

The Roof Carpentry of Oxford Cathedral

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SUMMARY

The medieval roofs of the Cathedral were all built for the Augustinian Priory of St. Frideswide, and are therefore to be seen in the context of monastic rather than cathedral carpentry. The oldest roof in the Cathedral is that over the chapter-house, belonging to the middle of the 13th century, and of standard rafter construction with no lengthways stiffening and employing notch-lapped joints. The Latin Chapel has its original roof of c.1320-40, interesting on account of its unusual form, being double-framed with side purlins and a ridge piece resting on a yoke (having affinities with cruck construction). The Lady Chapel has a late-medieval roof of unremarkable type, with butt-purlins and windbraces. The choir roof of c.1500 is a standard low-pitched king-post roof marking the change from high-pitched roofs to a low-pitch with leaded covering. Subsequently the transepts were given flat decorated ceilings, and the low-pitched nave roof of rather more elaborate type is probably also of early 16th-century date. The refectory of the Priory (the Old Library) was also built near the beginning of the 16th century, and its roof with the later painted ceiling has been described elsewhere.¹

INTRODUCTION

This description of the principal roofs of St. Frideswide's Priory has been undertaken to accompany the publication of the archaeological work in the church, and to provide for the first time a discussion of some of the earliest surviving carpentry in Oxford.² The roof carpentry of Oxford Cathedral has not been fully studied nor reported on before now, apart from passing mention in the standard works on the Cathedral.³ The roofs were examined and photographed by Ian Fisher, now of R.C.A.H.M. (Scotland), in the 1960s, when the chapter-house roof was measured (and photographed when it had no water-tanks).⁴ Cecil Hewett has described and illustrated the roofs of the nave and the Latin Chapel.⁵

¹ D. Sturdy, E. Clive Rouse and J.C. Cole, 'The Painted Roof of the Old Library, Christ Church', *Oxoniensia*, xxvi-vii (1961/2), 215-43.

² We are grateful to the Cathedral Verger, Edward Evans, and the Cathedral staff for their assistance in giving access to the roofs, and to David Scroggie of Peter Bosanquet and John Perryman Associates, for helping to uncover parts of the chapter-house roof, and encouraging the investigations there. The dendrochronology of the timbers has been kindly undertaken by David Haddon-Reece and Daniel Miles.

³ J. Britton, *Oxford Cathedral* (1820) contains useful illustrations. G.G. Scott's *Report* (1869) does not mention the roofs in any detail. P. Dearmer, *Oxford* (Bell's Cathedral Series, 1897) is not without value, whilst S.A. Warner, *Oxford Cathedral* (1924) is very carefully researched. *R.C.H.M. Oxford* (1939), 43, only briefly describes the open roofs. The most recent general description and discussion of the cathedral is to be found in N. Pevsner and P. Metcalf, *The Cathedrals of England: Southern England* (1985).

⁴ JM is most grateful to Ian Fisher for his generosity in placing these materials at his disposal in 1973.

⁵ C. Hewett, *English Cathedral Carpentry* (1974) describes and illustrates the roof of the nave (pp. 34-5, Fig. 21), and that of the Latin Chapel (pp. 38-9, Fig. 25) though they are omitted from his second edition (see note 9 below).

Opportunities for a close re-examination of the roofs were provided by the cleaning of the roof of the nave in 1979, and the conversion of the chapter-house attics for Cathedral offices in 1986–7.⁶ A survey of the Latin Chapel roof has also been undertaken, as this is a work of unusual form. The remaining roofs have not been surveyed, but are briefly described.

THE CHAPTER-HOUSE (Figs. 82–3)

The timber roof above the stone vault of the chapter-house is mostly obscured by the walls and ceiling of the attic rooms, now the Cathedral offices and formerly part of Priory House. The rooms, now approached up the new staircase in Priory House, are wholly within the roof-space, and the floor is level with the top of the side walls. There are three rooms, lit by windows in the end gables and the N. wall; the eastern two have corner fireplaces. A passage on the S. side of the rooms is lit by three dormer windows in the slope of the roof, and there are small rooms at each end of it, with windows in the gable wall. A chimney-stack in the W. wall rises from the fireplace in the room over the E. range of the cloister. The inaccessible roof-space over the chapter-house was perhaps converted to rooms in 1600, though work had been done on the roof covering in 1578;⁷ windows and chimney-stacks are shown in Sampson Strong's portrait of Wolsey, c.1610 (Fig. 87), and Loggan's view of the College in 1675.

