

Crown-post and King-strut Roofs in South-East England

By JULIAN MUNBY, MARGARET SPARKS and
TIM TATTON-BROWN

*THREE MAJOR KING-STRUT ROOFS of 13th-century date in Canterbury are published for the first time, and a group of analogous roofs in SE. England is described. A related group of side-purlin roofs at Chichester and Bishop's Waltham is discussed, together with the known examples of crown-post roofs dating from before c. 1300. It is suggested that continental roof-types influenced the work at Canterbury and Chichester, and that the 13th-century crown-post roofs may be derived from the king-strut tradition.*¹

The origin of the crown-post roof is now seen to be a more complex problem than it may have appeared when the first general account was published nearly twenty years ago.² Doubt has been cast on the assumed continental origin of the types,³ and on the significance of its distribution in England.⁴ The second of these is beyond the scope of this paper, but the first is to be reconsidered, in the light of new discoveries. The recognition of the importance of the roofs at Chichester,⁵ and the realization that several roofs having the appearance of crown-post type in fact had king-struts has now substantially altered the body of evidence. The recording of three major king-strut roofs from Canterbury now calls for a further attempt to discuss the whole question. Whilst this does not result in a definitive answer to the problem, it is hoped that a restatement may indicate the direction of further investigation.

A note of definition: A king-post rises from a tie-beam to the apex of the roof, where it carries a ridge-purlin; a king-strut rises to the apex only to meet the tops of the rafters, although it may carry a purlin at some lower point. A crown-post rises up to the level of the collar-beam where it carries a collar-purlin. Any longitudinal member supporting the common-rafter couples is a purlin.

THE CANTERBURY ROOFS

On the southern side of the great gate (or Abbot Fyndon's Gate) at St Augustine's Abbey, Canterbury is a large first-floor hall which was probably a Guest Hall. This hall, first depicted in Daniel King's engraving of St Augustine's (c. 1656),⁶ was heavily restored in the mid 19th century and incorporated within William Butterfield's buildings for St Augustine's

College. Several other engravings of this building, taken from both the E. and W. sides before the restorations, show that the original windows contained tracery of perhaps a mid to late 13th-century date.⁷ The building, which is not a rectangle (see Fig. 1) is c. 17 m (55 ft.) × 8 m (27 ft.) internally and is entered by a door in the SE. corner which leads immediately to a staircase to the first floor. On the E. side of the building is a large external chimney, now heavily restored also, which served fireplaces on both the ground and first floors. Outside the NW. corner is a stair-tower which also acts as the only other entrance to the hall (at the high end) and as the communication between the hall and the chamber above the Great Gate of c. 1309. The ground floor below the hall, which is today the kitchen, was divided into three main bays and still contains two fine sampson posts on stone bases which support the main beams for the floors above. To the S. of the hall is a building (today, and also perhaps in the 13th century, the chapel) which is supported on a stone vault and has three lancet windows in its W. gable. It is quite likely that the ground floor of this building at the W. end was the main gate to the Abbey until Abbot Fyndon's gate was built. What may be a blocked-up arch is still visible on the W. side, and Thorne⁸ refers to 20 marks being given in 1267 'for building a chapel over the gate'. If this is so, the first-floor hall to the N. when built was in a similar position in relation to the main gate as was the '*Aula Nova*' (with its famous Norman staircase) at Christ Church Priory.

During the middle and later years of the 13th century, we also learn from Thorne's Chronicle that a great deal of rebuilding was taking place at the abbey, particularly around the cloister and Great Court.⁹ In the 1260s there was work at the dormitory and on a new bathhouse and new chapel over the gate (mentioned above), and the refectory on the N. side of the cloister was being rebuilt. This was followed in the 1270s by the rebuilding of the great cloister and lavatory tower there, and also the building of a private chamber for the abbot. This in turn was followed in the 1280s and 90s by the rebuilding of the great kitchen and the W. range off the great cloister (the Abbot's house and chapel, largely). Finally, between 1300 and 1309, Abbot Fyndon built a new gate in the NW. corner of the Great (or Outer) Court. This is to the NW. of, and certainly later than, the first-floor hall mentioned above, and it seems most likely that the latter hall with its king-strut roof was built some time in the later 1260s when we know that the chapel over the gate was being built. Both this chapel and the first-floor hall could then be reached by the same stair (on the N. side of the original gate). It is also logical that this first-floor hall, as a Guest hall, would have been finished before the rebuilding of the W. range of the cloister or there would have been no guest hall for the abbey.

Over the first-floor hall is a large king-strut roof, medieval but heavily restored (Figs. 1 and 3A). The early engravings show dormers in the roof here, and it is clear that after the Dissolution another floor was inserted into the roof at about tie-beam level. This floor was removed in the mid 19th century and apparently at the same time the tie-beams in the hall and the bottom five feet of the king-struts were sawn off and replaced by new beams at a higher level supported by two side struts. Apart from this, the roof appears to be in its original form with four main king-struts dividing the roof into three bays, with eight common rafters to each bay. There are, however, three pairs of extra rafters at the S. end and an additional strut to the S. of the southern king-strut which have clearly been added later. This latter king-strut, however, has not been sawn off and it appears to mark the original S. end of the roof.¹⁰ All the king-struts, which are fairly slender, extend right up to the ridge and have the principal rafters, the collars (two to each truss) and the collar-purlin tenoned into them. Two pairs of slender straight braces rise from the king-strut to the collar-purlin and the lower collar, and the latter pair of braces is halved over the soulaces between the rafters and the lower collar. The lowest section of the two central king-struts (K 2 and 3 on Fig. 1) have simple lamb's-tongue stopped chamfers on them which must originally have extended down to other stops just above the tie-beam. The outer wall-plates are not visible but the top of the inner wall-plates behind a 19th-century fascia-board can be seen with the original ashlar-pieces tenoned into them. It is quite clear, therefore, that this is substantially a medieval roof, and both documentary and architectural evidence would suggest that it was built in the third quarter of the 13th century.

