BASE CRUCKS IN SOMERSET

I: GLASTONBURY ABBEY FARM AND THE PRIORY OF ST. JOHN, WELLS

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Since Sir Robert Hall published his 'Catalogue of Cruck Roofed Buildings in Somerset'[1] in 1970 and 1973, the number of such buildings recorded has risen to over 300. The majority are of jointed-cruck construction in which each cruck blade is formed of two lengths of timber with either a mortice and tenon joint at the 'elbow' at eaves level (Fig. 1) or more rarely a face-pegged joint (Fig. 2) as discussed by R. G. Gilson in Vol. 120 of *Proceedings*.[2] About 40 of the buildings have true crucks in which naturally curved or elbowed timbers rise without a joint from base to apex. The widths of buildings spanned by both these forms is usually c. 16ft. to c. 18ft. Lateral stability is given to each pair of cruck blades by a collar beam approximately halfway up the roof slope which in an open truss is often archbraced (Fig. 3); alternatively if the truss is closed to form a partition between rooms or a gable wall there is a tie beam at about eaves level (Fig. 4).

To span widths greater than was possible with the lengths of timber available for true crucks two alternatives were adopted:—

(a) EXTENDED CRUCKS in which the blades are extended by a length of timber added *above* the collar to reach the apex, jointed so as to maintain a true cruck profile (Fig. 5); these should not be confused with base crucks and two-tier crucks described below. Seven examples have so far been recorded. Three of these were listed by Sir Robert Hall[1] as 'Compound' crucks at Butleigh Court, West Camel barn and Englishcombe barn which latter also has some base crucks, and four others are now recorded at Wick Farmhouse, Norton St. Philip, the (ex)Manor House, Croscombe, Brick House (wing), Drayton and Strangman's, Heale, Curry Rivel. The term *Extended Cruck* has been adopted by the Vernacular Architecture Group in preference to 'Compound'.

(b) BASE CRUCKS in which the blades rise only as far as the lowest transverse member (Figs. 10, 15, 16) which, although the equivalent of the collar beam mentioned above in all other forms of cruck structures, is referred to in this context as a tie beam since it corresponds to the tie beam of an aisled post truss, an alternative form of roof structure closely associated with base crucks as indicated below. Above this member, the tie, the roof may have a variety of forms.

The generally accepted definition of a base cruck adopted by N. W. Alcock and M. W. Barley[3] includes those where the feet are set part way up in the walls (provided they are well below eaves level) as in the two buildings described below and in others to be described in subsequent papers; these are known as *Raised Base Crucks*, a preferable term to 'Middle Crucks' used by E. Mercer[4] who restricts the use of the term base crucks to those rising from ground level.

In Somerset where solid walls predominate (in contrast to timber-framed walls in some other counties) the setting of the cruck with shortened upright at an appreciable height in the walls was a logical early development and does not necessarily imply a late date nor any degree of imperfection as suggested by Mercer. Because of his restrictive definition of base crucks his distribution map[5] gives a less complete picture than does that of Alcock and Barley.[6]

A further aspect of the problem discussed by the latter[7] is the realization that with stone walls not only need the blades not rise from the ground but that they need not descend below the wall tops; when this occurs and the uprights disappear the roof can no longer be called base cruck and the term *Short Principal* is applied (Fig. 6). In some buildings an intermediate stage has been reached where the uprights are very short and set only slightly below wall top level; such roofs are best referred to as having *Curved Principals* (Fig. 7), and it is sometimes a matter of opinion to which class they belong, although typologically they may be regarded as related to base crucks.

In those roofs where the upper structure consists of small crucks supported on the tie, and known as *Two-tier Crucks* (as in the buildings here described; Figs. 10, 15 & 16), one other further development occurred in which the blades were extended past the tie to engage the feet of the upper crucks (Fig. 9) (as at Bridge Farmhouse, Butleigh). These are no longer strictly within the definition of base crucks but will be included in a future paper. A similar development occurred with short principals as at the Abbot's Kitchen, Muchelney. Forms of the upper structure, other than the two-tier cruck, which are found in Somerset will be discussed at a later date in connection with the buildings in which they occur.