The rooms have a suspended ceiling below the lower collar-beam, and the roof above can be reached either from a door in the valley next the S. transept, or through a modern trap-door in the ceiling of the W. room. Since the roof was photographed in the 1960s some large water-tanks have been inserted at the W. end, slung on steel-work attached to the rafters. The roof has also been re-covered in recent years, with felting, some new timber furring pieces on the outside of the rafters, and Bradstone replica stone slates.

The roof consists of 29 individual rafter couples with no original lengthways stiffening, such support being provided only by the external covering. The trusses have two collar-beams, about 5 feet apart, and the lower collars had soulaces bracing them to the rafters. The rafters have a simple half-lapped joint at the apex, the collars and soulaces have open notch-laps (with what Hewett calls a refined entry profile). In addition to the usual face-pegs holding these joints, there are also pegs driven in at about 45 degrees from the lower fore-edge of the collar, through the lap-joint and into the rafter (Fig. 83, detail). These are an unusual feature, and were probably devised to draw the lapped end of the collar firmly back into the rafter; comparable double pegging has been noted in the 13th-century roof at Cogges Priory.⁸ The soulaces have all been removed, but their lower mortices (now filled) can still be seen in the rafters which bisect the dormer windows in the passage.

Many of the collars are bowed upwards, as if from the applied load of the roof covering. The members are all substantial, being generally some 8 ins. (20 cm.) square, the upper collars being slightly smaller. Many waney edges are visible, suggesting that quarter-sawn trees were used. Two lower collars towards the E. end have each been

⁶ For a description of the discoveries in 1986–7, see above, pp. 185–93.

⁷ W.G. Hiscock, *A Christ Church Miscellany* (1946), 212.

⁸ J. Blair and J.M. Steane, 'Investigations at Cogges, Oxfordshire, 1979–81: The Priory and Parish Church', *Oxoniensia*, xlvii (1982), 75 and 79.