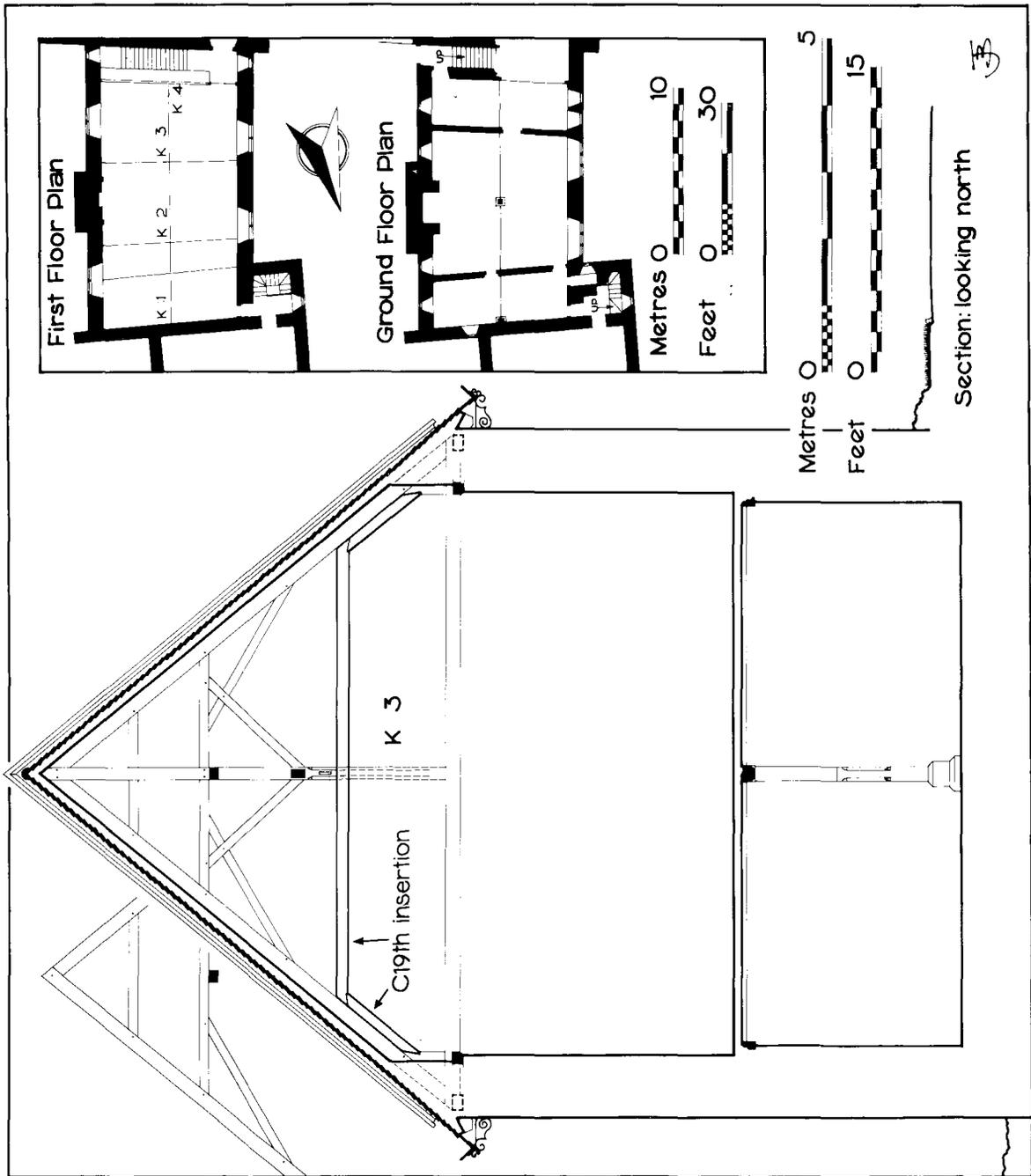


FIG. 1
The 'Guest Hall' of St Augustine's, Canterbury

The second surviving king-strut roof is over the building known originally as the 'Table Hall' which adjoins the Infirmary at Christ Church Priory. This building has survived largely intact as it was turned into the house for the second prebendal stall after the Dissolution. It is now the Choir House and within the lower part of the roof (i.e. below the scissor-braces) is the boys' dormitory. It was first examined architecturally by Professor Willis¹¹ who, using a now lost section of the Treasurer's Accounts quoted by Somner,¹² dated it to 1342–43. The tracery of the windows on the N. and E. sides would perhaps support this, but there is now evidence that the fabric of the hall (including the roof) is earlier, and that the work under Prior Hathbrand in the mid 14th century was in fact the refurbishing of an already existing building. This evidence is again both architectural and documentary. In the southern gable of the Table Hall roof (Fig. 2), originally looking out over the shed roof of the N. aisle of the Infirmary Hall, are three lancet windows (the cills of which were raised at a later date), which are an integral part of the Table Hall and must date from the 13th century.¹³ Secondly, the Table Hall is mentioned in the Almoner's Roll of 1283 and in Archbishop Winchelsea's Statutes of 1298,¹⁴ although it is not mentioned in the 'list of works' of Prior Henry of Eastry (1285–1331).¹⁵ Therefore it is probably safe to conclude that the Table Hall was complete before c. 1285, and that it was perhaps erected, like the Guest Hall at St Augustine's Abbey, sometime in the third quarter of the 13th century when there was need for a new building near the Infirmary.

