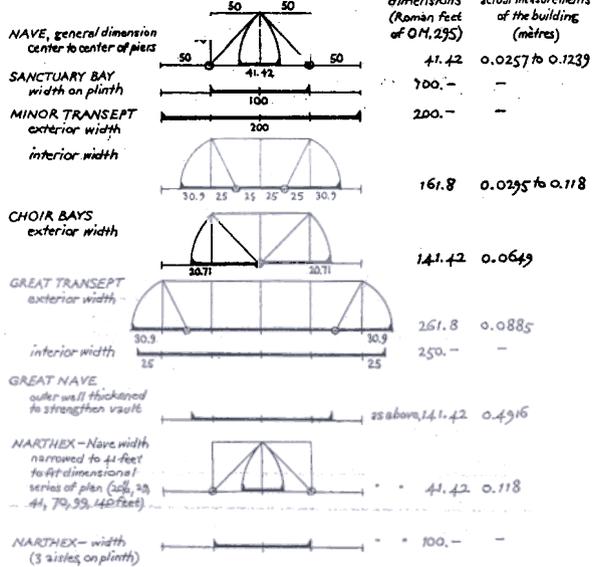


Fig. 22. — Model (original at 1 : 25) of Apse of Cluny III, made by G. and A. Latapie, sculptors. Plans and detailed studies by K. J. C. Musée du Farinier, Cluny. G. Arens, *photographer*.



TRANSVERSE DIMENSIONS OF CLUNY III



TECHNICAL RECAPITULATION OF THE ABOVE



Fig. 23. — Systematic Dimensions, Vitruvian Method at Cluny III. K. J. C. inv. et del.

