Wren, Pearce, and St Mary's: Ingestre Parish Church and its roofs

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This paper was prompted by a survey of the roofs over the nave, aisles and chancel before and during the recent restoration programme at St Mary's Church at Ingestre (Staffordshire). The project re-opened the question of who designed and built the church, and how the craftsmen involved could be secured to work on the building at a time when the Fire of London had created such a high demand for their skills in the capital. Commissioned by Walter Chetwynd, St Mary's was built between 1672 and 1676. The circumstantial evidence that Sir Christopher Wren was the architect is discussed, along with the possibility that Edward Pearce might have been available to control the work on site, and this reflects some of the complexities of the mid-17th-century building industry. The roofs are described, with particular reference to the carpentry and metal fixings.

Ingestre Church is approximately five kilometres east of the centre of Stafford at NGR SJ976246. The numerous country estates that clustered nearby, at the heart of Staffordshire's central lowland, might have been more than incidental to the design of a church in the new classical style at Ingestre in the 17th century, as they provided a pool of nobility and gentry to impress. The church was built adjacent to the client's own Ingestre Hall; Tixall Hall (home of the Astons) was less than two kilometres to the south, Colwich Hall (Wolseley) was close by to the sdouth-east, while Weston Hall (the Staffords), Sandon Park (Gerard) and Chartley (Ferrers) lie to the north and east. The nearby Shugborough estate was in the hands of the (then nouveau riche) Ansons.

Unlike most of Wren's City churches, Ingestre Parish Church has escaped most of the deprivations of demolition, structural adaptation at the hands of later architects, and war damage. Arguably, by comparison with Wren's churches in Cambridge, it exceeds the quality of his early commission at Pembroke College, and is the equal of one of his best works there - Emmanuel College Chapel. What the Ingestre plaster ceilings lack in refinement they gain in unrestrained exuberance, especially in the nave (Fig 1). The Cambridge chapels were fitted out to suit college life, but they have been subject to alterations, and many of the remaining churches in London have long lost their original fittings. The nave at Ingestre, '*a room of blissful harmony*' (Pevsner 1974, 155), is one of the few places left where Restoration architecture, furnishings and plasterwork can all be seen as a piece in a parish church attributed to Wren. St Mary's has not entirely escaped alteration, as it now houses some later monuments and stained glass – additions rather than subtractions. The height of the pews has been reduced, some of the plasterwork on the chancel ceiling might have been adapted, and part of the north aisle ceiling had to be reinstated in 1933 - 34, but the mouldings were made to match the old work (IPF 23 Jan 1934).

Fig 1: Detail of the nave ceiling.

Who designed St Mary's Church?

So much has been written about Wren and his architecture that some might wonder how much more can usefully be said, but the purpose of the first part of this paper is to reconsider the authorship of the designs for St Mary's Church in the light of what is known of its dates of commission, construction and dedication. In order to add substance to what is already in print, it will not be sufficient merely to proffer another opinion about the marked similarities in the style and proportions of Ingestre with some of the City churches. While vestry minutes and building accounts provide reliable information on construction programmes, even these leave room for uncertainty about the exact stages reached at any given time. Nevertheless, if questions of authorship and primacy are to be considered, the dates of construction at Ingestre must be set alongside those London churches for which Wren was directly responsible.

In 1942 a set of drawings and photographs was published that illustrated the general character and undoubted quality of St Mary's Church, along with some of its fixtures and fittings, arguing on stylistic grounds that the building was designed by Wren (Wren Soc **19**, 1942, plates 16 - 23). While few have directly opposed the attribution, levels of confidence vary, and despite its architectural significance, no detailed study of the building has appeared in print. In the absence of a contract or building accounts, the attributions to Wren have focused primarily upon the stylistic evidence. Pevsner was sufficiently persuaded of Wren's involvement, as '*... in the case of St Mary the exquisite quality speaks unequivocally*' (1974, 155). Whether by Wren or not, Clifton-Taylor described it as '*... the most distinguished country church in England of the late Stuart period*' (1974, 31). Similarly, Whiffen considered that '*Ingestre church is almost as ornate as the richest of Wren's London churches, and incomparably the most elaborate country church of its time*' (1947 - 8, 15).[1] Colvin listed Ingestre as one of Wren's works, but observed that '*the church could have been designed by someone else closely connected with Wren's office*' (1995, 1092).

Several Staffordshire historians recognised Walter Chetwynd as the benefactor who funded the construction of St Mary's Church, but few considered who might have been the architect (Harwood 1820, 57: Garner 1844, 111: Masefield 1910, 153). In their passing reference to the church, Greenslade and Stuart followed others who had suggested that Wren was responsible (1984, 47), while Thorold observed more cautiously that '*definite proof is lacking*' (1977, 111). Bayliss concluded that Wren's role in St Mary's might have been very small, if any (1999, 3).

Walter Chetwynd promoted and funded the demolition of the medieval church at Ingestre and the construction of its successor on a different site, endowing the new building with the tithes of Hopton. Born in 1632, Chetwynd married Ann Bagot, the 13-year-old daughter of Sir Edward Bagot of Blithfield. He was MP for Stafford in 1673, and again in 1690. He died in London in 1693, but he was buried at Ingestre (SHC **12** new ser, 1909, 4). In 1882, the family records were lost during the fire that destroyed most of Ingestre Hall. Were it not for that event, the papers concerning the commissioning and construction of the church might have survived (Shaw 1798, vi), but now it is only possible to speculate as to how Chetwynd might have encountered Wren, or commissioned him to design a Staffordshire church in the wake of the Fire of London. Although they were both Oxford *alumni*, Walter Chetwynd matriculated at Exeter College in 1616, before Wren was born (Foster 1891, **1**, 268-269). The most likely connection was through their mutual acquaintance, the Oxfordshire and Staffordshire historian Dr Robert Plot; Chetwynd – an antiquary himself – encouraged Plot to write his *Natural history of Staffordshire* (Shaw 1798, vi). Plot, also an Oxford graduate, became the first keeper of the Ashmolean Museum; his first degree was awarded in the same year as Wren secured his doctorate (Foster 1891, **3**, 1172; **4**, 1684). The two men certainly stayed in touch in London, as for example on 9th October 1677, when Wren's colleague Robert Hooke recorded in his diary – '*Met Dr Plot with him to Sir Chr. Wren*' (Wren Soc **29**, 1942, 57). Chetwynd was elected a fellow of the Royal Society in January 1678 (SHC **12** 1909, 4), when Plot was Secretary and Wren was President (Whiffen 1947, 15).

Fig 2: Drawing of 'Mr Chetwin's tower', undated. The illustration [V&A E.403-1951] *is reproduced by kind permission from the Victoria and Albert Museum; my thanks are due to Marian Owen for locating the image.*

The most convincing source linking Wren with Chetwynd and the design of St Mary's Church is an elevation drawing inscribed in Wren's hand '*Mr Chetwin's Tower*' (V&A E.403 - 1951)[2]; the drawing is undated, and the lantern was never built (Fig 2). Its existence does not show that Wren made the designs for the original scheme, especially as so many of the post-fire spires in the City of London were also additions, but it implies that he had some connection with the church or Chetwynd. In any case, there are other grounds upon which to base the argument that someone from Wren's practice was responsible for Ingestre. Indeed, when both the stylistic evidence and the timing of the broadly contemporary projects in London and Ingestre are considered in tandem, circumstantial though it is, the weight of evidence suggests that it was Wren, rather than a colleague, who designed St Mary's Church. The following discussion compares the dates of the known stages of development of St Mary's with those of St Bride Fleet Street.

In 1672 Walter Chetwynd petitioned the Archbishop of

Canterbury for consent to demolish the old church, which '*... stood very incommodiously, and was so ruinous, that it must be better to rebuild, than repair it ...*' On 2nd May the Archbishop appointed commissioners to advise on this petition, and on 22nd July they '*... judged it rather fit to be pull'd down and wholly demolished, than repaired ...*' The old church was probably west of the hall,[3] but the commissioners agreed that the new site proposed by Walter Chetwynd '*... was a more fit and congruous place.*' He had to wait for his faculty until April 1673, but Plot records that the church was '*wholly finisht*' in 1676, and in August 1677 it was consecrated by the Bishop of Coventry and Lichfield. It is possible that Chetwynd waited for the faculty in 1673 before he commissioned a design for the new building, but the rapid progress of the scheme allows an alternative possibility. Motivated by the twin desires of removing the church and its congregation from next to his house, and of promoting the new classical style of architecture, he might have secured a set of drawings by or before 1672; in any case, the designs must have been available no later than 1673.

Plot described the church and its consecration in some detail. It was

'*...not great, but uniform and elegant; the outwalls being all of squared free-stone, with a well proportioned Tower at the west end, of the same; adorn'd round the top with rail and ballister, and flowerpots at each corner. The Chancel within paved throughout with black and white marble; the Windows illustrated with the Armes and matches of the Chetwynds in painted glass; and the Ceilings with the same in Fretwork*'.

The print of the church reproduced in his book must have been made very soon after its completion (Fig 3) (Plot 1686, plate 26 opp p299).

Plot was generous with praise for the patron, but failed to mention the architect; it has been suggested that the architect's name was omitted from Plot's account because it was partly written by Wren (*Wren Soc* **19**, 1942, 57). Plot described no other Staffordshire church in such detail, but then no other church had been solely funded by the man who was also promoting the author.

Fig 3: Enlarged portion of Burgher's print of Ingestre Hall and Church, 1686. This illustration is part of the Staffordshire Views series owned by the Trustees of the William Salt Library, Stafford, who have kindly given their permission for it to be published here. My thanks are due also to Thea Randall, County Archivist and William Salt Librarian.

