The development of carpentry in Bedfordshire, 1200–1550

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INTRODUCTION

Bedfordshire is a county containing a surprising diversity of timber-framed buildings, in terms of form, style and construction detail, with an amalgam of building techniques from both adjoining and more remote areas in the South-East. Its location has had the effect of making the county subject to many building traditions. For example, it is on the very eastern boundary of cruck distribution (Bailey 1979, 16–19), and the Wealden house is well represented in varied forms (Bailey 1977, 85–88).

Drawing mainly on my survey evidence, this paper sets out to give an overview of the development of carpentry in Bedfordshire's timber-framed buildings between 1200 and 1550. It will illustrate how in the 13th and early 14th centuries Bedfordshire carpentry was part of the evolving pattern in the South-East of the country, of which London was the focal point. It will then show that Bedfordshire continued, in the late 14th, 15th and 16th centuries, to belong to the South-Eastern pattern of carpentry, but at the same time began to develop its own particular county characteristics while retaining a surprising number of East Anglian carpentry techniques and building forms.

The evolution of framing, roof type, bracing and the main construction techniques will be discussed in some detail for a wide range of building types. This will show how adjacent counties, such as Buckinghamshire, have, like Bedfordshire, evolved away from the fairly common South-East form of the 13th and 14th centuries to their own almost individual county styles which differ from each other to varied extents.

Particular characteristics of Bedfordshire building construction will be discussed such as the early demise of the crown-post roof in favour of the clasped side purlin by the end of the early 15th century, and the early abandonment of the hipped roof. It can be seen in the case of the crown-post roof that there is almost a distinct cut-off line between Bedfordshire and Hertfordshire, to the west of which the crown-post roof fell out of use at this early date with very few exceptions.

Bedfordshire was open to external influences as a result of its position in relation to two major roads which intersect at Dunstable in the south-east of the county: the Icknield Way stretching from East Anglia down through to Wiltshire, and Watling Street linking from the West Midlands to St. Albans and London. There are also two major rivers with tributaries spreading across Bedfordshire: the Ouse running out to the Wash, and the Lea joining the Thames (Fig. 1). The geology of the county with its differences in vegetation has a strong influence on the building materials used. It varies from the chalk hills of the Chilterns in the south of the county, through clays, the Greensands and Oxford clay to the limestones in the north.

The growth of the monasteries played a very significant part in the development of early carpentry in the county, with common ideas being brought into play. Many of the oldest buildings in Bedfordshire are the surviving elements of monastic buildings and the dwellings and shops built to serve the communities that grew up around the many religious centres. There was also considerable secular building activity in the county in the 13th and 14th centuries, with manor houses being established or rebuilt, many within moated sites. Construction of timber-framed building continued across the county in the 15th and 16th century in both the towns and villages, with extensive rebuilding in the 16th century.

THE EARLY BUILDINGS

This survey begins with the evidence for 13th- and 14th-century buildings. The earliest of these would sit comfortably almost anywhere in the South-East. Hitherto, examples of aisled halls were thought to be rare in Bedfordshire. However, during an intensive investigation of the timber-framed buildings in the county, I identified a series of previously unknown early aisled and base-cruck halls which give an insight into the development of early timber-framed buildings in the region (Alcock and Barley 1981, 322).

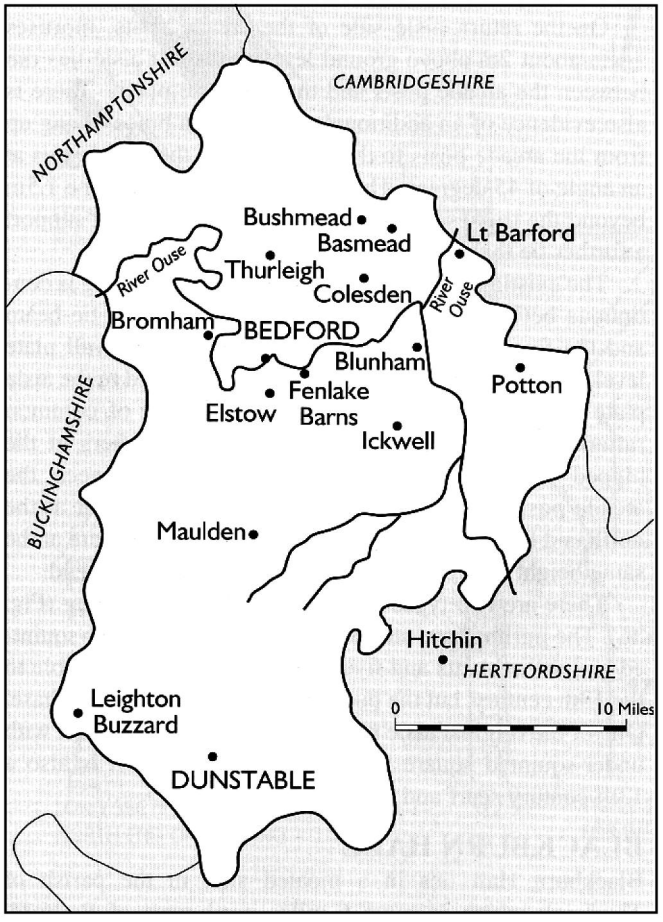


Figure 1

FENLAKE BARNS

This building was one of the range of buildings which formed the original grange of Newnham Priory. The Priory itself was to the north-west, across the River Ouse on whose southern banks Fenlake Barns sits. Between 1178 and 1181 the Augustinian Priory at Bedford moved to its new site at Newnham on the Bedford/Goldington border which recent excavations have shown to have been a major monastic establishment. Fenlake Barns belonged to the Priory until the Dissolution, when it passed to the Crown. Although called Fenlake Barns, the building was originally an early 13th-century aisled hall which unfortunately has now lost its aisles. It was first built as a two-bay hall with a room or rooms at either end within hipped aisle returns (Fig. 2).

An unusual and important feature of the original build is the very rare use of end crucks in the construction of the north and south end aisle returns. These are continuous crucks rising from floor to tie-beams which rest on cantilevered arcade plates. The cruck blade at the north end survives complete. The southern aisle return cruck blade is unfortunately missing but evidence for it remains.

The exact construction of the roof as first built is not clear, as there was a rebuild in the late 13th century when two extra trusses were added (nos. 2 and 4) with jowled posts, dividing the original two-bay hall into four bays. The rebuilt roof has side purlins laid flat and clamped between collar and rafter by a vertical strut in a similar manner to the Cressing Wheat Barn. The existing common rafters have two pairs of empty secret notched-lap joints which supported double collars. The arcade plates are original. The original build is of archaic construction, the three trusses from the first phase (nos. 1, 3 and 5) having arcade posts that taper out