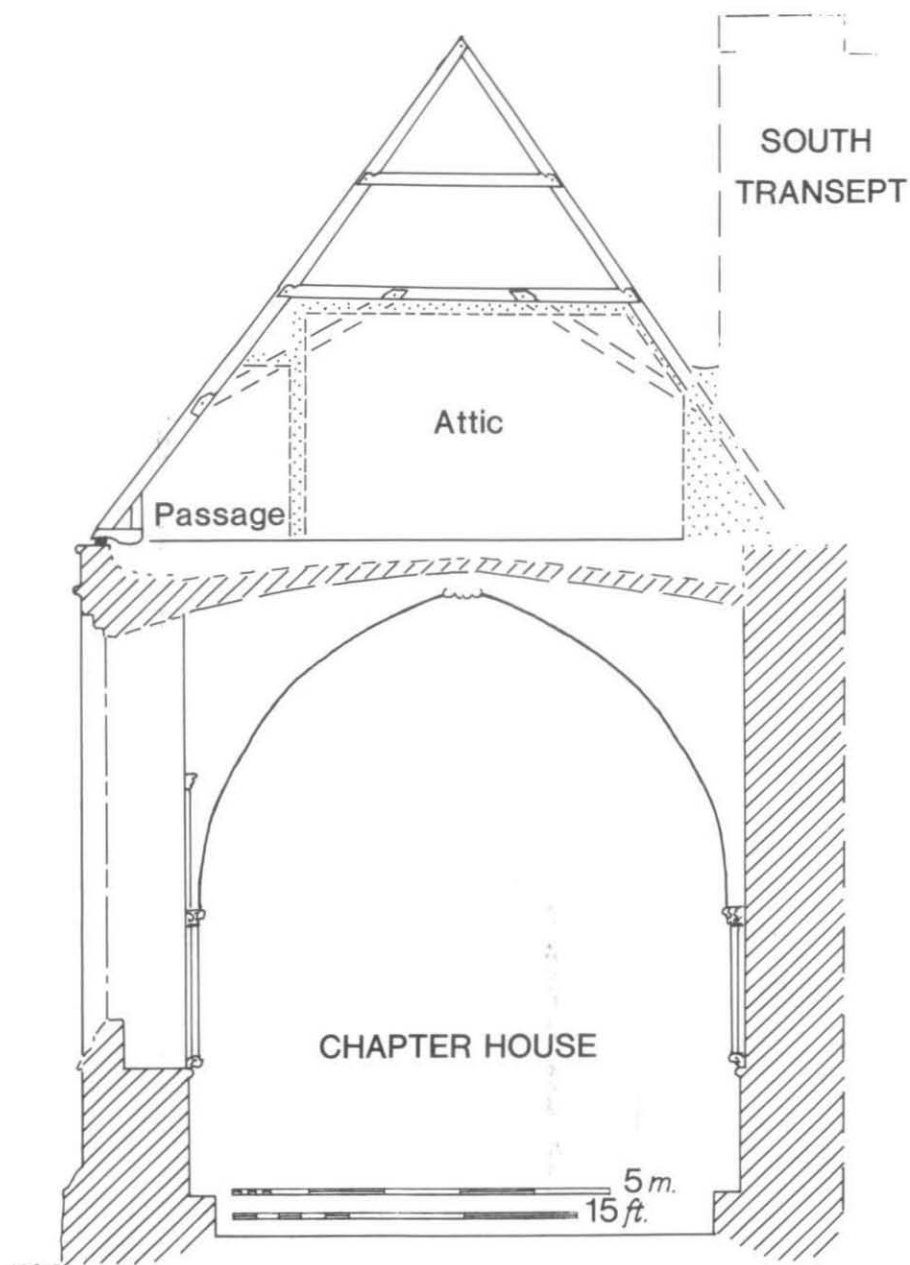


Fig. 82. Chapter-house: section looking W., showing attic rooms in roof-space above vault and relationship to S. transept.

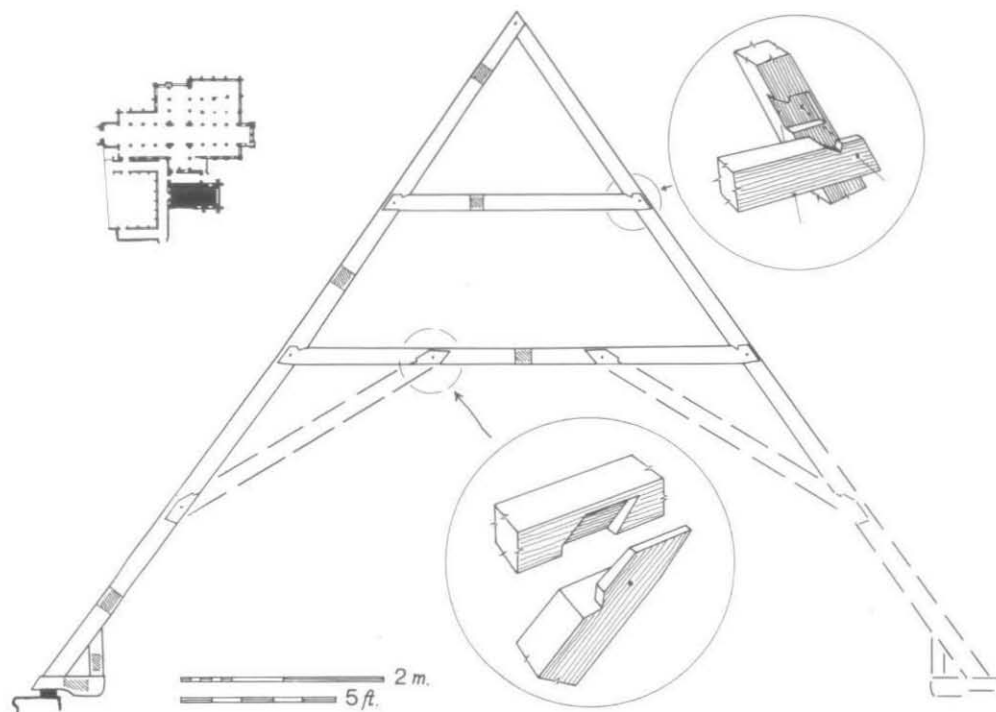


Fig. 83. Chapter-house: 13th-century roof-truss, looking W.

replaced by two softwood planks, and one near the W. end has been cut for the trap-door. Secondary features of the roof include longitudinal diagonal bracing in softwood, probably of 19th-century date, and side-purlins laid along the end of the lower collars, probably of the same period.