Examination of the overall distribution of base crucks reveals that the earliest are within the area of cruck construction but especially towards its boundary with the more easterly area of aisled-hall construction. It has thus been concluded that base crucks are a hybrid derivation of these two constructional methods; they combine the best features of both—a means of roofing a building of greater than usual span without the obstruction caused by rows of aisle posts. Compared with the average 16-18 ft. of normal cruck buildings the internal widths of base cruck buildings in

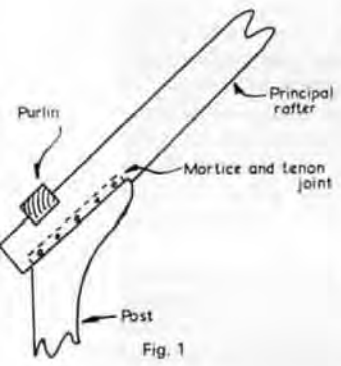


Fig. 1

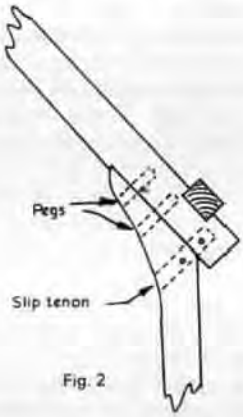
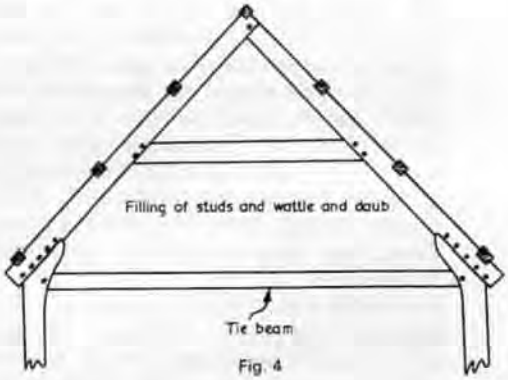


Fig. 2



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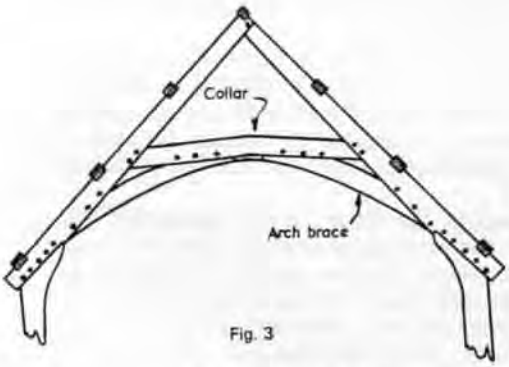

Fig. 3

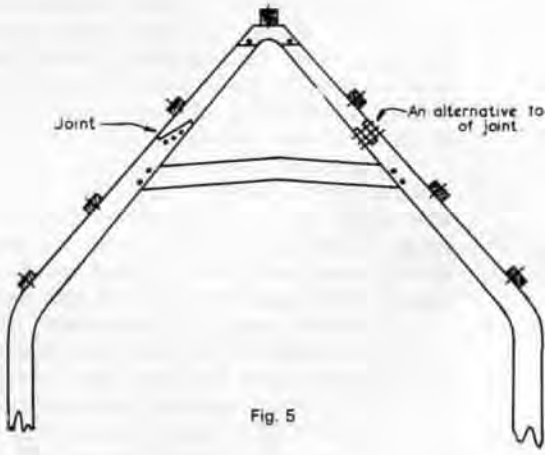

Fig. 5

Fig. 1. Mortice and Tenon Jointed Cruck.
Fig. 2. Face-pegged Jointed Cruck
Fig. 3. Open archbraced collar beam Jointed Cruck
Fig. 4. Closed Jointed Cruck with tie and collar beams.
Fig. 5. Extended Crucks

Somerset are: Doulting barn 27 ft. 2 ins., Englishcombe barn, 24 ft. 9 in., Glastonbury barn, 26 ft., Pilton barn, 28 ft., West Pennard Court barn, 20 ft. 6 ins., Bratton Court, Minehead, 24 ft., The Court House, Long Sutton, 22 ft. and the Tudor Tavern, Taunton, 25 ft. At the Priory of St. John, Wells, with a width of only 19 ft., and even more so at Hannam Manorhouse, Cheddar, with massive timberwork in the solar and a width of only 13 ft. 6 ins., such an elaborate roof is not a structural necessity and it must have been adopted as a status symbol. Hannam Manor is in fact the second-smallest base cruck roof recorded in the country: the smallest listed by Alcock and Barley[8] is in the upper chamber of the cross wing of the Abbot's Grange, Broadway, Worcestershire, where it was used for the sake of similarity with the hall roof. It is possible that the Hannam Manor solar roof may also be an imitation of that in the hall (now destroyed) but this was probably only 19 ft. wide. Indeed, all these buildings were the property of wealthy owners of high social standing, an aspect of base cruck buildings discussed by J. W. Tonkin for Herefordshire.[9]