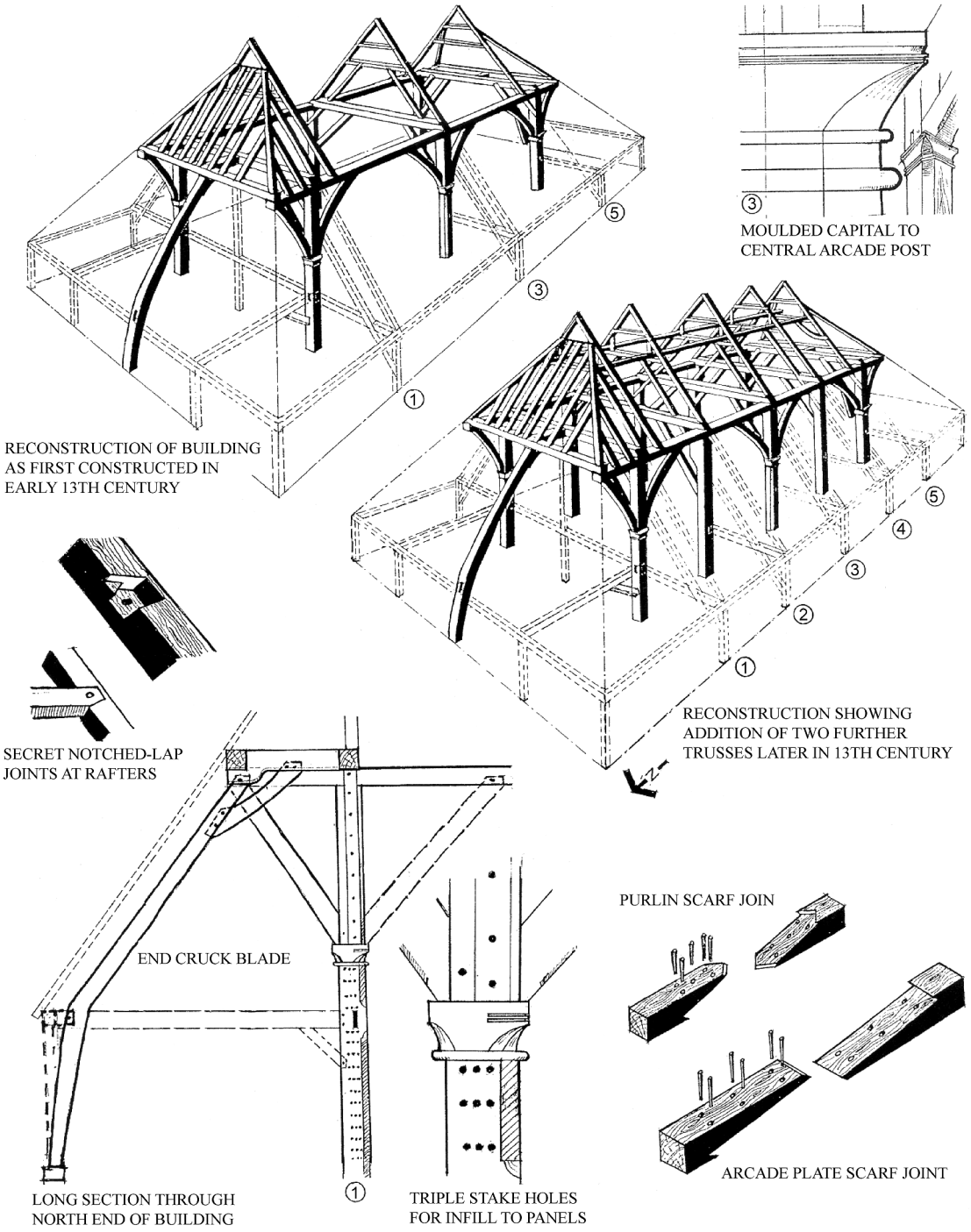

MOULDED CAPITAL TO
CENTRAL ARCADE POST
RECONSTRUCTION OF BUILDING
AS FIRST CONSTRUCTED IN
EARLY 13TH CENTURY
RECONSTRUCTION SHOWING
ADDITION OF TWO FURTHER
TRUSSES LATER IN 13TH CENTURY
SECRET NOTCHED-LAP
JOINTS AT RAFTERS
END CRUCK BLADE
PURLIN SCARF JOIN
ARCADE PLATE SCARF JOINT
LONG SECTION THROUGH
NORTH END OF BUILDING
TRIPLE STAKE HOLES
FOR INFILL TO PANELS

Figure 2

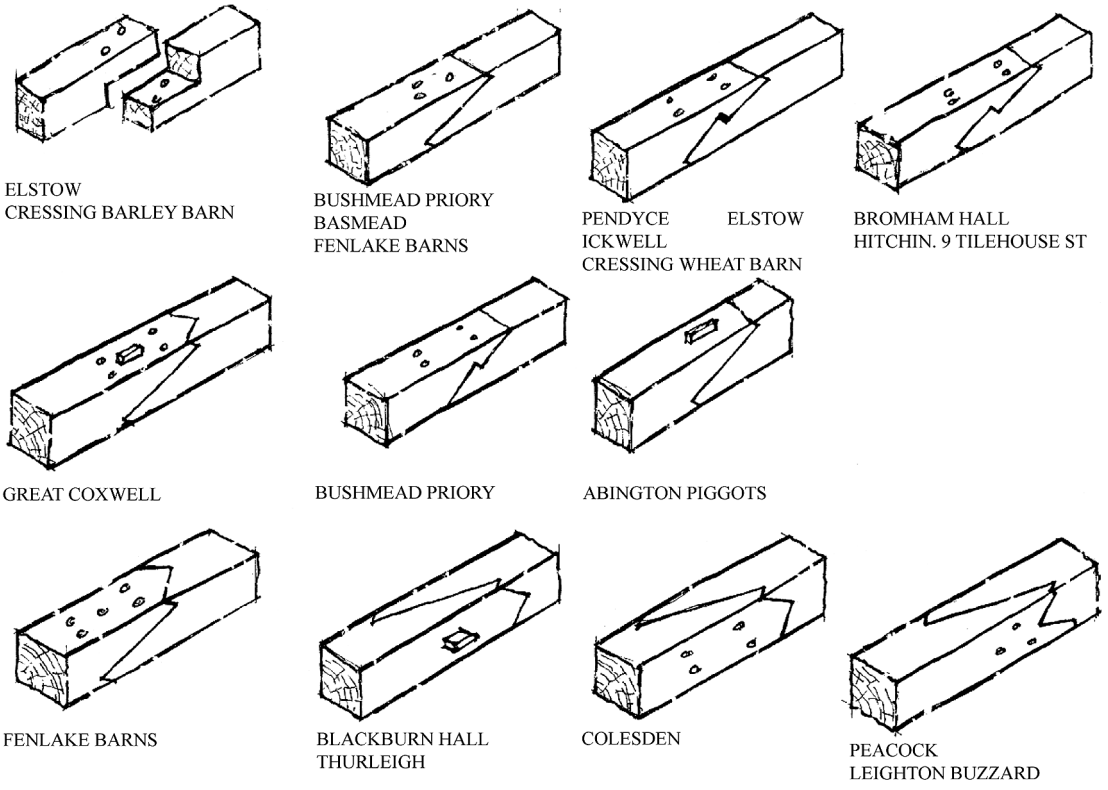


Figure 3

towards the bottom and with capitals of various but plain forms, carved out of the solid. The most elaborate capitals are on the arcade posts of the central hall truss. None of the arcade posts of this first phase are jowled, which suggests an early 13th-century date.

The central truss to the hall (no. 3) has octagonal arcade posts, the angles of which have a slightly concave chamfer. There is a mortise on the outer face of the posts for the aisle tie. The arcade posts of the hall central truss have braces which rise from the top of capitals up to the arcade plates where they are secured with central tenons; braces also secured with central tenons rise from the top of each capital to the underside of the tie-beam. These braces taper in both planes. There is a passing brace running from the collar, to which it is lap jointed, passing in a halving through the tie-beam and continuing down halving into the arcade post, whence it would have carried on down into the aisle post. There are chamfers on the braces rising up to the tie-beam and along the bottom corners of the tie itself, and on the lower corners of the passing brace between the tie and the aisle post.

The two original outer trusses (nos. I and 5) divided the two-bay hall from the rooms in the hipped aisle returns at either end. Both trusses are of similar construction. They do not have principal rafters fitted above the tie-beam. Braces tapering in both planes rise up from the capitals to tenon into the arcade plate. There were also passing braces halved into the tie-beam at the top, and passing the arcade posts down to the aisle posts.

The arcade posts on these two outer trusses bear evidence of the unusual nature of the techniques used for the infill on the truss line. At the north end (truss 1) there is a series of groups of three 25mm diameter holes, running up the inner faces of the posts, both below and above the capitals (Fig. 2). (Truss 5 is slightly different with two rows of holes). There is also a single row of vertical holes in the soffit of the tie-beam and the soffit of the braces between the capitals and the tie. This would seem to indicate that there were three rows of

horizontal wattling and one row of vertical wattling, somehow weaving together to form very large infix panels in a manner which we still have to research. Some 2m above ground floor level, there is evidence in both the inner and outer sides of the arcade posts for horizontal timbers in the order of 340mm high. At the centre of the tie-beam, on its underside, there is another mortise to take a vertical timber, coming down presumably to meet the horizontal timbers. It would appear, therefore, that there were quite substantial panels infilled with this wattle and daub filling.