The end walls are of plain rubble; the W. gable has the chimney-flue mentioned above, and the E. gable has two large putlog holes at about the level of the upper collar. The chimney-stack between the two rooms is not visible in the upper part of the roof.

The junction of roof and side walls was partly opened for inspection in the recent works. The N. side was seen only where the roof is adjacent to the transept, and the truncated rafters rested on modern posts embedded in brickwork. On the S. side the standard triangular base arrangement existed, with ashlar-pieces morticed into the rafters and into large sole-pieces carrying the rafter feet. No original tie-beams were observed, and do not seem to have been present. The sole-pieces were shallower on the outside where there had been a wall-plate (now replaced with bricks) resting on the stone table at the top of the wall; some of the inner ends of the sole-pieces stand on small stone piers that may rest on the vaulting, though this is obscured by rubbish. It is possible that there was an inner wall-plate standing on the inner face of the wall. The present floor is carried on large transverse joists, whose soffits are obscured by rubbish, and are presumably supported by the side walls. The crown of the vault was observed a short distance below the joist soffits near the centre of the room. The span between the walls in the chapter-house itself is 23 ft. 11 ins. (7.29 m.).

Comparable roofs are to be found in ecclesiastical contexts in the first half of the 13th century. At this time it was not the practice to include any lengthwise members, the outer covering of the roof and the gables being thought sufficient to prevent lengthways movement. Sideways movement was restricted by bracing with soulaces to the lower collars, and these employed notch-lapped (rather than mortice-and-tenon) joints, which became less frequent later in the 13th century. Some of the plainer roofs in the Cathedrals of Wells and Lincoln are of this type, though they have additional members between the two collars, and also tie-beams.⁹

It would be expected that the roof would be contemporary with the rebuilding of the Priory chapter-house in the second quarter of the 13th century. A loose notch-lap tenon, sampled for dendrochronology, was found to have a last ring dated to 1236 (without sapwood); although measured on the face of the timber rather than the cross-section, this sample matched very well with the Oxford dendrochronology mean curve.¹⁰ Allowance must be made for missing heartwood and about 15–35 years of sapwood, giving a felling date probably no earlier than 1250. It is unlikely, given the nature of the roof and its jointing, that it can have been built long after 1250, so it must date from soon after the masonry of the chapter-house. Only further sampling can determine a closer date, but similar results have been obtained from samples taken from reused timbers in Priory House, which share the same detail of diagonal pegging on the notch-lap joints (see following).

THE DORMITORY (PRIORY HOUSE)¹¹

The dormitory lay S. of the chapter-house, aligned N.–S. along the cloister, and its roof, if not removed in the post-Dissolution conversion to a canon's lodging, was probably damaged in the fire of 1669, after which the top floor was refashioned (small dormers are shown in the view of the College on the c.1610 portrait of Wolsey by Sampson Strong, Fig. 87, and the present ones in Loggan's view of 1675). In the recent construction work for the new staircase, a short length of an old roof-line was revealed at the W. end of the S. wall of the chapter-house, in about the right position for the dormitory roof. Two of the floor joists removed from the second floor to make way for the new stair were evidently reused, having mortices for notch-lap joints similar to those in the chapter-house roof. They are unlikely to come from the chapter-house itself, and may have been removed from the old dormitory roof in the 16th or 17th century. Two samples were taken for dating by dendrochronology, of which one (with 24 years of sapwood and the bark edge, i.e. complete) could not be dated, and the other (with incomplete sapwood) had a latest ring with a tentative date of 1241 and an estimated felling range of 1241–60. If indeed from the dormitory roof, this would have been about contemporary with the chapter-house roof.

⁹ C.A. Hewett, *English Cathedral and Monastic Carpentry* (1985), 6 (Wells Nave, c.1200) and 16–17 (Lincoln Chapter House vestibule, c.1234). For the date of Lincoln, see N.D. Foot, C.D. Litton and W.G. Simpson, 'The High Roofs of the East End of Lincoln Cathedral', in *Medieval Art and Architecture at Lincoln Cathedral* (B.A.A. Conference Proceedings for 1982, 1986), 54.

¹⁰ Oxford Mean Curve of dendrochronological samples from Oxfordshire buildings, by D. Haddon-Reece, D.W.H. Miles, J.T. Munby and the late J.M. Fletcher, publication forthcoming in *Oxonienia*.