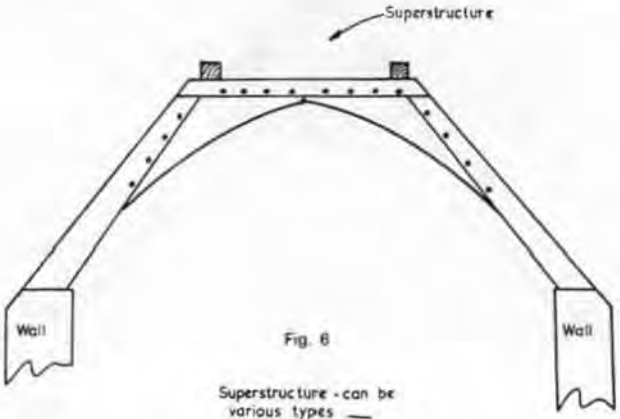

Fig. 6

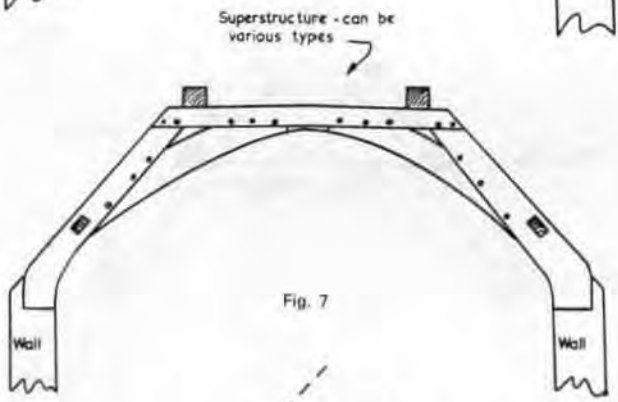

Fig. 7

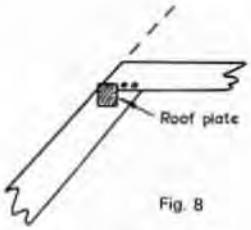

Fig. 8

Fig. 6. Short Principals
Fig. 7. Curved Principals
Fig. 8. Tie below the roof plate of a Base Cruck

In all the Somerset buildings except Englishcombe the aisled-hall ancestry is also seen in the square-set roof plates at tie-beam level (in contrast to normal purlins set in the slope of the roof) which are the counterparts of the arcade plates carried on the posts of aisled halls. Although no aisled trusses exist in any of the barns at Long Sutton Court House and at Bratton Court the ends of the roof plates are in fact carried on pairs of aisle posts, at the former the posts are admittedly short and set high in the walls, as are the crucks, and at Bratton Court, where it is not known at what level the feet are set, the roof plates are trapped *below* the tie of the base cruck truss (Fig. 8), an arrangement that is typologically earlier than that with the plate resting on the tie. At West Newton Manor Farmhouse, near North Petherton, a pair of posts remains at each end of the hall and there is one of a pair at the lower end gable rising from the ground; unfortunately the central truss of the hall has been removed without trace so that it cannot be ascertained whether the building included base crucks or was completely aisled. At Englishcombe there are no roof plates, all purlins being set in