On the return aisle side of the arcade posts, mortises again about 2m above ground level show that aisle ties ran between the arcade posts and the end aisle plates. There is also evidence of an additional mortise for a brace, rising up from the arcade posts to the underside of these aisle ties at an angle of 45 degrees. The arcade plates extend some 1.5m beyond the trusses at either end of the building and support a further tie that secures the top of the cruck blades.

The existing cruck at the north end of the building is continuous between the underside of this additional tie-beam and the floor level. At the rear of the cruck, at wall plate level, there is a mortise from which a tie spanned to the aisle plate at the north end of the building. A pair of common rafters have an additional collar to take the rafters of the hipped end. The horizontal beam running between the arcade posts at the south end is set lower than that at the north end from the mortise evidence. The aisle ties are at the same height, however, at the north end as the south end.

There are two types of scarf joints in this building (Fig. 3). The purlins have stop-splayed scarfs with under-squinted and sallied butts and five face pegs. These are datable to the 13th century, but the purlins may belong to a later phase. One of the original aisle plates has a stop-splayed scarf with under-squinted square butts and face pegs. This is also a 13th-century scarf and is some 1m long.

BLACKBURN HALL

Blackburn Hall lies in a moated site, in the parish of Thurleigh which is some six miles north-west of Bedford. Blackburn Hall itself marks the site of the ancient manor and lies a mile west of the church. The two-bay hall of the early 13th-century building survives at roof and first floor level (Fig. 4). The aisles have been removed. The overall hall length is approximately 10m and the upper bay, in which the smoke louvre is located, is approximately 0.5m longer than the other. This upper bay abuts a 16th-century cross-wing which was added at the north end of the hall replacing the original bay in this position. The hall was floored in the late 16th century.

The hall roof is of very early passing-brace construction. There are no purlins, and the common rafters have a single collar, with the exception of those on either side of the central truss, which have an additional collar slightly higher. In all three surviving trusses, the passing braces join the principal rafters with lap joints, and the collars are centrally tenoned as are the collars in the common rafters. All of the collars have the mortise-and-tenon joints pegged in both planes (Fig. 4). There are straight braces between arcade posts and ties in both end trusses to the hall. These are jointed to the tie with notched-lap joints with refined entry. These are also pegged in both planes.

Pegs driven down at an angle into the collar of the end hall truss (no. 1) which abuts the later wing are evidence that there was originally a hipped end, presumably supported on cantilevered arcade plates. The private rooms at the high end would have been contained within the return aisle.

The truss at the low end of the hall (no. 3) has evidence for several studs above and below the tie-beam. The high-end truss (no. 1) has a series of 25mm auger holes on the soffit of the tie-beam, with evidence for only a single central stud above and below the tie. The central hall truss (no. 2) has evidence on the soffit of the tie for arch braces in the form of a central mortise 1.7m long indicating that they were curving. The passing braces of the central truss are stiffened above the tie-beam by notched-lapped saltire braces. There are mortises under the arcade plates on their centre line for the arch braces rising from the arcade posts.

In the arcade plate, there is a scarf joint which is stop-splayed with under-squinted and sallied butts and an edge key (Fig. 3). This is similar to the scarf joint used in the top plates of the barn at Great Coxwell in Oxfordshire, except that the Blackburn Hall example is rotated through 90 degrees.

There are similarities between this building and the early 13th-century Barley Barn at Cressing Temple. Both have the rare feature of notched-lap joints with refined entry with pegging in both planes, as well as saltire stiffening. This combination of early features may indicate that Blackburn Hall is also of early 13th-century date.

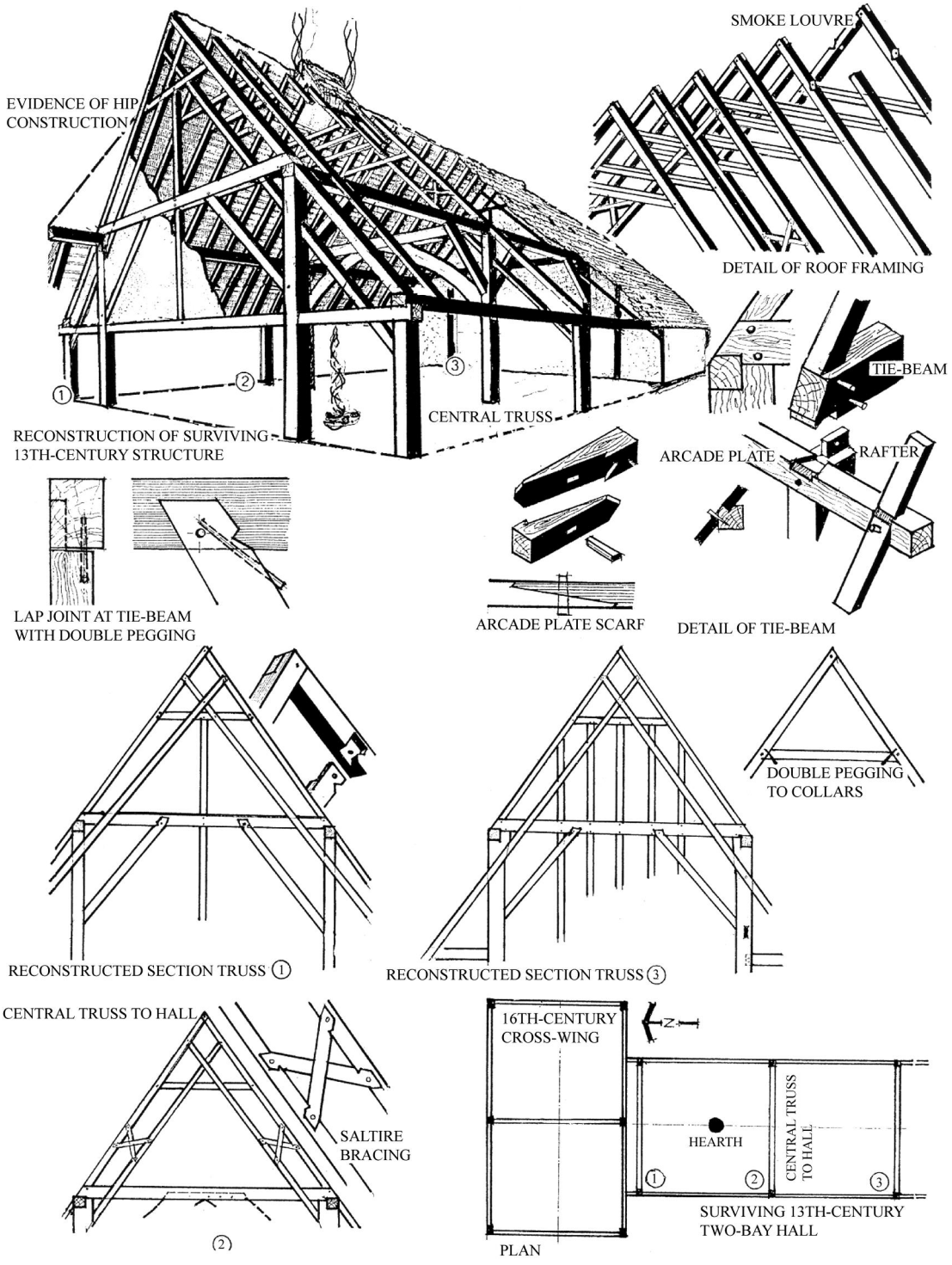

SMOKE LOUVRE
EVIDENCE OF HIP CONSTRUCTION
DETAIL OF ROOF FRAMING
TIE-BEAM
CENTRAL TRUSS
RECONSTRUCTION OF SURVIVING 13TH-CENTURY STRUCTURE
ARCADE PLATE
RAFTER
LAP JOINT AT TIE-BEAM WITH DOUBLE PEGGING
ARCADE PLATE SCARF
DETAIL OF TIE-BEAM
DOUBLE PEGGING TO COLLARS
RECONSTRUCTED SECTION TRUSS 1
RECONSTRUCTED SECTION TRUSS 3
CENTRAL TRUSS TO HALL
SALTIRE BRACING
2
16TH-CENTURY CROSS-WING
Z
HEARTH
CENTRAL TRUSS TO HALL
SURVIVING 13TH-CENTURY TWO-BAY HALL
PLAN