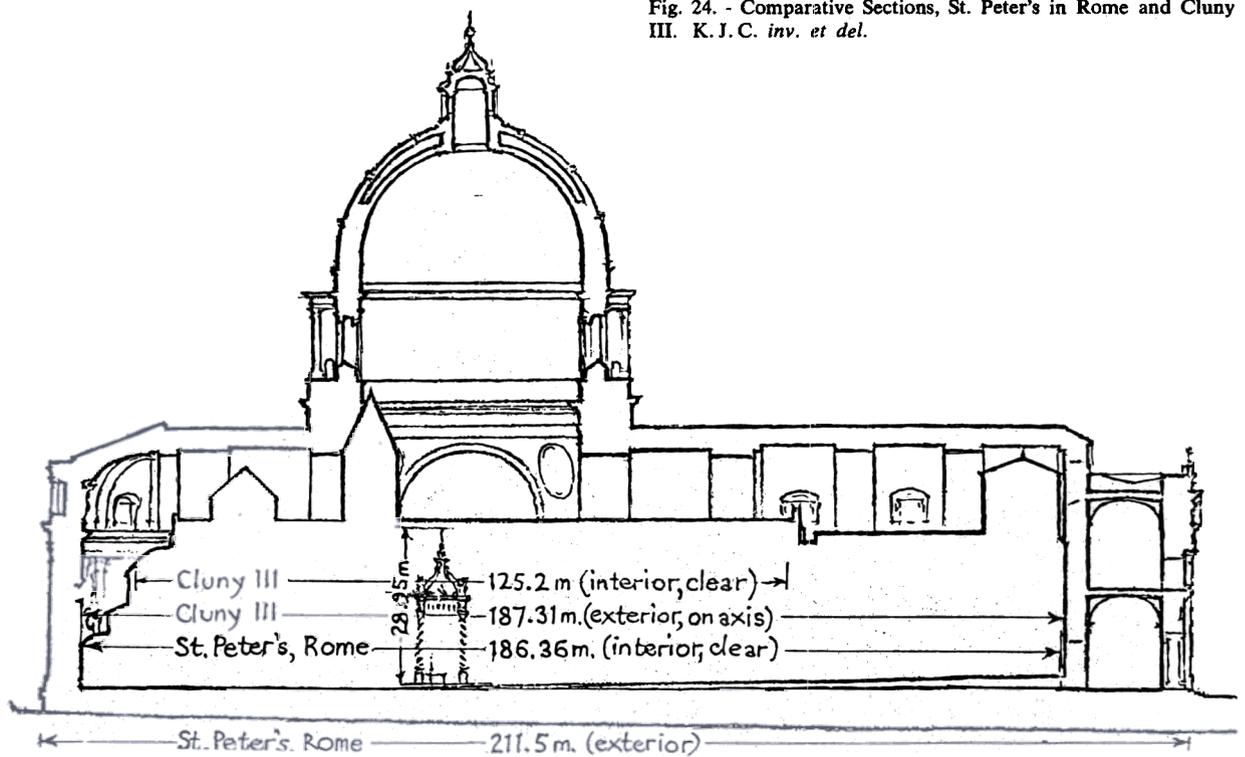


Fig. 24. - Comparative Sections, St. Peter's in Rome and Cluny III. K. J. C. inv. et del.

It occurs as a principal dimension in Cluny III and, further, multiplied by 2, 3, and 6; also in fractional form (50, 25, 12 1/2).

For the Middle Ages, everything was symbolic. The order and stability of the Universe were considered to be dependent on number. Here in this study, very scrupulously made, we have perhaps discovered something of the architect's intention, while avoiding the more romantic *ex post facto* symbolism.

### CLUNY III IN COMPARISON

We have subjoined a number of comparative plans to clarify the relationship between Cluny III and certain other notable buildings. We find, incidentally, that the exterior length of Cluny III on axis is 95 centimètres greater than the interior length of St. Peter's in Rome. However, St. Peter's cuts us all down to size, as the section drawing shows (Figure 24).

### DIRECT INFLUENCE OF CLUNY ON IMPORTANT CHURCH BUILDINGS (Figure 25)

1. The Norman Cathedral of *Canterbury*. As the chevet of Cluny III was being completed (1097-1098), an addition of very similar plan and purpose was made at Canterbury under St. Anselm († 1109), shortly after 1093, and continued until 1130 (the dedication date). The nave and transept (1070-1077) of Archbishop Lanfranc remained intact. With its added new choir, minor transept, sanctuary bay, apse, ambulatory and radiating chapels, the primatial church of All England exemplified the plan-scheme of the primatial monastic church of Cluny, which is generally accepted as its model. (St. Anselm was at Cluny in 1097).

However, the superstructure at Canterbury was entirely different. Canterbury was built over a vast vaulted crypt. The upper church had a wooden-roofed nave. The interior elevation and the eastern tower pair were perhaps suggested by Fleury (St. Benoît-sur-Loire, c. 1080 ff) and there are signs of influence from Jumièges<sup>(18)</sup> and (Figure 25).

2. The Cluniac Priory of *Lewes*, chief house of the Order in England. A new stone church, given to the monks by the founder (1077) would seem, in our view, to have been swept away to make place for an elaborate Church of the Virgin ("Lady Chapel") about 1150. Meanwhile (in 1090-97?) the chevet of a very impressive definitive church was built, with a dedication between 1091 and 1098. It resembled the newly-built chevet of Cluny III (planned before 1088), the intermediary being probably Lanzo of Cluny, the first prior of Lewes. The continuation work at Lewes was carried out on a grand scale, and obviously according to the

general pattern of contemporary Cluny, though the superstructure of the church, dedicated between 1142 and 1147, was Norman in style. The site has been excavated at intervals since 1880, but never fully reported<sup>(16)</sup> (Figures 14 and 25). There can be no doubt, however, that Lewes and its monastery represent Cluny III and its monastery just as Hirsau represents Cluny II and its entourage.

3. The Cluniac priory church of *Lenton* was a reduction of that of Lewes<sup>(17)</sup> (Figure 25). The minor transept was represented by two chapels tangent to the apse, somewhat recalling Fleury (St. Benoît-sur-Loire). Lenton's date falls in the twelfth century.