One of the underlying reservations about the authorship of the designs for Ingestre arises out of the conviction that Wren was too pre-occupied with challenges in the capital to be concerned with a church adjoining a provincial country house; but this may derive from a somewhat simplistic view of his profession, and of the building industry in the 17th century. As Colvin observed, the designing of more than 50 churches was clearly beyond the capacity of one man. Wren controlled a major architectural practice, and much of what has been attributed to him came from the pens of his colleagues; some of Hooke's drawings were signed by Wren, plausibly to indicate his approval of the work. In the absence of documentary proof of authorship, if the designs for Ingestre are to be attributed to any particular individual or practice, the stylistic evidence must be considered in tandem with the known sequence of the various building programmes.

It has been suggested that for the first five years of the building campaign in the aftermath of the Fire of London the task of designing new churches for the City was divided into areas of responsibility, with Wren, Hooke and Woodroffe each taking a sector. According to that thesis, a large number of churches in the east and north of the city can be attributed to Hooke, but fewer churches were assigned to Wren because he had so many other duties (Jeffery 1996, 96). Those for which Wren had any direct responsibility include St Mary-le-Bow, where construction began in 1670, St Bride Fleet Street, and St Stephen Walbrook (1672) (Jeffery 1996, 222-4, 283-4, 338). The plan of the first of these churches was constrained by its site, while the third incorporated a dome over the nave arcade, but St Bride Fleet Street is a particularly striking parallel with Ingestre.

St Bride's and St Mary's Ingestre are almost exactly contemporary, and they contain many strong similarities which can hardly be explained by coincidence. Both churches have a basilican plan, and both have square west towers containing circular lobbies. The north and south walls of both towers are on exactly the centre-line of the nave arcades, and both naves are double the width of the aisles. The nave clerestories are pierced by identical circular windows. The external faces of the walls of both churches are relatively plain, while the interiors are elaborately decorated. The most remarkable similarity is in the design of the piers in the nave arcades. At Ingestre, the piers are composed of four clustered shafts in Tuscan style, whereas those in St. Bride's are of paired Tuscan shafts. In both churches, the columns stand on tall bases, and both arcades have round arches as opposed to flat entablatures. More than any other feature, it is the design of the piers in the nave arcades that marks out Ingestre as the work of Wren. For the present purpose, some of the published dates for the construction programme at St Bride must be treated with caution. Colvin gives 1671 - 78 for the main body of the church (1995, 1095), while Whinney suggests 1670 - 84 for the entire project (1971, 52 and 204). Taken at face value, this would imply that Ingestre was completed before the larger St Bride, where the tower was apparently planned from the outset, but not completed until c 1703. The first contract for work upon the body of St Bride is dated 25th February 1671; the shell was essentially complete by 1674, and the church was re-opened for worship in December of that year (Jeffery 1996, 224). Accordingly, it is not simply the employment of particular architectural motifs, or the fine proportions (below), that mark out St Mary's as a Wren church, but also the date of the building work, making its design broadly contemporary with St Bride's. Although piers formed out of clustered Doric shafts had already been employed in Holland, Wren was the first to use them in an English church, and the construction of the larger St Bride progressed just a few months in advance of work at Ingestre.

The other early City church projects that Wren retained were not under construction until Ingestre was complete, but they too are useful for stylistic comparison.[4] Each of them has a basilican plan. The string- course all round the building at Ingestre is more successful than in most of the City churches. There are parallels in the manner in which the window heads break the string or pediment, and in the use of volutes. Wren habitually used the Corinthian and Composite orders, and incorporated a moulding across the top of the pilaster shafts, making the zone of the capitals into a continuous false frieze (Downes 1988, 42). While this device does not appear on the exterior elevations at Ingestre, it was employed on the chancel screen. Downes highlighted the way in which, in many of Wren's buildings, weight was saved by making the external roof and internal wood and plaster vaulting as a single integral construction (1988, 57) – a characteristic of Ingestre (below).

Who supervised the construction of St Mary's Church?

It is one thing for this circumstantial evidence to add weight to the argument that Wren, or at least a colleague working under his supervision, was responsible for the design of St Mary's, but quite another to identify who else might have been involved. Wren's assistant and later colleague Nicholas Hawksmoor drew up a scheme for Ingestre Hall c 1688, which was not executed (Staffs CRO D(W)1855.4 & D1006/1-4); but as he was only about 12 years old when work began on the church he must be ruled out as its architect (Downes 1969, 24-5). In any case, the building style is closer to Wren than to his assistant. Two other people who had connections with Wren, and who both worked near Ingestre, are Sir William Wilson and Edward Pearce, but it is unlikely that either of these candidates was responsible for the design. In 1670, Wilson worked as a carver at Sudbury Hall (Derbyshire) only 12 miles east of Ingestre, and around 1671 he executed the Wilbraham monuments in nearby

Weston Church. His other work in the midlands includes designs for the Free School at Appleby (Leicestershire) and St Mary's Church at Warwick, where he was in competition with Wren. Not all of Wilson's work was quite in the vanguard of new taste; his mullioned and transomed windows of c 1694 at Appleby have '*the appearance of a Jacobean structure of the first half of the 17th century*' (Colvin 1995, 1063-4). Wilson reputedly carved the '*very bad statue of King Charles II*' at Lichfield Cathedral (Shaw 1798, 244), where he also worked on the roofs, employing similar new technology to that at Ingestre (Hewett 1985, 124, 222-3). Although this might mark him out as a local candidate for some kind of role at Ingestre, his other commissions lack the refinement of St Mary's Church.

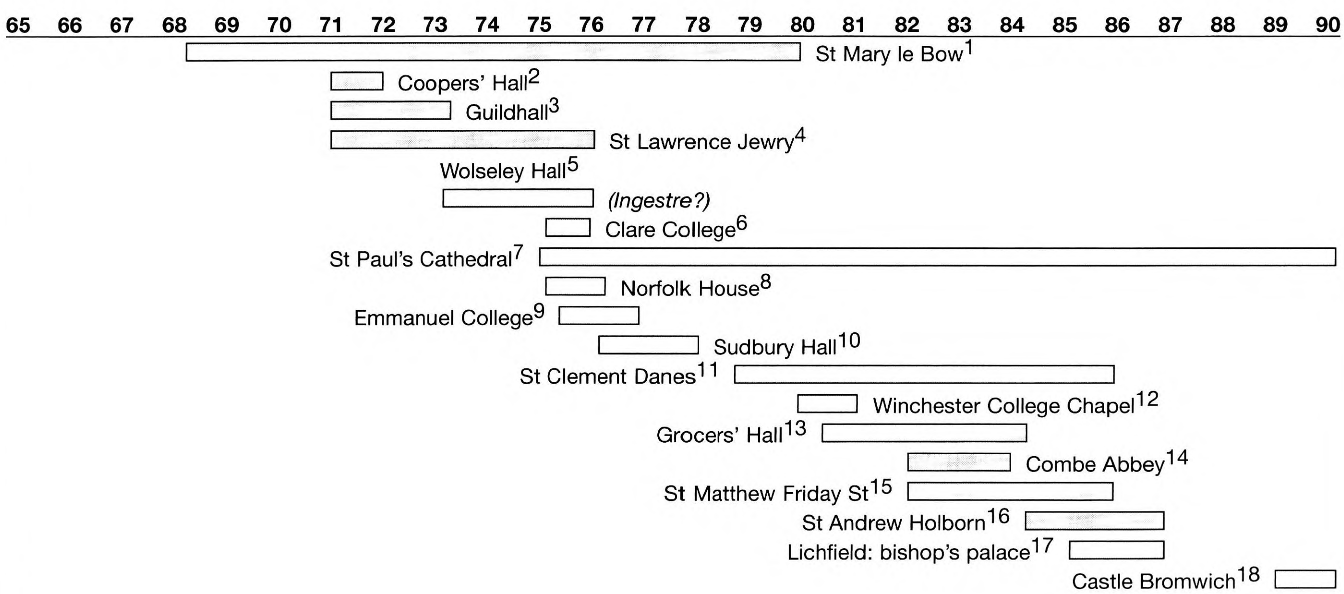
As in the City churches, the masonry, the carpentry, the interior fittings, and the plasterwork at Ingestre would have been devised and executed by different competent craftsmen. The wood carving at Ingestre has been improbably attributed to Grinling Gibbons (IPF 1953 - 1959), but this too might be the work of more than one hand, and again there are more likely contenders. Chief among them is Edward Pearce, who worked on a tightly knit group of contracts in the immediate area, including his best architectural commission. Pearce might not have designed the church, and whether he was involved at Ingestre is unknown, but the circumstantial evidence is worth reviewing, especially as it throws light upon the general background against which Ingestre was built. It illustrates, in particular, how ambitious building projects could be undertaken in provincial counties in the face of competition for craftsmen from the City, and, in general, the relative sophistication of the 17th-century building industry; an early contract at Ingestre might explain how Pearce came to work on others in the vicinity.

Edward Pearce (or Pierce) is remembered primarily for his busts of Oliver Cromwell and Sir Christopher Wren, now in the Ashmolean Museum; that of Wren has been described as the best 17th-century sculpture from an English hand (Whinney and Millar 1957, 255). Pearce was internationally regarded, having his portrait, amongst those of Palladio, Raphael, Inigo Jones and others, painted onto the wall of a room in Rome, as described by the writer John Talman. He has been attributed with carvings in stone of busts, gate piers, garden ornaments and pediments, and in wood of domestic panelling, and church fixtures and fittings (Gunnis 1968, 297).

In 1665 Pierce was working as a mason for Sir Roger Pratt at Horseheath (Cambridgeshire) (Colvin 1995, 754), and it might have been this connection which first brought him to Wren's attention. Although Wren designed the chapel for Emmanuel College, Cambridge, where building work began 1668, it was Pearce, with John Oliver, who designed the fittings (Downes 1988, 12). Much of the money for the work at Emmanuel College was supplied by its master, William Sancroft, who was also Dean of St Paul's Cathedral, and later Archbishop of Canterbury. Later, Sancroft appointed Pearce as the architect of the Bishop's Palace in Lichfield (Tringham 1987, 57 - 63).