Figure 4

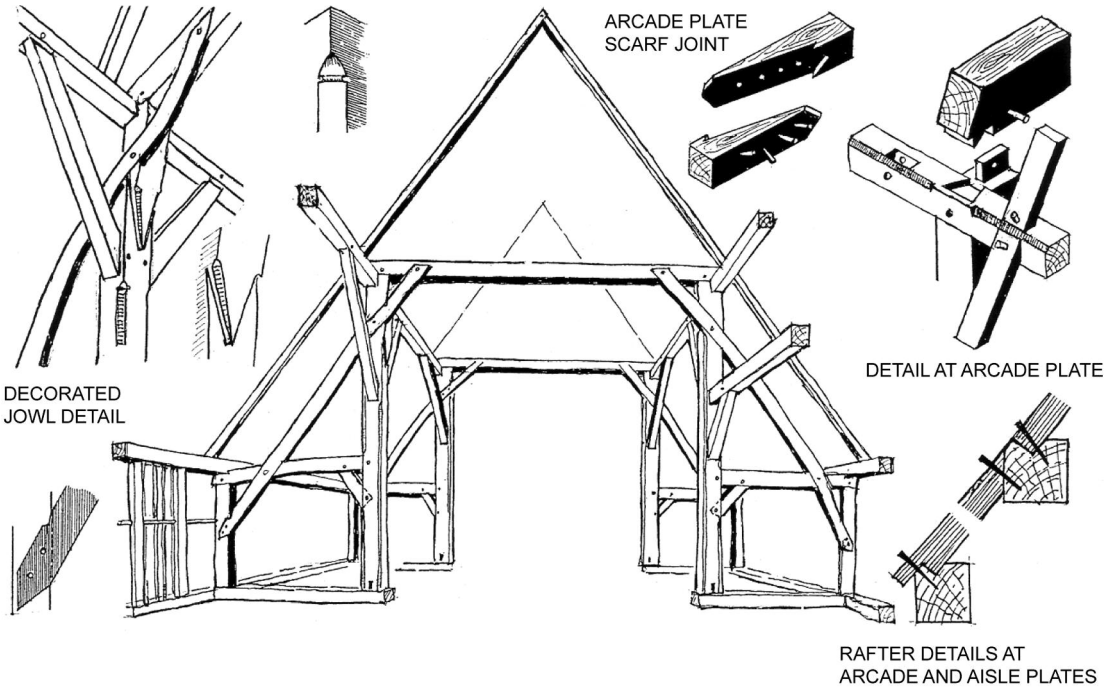


Figure 5

COLESDEN GRANGE BARN

Within this much reconstructed barn are preserved elements of the 13th-century structure. The roof has been totally replaced, but there are two original trusses which survive up to tie-beam level, one of them modified, and two reused arcade posts (Fig. 5). There are similarities to the Barley Barn at Cressing. There is no evidence of joints for principal rafters on lop of the tie-beams, and the evidence for the spacing of common rafters, seen on top of the arcade plates, shows that there was a common rafter close to either side of the tie and that the principal rafters were omitted. The passing brace rising up from the aisle post terminates in a lap joint in the side of the tie-beam. The aisles are reverse assembly and in one aisle post there is a notched-lap joint with refined entry pegged in both planes. The arcade posts have small jowls with those on the west side facing the barn entry having unusual decoration. The arcade posts also have raising holes. Both the braces between arcade post and arcade plate, and the short braces between arcade post and aisle tie, have V-shaped mortises. In the aisle plates, there are widely spaced stud mortises together with circular holes for wattle and daub. The scarf joint in the arcade plate is a stop-splayed scarf with under-squinted and sallied butts and edge pegs (Fig. 3).

The building would appear to be a little later than the Barley Barn at Crossing and Blackburn Hall. It has the same arcade scarf as Blackburn Hall, but without the key. Unlike the Barley Barn, the Colesden Barn has jowls. Blackburn Hall has two trusses with jowls and one truss without jowls. Is Blackburn Hall, with its purlinless structure, passing braces, saltire stiffening, lap joints with refined entry, and both jowled and unjowled posts, a transitional building, just later than the Barley Barn and of similar date to Colesden Grange?

BUSHMEAD PRIORY

This site is very useful for comparative analysis, as the roof of the surviving refectory building has been carbon-14 dated to 1280. The roof is of crown-post construction used in combination with passing braces. Lap joints were not used in the roof construction (Fig. 6). Two scarf joints were used. In the wall plate, there is a through-splayed and tabled scarf with two face pegs, and in the purlin, a stop-splayed scarf with squinted butts and three face pegs (Fig. 3).

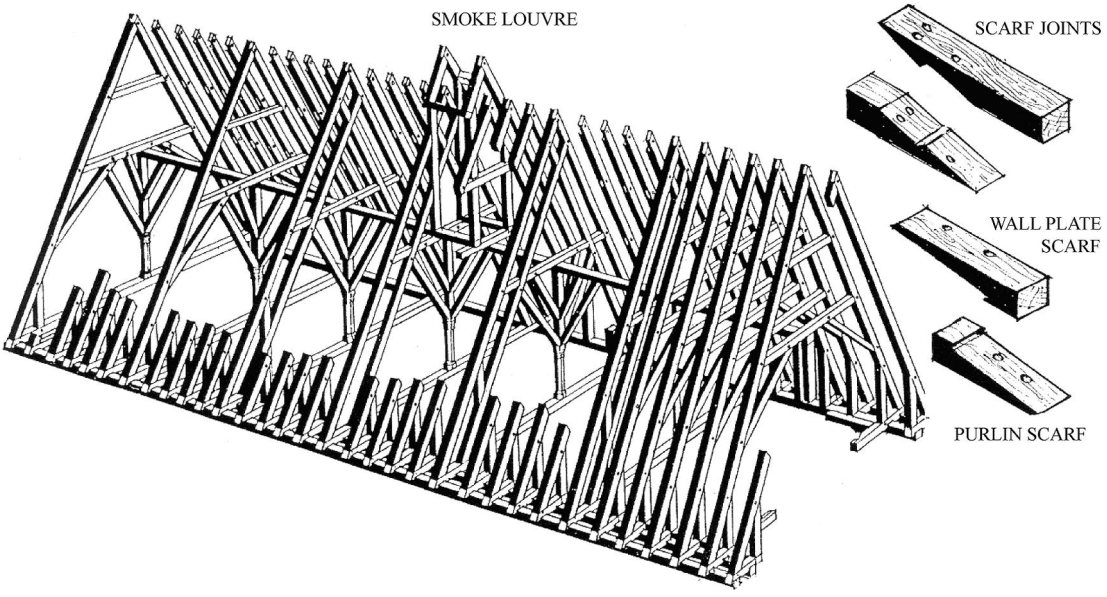


Figure 6

9 TILE HOUSE STREET. HITCHIN

This building, although just over the border in Hertfordshire, is included because of its unusual early framing. In the centre section of the building, between two later cross-wings, is the remains of a 13th-century aisled hall which has had the aisles removed. Only the roof of one half could be accessed. This is a two-bay hall with a central octagonal crown post with elaborately moulded capital and base (Fig. 7). The moulding at the capital includes a half roll with frontal fillet. The crown post height from bottom to top of capital is 600mm, and from base to purlin 1.9 metres. It should be noted that there are not any principal rafters on truss 2, the central truss. Straight square-section braces rise from either side of the capital to the underside of the purlin. The tie-beam is slightly cambered. The construction of the end trusses (nos. 1 and 3) is of great interest. They have a king post rising from the tie-beam to the apex of the roof, and the collar is halved through this post. The stiffening above the tie-beam on truss 1 comprises three straight braces on each side running parallel to the principal rafters. The upper brace on each side is tenoned into the king post, halved through both collar and tie, and tenoned into the arcade post. There is a stop-splayed scarf, with under-squinted square butts and face pegs, at the arcade plate (Fig. 3).