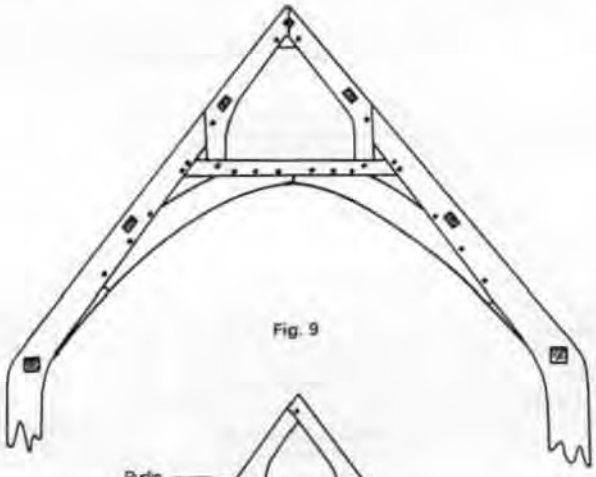

Fig. 9

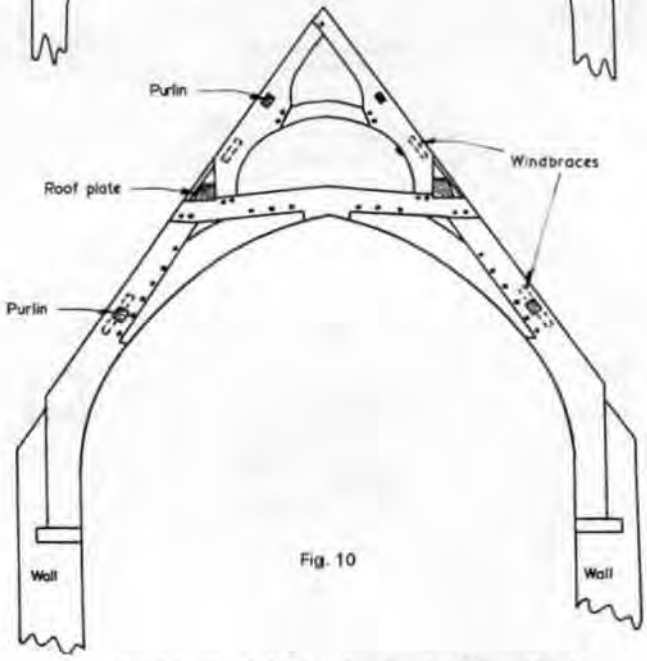

Fig. 10

Fig. 9. Main Cruck blades clasping the Upper Cruck
Fig. 10. Glastonbury barn, Main Truss

the roof slope, without regard to the position of the tie, and in the absence of any aisle posts it may well be a development from true crucks, its composite nature being an alternative method of overcoming a lack of adequately long timbers as in the extended crucks previously mentioned.

THE ABBEY BARN, GLASTONBURY

Compared with some other monastic barns, that at Glastonbury, which is 93 ft. long by 33 ft. 9 ins. wide externally, is not large, but it is one of the finest both for the quality of the masonry, the exquisite detail of the ornamentation and the splendour of the roof. The walls, over 3 ft. thick, rise to 16 ft. at the eaves; and the ridge of the roof is 40 ft. high. At mid-length of both sides is a porch 16 ft. long by 18 ft. with walls of

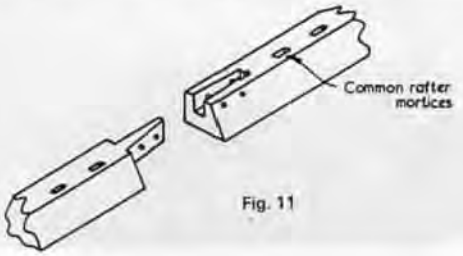

Fig. 11

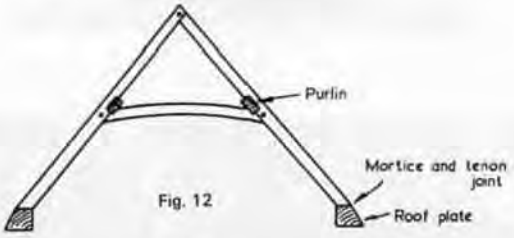

Fig. 12

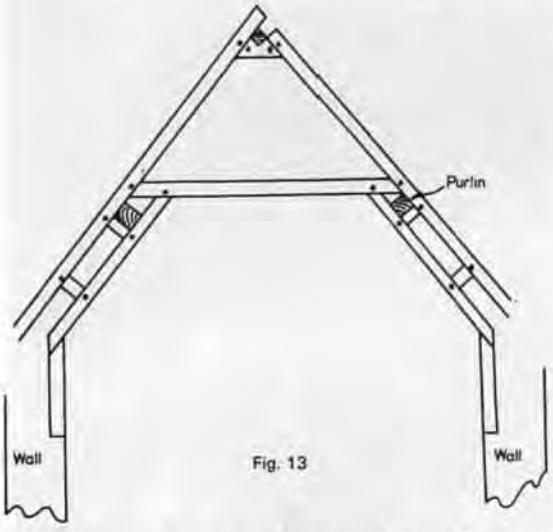

Fig. 13

Fig. 11. Glastonbury barn, Roof Plate joints
Fig. 12. Glastonbury barn, Intermediate Truss
Fig. 13. Glastonbury barn, Porch Roof