Pearce's renown as a sculptor and wood-carver should not overshadow his equal capacity as a building contractor who

Table 1: Pearce's building contracts 1668-90



1 Jeffery, 284; 2 Gunnis, 296; 3 Colvin, 754; 4 Jeffery, 255; 5 Colvin, 754; 6 Willis & Clark i, 104; 7 Wren Soc x, 54; 8 Colvin, 754; 9 Willis & Clark ii, 707; 10 Colvin, 754; 11 Jeffery, 230; 12 Colvin, 754; 13 Gunnis, 296; 14 Colvin, 754; 15 Jeffery, 296; 16 Jeffery, 197-199; 17 Tringham, 57; 18 Gunnis, 296.

also took architectural commissions. There might be some justice in the argument that, like Wren, in the 1660s Pearce was too pre-occupied with work in the City, if it were not for the fact that he was adept at running simultaneous contracts. While he collaborated with Oliver in Cambridge, he was already working as a mason at St Mary-le-Bow (Gunnis 1968, 296), and in addition, from 2nd March 1671 he was the main contractor for dismantling the fire-damaged St Lawrence Jewry, and then for the stonework in its replacement. As if that were not enough, again from 1671he worked at the Guildhall, across the yard from St Lawrence. When Pearce was ordered to remove 40 tons of stone from the Guildhall yard, the work was billed to the church, implying that the mayor's tolerance of both contracts had been over-extended (Guildhall MS25539/2 f.169b). Once again, in 1676, alongside his continuing work at St Lawrence Jewry and St Mary-le-Bow, and the commencement of St Paul's Cathedral, where he was appointed to work as a master mason (Jeffery 1996, 352), he accepted contracts at Norfolk House (The Strand) and Sudbury Hall (Derbyshire), where he carved the staircase (Colvin, 754).

The pattern that emerges from a review of his career between 1668 and 1690 (Table 1) shows that while Pearce maintained a close involvement with the rebuilding of the City churches and St Paul's Cathedral, he worked simultaneously on other contracts, and to achieve this he must have directed the work of others. He enjoyed the patronage of a number of influential clients, some of them being prepared to wait upon his expertise; the records of his work on the Bishop's Palace at Lichfield are particularly helpful as a guide to the way that he could run simultaneous schemes in different places. It is worth summarising as it might reflect general practice in the 17th-century building industry. Pearce visited Lichfield and Eccleshall (where the Bishop had another palace) from 9-18 September 1685. On 10 April 1686 the Dean of Lichfield wrote of Pearce – *'The year spends, the masons and carpenters are unsatisfied, and all things cool for want of him...'* In response, Pearce returned to Lichfield on 4 May, to stay for 28 days, and rapid progress followed. During the course of the two-year project, Pearce spent a total of three months in the area. Most of the construction work was done by others, but he reserved for himself the role of sculptor for the cartouche bearing the diocesan arms in the pediment over the front doorway, for which he charged £20 (Tringham 1987, 57-62). His renown as a sculptor and wood-carver would lead to commissions from the Crown (Colvin 1976, 171; 1982, 147), but probably for most of his career, his primary income was derived from building construction.

The accounts for the rebuilding of St Lawrence Jewry show why Pearce, and presumably others in his situation, found it necessary to run several contracts simultaneously. The accounts tend to be written in blocks all in the same hand, suggesting that a clerk was responsible for recording works reported or invoiced to him. The recorded payments, written in a different hand, and Pearce's acknowledgement of receipt, sometimes in the margin, suggest that he was paid for the work of a team, and that on occasion he was obliged to wait for a considerable time for remuneration. Numerous items totalling several thousand pounds submitted by him from 1675 were not settled until 16th August 1681 – a considerable financial commitment that was presumably serviced by loans (Guildhall MS 25539/2 folios 169b-174a). Plausibly, those shorter-term contracts that he accepted elsewhere would have been necessary to help to pay interest, or otherwise to provide an income during the interim.

The possibility that Pearce might have been employed at Ingestre is based upon circumstantial evidence, but it is compelling nonetheless. His work at the Guildhall was complete by 1673, then, apart from the stonemasonry at St Lawrence Jewry and St Mary-le-Bow, there was a gap in the record of his additional contracts until 1676, when Sudbury Hall, Norfolk House, and Emmanuel College all commenced. That three-year gap coincides with the period when the church at Ingestre was under construction. If Pearce worked at St Mary's during that period, this might explain how he obtained so many other subsequent contracts in the area. The bulk of his work was in London. The contracts in and around Cambridge no doubt arose out of his work with Pratt and Wren. His work at Combe Abbey (Warwickshire) and Hampstead Marshall (Berkshire) were at the behest of William Winde, who was also acquainted with both Wren and Pratt (Colvin 1995,1066). Apart from Winchester, most of his other architectural and building contracts were close to Ingestre. Sudbury Hall is only 12 miles north-east, while Lichfield is 12 miles to the south-east. Writing of Wolseley Hall, a mere three miles from Ingestre, Plot was fulsome in his praise:

'But of all the Joyners work I met with in this County, there is none comparable to that of the new dining room at S^r^ Charles Wolseley's ... the carved work whereof is also very good, both done by one Pierce' (1686, 383).

It is a pity that, at Wolseley, Plot elected to credit both the client and his joiner, while only the former was mentioned at Ingestre.

The absence of a mason from one contract does not prove his presence on another, but equally, as shown above, his involvement elsewhere would not demonstrate that Pearce was unavailable to manage the work at Ingestre. In view of his other work in the immediate vicinity, some of it obtained in his own right rather than as a sub-contractor, Pearce is the prime candidate. The stonemasonry, the quality of the garlands, and the superb joinery and carving of the chancel screen and the pulpit, all point to the involvement of someone of his calibre. Whoever supervised the construction work, it is clear from the above discussion of Pearce's role elsewhere that some of the best 17th-century builders could manage site-works in various locations, even in the wake of the Fire of

London.

Architectural description

In 1677, the church comprised a west tower, nave with two aisles, and a chancel (Fig 4); the vestry in the angle between the chancel and the south aisle (not shown on the plan in this paper) was added in 1908 (LJRO faculty 14th Feb 1908). Built of Hollington stone, St Mary's Church is very compact, renowned more for the quality of its architecture than its scale. The tower is of three stages, the lower of which has rusticated corners and a low plinth, the latter broken by the three-quarter-round Tuscan columns framing the west doorway. The columns carry the triangular pediment, which rises into the second stage; both the pediment and the clock above it are framed by garlands. The lower moulded string continues as the eaves' cornice round the aisles and the chancel, while the upper returns around the eaves of the nave, together unifying the entire composition. There is a belfry window with a semi-circular head on each side of the tower, topped by another moulded cornice and an open balustrade with urns at each corner. Four windows on each side of the aisles and one on each side of the chancel all have semi-circular heads rising to foliate volutes, which support the cornice. The east window in the chancel is of three stepped lights with semi-circular heads, the central light breaking into the tympanum. The four windows along each side of the clerestory, and one on each side of the tower, are all circular.

Although the tower is square externally, the lobby inside is round. In the nave, four Tuscan shafts on tall bases are clustered to form the piers, which support the four-bay arcade. Above the clerestory windows, an ornate cornice with festoons nodding towards the three main ceiling panels, rectangular at each end, oval at the centre. The semi-circular chancel arch frames a wooden screen with Corinthian columns and an elaborate entablature, topped by a royal coat of arms.

The plan geometry and the overall proportions of Ingestre Church are masterly (Figs 4 and 5). The building was set out on a five-foot interval grid. The outer faces of the north and south walls of the 20-feet-square tower were set on the same grid-lines as the centres of the nave arcades, and those of the chancel north and south walls. The length of the nave is twice its width; measuring from the floor to the middle of the tiebeam, the nave is 30 feet tall - $1^1/_2$ times its width. In the arcades, the tops of the cornices are at half the height of the