In the 13th century there was much discussion among the Black Monks generally about the eating of meat on special occasions, which was forbidden by the Rule of St Benedict. The General Chapter of 1249 ordered the provision of a suitable place near the Infirmary for the serving of meat on certain days. In 1275 the Abbot of St Augustine's built a 'misericord' or hall for meat-eating attached to the Infirmary there. The monks of Christ Church took no heed of the General Chapter, but they probably made provision for meat-eating near the Infirmary about the same time.¹⁶

As it survives today, the Table Hall is remarkably complete. The E. wall has a series of very fine traceried windows in it; each one has on the outside a pair of carved corbelled heads, all different. The outer face of this wall is also unusual in that it is made of finely knapped tabular flints. All of this work must relate to the refurbishing under Prior Hathbrand in 1342–43.¹⁷ Within the Hall, despite the later divisions, it is easy to see how the three main moulded tie-beams divide the hall into four bays, the southernmost of which (perhaps the screens passage) is much shorter than the others (Fig. 2). At the W. end of this latter bay is the main door and in the S. wall are the remains of two other doors (a medieval recess is still visible on the S. side of the westernmost of these two doors), which lead into the N. aisle of the Infirmary Hall, by then perhaps infilled and acting as a buttery and pantry. Running along the outside of the western wall of the Table Hall is a moulding and below a series of corbels (Fig. 2 inset) which clearly indicate that there was originally a pentice here which connected with the Infirmary kitchen on the W. and the Prior's New Lodging (a later building) and perhaps with the 'New place for the *Deportum*'¹⁸ on the N. There is also a chamfered jamb which is the S. side of a possible door that is now built into the buttress on the NW. corner of the Table Hall.

The very fine king-strut roof of the Table Hall, whose internal dimensions 15 m (49 ft.) × 8.5 m (28 ft.) are almost identical to the Guest Hall at St Augustine's, is different from it in that the Table Hall has a scissor-braced roof, with the scissors of the principal trusses tenoned into the king-struts (Figs. 2 and 3, C). The upper parts of the scissors are here replaced by straight braces to the collars. Two pairs of braces from the king-struts to the collar-purlin are slightly curved, however, and the collar-purlin, which is tenoned into the central king-strut, half-laps over the N. and S. king-struts. At the N. end of the roof the collar-purlin is supported on a simple post (perhaps added in the mid 14th century) while at the S. end it runs into a specially made vertical 'mortice hole' for it in the gable wall above the central lancet. The three tie-beams and the inner wall-plate are all moulded, and in its NE. corner is a small fragment of carved decoration (Fig. 2 inset).