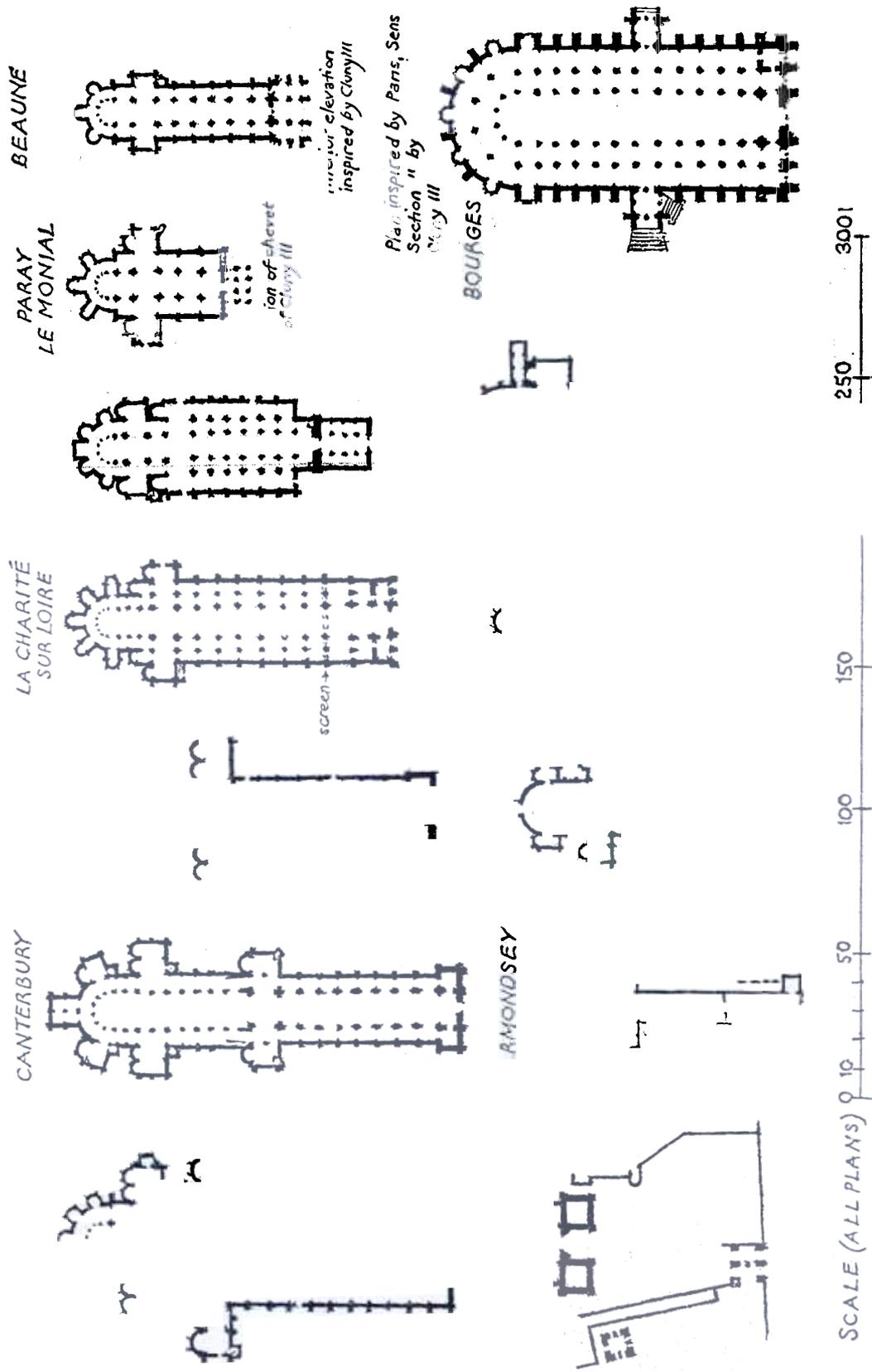
4. The eastern apses and choir at *Bermondsey* had apparently been built when the monastery (after 1089) became a priory of La Charité-sur-Loire (in 1098?). Early in the twelfth century La Charité was transformed to resemble Cluny III, and Bermondsey, as finished, reflected them both. The superstructure at Bermondsey must have been very light, for the foundation walls are only 2 1/2 feet in width<sup>(18)</sup> (Figure 25).