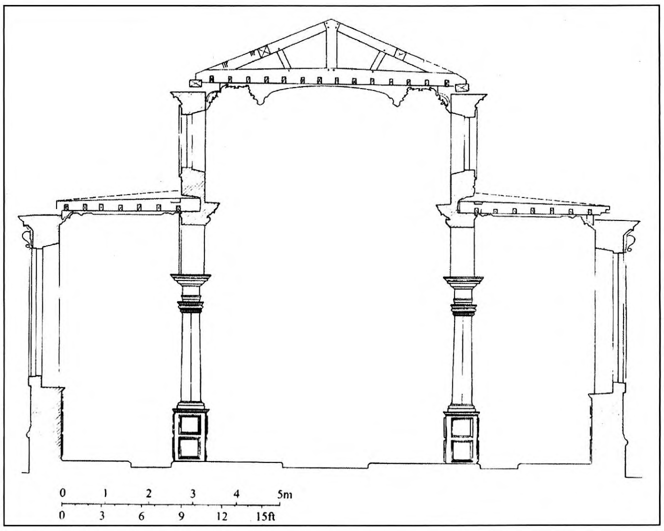


Fig 5: Section of nave and aisles

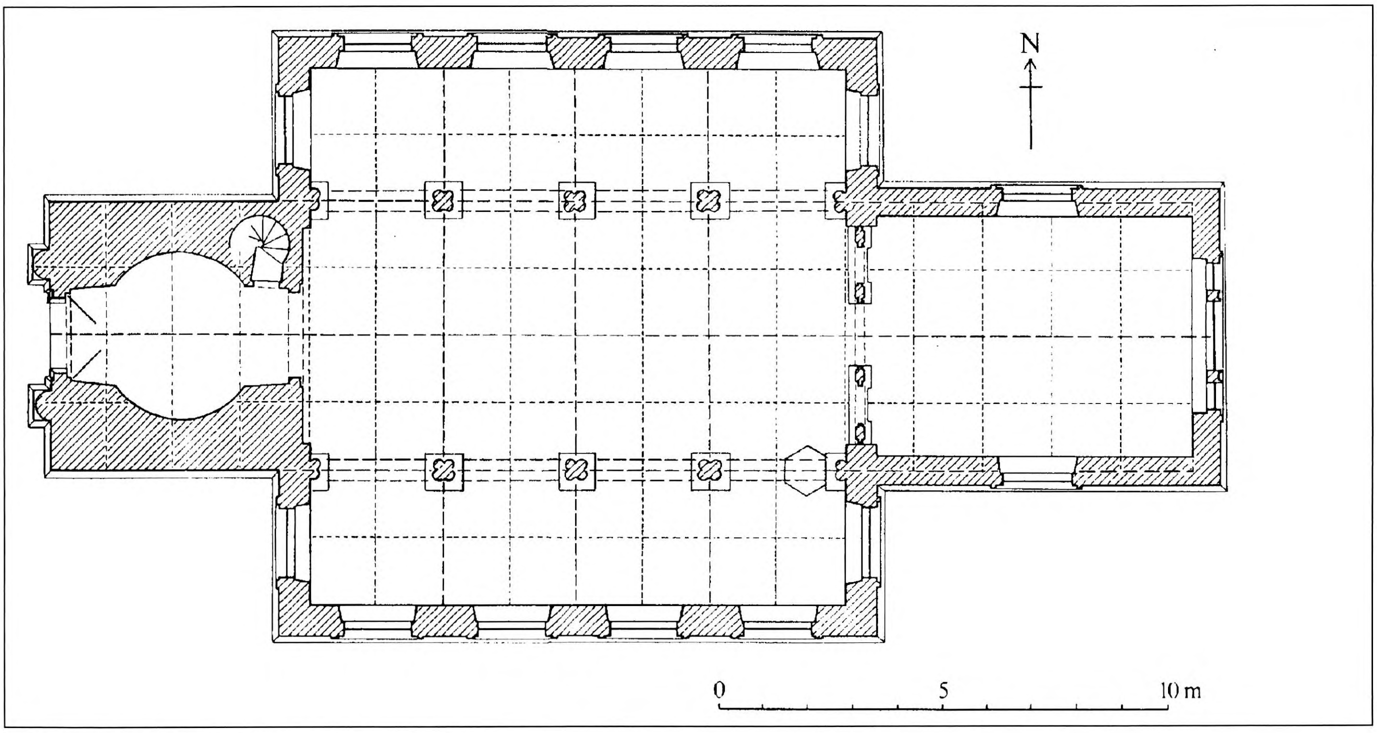


Fig 4: Plan of St Mary's Church against a 5 feet interval grid.

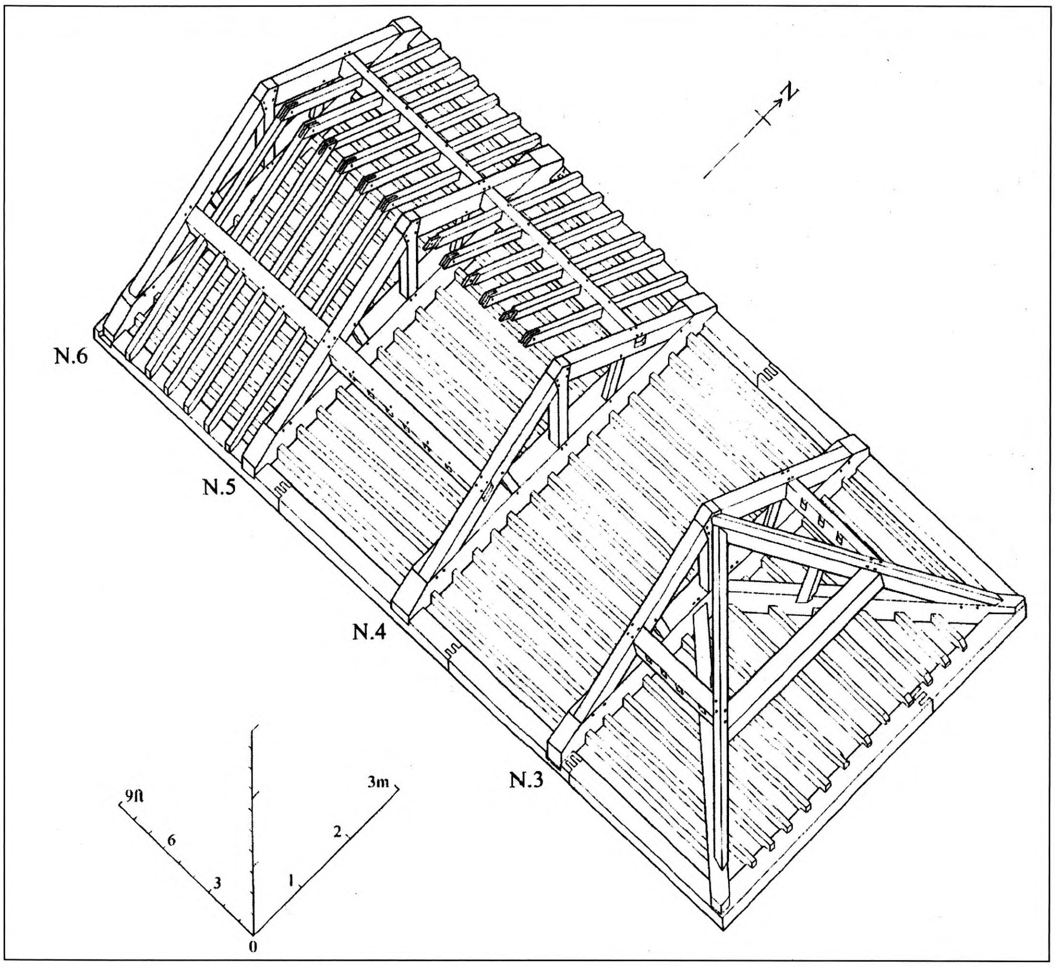


Fig 6: Axonometric drawing of nave roof timbers.

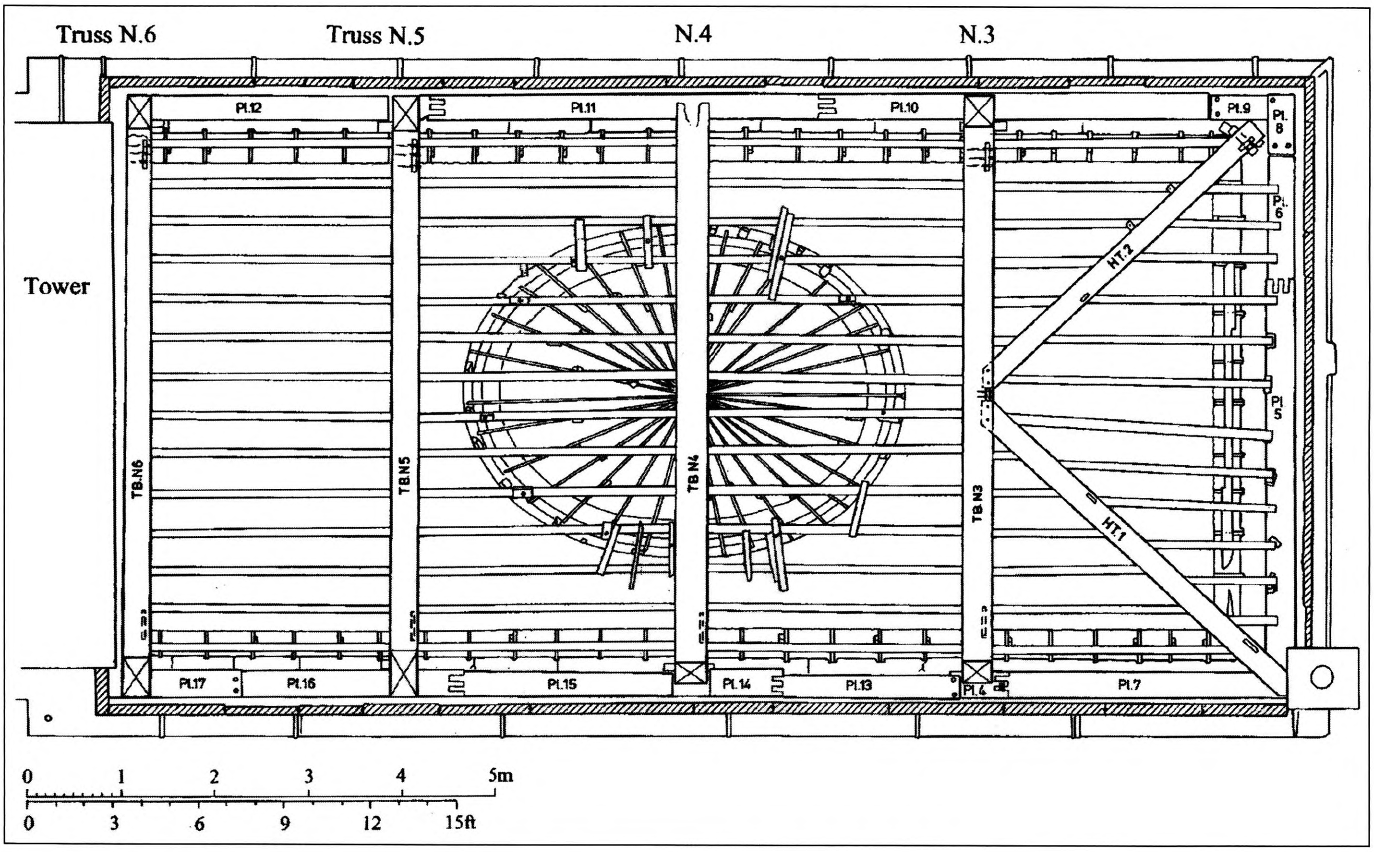


Fig 7: Plan of nave ceiling timbers.

nave. Each aisle is half the width of the nave. Each aisle is 20 feet tall – half its length and twice its width. If the thickness of the screen is excluded, and the dimensions are taken to the centre of each wall, the chancel was set out on a grid of 25 by 20 feet.