¹¹ For further description of Priory House see above, pp. 185–93.

THE LATIN CHAPEL (Fig. 84)

The Latin Chapel was built c.1320–40,¹² and the present roof is probably the original one. It is of four bays, like the vaulting of the chapel below, the trusses corresponding to the external buttresses. The W. bay has been partly removed, probably to give light to the clerestory window (which is late-medieval); half this bay for half its width has a flat lead roof, the resulting walls being of studwork, probably 19th-century, with a king-post and struts to the N. side. Against the W. wall is half an original truss, and there are four further trusses with the last inside the E. wall of the chapel. The tops of the side walls are mostly obscured by builders' rubbish from re-roofing, but there is at least one wall-plate on each side, in part ancient, with tie-beams resting on them and on short stone piers. The piers on the N. are flush with the inner edge of the wall and those on the S. side stand forward some 13 ins. (33 cm.). The distance between the walls is 19 ft. 6 ins. (5.95 m.). The trusses stand over the pockets of the vault, which are filled level with rubbish.

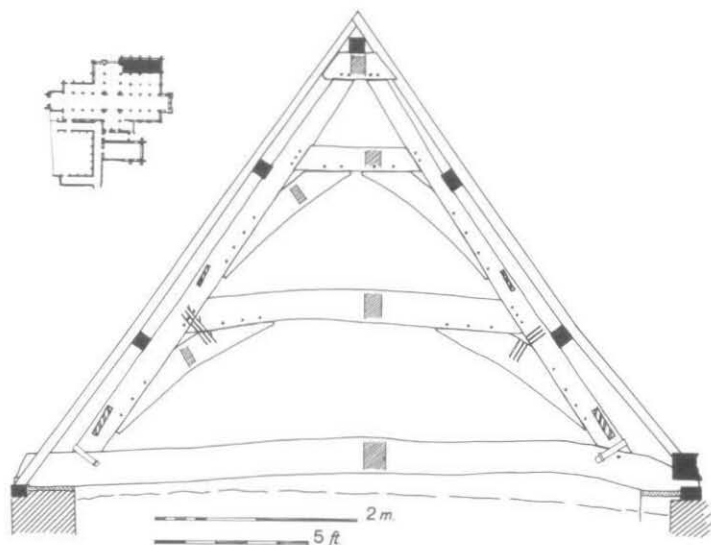


Fig. 84. Latin Chapel: 14th-century roof-truss, looking E.

The roof is double-framed, with the principal trusses supporting four purlins and a ridge-piece, on which the common rafter couples rest. The principal rafters are joined together at the apex with a large yoke on which the ridge-piece is placed. There are two collars, each supported from below with curved braces. The side-purlins are supported by braces rising from the rafters, and are pegged to the principals, though not trenched into them. All the timbers are accurately cut and well pegged, though they are very waney and exceedingly irregular in outline, evidently being made from single branches and trunks.¹³ The joints are all pegged mortice-and-tenons, and the purlins are scarfed

¹² A stylistic date of the 1320s to 1330s is proposed by Morris, above p. 182, while Blair suggests that Bishop Burwash's chantry, founded at St. Frideswide's altar in 1338, may indicate the actual date, below p. 245.

¹³ Hewett, *op. cit.* in note 5, gives the roof too regular an appearance.

with simple splays and three pegs (the ridge has trait-de-Juppiter scarfs). Modern additions include a series of braces from the ties to the lower purlins, and collars beaked to the upper purlins, whilst many of the common rafters have been replaced. Iron rods have been inserted in the centre of the trusses. The roof has recently been recovered with Bradstone slates, and felted.

The roof is of interest because of the construction of the apex, which resembles a widespread form used for joining principals in cruck roofs (e.g. Swalcliffe Tithe Barn, of c.1400),¹⁴ and is of striking appearance owing to its careful use of most irregular timber. These hidden features are somewhat at variance with the lavish decoration of stonework and glass in the Latin Chapel itself.