Glastonbury Abbey Barn
Junction of base cruck, tie beam and roof plate

Glastonbury Abbey Barn
Upper cruck standing on the tie beam

similar thickness, in which the doors are set in deeply four-centred arches with two plain 45° chamfers separated by a step and stopped with half pyramids. At each side of each porch is a two-centred door opening of which the inner arch is segmental. In each porch gable is a window of two trefoil-headed lights in a square frame with reserved chamfers combined with hollow mouldings; the mullions have a roll and double-hollow moulding. A scroll dripmould extends almost the full depth of the window. At the apex of each main gable is a traceried window of three trefoiled lights within a two-centred frame moulded like the porch windows, and of a style typical of church architecture of the Decorated period.

Below the windows in the main gables and above those in the porches, the emblems of the four Evangelists are carved within quatrefoil frames: St. Mark, a winged lion, on the south, St. Luke, a winged bull, on the north, St. John, an eagle on the west and St. Matthew, an angel, on the east. A human head is carved on the kneelers of each of the main gables which are topped by half-sized statues, that at the west of a bishop, possibly the founder, that at the east of the Virgin Mary. The porch gables terminate in crocketted finials and unidentified animals stand astride the side buttresses.

The *roof* consists of eight raised base-cruck trusses set on horizontal timber baulks halfway up the walls and carrying a superstructure of upper crucks (Fig 10); these 'two-tier' crucks represent the crowning achievement of the cruck tradition and are peculiar to the south-west of England. An upper and lower row of purlins are tenoned into the upper and base crucks respectivly, a typical medieval arrangement; between these are roof plates of heavier section, not in the slope of the roof, which are carried on the ends of the ties. Surprisingly these plates are not secured in any way to the ties, nor are they trapped by the upper crucks as at the Priory of St. John, to resist tilting moments due to thrust from the common rafters, yet they show no signs of displacement. They are in bay lengths with tongued joints above the ties (Fig. 11). Replacement of some plates during repairs has enabled this feature to be clearly seen.

The common rafters, in separate lengths of timber above and below the roof plates, have in the past been replaced and are now supported at their apices by a small ridge purlin, but the latter is an addition and originally each pair would have been joined by a side-lapped joint at the apex as at the Priory of St. John. There are intermediate trusses (Fig. 12), as are frequently found in early major buildings in Somerset, carried on the roof plates midway between the main trusses; in these the clasping of the upper purlin by the collars, like the absence of the ridge, is more commonly found in eastern England. There is thus hybridization of the eastern carpentry tradition and the western cruck tradition. Most unusually no carpenter's marks are to be found.

The completely new roofs built on the porches in 1976/77 are an exact copy of those previously existing (Fig. 13) but these were themselves replacements (of the 19th century?) in a style showing no affinities with the main roof, although from the evidence of the masonry there is no doubt that the porches are coeval with the barn. The slots in the walls carrying small vertical posts under the inner lower principal rafters imply that originally the porches were roofed with small cruck trusses such as are still to be seen at Doulting barn. The lower ends of the common rafters of the main roof are supported over the porch entrances on large timbers tenoned into the adjacent main cruck blades at wall-top level, but otherwise there are no wall plates; it is unfortunate that previously published sectional drawings have been made at this point giving the false impression that wall plates are a feature of this building.

Other than the loss of the porch roofs and the addition of the ridge purlin, original features have not been materially altered either by the extensive past repairs or those of 1976/77, during which several complete cruck blades have been replaced in addition to other timbers.