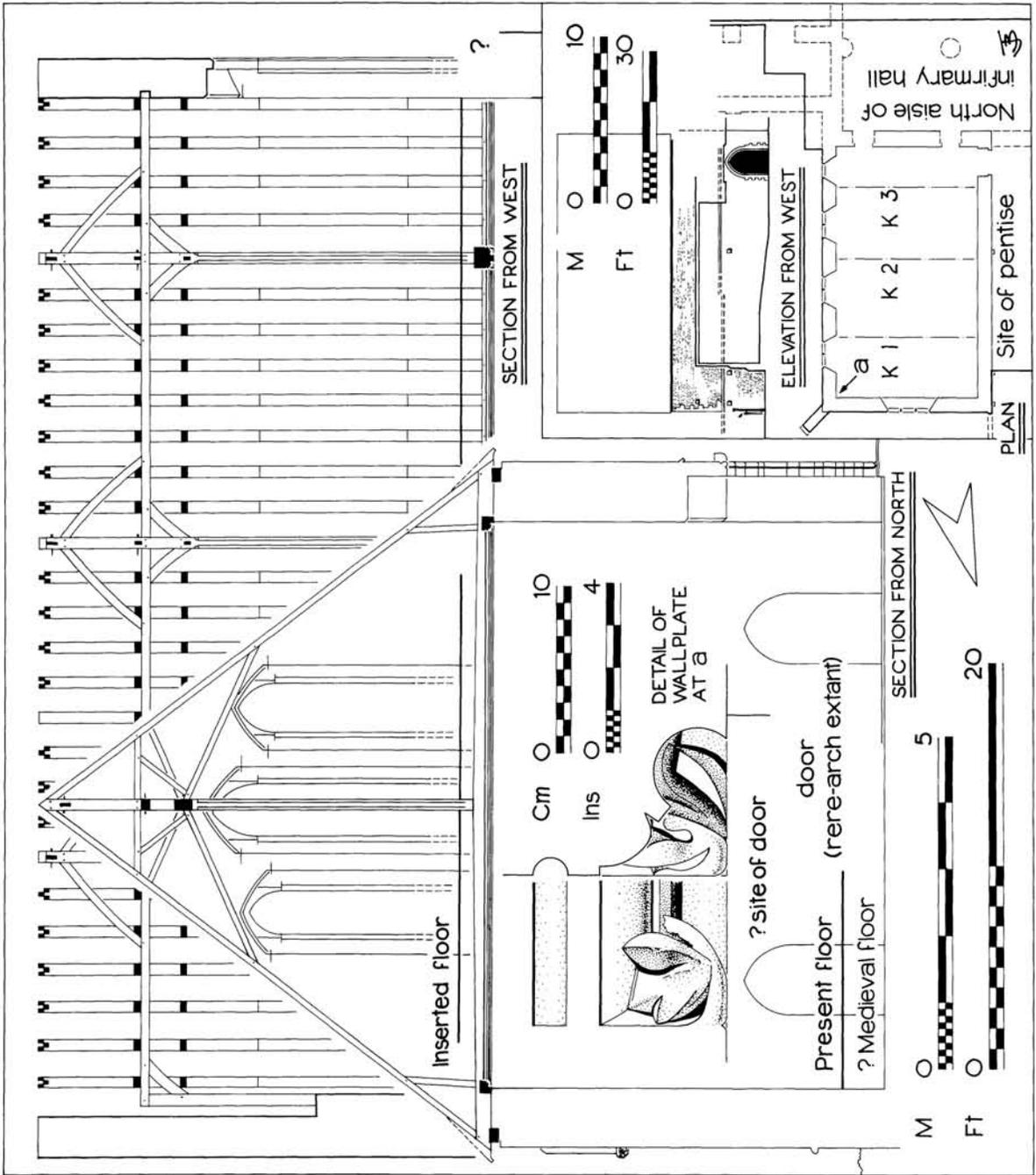


FIG. 2
The 'Table Hall' of Christ Church, Canterbury

The third king-strut roof is over the chapel of the Eastbridge Hospital in Canterbury. This hospital was first erected in c. 1180, and the main single-aisled hall and undercroft of this date still survive though capped with a late (15th-century) crown-post roof.¹⁹ At right-angles to the hall and on the street frontage is a first-floor chapel. The fabric of this also dates to the late 12th century, but the N. wall of the chapel is now pierced by three mid 14th-century windows.²⁰ Over the chapel is a four-bay king-strut roof which is similar in many ways to the Table Hall roof (Fig. 3, B). The second bay from the W. is more complicated than the other bays because it originally carried an octagonal belfry. This must have projected up through the roof as a spire, but was subsequently cut down (perhaps in the early 18th century), and only the base and truncated lower timbers survive. The belfry, though built as a separate structure, was clearly contemporary with the roof. The remaining part of the roof is scissor-braced, with collars lapped over the lower part of the scissors. The main trusses (two on the W. and three E. of the belfry) lack scissors and have soulaced collars and an extra upper collar, and a king-strut. The collar-purlin is tenoned into the king-strut and is further secured by longitudinal bracing to the king-strut from above and below.

This roof, though less than half the span of the other two already described, has many similarities to the Table Hall roof and must probably also date from the later part of the 13th century. As yet, however, no documentary evidence has been found to reinforce this, though a rebuilding in Archbishop John Peckham's time (1279–94) seems most likely.

DISCUSSION

All three of these Canterbury roofs are in the 'trussed rafter' tradition, with members of approximately equal scantling. In each the collar-beams of the common-rafter couples are supported from below by purlins, thus preventing lengthways movement (racking) of the rafters. This is usual enough in roofs of this class, but the special feature here is that the normal type of support is not employed. Instead of a crown-post terminating at collar and collar-purlin, there is a king-strut which rises to the apex of the roof (and into which the rafter tops are tenoned). The collar-purlins, rather than being continuous members (or scarfed lengths), are separate pieces that are tenoned into the king-struts.

These three Canterbury roofs are not unique, but are perhaps the finest examples in a group of roofs surviving in southern England. Their publication calls for a restatement and partial revision of the views of Dr J. M. Fletcher and the late P. S. Spokes on the origins of crown-post roofs.²¹

Roofs with King-struts

Directly comparable with the St Augustine's roof is that on the Abbot's House at Robertsbridge Abbey, E. Sussex. In this instance (Fig. 3, D) the king-strut terminates at a high collar and does not reach the apex. The decorative details of timber mouldings and of the undercroft and surviving windows are of the third quarter of the 13th century.²² Roofs of smaller span, appropriately with less elaborate bracing, survive over the naves of churches at West Stourmouth, Kent (Fig. 3, F) and South Hayling, Hants. (Fig. 3, I). In both of these, what at first appears to be a crown-post support for a rafter roof with seven-cant bracing, is in fact a king-strut continuing up to the apex of the roof. West Stourmouth has one slender king-strut and evidence for two others; the roof has been cut through by the 14th-century timber bell-tower at the W. end. Hayling belongs to a single building phase,