5. La Charité-sur-Loire. A greatly enlarged version of Cluny II was built at this priory, "the eldest daughter of Cluny", and dedicated in 1107. Soon afterwards, when the full impact of Cluny III was apparent, a reconstruction and augmentation on the model of Cluny III was begun. The eastern transept is represented by two absidioles facing each other across the ambulatory passage and the apse. The west end was never finished. After 1695 the nave was shortened and largely rebuilt<sup>(19)</sup> (Figure 25).

6. The priory church of *Souvigny* formerly possessed a narthex, a wooden-roofed nave of very wide span, a transept, and a triapsidal chevet. It is believed that the church in this form was dedicated in 1063. Beginning about 1080 the church was rebuilt with five aisles and vaulted. In the course of this work, a chevet resembling the Cluny III design of 1088-98 was added at the east. The church proper, as at Cluny and at Canterbury, thus comprehended apse, ambulatory, radiating chapels, minor transept, intermediate choir, major transept and a long nave. Here the work was in the Burgundian style. Souvigny has august memories — Abbots Mayeul and Odilo of Cluny were buried there, and in Gothic times it became a Bourbon pantheon. The family has been connected with it ever since the original gift was made in 915<sup>(20)</sup> (Figure 25).

7. *Paray-le-Monial* priory church is the closest copy of Cluny III<sup>(21)</sup> (Figure 25). The older church at Paray had a narthex and tribune which were preserved when the rest of an old building was swept away. The new work, prepared or in progress before 1109, was in fact a close reproduction, though diminished in scale, of the very chevet at Cluny which we have already seen as inspiring the new constructions at Canterbury, Lewes, Souvigny, and La Charité-sur-Loire. Paray, the "vest-pocket Cluny" did not have the requirements for large-

Fig. 25. — Notable Churches related to Cluny III. Sketch Plans, restored and/or completed. K. J. C.



scale ceremonial and processions which called for the great transept and the imposing nave of Cluny III. Paray as built was not intended, in our view, to have a longer nave. The nave as built was quite sufficient for the demands of the liturgy in a typical priory. The equivalent structure at Cluny III was a workable church, but it needed the second transept and the nave because of the special régime of the primatial Mother House. These early copies, modified to be sure, point up the special and functional character of the Cluny III chevet. They are further proof that the chevet was vigorously undertaken, after suitable preparation, by 1088. It is clear that the apse was in service when the five principal altars of Cluny III were dedicated in 1095, as the texts declare; they offer no reason to suppose that the apse was built hesitantly between 1110 and 1130. The copies are too early for that, and the need for choice space was too imperative at Cluny, even as early as 1098.

There is an interesting collateral group which has connections with Cluny III:

1. *Autun* cathedral, *coniuncta* of Cluny, 1120-1135 and later. A much augmented version of Cluny II, employing a variant of the system of Cluny III in the interior elevation. The architecture of the nave is stouter than that of Cluny III, perhaps because of the fall of vaulting (1125) in the bolder design at Cluny<sup>(22)</sup> (Figure 25).
2. Notre Dame at *Beaune* (c. 1140) is an attractive reduction of Cluny II or Paray-le-Monial, adapted to the needs of a collegiate church of some importance<sup>(23)</sup> (Figure 25).
3. The Cathedral of *Langres*<sup>(24)</sup> (Figure 25) is also a reduction of the Cluniac pattern, but in this case, by rare exception, the architectural theme is that of the