THORPE WATERVILLE, NORTHAMPTON

The roof of this stone building has similarities with 9 Tilehouse Street, Hitchin, and is also of 13th-century date (Fig. 8). Both have 'crown-post' roofs utilising king posts and mouldings incorporating half rolls with fillets. As at Hitchin, the purlins tenon into the king posts and the collars halve through the posts. Braces from the posts rise up and are jointed into the soulaces between principal rafters and collar. Mortice-and-tenon joints are used throughout the construction. Another example of a 'crown post' roof utilising king posts is the 13th-century cross-wing at Tiptofts, Wimbish, in Essex.

THE OLD HOUSE, ICKWELL GREEN

The core of the present house dates from either the late 13th or early 14th century. The main surviving section of the original building is of four bays and is about 50 feet (15.3m) long, each bay measuring just over 12 feet. This part of the building was originally aisled but the aisles have been removed (Fig. 9). One end of the building has a hipped roof; at the end opposite to this is a cross-wing. This is some 15 feet (4.6m) in span and is slightly lower in height than the main body of the building. The approximate height to the underside of the arcade

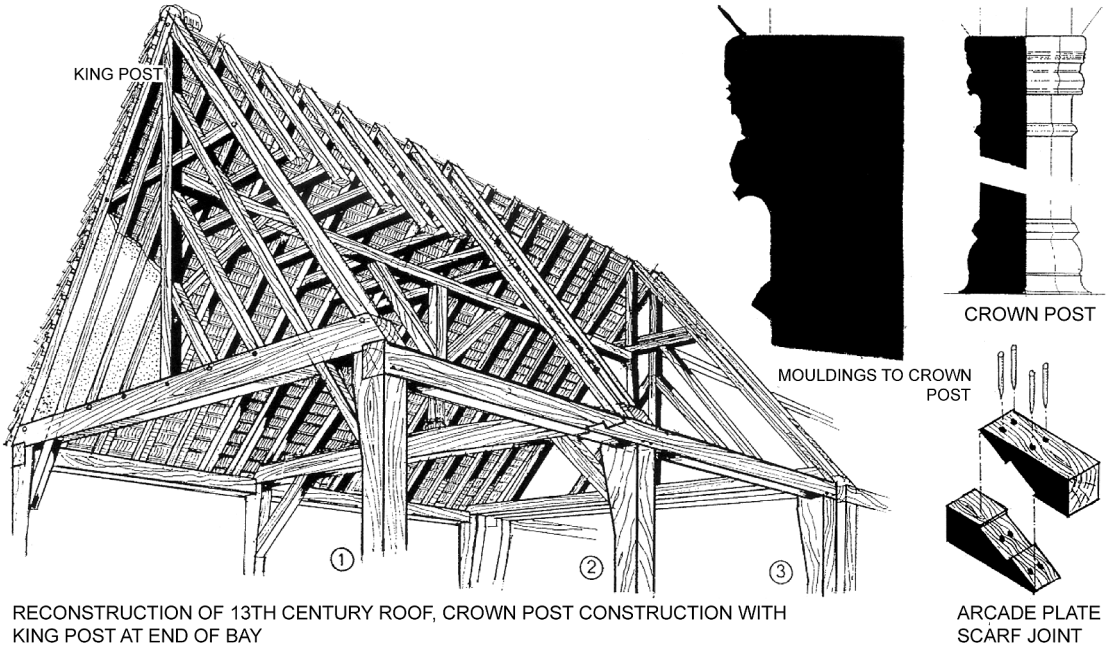


Figure 7

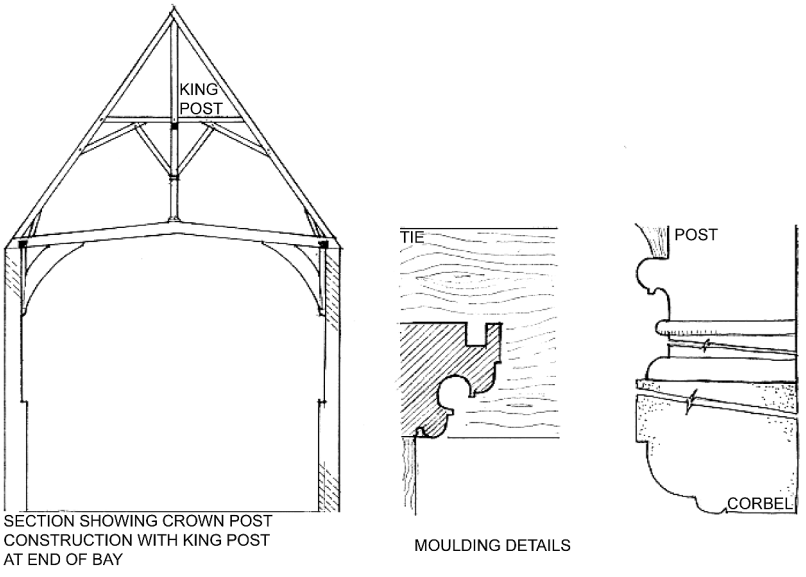
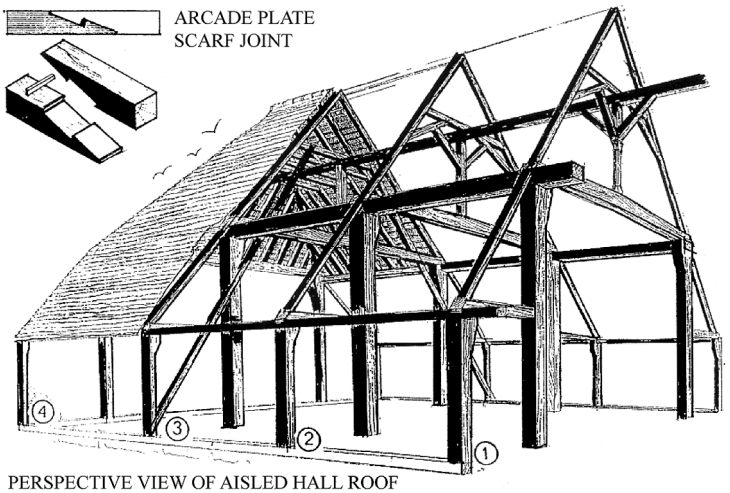
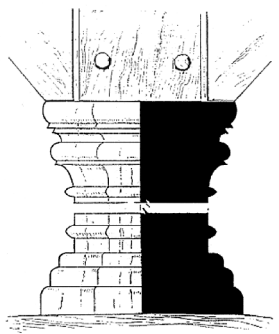


Figure 8

plates is 16 feet (4.9m). There is now little evidence of the early building below arcade or plate level, but fortunately the roof of both sections of the building survive mainly intact. The main section of the building only has been reconstructed on the drawing. The main four-bay part of the building is of crown-post roof construction. The upper sections of three trusses survive at roof level, as does the construction of the hipped end. The main truss (no. 1) at the centre of the hall has an octagonal moulded crown post with mouldings at both cap and base. The tie-beam is some 13 inches



PERSPECTIVE VIEW OF AISLED HALL ROOF



MOULDINGS TO CROWN POST

Figure 9

(330mm) wide and has a slight camber. The collar is the same width as the principal rafters. All of the joints on this truss, and throughout the building, are mortised and tenoned. (There are no lap joints in this building).

At the next truss (no. 2), the crown post itself and the braces are missing. All that survives is the collar and two braces rising up from the principal rafters to the collar. This truss has been reconstructed on the illustration from evidence for joints in the braces. The crown post is also missing from the truss nearest to the hipped end (no. 3), as is the purlin at this end of the building. The collar does, however, show evidence of passing braces. There is also evidence for only one of the passing braces striking the principal rafter near the apex, the other presumably finishing at its junction with the first passing brace.

The hipped end is virtually complete. There is evidence of a brace from the central rafter of the hip to the collar purlin. The collars are of the same width as the rafters and are joined to them with central tenons. It should be noted that there is an additional couple above the collar at the second pair of rafters along from the moulded crown post in the direction of the hipped end.

Only one arcade post survives. A single section of surviving arcade plate is accessible. It terminates at a break at a scarf joint. Only half of this scarf joint is preserved; it is stop-splayed and under-squinted, with square butts and four face pegs (Fig. 3). It most likely had a transverse key judging from the asymmetrical nature of the surviving element of the joint.