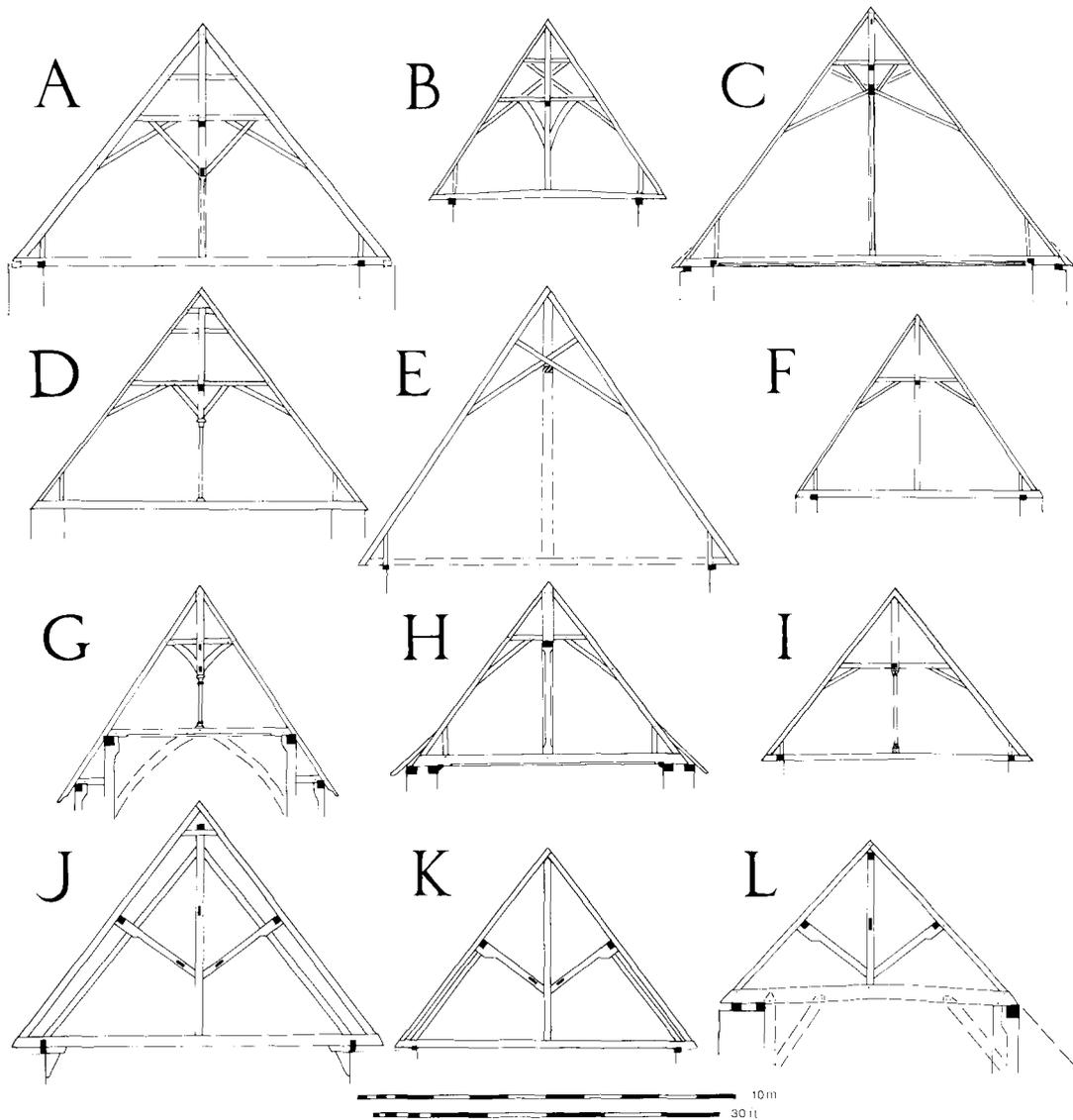


FIG. 3

A. St Augustine's, Canterbury: 'Guest Hall'; B. Eastbridge Hospital, Canterbury: Chapel; C. Christ Church, Canterbury: 'Table Hall'; D. Robertsbridge Abbey, East Sussex: Abbot's House; E. Chartham Church, Kent: Nave; F. West Stourmouth Church, Kent: Nave; G. Ratling Court, Aylesham, Kent: Hall; H. Old Vicarage, Maidstone, Kent: Hall (demolished); I. South Hayling Church, Hants: Nave; J. Chichester Cathedral, West Sussex: Nave; K. Bishop's Palace, Chichester, West Sussex: Chapel; L. Bishop's Waltham, Hants: 'Stable' (demolished)

possibly of the 1260s.²³ At Chartham, Kent the scissor-braced nave roof (Fig. 3, E) has at its centre the remnant of a similar arrangement, with only a fragment of the king-strut surviving above the collar, at the point where a sawn-off tie-beam survives at the top of the wall. The chancel of this church was being rebuilt in 1294, though it is possible that the nave roof is earlier, like the walls on which it stands.²⁴ King-struts also occur in the chapel roof of Dane Chantry near Petham, Kent, now heavily restored, and undated, but possibly 13th-century. At Grosmont, Gwent (Monmouthshire), a king-strut roof over the nave has been reported by Dr C. R. J. Currie.²⁵ This has longitudinal braces rising from king-strut to collar-purlin, and employs notch-lap joints at the outer ends of the collars and at the top of the braces and ashlar. Structural evidence suggests a 13th-century date for the roof, and there is a possible association with a royal grant of four oaks to the parishioners in 1240,²⁶ but this church requires fuller investigation before a firm date can be assigned to it.

In a secular building, the now demolished vicarage at Maidstone, Kent, had a plain, unbraced king-strut supporting lengths of collar-purlin (Fig. 3, H).²⁷ A timber-framed house, the aisled hall at Ratling Court, Aylesham, Kent,²⁸ has terminal king-struts in the hall, between which are one king-strut truss and one crown-post proper (Fig. 3, G). These buildings were probably built in the last quarter of the 13th century. A later date is likely for the Court Hall at Otford, Kent, with a king-strut in a dividing truss of an otherwise crown-post roof.²⁹

The terminal king-strut in the gable-ends of timber-framed buildings that otherwise have crown-post roofs seems not to have been uncommon in Suffolk, Essex and Hertfordshire in buildings that perhaps belong to the first half of the 14th century.³⁰ One curious occurrence is in the service wing of Tiptofts, Wimbish, Essex, perhaps of 13th-century date, where the crown-posts continue above the collar, but terminate half-way to the apex (except in the gables).³¹ This would allow for the attachment of short collar-lengths whilst dispensing with the additional support at the apex.

King-struts also occur in special situations when they have some additional function. The Eastbridge Hospital in Canterbury has them in the belfry, described above, as an integral part of the bell-frame. In Salisbury, Wilts., the Old Deanery roof has king-struts made of short pieces in the three trusses of the louvre at the centre of the hall.³² At Westminster Abbey, the truss next to the eastern apse (c. 1255–59) has an upper king-strut rising from collars, faceted to take the tops of the radiating rafters of the apse,³³ rather in the manner of the central post of a timber spire.³⁴

The roofs described so far can all be assigned to the 13th century, and some of them to the third quarter of the century. They are mostly on better-quality buildings, often ecclesiastical, and all were visible from below. All but Grosmont are in S. England, though this need not be an important factor, and it is quite likely that more will now be recognized elsewhere.

Related roofs, with side-purlins

A second group can now be described, which is of a different kind, but in some sense related. There are three roofs, two at Chichester, W. Sussex, and one at

Bishop's Waltham, Hants. The importance of the roof of Chichester Cathedral was recognised by Mr C. A. Hewett, and is the subject of a detailed recent study.³⁵ Dating from the second half of the 13th century, it has a very tall crown-post, with raking side-struts supporting purlins on each side: this survives for the full length of the nave and choir (Fig. 3, J). A smaller version of the roof has now been discovered over the Bishop's Chapel at Chichester (Fig. 3, K). Rather than a crown-post, this has a king-strut rising to the apex, and a similar arrangement of side-struts and purlins.³⁶ It must be nearly contemporary with the Cathedral roof, and the difference of design a reflection of the different scale of the two roofs. Almost identical to the Chapel roof was the domestic building, now demolished, in the Bishop of Winchester's palace at Bishop's Waltham.³⁷ This had a king-post carrying a ridge-purlin, as well as the side-purlins carried on the raking side-struts (Fig. 3, L). The character of these roofs is somewhat different from those in the first group, being double-framed with side purlins, and with a profile reminiscent of classical roofs and of the ubiquitous type made common in and after the 17th century.³⁸ However, their medieval date is beyond suspicion, and although rare in this country, there are several close parallels on the Continent, to which we must now turn.