The roofs

Primarily intended to inform decisions about repairs and conservation, the survey also provided opportunities to analyse three types of roof structure and discuss them against the general background of Restoration period carpentry. The nave roof is remarkably similar to that on Wren's model for Pembroke College, Cambridge (Wren Soc **5** (1928), plate xi). The aisle roofs bare comparison with parallels in several London churches of the same period. The experimental nature of the main trusses and the type of metal fixings employed in the chancel roof again point to Wren or someone from his office.

The roofs remained largely intact until leaks noticed in 1927 led to works under a faculty granted 9th March 1933, and only 33 years later, in 1966, further fabric failures were noted. Both episodes of repairs included the replacement of some of the common rafters and other timbers, as described in the full technical report (Meeson 2003). To inform conservation decisions, the roof survey and report included a catalogue of every structural timber, and discriminated between the demonstrably primary elements and the later replacements made during repairs, but in the following analysis, attention is focused mainly upon the substantive surviving portions of the primary roofs.

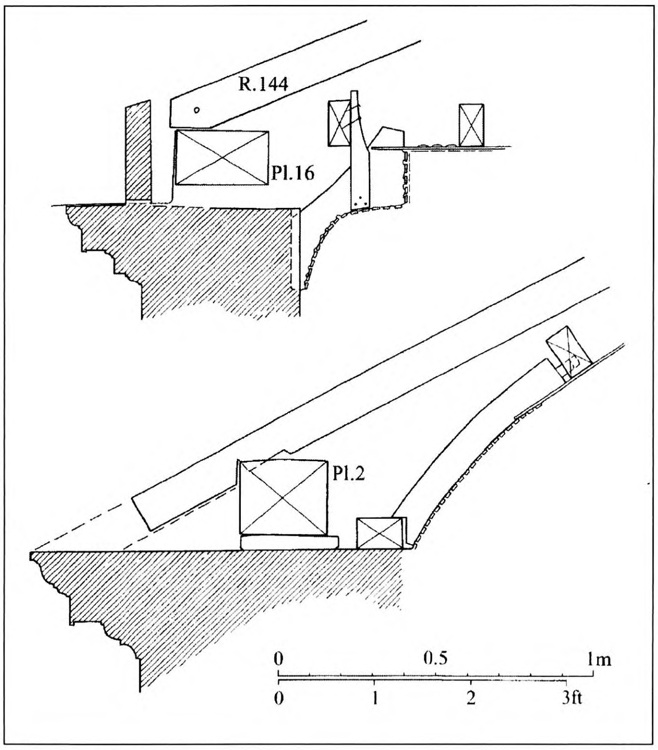


Fig 8: Nave (above) and chancel (below): eaves and cornice details.

The nave roof

The four-bay roof of the nave has a pitch of c 22½°; measured at eaves level, it has an internal length of 11.74m (38ft 6ins) and an internal span of 5.57m (18ft 3ins); it adjoins the tower to the west, but the east end, overlooking the chancel, is hipped (Fig 6).

Including the moulded cornice, the top of the nave wall along the eaves is c 80cms wide, but over the chancel-arch, it is c 90cms wide. The construction of the roof commenced with the careful setting out of the wall plates c 15cms from the inside edges of the walls.[5] The plates were formed out of short lengths of oak of c 29 x 17 cms scantling and laid in flat section; the individual timbers are linked by face-halved scarf joints, pegged through their outer faces. Some of the wall plates have been replaced, but the later timbers are readily distinguishable as they are joined to their counterparts by side-halved scarf joints and fixed with machine-made metal bolts. All of the primary wall plates were laid onto thin timber pads so that their soffits did not sit directly on top of the wall. The pads were used to ensure that the plates were set at the precisely correct level to serve as the horizontal base for the roof-trusses. Therefore, for example, while its top face is horizontal, the soffit of plate Plate 5 is 8.5cms above the top of the wall at its north end, but the gap at its south end is only 5.8cms.

Once the wall plates were in place, the tiebeams were laid across them and, being tenoned into the faces of the tiebeams at both ends, the ceiling joists were assembled at the same time. Each tiebeam was secured across the wall plates with half-dovetail joints. The four main roof trusses (N3 – N6 on Fig 6) include a tiebeam, principals, a king-strut and raked struts, employing mortice and tenon joints

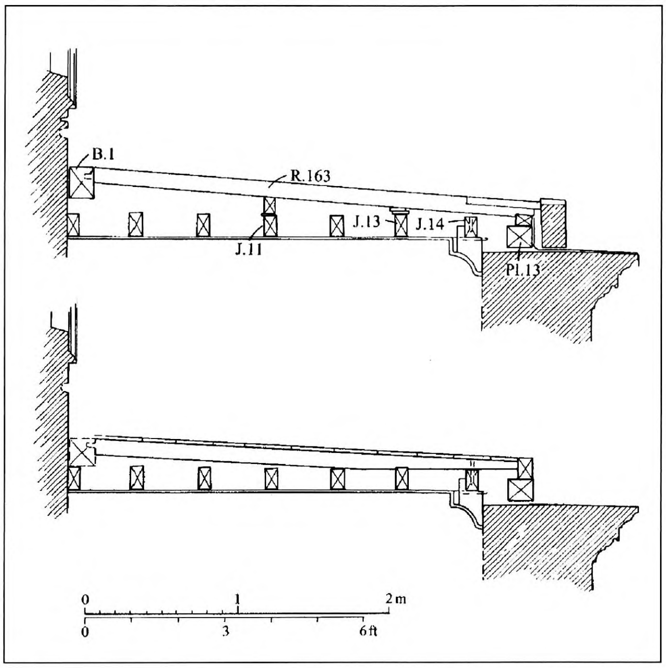


Fig 9: Section of south aisle roof: as found (above) and as built (below).

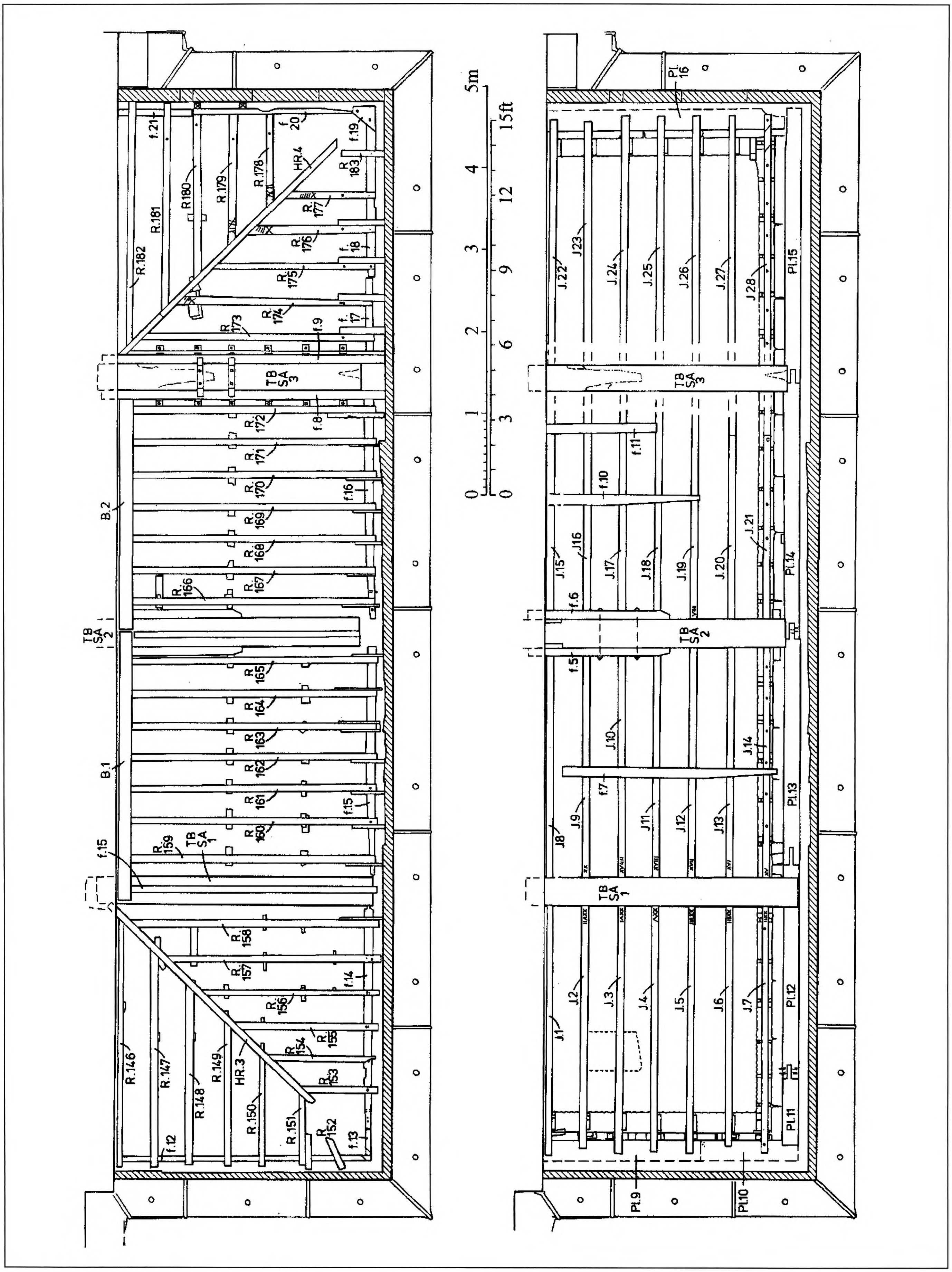


Fig 10: South aisle roof. Left, rafters; right, ceiling joists.