The ties to the arcade plate have lap dovetails with entrant shoulders. The earliest known date for this type of joint appears to be about 1270 at the Cressing Wheat Barn, but it does run on into the next century. The dovetail stops 75mm from the outer edge of the arcade plate and the tie-beam overhangs the arcade plate by 25mm. The common rafters have the ubiquitous 'puzzle' holes some 125mm above the arcade plate. There is evidence of the pegs on the side of the arcade plate for the aisle rafters.

BROMHAM HALL

Bromham Hall lies on the banks of the River Ouse, to the east of Bedford. The original core of the building is a medieval aisled hall with a central base cruck. Much of the early hall is hidden by 18th-century rebuilding, particularly at ground floor level. At the upper levels, there is access to investigate the original building above aisle plate level. The aisles have been removed in part in antiquity, but elements of them survive.

All that remains of the original building, which is possibly early 14th-century in date, is a two-bay hall section, a spere truss, the cross-passage, and the bay at the low end beyond the cross-passage (Fig. 10). The crown-post roof has square unchamfered posts with curved braces of thin section

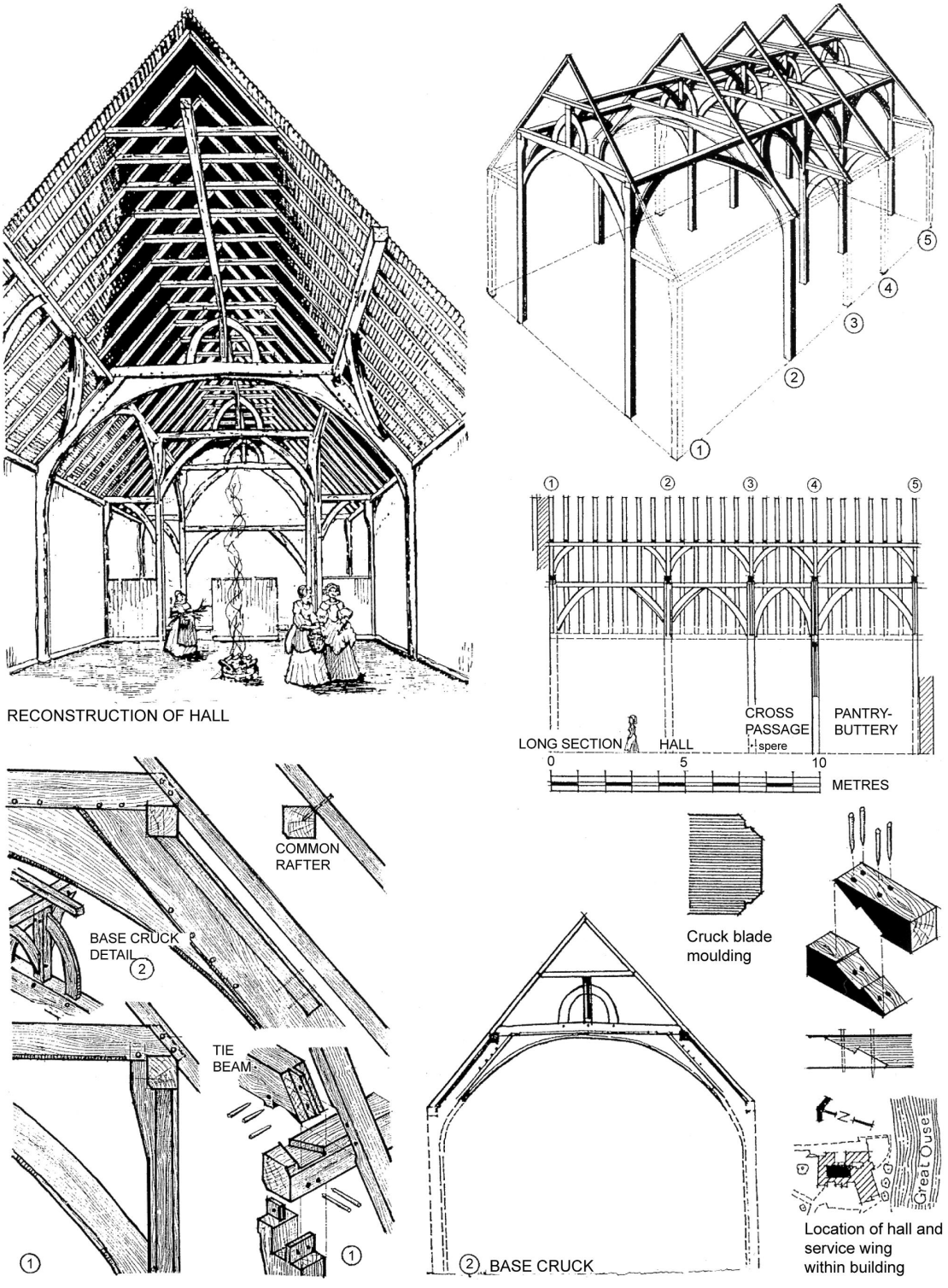

RECONSTRUCTION OF HALL
LONG SECTION
HALL
CROSS PASSAGE
spere
PANTRY-BUTTERY
0
5
10
METRES
COMMON RAFTER
BASE CRUCK DETAIL
TIE BEAM
Cruck blade moulding
BASE CRUCK
Great Ouse
Location of hall and service wing within building

Figure 10

rising upwards from the post to the underside of the purlin and downward from the post to the top of the tie-beam. The tie-beams have a slight camber and are chamfered. There are no lap joints, all the timbers being mortised and tenoned. There is evidence at truss 2 of the upper part of the base cruck blades and also of the spandrels. The cruck blade has a simple moulding. The principal rafter to the base cruck is continuous from the apex past the end of the tie-beam down to the aisle plate. The end of the tie-beam is tenoned into the inner face of the principal rafter (Fig. 10). The common rafters are also continuous from apex of roof to aisle plate and are pegged through into a chamfer on the top outer corner of the arcade plate. The arcade posts are jowled. There is a single scarf joint visible in the aisle plate. This is a stop-splayed and tabled scarf with under-squinted square butts and four face pegs (Fig. 3).

THE ELSTOW BUILDINGS

At Elstow there is a considerable number of interesting buildings which include the largest group of crown-post roofs in the county (Bailey 1978). Two particularly notable early buildings are discussed below. Elstow developed around the medieval Benedictine nunnery founded in 1070 by the Countess Judith, the widow of the Earl of Huntingdon and a niece of William the Conquerer. The nunnery was a focus of the village until it surrendered to the Crown in 1539.

The most remarkable surviving building of the group is no. 2, Bunyans Mead (Fig. 11). It is of early 14th-century — or perhaps late 13th-century — date and is a two-bay structure with a continuous jetty onto the main road elevation. The building is virtually complete except for damage caused by later inserted windows and certain modifications internally to the studding.

The two bays of the building are divided on the central truss by a timber-framed partition. The northern bay would appear to have been originally a shop, and the southern bay living accommodation. This is one of two buildings in Elstow identified as shops; the other at the southern end of the village is later in date (Bailey 1979). (In addition, there are six self-contained shops on the ground floor of the late 15th-century moot hall on the green).

The front elevation is embellished liberally with ogee braces, a most uncommon feature in Bedfordshire. The crown-post roof construction is archaic, using lap joints on the braces, and the collars of the common and principal rafters. The crown post is square with slightly chamfered corners below the braces. The crown-post braces are very slightly curved, and are as wide as the purlin and the collar respectively. The only scarf joint that survives is in the purlin, and this is a stop-splayed scarf with under-squinted square butts with a transverse key. Another archaic method of construction is the use of lodged floor joists. The spine beam supporting the first-floor joists is continuous from one end of the building to the other. It is supported on knees at the end walls and on either side of the central partition, and the joists simply rest on top of the spine beam. One of the surviving door openings has a pointed arch. These and other features would seem to indicate a late 13th- or early 14th-century date. Another example of a building with similar lodged floor-joist construction datable to the 13th century is Little Chesterford Manor in Essex (Hewett 1969, 37).