western bays of the narthex of Cluny III, which were built, beginning about 1179, in a simplified version of Burgundian Gothic, with Romanesque reminiscences. 4. Little thought is given to the connections between Cluny and *Bourges*, which in the early Middle Ages was considered to be the ecclesiastical metropolis of Aquitaine. It was here that the celebrated foundation charter of Cluny was promulgated on September 11, 910, the scribe and one of the signers being (as is usually believed) Odo, future abbot of Cluny (927-42), who was considered their first father by the monks, though the groundwork of the abbey was laid by the founder abbot Berno (910-927) who had persuaded William Duke of Aquitaine and Marquis of Gothia to cede his favorite hunting lodge, the *Villa Cluniaca*.

The gorgeous Gothic cathedral of Bourges<sup>(25)</sup> (Figure 25) has important reminiscences of the great church, Cluny III. The Gothic fabric at Bourges made possible dimensions which were almost exactly one-fourth larger than those at Cluny. In each case the ratio of nave width, clear, to height under the vault was almost exactly one to three. Bourges was the first among the great Gothic churches to repeat the Cluniac motive of a tall inner aisle with a clearstory of its own within, and rising above, an outer aisle of considerable dimensions. Bourges owes something of the scheme of its plan to Paris, but even more to Sens<sup>(24)</sup> (Figure 25), which was first built without a transept. Perhaps, through Sens, there came to Bourges a subtle nuance of that Burgundian warmth and assurance to which the Romanesque of Cluny contributed so much.

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## NOTES

(1) Observation of Dr. Helmut Schlunck, Director of the German Archaeological Institute in Madrid (personal communication).

(2) K. J. C., *Carolingian and Romanesque Architecture*, 1st and 2nd ed., pp. 14, 17, Plate II A.

(3) *Archaeologia* (London), vol. IXXX (1930), 143-178.

(4) K. J. C., *Cluny: Les Eglises...*, p. 51, pl. XXV, fig. 39, 40; *L'Abbatiale de Payerne* (Bibliothèque Historique Vaudois, XXXIX), Lausanne 1966; pp. 65-79.

(5) M. et C. DICKSON, *Les Eglises de l'Ancien Diocèse de Chalon* (Mâcon, 1935), pp. 311-313.

(6) K. J. C., *Cluny: Les Eglises...*, pls. XIV, fig. 16, pls. XXVI, XXVII, fig. 41-45; pl. XXVIII, fig. 47; pp. 43-45.

(7) K. J. C., *Carolingian and Romanesque Architecture*, 1st and 2nd ed., pp. 111, 255-256.

(8) N. HUNT, *Cluny in the Time of St. Hugh* (London, 1967) pp. 82, 85.

(9) This building was often called, because of its location, the Infirmary Chapel, but it was in the régime of the cloister, and not a part of the Infirmary proper, which had an ancillary chapel. The progress of this reconstruction is detailed by K. J. C. in an article, "Cluny, 1077-1088" in *Mélanges offerts à René Crozet* (Poitiers, 1966) vol. 1, pp. 341-344.

(10) For comparison, the church of Fontenay, which was also pushed aggressively with ample funds, took eight years (1139 to 1147). It is 66 mètres long, and approximately equivalent, as a fabric, to the chevet of Cluny III. Much simple and less lofty, it was built twice as fast as the latter. (The coefficient would be 9.4 mètres per year).

(11) Observations in *Speculum*, vol. XLV, no. 1, (January 1970) pp. 1-39 on two articles in the *Bulletin Monumental*, vol. CXXVI (1968) no. 3, pp. 235-322, and vol. CXXVII (1969) no. 2, pp. 183-186.

(12) *Viator* 2 (1971), in press as this is written: "Early Examples of the Pointed Arch and Vault in Romanesque Architecture", by K. J. C. and Henry M. Willard. From 1083 there was confraternity officially between Cluny and Montecassino.

(13) *Studies*. Museum of Art, Rhode Island School of Design (Providence, R. I., U.S.A., 1947), pp. 17-31.