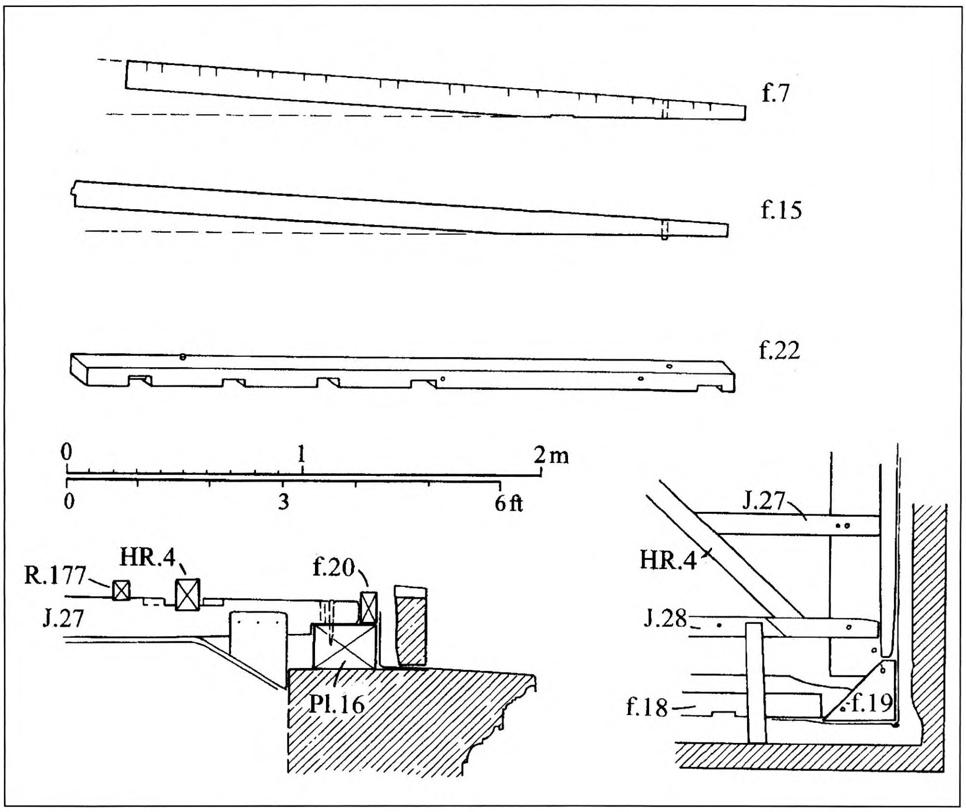


Fig 11: South aisle roof details.

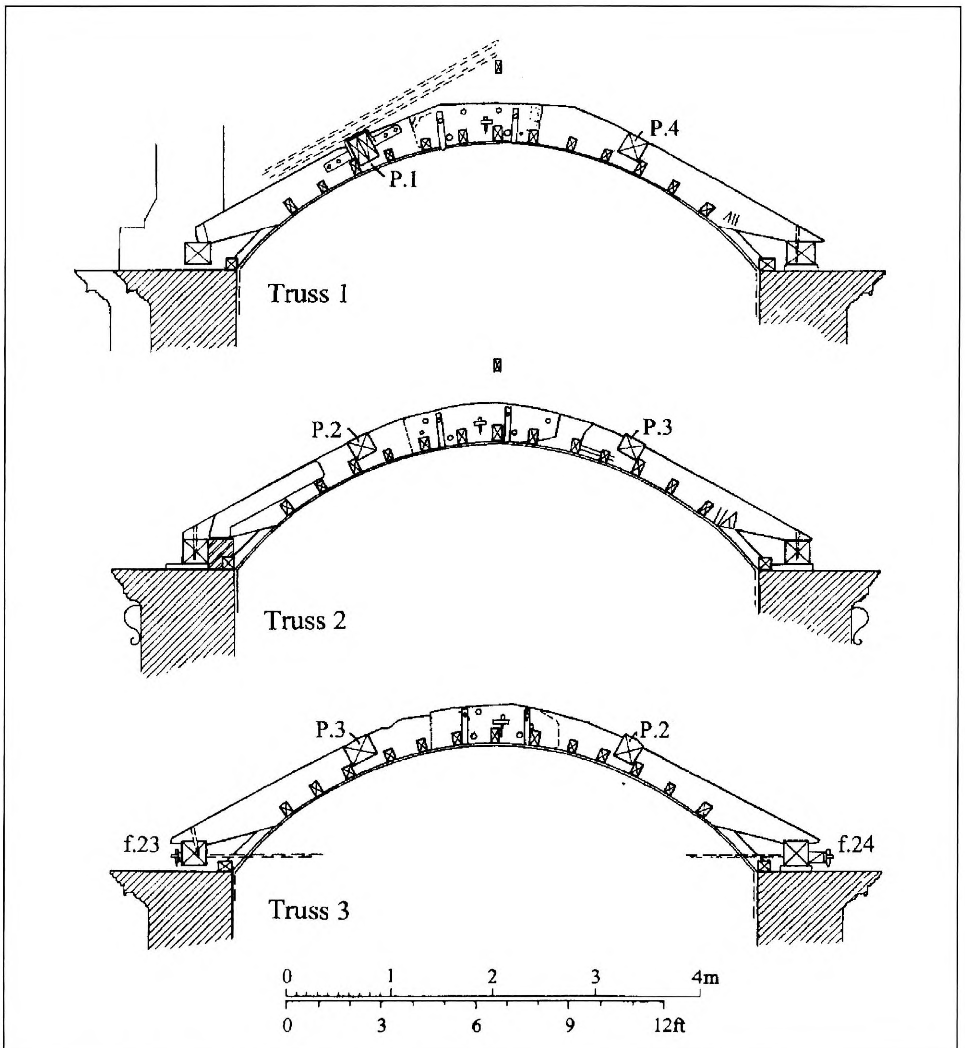


Fig 12: Arch-tie trusses over the chancel

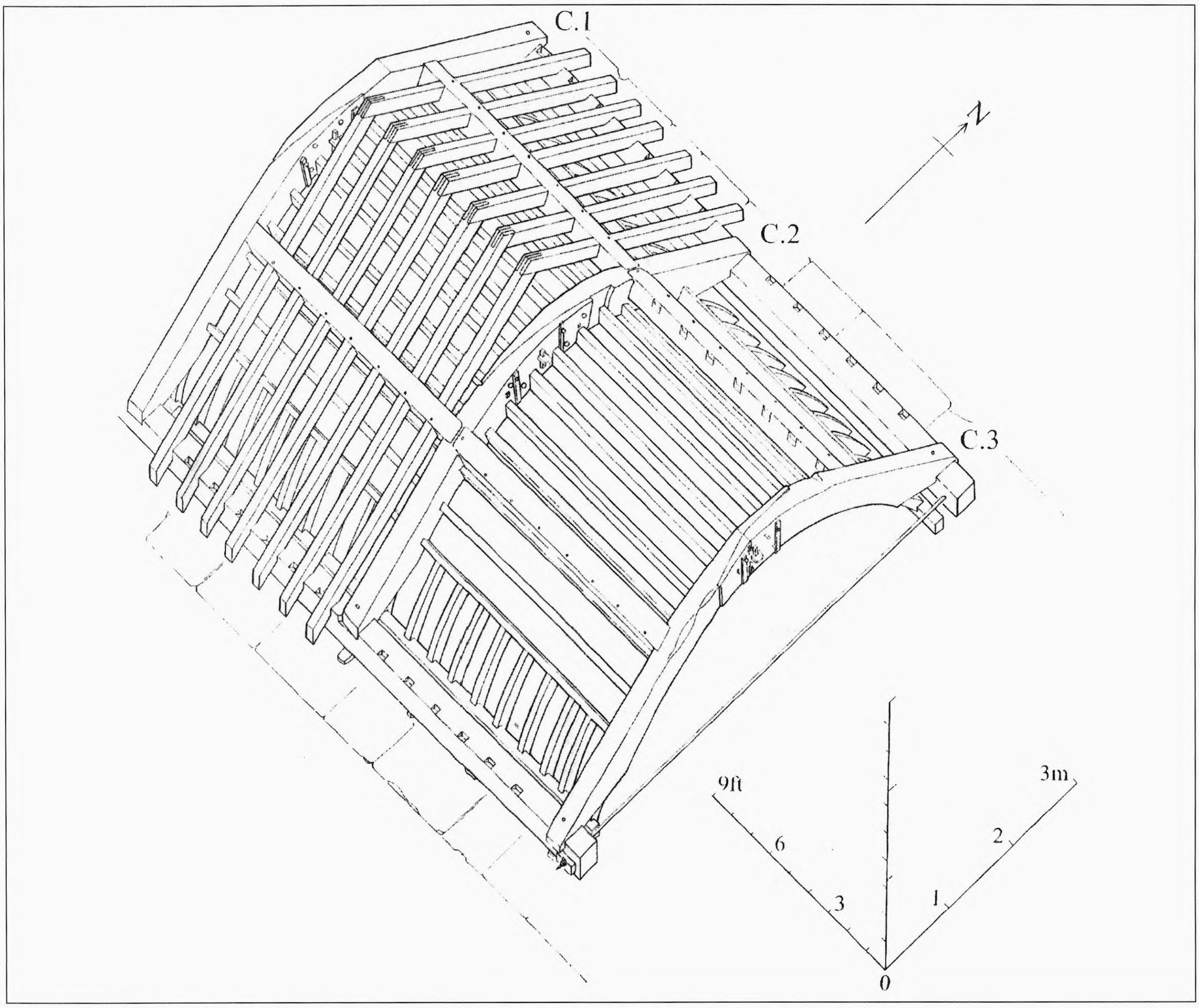


Fig 13: Axonometric drawing of chancel roof.