THE LADY CHAPEL

The roof of the Lady Chapel, immediately S. of the Latin Chapel, is a later medieval replacement of the 13th-century original. Like the Latin Chapel roof, half the western bay has been removed and replaced with a flat roof. It has five bays, which do not match the disposition of the vault bays beneath (though the vault pockets are again filled with builders' rubbish and cannot be seen). The westernmost truss was moved inwards when the roof was shortened, and the sixth truss is next the E. wall of the chapel. The distance between the walls is c. 14 ft. 9 ins. (4.5 m.). There are single wall-plates carrying the tie-beams, the principal rafter couples have a single collar (slightly cambered), and two butt-purlins on each side, the lower ones supported by curved wind-braces of thin section. Between the upper purlins are a number of collars with beaked ends, probably a later addition. The purlins are joined to the principal rafters with tenons on their outer side, without haunches. The timbers are mostly regular, with few waney edges. Like the Latin Chapel, this roof has recently been felted and recovered.

The roof is of a standard late-medieval type, perhaps of c.1400, after which date the purlin joints would more likely have had diminished haunches (which were used at All Souls' College in the 1440s).

THE CHOIR

The vaulting and reconstruction of the upper part of the choir was carried out c.1500, partly as a translation of timber hammer-beams roofs into stone. At this time the clerestory of the Norman choir was demolished, and the steeply-pitched Norman roof (the outlines of which can be seen on the central tower) was removed and replaced with a low-pitched roof covered with lead. This is carried on a series of heavy trusses with timbers of large section, having a tie-beam carrying a king-post and two raking side-struts from tie to rafter, with a deep ridge-piece. The tops of the king-posts are dovetailed to take the ends of the rafters, and thus act in tension rather than compression. Several king-posts and rafters have large chase-mortices and are reused. The eastern truss probably dates from the time of Scott's restoration in 1870-6.

Late-medieval low-pitched roofs gave little scope for variety. The principal features of this roof can also be seen in the upper part of the early 16th-century roof over the nave of Bath Abbey.¹⁵ According to Francis Bond, a verger reported that in Dean Liddell's

¹⁴ J.M. Steane, *South Midlands Archaeology*, 17 (1987), 50.

¹⁵ Hewett, *op. cit.* in note 9, 62-3.

time the roof-space here was found to contain a considerable quantity of hay, thought to have survived from the time of the royalist occupation of Oxford.¹⁶

THE TRANSEPTS

The intention to vault the transepts in the same manner as the choir can be seen at the end of the N. transept, where the first bay was altered, and contains the tomb of James Zouch (d.1503) who left money for new vaulting. This was not done, though the N. bay has shafts and wall panelling for it, and the present flat panelled ceiling was added some time later (see above, pp. 128–9), on a series of stone corbels high on the wall. It is of three bays, with moulded tie-beams, purlins and rafters. The S. transept roof is of similar style, divided into smaller panels, with the end bay a modern replacement.

THE NAVE (Fig. 85)

The nave roof is based on polygonal-concave stone corbels, similar to those supporting the vaulting in the choir; thus the roof must be of the same date, or later, assuming that the choir corbels are contemporary with the vaulting. It would therefore be early 16th-century.

The roofs of the transepts and nave were cleaned from scaffolding in 1979, and the nave roof was examined and drawn in August 1979. It was found to be partly of softwood, probably the replacement of 1816 noted by Britton (though a view by Thomas Malton in 1802 shows that the original roof was of the same appearance).¹⁷ It is of five bays, the westernmost largely of Scott's restoration (i.e. the western truss and probably the next). The next four bays and four trusses are contemporary, probably of 1816; the easternmost truss is hard against the tower.

The width of the nave between the walls is 22 ft. 5 ins. (6.83 m.), the full length from tower to W. wall 75 ft. 7 ins. (23.05 m.). Wall-posts with hollow chamfers are mounted on the corbels, with a plain butted scarf near their base. They support the tie-beams, which are braced by a semi-circular arch-brace (with an ogee moulding) rising from the corbels to the centre of the tie. It is in at least five sections, with free tenons joining the individual curved pieces (Fig. 85, detail), and presumably chase-tenons joining them to the tie. The spandrels between the brace and tie are filled with an open arcade of traceried lights, trefoiled in ogival heads. The wall-plates have a casement moulding and double ogee. The low-pitched principal rafters are supported by a king-post and two raking side-struts, all hollow-chamfered. The king-posts may have internal iron supports, having a peg on their W. side and a small wedge on the E. Above the tie the spandrels are also filled with open traceried panels. The ridge-piece is hollow-chamfered, and the purlins on the side-struts have in addition a roll and hollow. Where the ridge joins the later part of the roof there is a splayed and tabled scarf with under-squinted abutments, and two diagonal iron rods.