(14) P. H. SCHOLFIELD, *The Theory of Proportion in Architecture*, Cambridge, (1958). Useful summaries, extensive bibliography. — A study based on the excavation of a Roman town: *Situla I*, quarto series (Ljubljana, 1963) — Milica Detoni, Tine Kurent, *The Modular Reconstruction of Emona*.

(15) F. BOND, *Gothic Architecture in England* (New York and London, 1906), pp. 149 and 184-189. Anselm knew Cluny as early as 1056. At first high in the favour of the King, he became Archbishop of Canterbury in 1093. In 1096 he appointed Prior Ernulph, who started the new extension, and he paid for a large part of it himself. He was at Cluny in 1097 and in the period 1099-1105, but his exiles and the royal expropriations pose a problem.

(16) A. CLAPHAM, *English Romanesque Architecture after the Conquest* (Oxford, 1934) pp. 70-73, and T. S. R. BOISE, *English Art 1100-1216* (the Oxford History of Art, III, Oxford, 1953) pp. 53-56, both with detailed bibliographies. Incidentally, the foundations indicate an oblong Chapter House, as at Cluny. The apse shown in other published plans is imaginary.

(17) Plan based on materials most kindly communicated in 1961 by the excavators of the site, Messrs R. H. Elliott and A. E. Berbank. They found that the centre lines of the foundations were very exactly determined by a quadrille of  $12\frac{1}{4}$  foot diagonal squares. (Compare with the Vision of Gunzo in the miniature — Bibliothèque Nationale, MSS lat. 17716; see K. J. C. *Cluny: Les Eglises...*, p. 80, pl. XXXVIII, fig. 68; pl. XXXIX, fig. 73).

(18) W. F. GRIMES, *The Excavation of Mediaeval London* (London, New York, and Washington, 1968) pp. 210-217.

(19) *Congrès Archéologique*, 1967 (Nivernais), pp. 43-103. This study takes no account of a screen wall (perhaps a flying screen like those of St. Etienne, Nevers) shown in the Sylvestre engraving of 1650 (p. 48). This would have marked off the nave from the (future) narthex. The complexities here might be resolved if it could be shown that narthex aisle arches were built early on, to stay the higher construction on its western side. Several architects at Cluny employed similar expedients. In *Journal of the Society of Architectural Historians*, vol. XI (1952), no. 3, pp. 17-22, and *Speculum*, vol. 30 (1955) no. 1, pp. 1-14, explore the possibility that a nave façade existed at the third bay, its traditional place. The aisle arch of the narthex exists in part, but the transverse wall has vanished.

(20) *Congrès Archéologique*, 1938 (Allier), pp. 115-148. The church plan and the text wrongly give a nave of seven rather than six bays east of the towers.

(21) Jean VIREY, *Paray-le-Monial et les Eglises du Brionnais* (Paris, 1926). His date may be too early, for the novices' choir, where the novice was injured, may have been above the porch between the western towers (pages 14-16).

(22) D. GRIVOT and G. ZARNECKI, *Gislebertus Sculptor of Autun*. Preface by T. S. R. Boase (New York, Paris, 1961). The authors were in disagreement with the preface provided by the publisher for the French edition (of 1960).

(23) *Congrès Archéologique*, 1928 (Dijon), pp. 268-289

(24) *Ibid.*, pp. 483-510.

(25) These are two types of piers in each case, and these are deviations, but representative dimensions are 9.80 m to 29.50 m at Cluny and 12.40 m to 36.75 m at Bourges. Large drawings in R. BRANNER, *La Cathédrale de Bourges et sa place dans l'Architecture gothique* (Paris, Bourges, 1962). Nothing comparable to the magnificent sexpartite vaults of Bourges was achieved until the construction of the nave of St. John the Divine in New York (1916-29).

## RESUME

En 1928, le gouvernement français a bien voulu accorder à la « Mediaeval Academy » l'autorisation de reprendre les travaux de dégagement de l'ancienne abbaye de Cluny (Saône-et-Loire), commencés en 1912-1913 par les services du Ministère des Beaux-Arts.