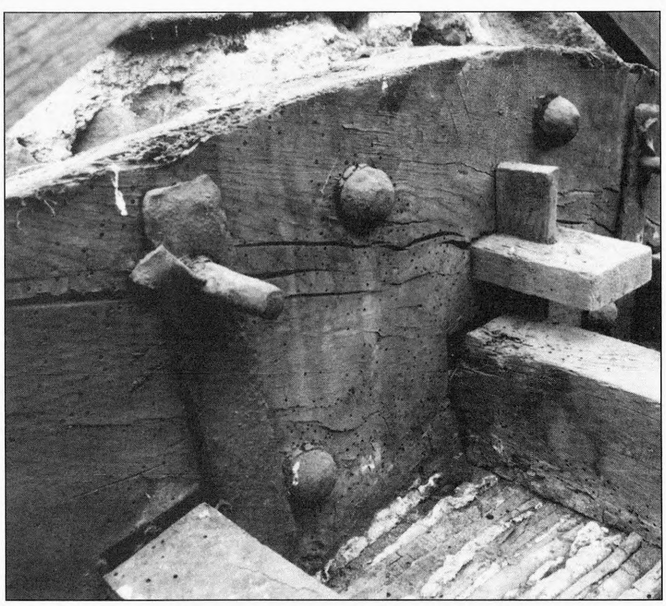


Fig 14: Chancel truss 3: detail of scarf joint fixings.

throughout. A high proportion of the primary roof survives, including seven out of the eight side purlins; the majority of these are secured to the principals by central tenons with diminished shoulders, showing that they were assembled in tandem with the principals.

The hipped east bay apparently presented the carpenter with a problem that he was not accustomed to solving. The diagonal hip-ties HT1 and HT2 were individually tenoned into the east face of the tiebeam, to avoid clashing with the mortice for the base of the king-strut (Figs 6 & 7). However, the hip-rafters had to meet at a single point against the king-strut, in-line with the ridge. To achieve this, the head of the north-east hip-rafter was made to rest on a bracket attached to the face of the king-strut, and the end of south-east hip-rafter was tenoned into its side. While this produces a neat hip-apex, the hip-rafters do not line up with the hip-ties below (Fig 6). As a result, the raked struts down from the hip-rafters overlap the sides of the hip-ties, and the tenons that secure them had to be placed precariously close to the hip-tie arises (Fig 7).

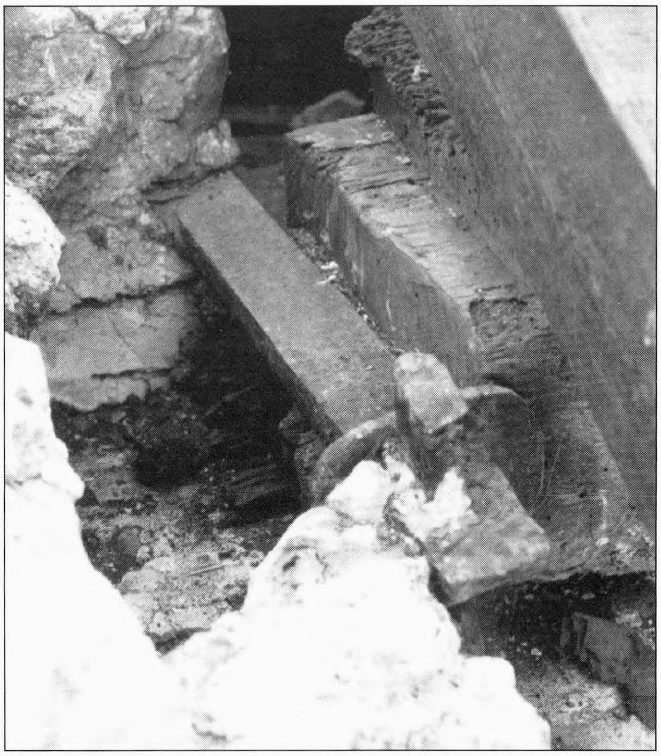


Fig 15: North end of tie-bar in chancel east wall.

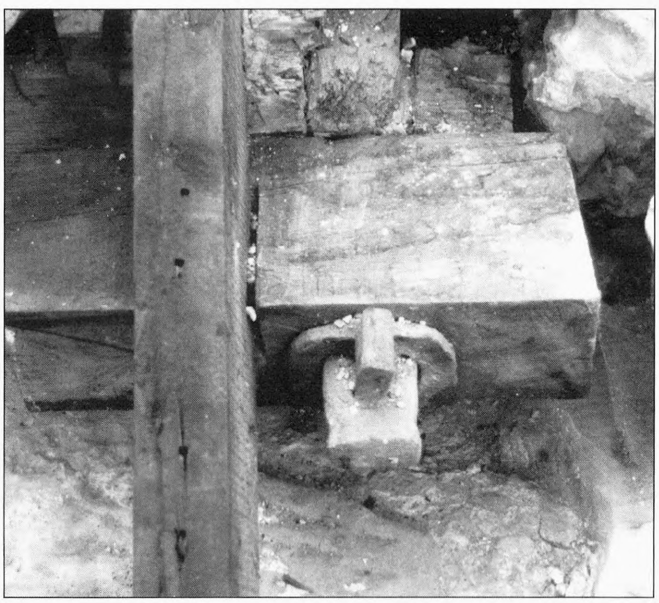


Fig 16: The same tie-bar on south side of chancel.

A high proportion of the primary hand-sawn oak common rafters survive, and in the two central bays, the carpenters' marks generally correspond, running in sequence from west to east. The original arrangement survives along the apex of the central bays, where there was no ridge-purlin. At the apex, the common rafters are linked by bridled joints; they are fixed to the purlins with un-shouldered and un-pegged central tenons. In the lower tier, most of the primary common rafters have pegged tenons into the purlins; their feet are lodged across the top faces of the wall-plates, where many are still fastened with small hand-made metal spikes, driven diagonally through their sides. In the hipped bay, all of the rafters above the purlins are tenoned thereto, but their heads are spiked, confirming the method and order of assembly, the main frame being complete before the rafters were added.

The remarkable nave ceiling remains intact because all of the joists are primary and *in situ*. With a few exceptions in the hipped bay, all of the joists are secured to the sides of the tiebeams by central tenons with diminished shoulders. In the central two bays, the main ceiling feature is suspended from wooden brackets nailed to the joists (Fig 7). The ceiling cornice is plastered onto laths nailed to shaped wooden brackets which are set at regular intervals around the sides of the nave (Fig 8); the foot of each bracket sits in a groove cut into the top of the wall, while its head is suspended from another timber nailed in turn to the outer joist.

The use of a moulded eaves cornice created a wide top to each wall, which extended well outside the line of the wall plates, leaving space for a low parapet or blocking course (Fig 8). However, the blocking course recorded during the roof survey was of a different stone from the remainder of the church, and was set out over secondary lead sheeting. Some of the primary rafter feet appeared to be weathered, implying that they had been exposed at some stage, but it was not clear whether that was due to a failure of the original design or a subsequent alteration. The numerous surviving section drawings of roof designs from Wren's practice show that a variety of methods of construction could be employed along the sides of roofs. On the large Trinity College Library roof, the tiebeams stop well short of the eaves parapet to leave room for a gutter, but elsewhere, apparently, they abutted the inside face of the parapet. Other section drawings show the tiebeam stopping short of the outer edge of the eaves, but do not indicate whether a blocking course was intended (Wren Soc **5**, 1928; **9**, 1932). Burgher's 17th-century illustration of St Mary's Church implies that the eaves of the nave and aisles were treated differently from those of the chancel, and that is borne out by the architectural evidence (Figs 8 & 9).

The aisle roofs

The aisle roofs, with an internal span of only 2.75m, are divided into four bays. Both aisles have retained their primary tiebeams and ceiling joists, but many of the common rafters have been replaced.

The carpentry of the aisle roofs was conditioned by two main constraints. Firstly, in the absence of a tribune, there was only limited space between the top of the nave arcade and the clerestory windows to accommodate the inner end of each roof. Secondly, as an essential element of the overall design, a very low pitch of only c three degrees was required, for the aisle roofs to remain hidden behind the blocking-course or parapet. The carpenters had to fabricate a structure with the minimum possible gap between the ceiling and the roof covering. The main effect of past reconstructions of these roofs had been to increase the void between the ceiling and the outer membrane, but here the original arrangement is interpreted (Fig 9).

The assembly of the aisle roofs commenced with the emplacement of the wall plates (Fig 10). Each with a scantling of up to c 20 x 17cms, the -plates were scarfed together by double-pegged bare faced tenons; as around the nave (above), they were supported by timber pads, leaving a gap between their soffits and the top of the walls. After the -plates had been assembled, the tiebeams were lifted into place. Most of the tiebeams now have decayed outer ends, but in the north aisle, TBNA 2 still has a half-dovetail on its soffit where it sits across the -plate. The inner ends of the tiebeams were set into sockets in the wall near the foot of the clerestory. Because the ceiling joists are secured to the sides of the tiebeams by central shouldered tenons, they must have been assembled at the same time. The joists have laths nailed to their soffits to carry the plaster ceiling below. Shallow housings were cut into the top face of each tiebeam to secure the ends of bearers adjacent to the face of each wall; these bearers would support the inner ends of the common rafters. For the end bays, the housings were cut diagonally to carry substantial hip rafters. It was probably at this stage in the assembly process that the masonry around the tiebeam sockets was made good with rubble and mortar.

Over both aisles, virtually all of the common rafters had been replaced when the roof-pitch was altered, but several of them had been re-used *ex-situ*, providing some of the information required to interpret the original form of the roof. Each intact rafter had a shouldered tenon at its inner end. The scantling of each of the former common rafters is reduced towards its outer end, and the angle at which each timber is firred indicates the original pitch (f 7 and f 15 on Fig 11). Each primary rafter has a peg-hole *c.*0.3m from its foot. In each bay, the outermost ceiling joist retained the evenly spaced series of holes that formerly received the pegs through the ends of the rafters. Thus, each outermost ceiling joist also served as a flying plate. The pitch of the roof was so shallow that some of the rafter soffits also sat across one or more of the inner joists (Fig 9). By this device, part of the load imparted by each rafter was shared by the outer two or three joists, rather than the wall plate, though of course each joist also transferred a load upon the tiebeams. As the top face of each wall plate was below the level of the joist soffits, there would have been a gap between these and the projecting feet of each rafter. Another re-used timber (f 22 on Fig 11) retained housings at the common rafter intervals; this is interpreted as a kerb, originally spiked onto the top of a wall plate. The kerb closed the gaps between the feet of several rafters, as reconstructed in Fig 9.