Continental roofs

The publication of examples of roof carpentry in France and the Low Countries has for a long time provided comparative material for English work, though it has not always been accepted that they influenced the design of roofs in this country.³⁹ Undoubtedly the continental evidence provides a sequence that can partly be demonstrated in England, and is especially valuable for the earlier (12th- to 13th-century) period in the greater number of survivals from that time. There seems to be no reason why carpentry should have a markedly more insular development than masonry styles, and the appearance of insular idiosyncracies does not disprove knowledge of what was happening elsewhere.

The general outline of continental roof development has been stated before and only needs brief rehearsal here.⁴⁰ The earlier, Romanesque roofs had an identical series of trusses, mostly with tie-beams, the trusses being strutted and braced in a variety of ways. Often a central king-strut was present, but these roofs generally had no purlins or other form of longitudinal support beyond their outer covering. By the early 13th century central purlins were being used, and these often ran between king-struts; the number of tie-beams was reduced at the same time. Thus there came into being roofs with principal trusses carrying purlins that supported the plainer common trusses (though all with equal scantling).

These solutions to the problem of economizing in the use of timber whilst providing additional lengthways support were not immediately used in England, and there is some evidence that other means, such as side-purlins, were used here first.⁴¹ However, the roofs of the first group described above are hardly likely to have been independent, Kentish innovations, and they would seem to indicate that by the middle of the 13th century there were carpenters at work who had some knowledge of French roofing styles. The second group of roofs can be seen as providing direct

evidence for this. Lacking any parallels in England, the use of the king-post with raking side-struts is found in the early 13th-century barn at Maubuisson (Seine-et-Oise),⁴² in Amiens Cathedral,⁴³ and in St Walburga's at Veurne, perhaps of *c.* 1280.⁴⁴ The Chichester carpenter could not possibly have devised such a roof independently.⁴⁵ To an extent, these roofs are in a different class from the trussed rafter roofs, and their double framing may have a more southerly origin, as suggested by continental scholars.⁴⁶ However, the use of the crown-post, king-strut and king-post at Chichester and Waltham does also link them to the first group.

Crown-post roofs

The discussion of these variant types of crown-post roof and their affinities must be the starting point for an investigation of the appearance of the crown-post in England. Whilst the argument is partly typological, the chronological framework is important, and it is necessary to establish the date of the first crown-post roofs, though this is no easy matter.

It would now be agreed that the date of *c.* 1240 for the nave roof of Harwell Church, Oxon. (Berks.) is too early, and that it probably belongs nearer to *c.* 1300.⁴⁷ One of the earliest crown-posts may be that in the Old Deanery at Salisbury, Wilts., which was quite possibly built when Robert of Wykehampton was dean (1258–74), and may be identified with the building that he left his successors in 1277 after he had become bishop.⁴⁸ Nearly contemporary might be Manor Farm, Bourn, Cambs., which was perhaps built after a fire of 1266.⁴⁹ St Mary's Hospital, Chichester, W. Sussex, was probably built soon after the closing of a lane across the site in 1290 (and window tracery in the chapel confirms this).⁵⁰ The association of building accounts with existing structures provides dates of 1291–92 for the Black Hostry at Ely, Cambs.,⁵¹ of 1297–98 for the insertion of base-cruick and crown-post at Lime Tree House, Harwell, Oxon. (Berks.),⁵² and of 1293–1300 for the old Warden's Hall at Merton College, Oxford.⁵³

The stylistic dating of timber and masonry details suggests a date of 1280 or before for Bisham 'Abbey', Berks.,⁵⁴ of *c.* 1280 for Charney Basset, Oxon. (Berks.)⁵⁵ and the S. wing of Middle Farm, Harwell, Oxon. (Berks.), of *c.* 1290 for Old Soar, Plaxtol, Kent⁵⁷ and the 1280s or 1290s for Bushmead Priory, near Eaton Socon, Beds.⁵⁸ The domestic building at Halesowen Abbey, Worcs.,⁵⁹ is probably late 13th century, and the decoration of its crown-post capital links it to the two base-cruick halls of *c.* 1300 at West Bromwich, Staffs.⁶⁰ and Wasperton, Warks.,⁶¹ which are themselves similar to that at Grafton Flyford, Worcs.⁶² Another base-cruick with crown-post occurred at Moor Hall, Harefield, Middlesex, possibly of 13th-century date.⁶³ The transition from scissor-bracing or passing bracing to crown-post is hard to date in the aisled halls illustrated by Hewett. Place House at Ware, Herts., Priory Place at Little Dunmow, Little Chesterford Manor, Southchurch Hall and Bayhorne Hall, Birdbrook, Essex, are likely to belong to the last decade of the 13th century or the first decades of the 14th.⁶⁴ The dating evidence is almost entirely the decorated capitals of the crown-posts, which do not give much precision; an additional indication for some is the experimental nature of the jetty construction.⁶⁵

There are similar problems in dating the smaller church roofs listed by Fletcher and Spokes in Berkshire, which could easily be either side of 1300.⁶⁶

The crown-post roofs dated to the 13th century, listed above, typically have a tie beam spanning *c.* 20 feet (6m) and a pitch of *c.* 55°. The earlier ones can be characterized as having tall crown-posts, with or without capitals, and straight bracing. Later ones, as Merton College, Oxford and the Herts.–Essex group have shorter crown-posts and curved bracing. Thus the three-phase scheme suggested by Fletcher and Spokes might be revised by grouping together phases I and II, with the transition to phase III being in the 1290s.⁶⁷ As to overall chronology, it can be seen that examples firmly dated before 1290 are not numerous, but an origin in the 1260s does not seem impossible.

Conclusions

With this revised dating, it is possible that the first crown-post roofs are a decade or so later than the king-strut roofs of the Canterbury group, although none of the dating criteria discussed above would allow this as a positive assertion. Were it true, the crown-post could be seen as a simple development from the king-strut, by reducing the central member of the truss to a necessary minimum. If the king-struts were a continental import, then the crown-post could be an insular development. Alternatively, if both forms were in fact contemporary, then there might have been an element of choice between the two types. The greater spans at Canterbury and Robertsbridge could be significant, if the king-strut was felt to be more necessary in a larger roof; but this would not be relevant for the smaller (and possibly later) examples. Considerations of this sort were evident at Chichester, where a similar type of roofing used a crown-post and king-strut alternately, but with the crown-post being used for the larger roof.