Ces nouveaux travaux, qui se prolongèrent jusqu'en 1950, permirent de retrouver de nombreuses pierres sculptées et notamment d'identifier un relief représentant saint Pierre, provenant du portail de l'immense abbatiale, qui depuis 1920 se trouvait aux Etats-Unis, à Providence, dans l'Etat de Rhode Island. Toutefois, le véritable but poursuivi était de retrouver des éléments supplémentaires susceptibles de permettre une interprétation complète d'un certain nombre de vieux textes et plans, dont les plus anciens remontent à 1043. Une

étude minutieuse des données ainsi fournies permit de dresser avec sérieux les plans de l'ancien ensemble de bâtiments formant le couvent médiéval, aujourd'hui détruit, à une échelle de 1:200, et ceux de l'abbatiale elle-même (« Cluny III ») à une échelle de 1:100. Il est possible de consulter ces plans, de même que les carnets des fouilles et environ 2.000 photos prises au cours des travaux, aux Archives Municipales de Cluny. Ces travaux intéressaient les édifices suivants:

1. La villa franque avec sa chapelle, actuellement dénommée « Cluny A » (vestiges fragmentaires);
2. « Cluny I » (915 à 927 environ). Reconstitution purement conjecturale; ressemblait probablement à « Payerne I » (962), reconstruite par les moines de Cluny après 963;

3. Le monastère tel qu'il a été reconstruit pour la première fois, en bois, de 942 à 950 environ. Aucune indication directe concernant cette reconstruction;

4. « Cluny II » (948 à 981 environ); voûtes et travaux de fortification, 1010 à 1020 environ. L'architecture de cette église a exercé une influence assez considérable du fait des avantages pratiques de son plan d'ensemble, de sa bonne acoustique et aussi de l'importance croissante de l'Ordre de Cluny. Une copie pas tout à fait identique existe à Hirsau;

5. Deuxième reconstruction du monastère de 944 à 1048 environ. Mentionné dans le coutumier de Farfa; a exercé une influence très importante. Copie à Hirsau présentant certaines modifications;

6. Le monastère roman (3<sup>e</sup> reconstruction) de 1077 à 1085 environ. Son influence se retrouve dans le style du prieuré de Lewes, dans le Sussex (Angleterre) et ailleurs. Il fut possible d'affecter aux travaux de la nouvelle église, construite aussitôt après, l'importante et énergique équipe d'artisans qui y avait travaillé;

7. « Cluny III » (1086-88 à 1120-30 et au-delà). Le chef-d'œuvre par excellence de l'architecture romane; son influence se retrouve dans le style de diverses églises en France et en Angleterre.

Le nouveau chœur (prévu pour 300 personnes) était terminé dès 1098; jusqu'alors les moines, au nombre de 280, s'étaient entassés dans le chœur de « Cluny II », prévu pour 200 personnes seulement. Les parties les plus orientales de l'édifice furent certainement construites avant 1098, car à cette date la technique employée pour leurs maçonneries avait déjà été copiée à Lewes et à Cantorbury. Les 5 autels situés dans le chevet furent consacrés en 1095;

8. Divers ouvrages ultérieurs de style gothique, entre 1170 environ et 1600 environ;

9. Quatrième reconstruction du monastère, de 1750 à 1790, entraînant d'importantes destructions des ouvrages anciens. Après 1798, l'abbatiale fut démolie pour permettre la réutilisation de ses pierres.

Fig. 1. — Cluny III et ses églises « rivales » les plus grandes de styles paléo chrétien, byzantin, gothique et renaissant. Plans-masses Cluny I et II ajoutés à titres de comparaisons.

Fig. 2. — Vue de Cluny III depuis l'ouest vers 1120-1125. A droite, hôtellerie d'Odilon, palais de Hugues et, à l'arrière, tours de Cluny II. K.J.C. inv. et del.