The hipped ends of the roofs differed somewhat from the eaves because the ceiling joists were required to bear on the east and west wall plates. Most of the primary scheme survives at the east end of the south aisle, and this is detailed on Fig 11; J.27 is lodged and pegged onto Plate 16, and the primary kerb f 20 remains *in situ*, but all of the hip-rafters have been replaced. At the south-east corner, a triangular oak block (f 19) spans the abutment of Plates 15 and 16, and is pegged to each of them. The foot of the primary hip-rafter – the predecessor of HR 4 – was originally lodged on this block.

The *ex-situ* primary rafter f 7 has been shortened, so it has lost its shouldered tenon, but it retains other useful information about the primary roof (Fig 11). Pairs of nail-holes indicate the widths of the primary wooden boards, providing the evidence for those shown on Fig 9. Between each pair of nail-holes there is a narrow white line, suggesting that after the boards had been nailed into place, but before the outer lead membrane was added, a protective treatment, possibly lime-based, had been painted onto their outer surface. A high proportion of the rafters now have extension-pieces fastened onto their sides to project the roof out to the blocking-course. As on the nave roof, the blocking-course now stands on lead-work, which is wrapped up the sides of the wall plates.

The chancel roof

Internally, the chancel is approximately six metres long and five metres wide. The west end of the chancel roof stands against the taller nave, while the east end abuts the back of the east gable. Unlike those in the nave and aisles, the chancel ceiling is tunnel-vaulted, demanding a different type of structure, which is of two bays, and assembled with a pitch of c 27½°. Although this roof is steeper than that over the aisles, the tunnel-vault below again leaves little space for the supporting frame between the ceiling and the common rafters. The ingenious solution included three transverse trusses in which the main timbers doubled as steeply cambered tiebeams and as principals to carry the purlins; below, they are termed *arch-ties* (Figs 12 & 13).

Along each side of the chancel, the moulded eaves cornice projects out to form a 1.2m-wide top to the wall. As in the nave, the wall plates are carried a few centimetres above the wall by timber pads (Pl 2 on Fig 8). There are half-dovetails on the soffits of the arch-ties where they are lodged across the wall plates and each joint is stoutly pegged. Although the internal span of the roof is only five metres, because of the particular shape required for the arch-ties, each of them had to be formed out of two sections of oak. The soffit of each section was curved to the shape of the ceiling, while the upper face was cut to a straight line corresponding with the plane of the roof (Fig 12). The two lengths of timber were joined together by a splayed scarf joint. Three different types of fasteners were used to fix the timbers together near the centre of the arch (Fig 14). Firstly, a mortice was cut through both timbers near to the middle of each splay, and a long slip-tenon was driven through the joint, with both ends projecting to receive a face-peg, preventing withdrawal in either direction. Secondly, two metal straps pass down one face of the scarf joint, under the soffit, and up the other side, and each of them is secured by forelock bolts. (Near to the top of each strap, a metal bar passes through the entire assembly, projecting out at both sides, and a hole on each end of the bars coincides with the face of the strap; a metal strip which passes through each hole has twisted ends to prevent withdrawal, creating a blacksmith's version of the through-tenon with face-pegs). Thirdly, four iron bolts were also fixed through the scarf joint.

The straps and bolts are not the only metal employed in this roof. The evidence is equivocal, but the tie-bar through the gable-end truss 3 might also be primary, for the technology employed is similar to that on the scarf joints. The east end of the wall plate Pl 2 no longer occupies the rubble and mortar socket that was originally formed around it. Nevertheless, the iron bar that passes through the wall plate is set into the same rubble core (Fig 15). For the bar to be secondary, it would have been necessary to reconstruct the inside face of the gable, and no sign of such an alteration could be detected. On the north side of the roof, the bar passes through an iron washer set against the outer side of the wall plate, and a cotter (a metal face-peg) is fixed through a hole in the end of the bar. The arrangement would be similar at the other end of the bar, at f 24 on the south side of the roof, but for the fact that there is now a softwood block between the side of the wall plate and the fixing-peg (Fig 16). The wall plates both appear to remain in their intended alignments, so it is unlikely that either of them has moved. If, as seems plausible, this tie-bar is a primary feature of the roof, the secondary softwood block might replace an oak predecessor; a miscalculation of the distance required between the fixing-holes at each end of the tie-bar would explain the need for the spacing-block.

As central tenons with diminished shoulders were employed at each end of all the ceiling joists, these must have been assembled in tandem with the arch-tie trusses, and in the absence of evidence to the contrary, they must all be presumed to be primary. Along each side of the ceiling, a number of curved brackets (eight in each bay) are tenoned into the lowest joist, and birds-mouthed across the arris of an inner-plate (Figs 8 & 13). The employment of birds-mouth joints implies that these supports for the lower portion of the ceiling were designed for insertion after the main frame had been assembled. The outer roof-frame is carried by side-purlins. The purlin on the south side of the west bay is secondary, being comprised of two paired softwood timbers, but the other three are primary. They appear to be tenoned into the arch-ties, but at the central truss, the top face of each purlin extends across the waney edges below.

Along the north side of the roof, most of the primary rafters remain *in situ*. Originally, there was no ridge-board, and the rafters in the upper tier were linked to their counterparts at the apex by bridled joints; the feet of these rafters have central tenons into un-pegged mortices on the purlins. The lower tier of rafters has pegged central tenons into the purlins, and they are scotched into triangular housings where their feet extend across the wall plates (Figs 8 &13). In the west bay of the roof, on both the north and the south sides, a number of housings for scotched rafter-feet appear to be unused, but this is tentatively attributed to a setting-out error.

The sides of the primary roof over the chancel were different from those of the nave and aisles (Fig 8). The feet of the *in situ* primary rafters form a line approximately mid-way between the outer edge of the wall and the side of the wall plate, and in several instances, the end-grain shows signs of weathering. Furthermore, the top of the wall is weathered outside the line of the rafter-feet, implying that it too was exposed to the elements for some time: whether this was by design or through neglect is not clear. Secondary extension-pieces fastened to the feet of the primary rafters now project the roof-slope to the outer edge of the eaves.

Discussion

During the course of the 17th century, the vogue for shallow-pitched roofs, particularly those of a wide span, prompted carpenters to respond by moving away from medieval roof-types towards what have been termed 'trussed roofs' or 'trussed-rafter' roofs (Yeomans 1992, 1999). Many carpenters were left to their own ingenuity in the detailing of shallow-pitched roofs with hipped ends, but various types emerged as elegant solutions to the problems. Arguably, the roof over the nave at Ingestre is typical of its period, and there is no particular reason to attribute it to Wren or his office, even if it is comparable with his model for the roof of Pembroke College. Equally, if the integration of the ceiling timbers with the outer roof over the aisles and chancel at Ingestre can be likened to parallels in several London churches of the same period that does not identify the designer.

The employment of iron fixings in the chancel roof at Ingestre does not prove that the technique was specified by someone in Wren's practice. However, Wren's views on the use of iron are well recorded:

> *'Iron, at all Adventures, is a good Caution; but the Architect should so poise his Work, as if it were not necessary'* (Wren Soc **19**, 1942, 130).

He did not always follow this principle, as has been shown at St Mary-le-Bow, and when occasion demanded, he made copious use of iron, especially in the spire of Salisbury Cathedral (Reeves, Simpson and Spencer, 1992, 380-406). Iron bolts and straps were used in the roof of St Peter's Cornhill (Wren Soc **9**, 1932, 60), where the early designs were by Edward Jarman; John Oliver might have played some part, but the later drawings have been attributed to Robert Hooke (Jeffery 1996, 326-9). Some of the roof-timbers at St Benet Paul's Wharf, designed by Robert Hooke, were fastened together by forelock bolts through iron straps, similar to those at Ingestre (RCHME, 1998, 62). Wilson, who also worked in Wren's office (above), employed forelock bolts with double washers in the roof of Lichfield Cathedral c 1661-69. It is unclear how much 17th-century architects involved themselves in the specifics of roof assembly, but the arch-ties and iron fixings in the carpentered frame over the chancel at St Mary's Church show a readiness to innovate to achieve a desired outcome.

Copious vestry minutes, building accounts and drawings survive for the post-fire London churches, yet it is sometimes impossible to determine who designed what. Against that background, and as the documentation for Ingestre is lamentably poor, it is unlikely that proof will be found of Wren's direct hand in the design of St Mary's, but the circumstantial evidence is strong. Wren's design for a steeple for the church was probably drawn later than about 1676, for apparently the tower already existed. Although the execution of the design would have involved the removal of the balustrade, and the cornice moulding on his drawing does not exactly match that on the building, the drawing does at least suggest that he knew both the building and Chetwynd. As prominent Oxford alumni, and later as president and secretary of the Royal Society, Wren and Plot were well acquainted with each other, and Chetwynd was elected shortly after the completion of St Mary's. It is one of the most elegant and refined buildings of its era, replete with Wren's architectural proportions, devices and motifs. In particular, the seminal clustered shafts in the nave arcades were under construction at broadly the same time as those employed by Wren in St Bride Fleet Street.

Edward Pearce could have been available during the time that St Mary's was under construction. Whether Archbishop Sancroft or Wren was the link is unclear, but a project here might have been the catalyst for the later commissions that he undertook in the immediate vicinity, including his best building contract at Lichfield, outside the main orbit of his early career in and around Oxford and London. Apart from the stonework, the wooden screen, reredos, and pulpit with tester are supreme exemplars of the period, demanding a sculptor of his calibre.

1 *This is a somewhat back-handed compliment, as it might be argued that anything more elaborate was too ornate.*
2 *I am grateful to Marian Owen for this reference.*
3 *Poole op cit.*
4 *The foundation stone for St James Piccadilly was laid on 5 April 1676 (Jeffery, 250): Wren's design for St Clement Danes is undated, but the rebuilding programme commenced in 1679, when Edward Pearce was listed as one of the craftsmen (Jeffery, 229-230).*
5 *For the carpentry terms used in this paper, see Alcock, Barley, Dixon and Meeson 1999.*