It is more important to state these possibilities than to enunciate any definite solution to the problem. When there are more examples to consider, and better dating to rely on, it may be possible to give a more definitive account. In the meantime, there are some positive conclusions:

- (i) The number of king-strut roofs that date from before *c.* 1300 approaches the number of crown-post roofs from the same period.
- (ii) The roofs of Canterbury and Chichester imply direct knowledge of continental carpentry styles, even though this may not be apparent in other major English roofs of the 13th century.

ACKNOWLEDGEMENTS

We are grateful to the Headmaster of the King's School for allowing us to examine the St Augustine's building, to Mr and Mrs M. G. Rupp for giving us access to the Table Hall (Choir House) and to Canon Colin Tufton, the Master of Eastbridge Hospital. The drawings (Figs. 1 and 2) and the original surveys are the work of John Bowen of the Canterbury Archaeological Trust. The survey of Robertsbridge was generously made available in advance of publication by David and Barbara Martin of the Rape of Hastings Architectural Survey; information on Grosmont was kindly made available by Christopher Currie, and on Hayling by Grahame Soffe.

ADDENDUM

One further example of a king-strut roof has come to light in Canterbury since going to press; it is over the former Bakehouse of the Priory, on the N. side of Green Court, and covers a span of some 29 feet (8.8 m).

NOTES

¹ The description of the Canterbury buildings and other examples in Kent is the work of T. T.-B. and M. S.; the rest is by J. M.

² J. M. Fletcher and P. S. Spokes, 'The Origin and Development of Crown-Post Roofs', *Medieval Archaeol.*, VIII (1964), 152-83.

³ J. T. Smith, 'The Reliability of Typological Dating of Medieval English Roofs', 239-69 in R. Berger (ed.), *Scientific Methods in Medieval Archaeology* (California, 1970), 258-59.

⁴ E. Mercer, *English Vernacular Houses* (London, 1975), 82-95.

⁵ C. A. Hewett, *English Cathedral Carpentry* (London, 1974), 28-29.

⁶ In Dugdale's *Monasticon*; see also R. J. E. Boggis, *A History of St Augustine's Monastery, Canterbury* (Canterbury, 1901), opp. 9.

⁷ See drawings by S. Hooper of c. 1780 and T. Hastings of c. 1813 among others. See also A. J. B. Beresford Hope, 'Architectural Notes on St Augustine's College, Canterbury', *Archaeol. Cantiana*, 4 (1861), 60-62.

⁸ A. H. Davis (trans.), *William Thorne's Chronicle of St. Augustine's Abbey, Canterbury* (Oxford, 1934), 249-50.

⁹ *Ibid.*, 253 and 262.

¹⁰ This perhaps indicates that the staircase to the hall was originally external and squeezed between the S. end of the hall and the postulated early gatehouse and chapel.

¹¹ R. Willis, 'The architectural history of the conventual buildings of the monastery of Christ Church in Canterbury', *Archaeol. Cantiana*, 7 (1868), 55.

¹² Published in W. Somner, *The Antiquities of Canterbury* (2nd ed. London, 1703), 107.

¹³ The lower part of this S. wall of the Table Hall, which is also the N. wall of the Infirmary Hall, must date from the first half of the 12th century.

¹⁴ C. A. L. C. Almoner's Rolls 5, and Willis, *op. cit.* in note 11, 60 and 183-84.

¹⁵ *Ibid.*, 185.

¹⁶ For discussion of this matter with references cf. D. Knowles, *The Religious Orders in England* (Cambridge, 1948), I, 282. A. Hamilton Thompson identified the misericord at St Augustine's as SW. of the Infirmary Hall: *Archaeol. Cantiana*, 46 (1934), 191.

¹⁷ H. Wharton, *Anglia Sacra* (London, 1691), I, 142 mentions under Hathbrand's works '*Aulam quoque lapidem que dicitur "Mensa magistri" cum septem cameris adjacentibus pro infirmis*'; see also Somner, *op. cit.* in note 12, 107 where the new chambers and penteries in the Infirmary are also mentioned.

¹⁸ Willis, *op. cit.* in note 11, 59. This new *Deportum* built by Prior Chillenham, was perhaps (*pace* Willis) the large hall with a porch that was later incorporated into the northern part of the Deanery, originally the Prior's New Lodging.

¹⁹ W. H. Godfrey, 'Some Medieval Hospitals of East Kent', *Archaeol. J.*, 86 (1929), 102 and fig. 2.

²⁰ Perhaps relating to work after the refoundation of the hospital by Archbishop Stratford in c. 1342: Somner, *op. cit.* in note 12, 60-63 and app. XVII, p. 13.

²¹ See note 2 above.

²² Information from D. and B. Martin; I. Nairn and N. Pevsner, *The Buildings of England, Sussex* (Harmondsworth, 1965), 589 'mid 13th'; S. E. Rigold felt it to be more 1280 than 1250.

²³ G. Soffe, who brought Hayling to our attention, believes the nave followed the completion of the chancel by c. 1253 (this being the church serving the alien priory of Hayling).

²⁴ S. E. Rigold in *Archaeol. J.*, 126 (1969), 265-66.

²⁵ *Medieval Archaeol.*, xvi (1972), 179, and further details supplied by Dr Currie.

²⁶ *Close Rolls* 1237-42, 185.

²⁷ E. W. Parkin, 'The Old Vicarage, Maidstone', *Archaeol. Cantiana*, 80 (1965), 205-14; Mercer, *op. cit.* in note 4, 176 (224), pl. 53.

²⁸ E. W. Parkin, 'Ratling Court, Aylesham', *Archaeol. Cantiana*, 92 (1976), 53-64; A. D. Stoyel in *Period Home*, Vol. 3, No. 3 (1982), 10-14.

²⁹ A. D. Stoyel, *Otford's Medieval Court Hall* (Sevenoaks District Architectural History, 1980), 4-7.