Abutting onto the rear face of this building is a hall, of apparently slightly later date. This hall has been badly mutilated over the intervening centuries and virtually all evidence below first-floor level has been destroyed. The hall also has a crown-post roof which is heavily soot blackened. The rear end of the hall is virtually complete above the tie-beam. There are curved downward braces between the crown post and the tie-beam, and there is joint evidence for braces below the underside of the beam and the surviving corner post. Unfortunately the west end of this hall where it adjoins no. 2 has been destroyed. On the centre truss of the hall the crown post and tie-beam remain with the curved braces intact. Below the tie-beam of the central truss, evidence of braces exist only from mortises on the underside of this beam which indicate that they curved across to meet the wall posts.

The scarf joint in the wall plate of the hall is similar in form to that in the purlin of the building above. There is also a scarf in the purlin of this building, which is of early form, being a simple edge-halved scarf with square vertical butts and two face pegs. This scarf (Fig. 3) was used for the main span top plates in the Cressing Temple Barley Barn which dates from c.1220 (Hewett 1969, 171).

At no. 8, Bunyans Mead, adjacent to the building discussed above, there are surviving elements of a base-cruck hall of probably 13th-century date,

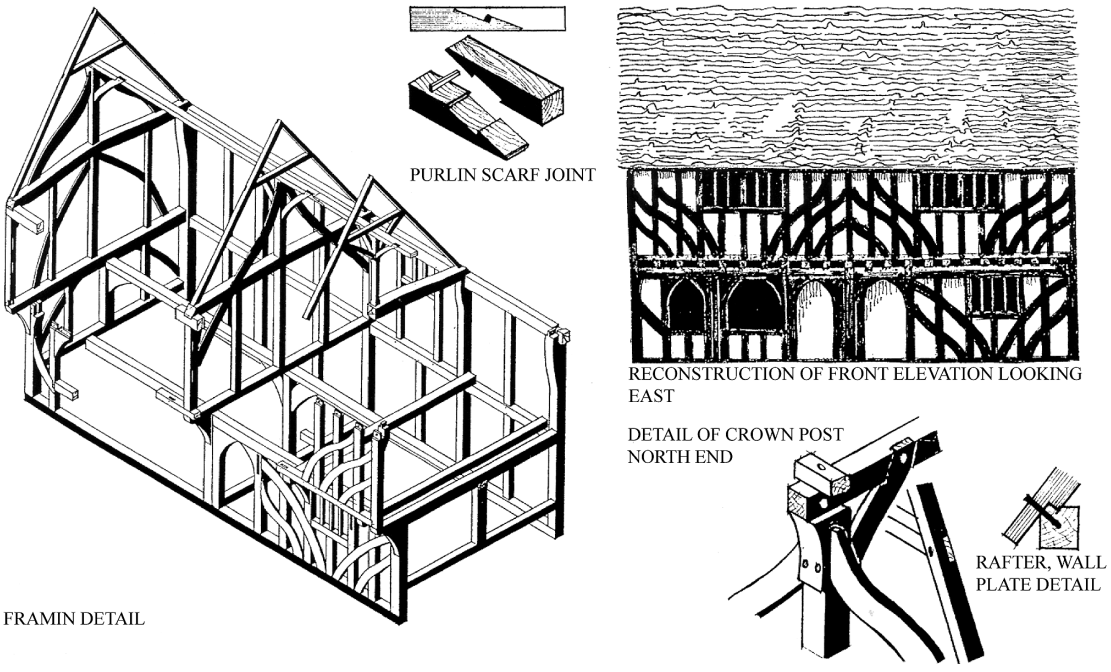


Figure 11

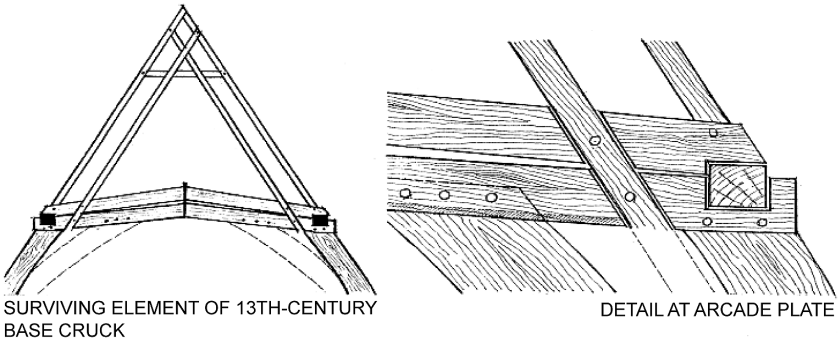


Figure 12

with a passing-brace roof (Fig. 12). Only the roof survives of the two-bay hall section as the aisles and arcade posts have been removed, and the bays at either end of the hall have been replaced by later cross-wings. The upper part of the base cruck survives together with the common rafters with their notched-lap jointed collars, all of which are heavily sooted.

The base cruck truss was of double-tie construction. The upper tie sits on top of the aisle plate in the conventional manner with the lower tie-beam in the form of a reverse assembly. The upper tie-beam measures approximately 225 x 175mm; the lower one is 270mm high. A vertical peg is driven downwards on the centre line of the upper tie-beam into the lower one. There are mortises under either end of the tie-beam for braces coming down to the cruck blades. There is also surviving at either side some 300mm or so of the top half of the cruck blades which are tenoned into the soffit of the lower tie-beam with two pegs.

The principal rafters are approximately 110mm square. They are tenoned into the top of the upper tie-beam, and are halved and pegged at the apex. The collar is lap jointed into the principal rafters. The passing braces, which measure 110 x 75mm,

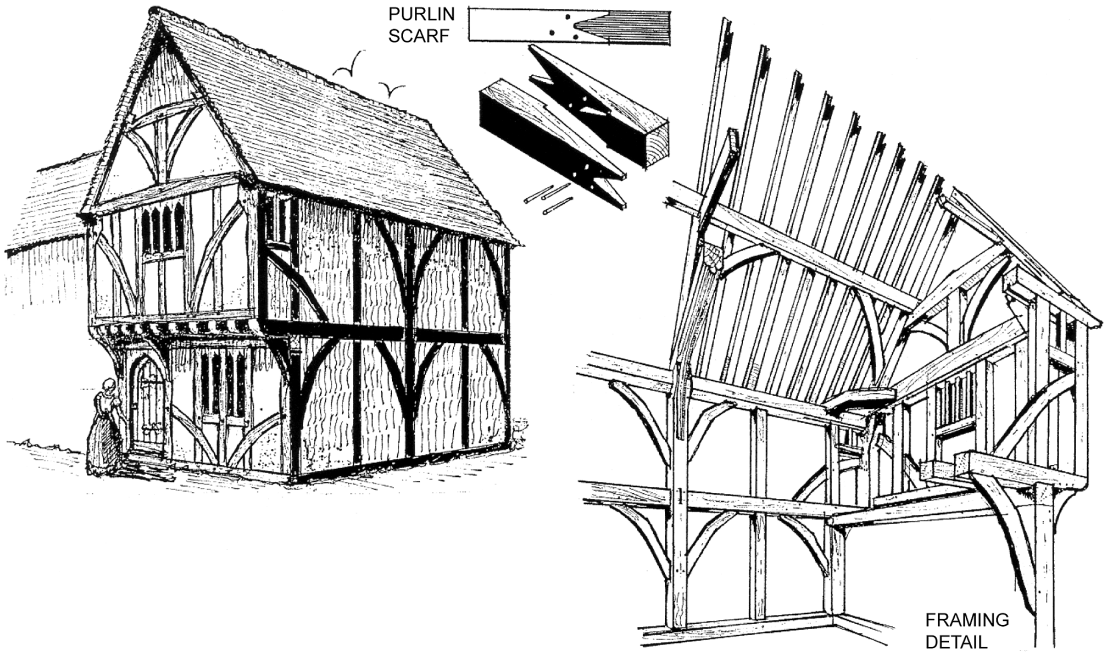


Figure 13

survive intact from the level of the bottom of the lower tie-beam. They are halved through both tie-beams and the collar, and lap jointed into the principal rafters near the apex.