In the slope of the roof are numerous small rafters, with ogee mouldings, and battens supporting quatrefoil panels. There are 48 panels on each side in each bay, 24

¹⁶ Francis Bond, undated letter to R.I.B.A. *Transactions*, c.1900; cf. F.J. Varley, *The Siege of Oxford* (1932), 105 (and *Supplement*, 15).

¹⁷ Britton, *Oxford Cathedral* (1820), 18 & pl. v; T. Malton, *Oxford* (1802–10), un-numbered plate dated 30 June 1802.

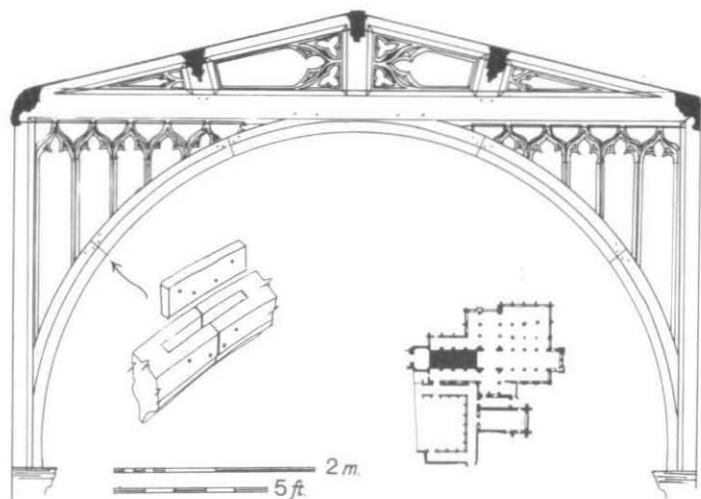


Fig. 85. Cathedral nave: 15th/19th-century roof-truss looking E., with detail of scarf-joint.

above the purlin, and 24 below (in three rows of eight panels). At every intersection are applied plaques, decorated with faces, figures or foliage. These have a different patination from the rest of the roof, and may be original.

All the timber in the roof is cut very straight, with smooth surfaces, and would seem to be in part of softwood. It is all covered with a dark-brown varnish (Scott's bay is painted brown to match). The second bay from the E. is lighter, as if the varnish had been removed or was applied differently. Possibly it was more affected by the candles of the choir-stalls.

Apart from the plaques, the whole roof is of one date, and would seem largely to be work of 1816, judging from its even finish. As a low-pitched roof with arcaded spandrels it belongs to a group of late 15th-century roofs in Oxford (e.g. Duke Humfrey's Library and St. Mary the Virgin church). What is unusual in this one is the greater amount of decoration and (if original) the near semi-circular arcature of the spandrels.

OTHER ROOFS

The lean-to aisle roofs of the nave and choir are not accessible. The St. Lucy Chapel has a 19th-century open rafter-roof. The slype extends beyond the E. wall of the S. transept, and has a short length of pitched roof outside the transept, which is inaccessible. The post-medieval ceiling of the crossing was moved by Scott and replaced above the open lantern stage, though it is shown by Britton at a lower level; above this there is no ancient timberwork in the belfry or spire, though a plain 19th-century timber framing stands inside the lower part of the spire.

CONCLUSION

The roofs of St. Frideswide's Priory are unexceptional, but belong to a church of no great size or pretension. The chapter-house preserves what is probably the earliest roof in

Oxford, a fine mid 13th-century rafter roof of the first phase of Gothic carpentry, when no lengthwise support was provided for the rafter couples, and notch-lap joints were preferred to the mortice-and-tenon variety. Neither this nor the roof over the Latin Chapel was intended to be seen, but in the latter case the uneven appearance of the carpentry contrasts with the excellence of the 14th-century stonework over which it stands. By this period roofs were double-framed, with the trusses supporting purlins in a rigid framework on which rafters could be laid. The vernacular detailing of the Latin Chapel is in contrast with the more regular appearance of the Lady Chapel roof. In the last phase of Gothic carpentry, which saw the increasing use of lead-covering, the low-pitched king-post roof became the norm, and the examples surviving in the Cathedral provide an interesting contrast, that above the stone vault of the choir being plain and utilitarian, whilst the other open ones are decorated with panelling.