³⁰ See note 64 below.

³¹ C. A. Hewett, *English Historic Carpentry* (London and Chichester, 1980), 126-28, fig. 112; see Mercer, *op. cit.* in note 4, 157 (128).

³² See note 48 below.

³³ R. W. McDowall, J. T. Smith and C. F. Stell, 'Westminster Abbey, The Timber Roofs of the Collegiate Church of St Peter at Westminster', *Archaeologia*, 100 (1966), 155-74, figs. 1 and 3; Hewett, *op. cit.* in note 5, 113.

³⁴ e.g. Hewett, *op. cit.* in note 5, 82.

³⁵ J. Munby, 'Medieval Carpentry in Chichester: 13th-century Roofs of the Cathedral and Bishop's Palace', 229-53 in A. Down, *Chichester Excavations*, 5 (Chichester, 1981).

- ³⁶ *Ibid.*, 239–41 (it replaces and partly incorporates a scissor-braced roof).
- ³⁷ Mercer, *op. cit.* in note 4, 163 (160).
- ³⁸ Munby, *op. cit.* in note 35, 245.
- ³⁹ F. Ostendorf, *Die Geschichte des Dachwerks* (Leipzig and Berlin, 1908); H. Deneux, 'L'Évolution des Charpentes du XI^e au XVIII^e Siècle', *L'Architecte*, n.s. 4 (1927), 49–53, 57–60, 63–68, 73–75 and 81–89; *Charpentes*, 1–3 (Centre de Recherches sur les Monuments Historiques, c. 1959 and 1972); H. Janse and L. Devliegher, 'Middeleeuwse bekappingen in het vroegere graafschap Vlaanderen', *Bulletin de la Commission Royale des Monuments et des Sites (B.K.C.M.L.)*, 13 (1962), 299–380 (Translation by John Harvey in Vernacular Archit. Group Library).
- ⁴⁰ Fletcher and Spokes, *op. cit.* in note 2; McDowall *et al.*, *op. cit.* in note 33; J. T. Smith, 'The Early Development of Timber Buildings: the passing-brace and reversed assembly', *Archaeol. J.*, 131 (1974), 238–63.
- ⁴¹ Discussed in Munby, *op. cit.* in note 35, 247.
- ⁴² *Ibid.*, 245; W. Horn in Berger, *op. cit.* in note 3, 30.
- ⁴³ Deneux, *op. cit.* in note 39, 68.
- ⁴⁴ Janse and Devliegher, *op. cit.* in note 39, 346.
- ⁴⁵ It is curious that one of his predecessors left his position to go on crusade, c. 1226–30: W. H. Blaauw, 'Letters to Ralph de Nevill', *Sussex Archaeol. Collect.*, III (1850), 75.
- ⁴⁶ Cited by G. Meirion-Jones in *Vernacular Archit.*, 9 (1978), 20 and 24; H. Janse in *Vernacular Archit.*, 11 (1980), 12–13.
- ⁴⁷ Information from Dr J. Fletcher.
- ⁴⁸ N. Drinkwater, 'The Old Deanery, Salisbury', *Antiq. J.*, XLIV (1964), 41–59.
- ⁴⁹ R.C.H.M., *West Cambridgeshire* (London, 1968), 24–25.
- ⁵⁰ Munby, *op. cit.* in note 35, 248; W. Horn and E. Born, *The Plan of St Gall* (California, 1979), ii, 91–95, figs. 341–43.
- ⁵¹ Fletcher and Spokes, *op. cit.* in note 2, 174–76.
- ⁵² J. Fletcher, 'The Bishop of Winchester's Medieval Manor House at Harwell, Berkshire, and its relevance in the evolution of timber-framed halls', *Archaeol. J.*, 136 (1979), 173–92.
- ⁵³ Hewett, *op. cit.* in note 31, pl. III; J. R. L. Highfield, 'The Aula Custodis', *Postmaster*, IV, no. 4 (1970), 14–22, correcting his *The Early Rolls of Merton College*, Oxford Historical Society n.s. 18 (1964), 59–62.
- ⁵⁴ J. Fletcher and C. A. Hewett, 'Medieval Timberwork at Bisham Abbey', *Medieval Archaeol.*, XIII (1969), 220–24.
- ⁵⁵ M. E. Wood, *Thirteenth-Century Domestic Architecture in England*, suppl. to *Archaeol. J.*, CV (1950), 9; *eadem*, *The English Medieval House* (London, 1965), pl. XLV B (*recte* A).
- ⁵⁶ J. Fletcher, 'Three Medieval Houses in Harwell', *Berks. Archaeol. J.*, 62 (1965–66), 45–69, esp. 48–49.
- ⁵⁷ Wood, *op. cit.* in note 55, 36–38 and pl. vii C respectively.
- ⁵⁸ N. W. Alcock, 'Bushmead Priory, Bedfordshire', *J. Brit. Archaeol. Assoc.*, 3rd ser. xxxiii (1970), 50–56.
- ⁵⁹ V.C.H., *Worcestershire III* (London, 1913), 138–39; cf. note 61.
- ⁶⁰ J. T. Smith, 'Medieval Roofs: A Classification', *Archaeol. J.*, 115 (1958), 141.
- ⁶¹ S. R. Jones and J. T. Smith, 'Manor Farm, Wasperton', *Birmingham Archaeol. Soc. Trans. Proc.*, 76 (1960), 19–28.
- ⁶² F. W. B. Charles, *Medieval Cruck-Building and its Derivatives*, Soc. for Medieval Archaeol. monograph ser. 2 (1967), 38–39.
- ⁶³ S. E. Rigold, 'Two Camerae of the Military Orders', *Archaeol. J.*, 122 (1965), 86–132.
- ⁶⁴ Hewett, *op. cit.* in note 31, 122, 129, 133, 134 and 140.
- ⁶⁵ *Ibid.*, 293–95 and app. 5.
- ⁶⁶ Fletcher and Spokes, *op. cit.* in note 2, 172.
- ⁶⁷ *Ibid.*, 169.