BASMEAD MANOR

Of the early range, a major portion remains intact, comprising a three-bay unaisled hall and a two-bay upper end. It has a crown-post roof with tall plain square posts with slightly curved braces rising to mortise into the purlin, and braces which curve down to the tie-beams. The collars are halved onto common and principal rafters. A traceried eight-light window looks onto the hall from the parlour. There are simple stop-splayed scarf joints with under-squinted butts and face pegs in both top plates and purlin. These are of early type, but it has been suggested that the tracery indicates an early 15th-century date (Alcock 1969, 46).

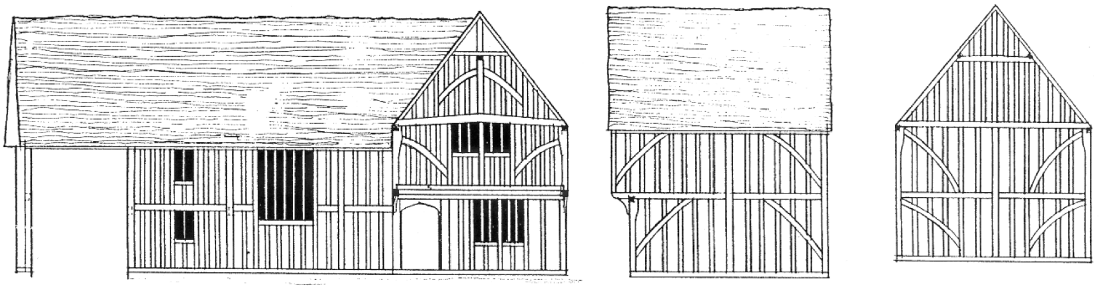
A building in Elstow opposite no. 2, Bunyans Mead, is of almost identical construction, with similar bay lengths and widths. Here survives a two-bay hall, the spere truss and the lower bay. Here too the crown posts are square and plain, with braces of similar width and thickness, arranged as those at Basmead.

THE PEACOCK, LEIGHTON BUZZARD

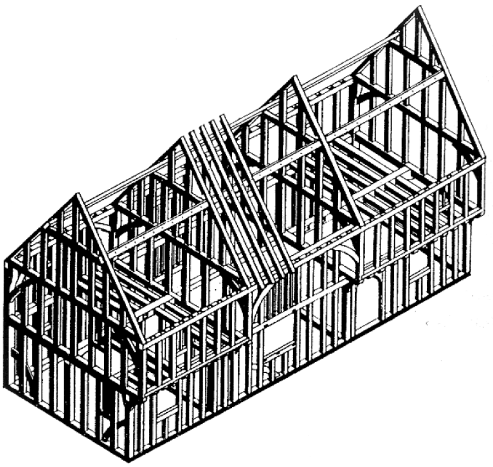
An early example of the use of clasped side purlins is to be found in the cross-wing to this hall-and-cross-wing building (Fig. 13), which has very early features such as angle ties between wall plates and tie-beams, and widely spaced studs. There is also the unusual combination of arch braces being used for the side frames, with tension braces at first-floor level at the front. The window mullions are square in section. There is also a stop-splayed scarf with edge pegs of unusual construction, almost certainly of early date, being very similar to the 13th-century ones at Fenlake Barns, Blackburn Hall, and Colesden Grange Barn (Fig. 3).

THE 15TH AND 16TH CENTURIES

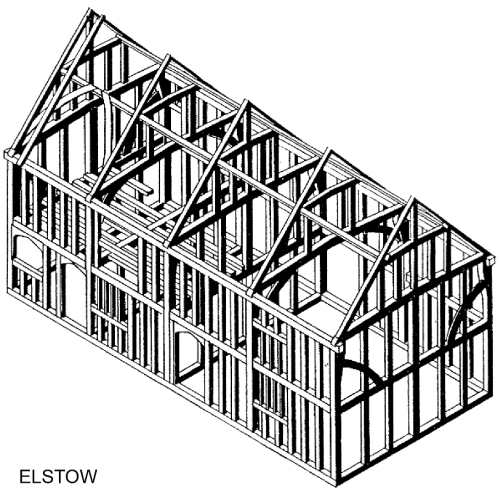
Bedfordshire timber-framing developed in the 15th and 16th centuries in a similar way to the Essex school to the east, and also had much in common with adjacent North Hertfordshire and Cambridgeshire. Characteristic of it are medium spaced studs (usually 150 x 100mm in section), a middle rail, and curved tension braces at lower and upper storey which are either exposed externally or internally. However, although confined usually to

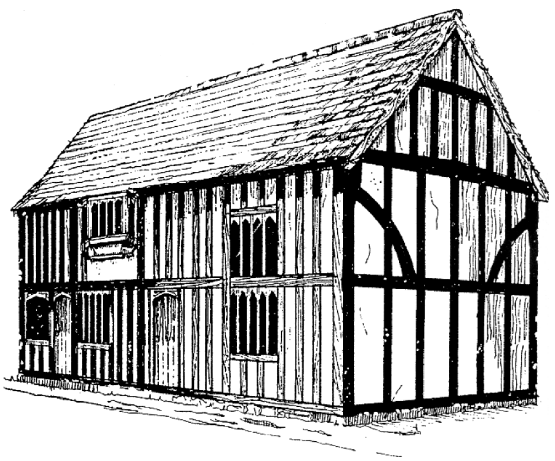


SUN HOUSE, POTTON: EXAMPLE OF COLCHESTER BRACING; HALL AND CROSSWING



LITTLE BARFORD, WEALDEN HOUSE





ELSTOW

Figure 14

earlier and later buildings, there was the occasional use of arch braces, sometimes in association with tension braces. There are some examples of 'Colchester bracing', such as Sun House, Potton (Fig. 14; Bailey 1980b). Generally the studs are pegged into position, in contrast with adjoining Buckinghamshire where this was not always the case.

From the early 15th century onwards, crown-post roofs were rarely used, although there is a large group at Elstow, as well as isolated occurrences throughout the county. The roofs are almost all clasped side purlin, usually with the principal rafter reducing above the purlin, though in some cases the principal is the same section throughout its length and notches around the purlin. There are also cases where the rafters reduce above the collar and then widen just before the apex for the halving. Ridge pieces are not used except in crucks. In buildings of higher quality, the purlins were sometimes tenoned into the principal rafters and perhaps moulded; indeed, it is not uncommon to find buildings with both clasped and tenoned purlins. Towards the end of the 16th century, there was a trend towards tenoned purlins.

There are many roofs in quality buildings with moulded braces to collar and tie-beam. Wind braces to roofs were arched up to the late 16th century when they would most likely be straight. In this period, tension braces also fell out of use in favour of arch bracing, often with a reverse curve. Externally, even the most important vernacular buildings were devoid of decoration and moulding, except perhaps for barge boards and a moulded bressumer. The use of dragon beams is uncommon; when they do occur, they are very simply moulded. Decorative infill panels began to appear round 1600 (Bailey 1975).

Bedfordshire houses of this period are of varied plan form. Hall and cross-wing buildings are numerous, usually very plain with few mouldings or decorations. There are several examples of Wealden houses (Fig. 14), some of which have two-bay halls and are five bays in length, while at the other end of the scale, one has a hall of only some 3m in length (Bailey 1977,1980a). There are also many examples of shops arranged in different ways. A fine pre-15th-century example in Dunstable, dated by dendrochronology to 1335, is of three jettied storeys with a total of six shops at the ground floor arranged back-to-back in threes (Bailey 1980c, 98). Others have a shop to the street with a smoke bay to the rear, and there are others with shop and accommodation side by side on the street. A good example of this can be found in Elstow High Street (Fig. 14). Here alongside the shop is a two-storey bay and a hall of a single bay. Perhaps the most significant building in this category is the Moot Hall at Elstow with its six shops and upper hall.

CONCLUSION

The 13th- and 14th-century timber-framed buildings in Bedfordshire show marked similarities in style and construction to contemporary buildings in other counties in south-east England, pointing to a common root which is thought to be London. The great similarities in form and construction between some of the Bedfordshire buildings which have been discussed here, and the great barns at Cressing Temple, illustrate the large area of common influence.

In the 15th and 16th centuries, Bedfordshire buildings still follow in many ways the form and construction of those in Essex and the adjoining counties. However, there are differences in Bedfordshire, such as the discontinuation in the use of crown-post roofs which only occur rarely in this period, and the abandonment of the hipped roof.

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