Fig. 3. — Vue de Cluny III depuis l'est. A gauche, église Notre-Dame, dortoir Cluny II et chapelle cimetériale de la Vierge. K.J.C. inv. et del.

Fig. 4. — Fouilles de la « Mediaeval Academy of America » à Cluny, 1928-50, d'après Fréd. Palmer et K.J.C.

Fig. 5. — Constructions du X<sup>e</sup> siècle révélées par les fouilles et les analyses, en relation avec Cluny I, II, et III. K.J.C. inv. et del.

Fig. 6. — A gauche, Payerne : « Villa Paterniaca »; Payerne I et II (fouilles), d'après A.-A. Schmid. A droite, restitution hypothétique de Cluny I par analogies, d'après K.J.C.

Fig. 7. — Tournus, Saint Laurent (X<sup>e</sup> siècle). Tour restituée à titre d'hypothèse par K.J.C.

Fig. 8. — Cluny II et l'abbaye aux alentours de 1043. K.J.C. inv. et del.

Fig. 9. — Hypothèse de restitution du sanctuaire de Cluny II. K.J.C. inv. et del.

Fig. 10. — Coupe à travers la « Villa Cluniaea », Cluny A et Cluny I. Coupe du transept de Cluny II. Élévation recomposée de la salle capitulaire et du dortoir d'Odilon. Coupe du croisillon méridional conservé du grand transept de Cluny III. K.J.C. inv. et del.

Fig. 11. — Cluny II et l'abbaye d'après les fouilles et les données du Coutumier de Farfa (1043). K.J.C. inv. et del.

Fig. 12. — Hirsau. Restitution du plan de l'église et du monastère d'après Mettler, Hempel, Weizäcker et K.J.C.

Fig. 13 et 14. — A gauche Cluny III et l'abbaye, y compris les adjonctions de l'âge gothique. Plan recomposé d'après les fouilles et les mesures relatives en 1043, 1623, 1750, 1793-1817 et 1950. A droite, prieuré de Lewes. Plan recomposé d'après les vestiges et des sondages (Breakspere et Godfrey). Adaptations gothiques incluses. K.J.C.

Fig. 15. — Cluny III. Chevet en 1098, sur la gauche, de haut en bas : hôtellerie, communs, palais, Cluny II et aumonerie, celliers, boulangerie et, à côté, réfectoire et noviciat. Contre l'abside de Cluny II : dortoir, église Notre-Dame, chapelle du cimetière. A l'avant-plan : infirmerie et prieuré. Restitution fondée sur les mesures au sol, les descriptions de 1043, 1623, et vers 1710, et les vues de 1670, 1714 et 1773. K.J.C. inv. et del.

Fig. 16. — Résumé chronologique de Cluny II et III. Superficies et capacités des chœurs. K.J.C. inv. et del.

Fig. 17. — Façade de Cluny III vers 1106-1120, avant l'édification du narthex. K.J.C. inv. et del.

Fig. 18. — Maquette du portail principal de Cluny III par les sculpteurs G. et A. Latapie. Etude archéologique de Helen Kleinschmidt et K.J.C. d'après les dessins, descriptions et vestiges exhumés lors des fouilles. Musée du Farinier à Cluny. Photo G. Arens.

Fig. 19. — Saint Pierre. Statue du flanc nord du grand portail de Cluny III. Photo « Rhode Island School of Design ».

Fig. 20, 21 et 22. — Maquettes des Latapie. Fig. 20, revers de la façade de la nef de Cluny III. Fig. 21, vue oblique vers la nef. Fig. 22, abside principale. Photos G. Arens. Voir les figures 18 et 19.

Fig. 23. — Etude des proportions. Vitruve et Cluny II. K.J.C. inv. et del.

Fig. 24. — Coupes comparées de Cluny III et Saint Pierre à Rome. K.J.C.

Fig. 25. — Plans schématiques de grandes églises par rapport à Cluny III. Plans restitués ou complétés par K.J.C.