Previous assessments of the date of construction have varied from the 14th century (C. A. R. Radford[10]) to c. 1500 by Pevsner,[11] the latter based on the supposed finding of the Arms of Abbot Bere—but these are not otherwise

known; and, apparently on the same unsubstantiated evidence, J. T. Smith has suggested the 16th century. Recent examination of the manorial records by Dr. R. W. Dunning, Editor of the V.C.H. (Somerset), reveals that a thatched barn of c. 1300 was rebuilt with a stone-tiled roof between 1370 and 1389. Within the bounds of present knowledge, based on the typology of the roof structure, a late 14th-century date is probable, although the gable windows and the carvings could be somewhat earlier. It is hoped that dendrochronological tests now in hand may provide a more precise assessment of date.

(Note: a number of details were incorrectly shown in the drawings published in 1850 by A. and A. W. Pugin,[12] and on p. 53 (Fig. 3) of *Proceedings*, Vol. 114 (1970), the latter based on drawings made by students of the Manchester University School of Architecture; these errors have been corrected in the drawings illustrating this paper which supersede any previously published. The measurements are taken from drawings prepared by the Architect's Department of the Somerset County Council.)

THE PRIORY OF ST. JOHN, WELLS

The house stands to the north of the site of the Priory, with which it was probably associated, and is separated from it by a small stream now piped under the road and close to the south gable. Other than some small Gothic and Tudor window-frames reset in the latter, and a square-headed, originally shuttered, window-frame in the rear wall, all window and door frames are recent. The walls are rendered and a solid parapet has been added to the front wall. The roof is tiled and coped at the south gable but the north gable is obscured by a tall 19th-century building. At the rear at the north end a two-storeyed wing of three building periods has no datable features remaining, but in it a stone spiral stair was recessed into the house wall.

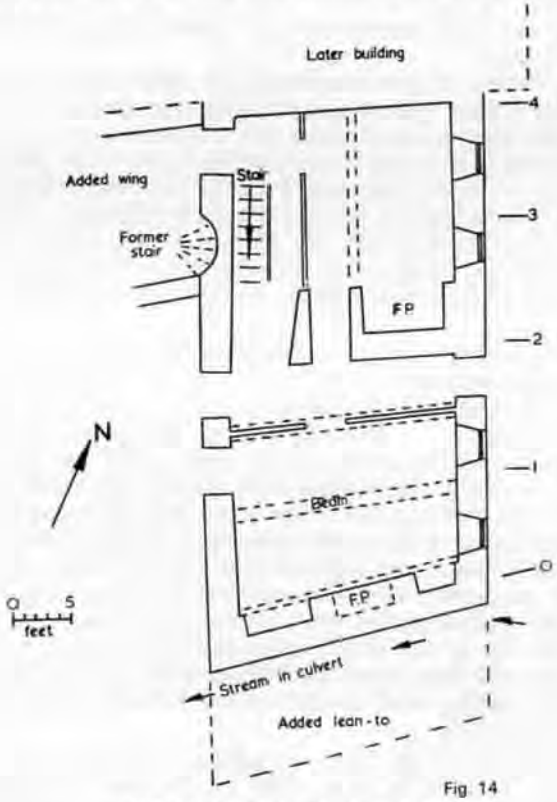

Fig. 14. Priory of St. John, Plan

The *plan* (Fig. 14) comprises a *hall* to the north of a *cross passage* onto which its axial stack backs, and a second room (originally *service room(s)*) to the south. No early features remain except for an axial ceiling beam in the former and a transverse beam in the latter with stepped run-out stops to plain chamfers. A modern axial passage, partitioned out of the hall, now leads to the wing; in it modern stairs probably replace spiral ones usually found beside the hall stack.

On the *first floor* the only early feature visible, other than the windows referred to above, are the uprights of a cruck truss aligned with the back of the hall stack, that in the front wall being seen to be set on a large horizontal baulk c. 1 ft. above the floor; the lower part of the chamfered archbrace, 6 in. wide, is solid with the 11 in. wide upright.

In contrast to the paucity of surviving early material on both floors, the *roof* (Figs. 15-19), one of the best preserved medieval structures yet recorded in Somerset, is one of only five domestic base-cruck roofs known in the county, the other five being in barns. In overall design it closely resembles that at the Abbey Barn, Glastonbury, but it has a number of detailed differences and being domestic is heavily smoke blackened. A most unusual feature is that early Arabic numbers are used in addition to the usual Roman ones for the carpenter's marks (Fig. 19). No specific connection can be claimed but it is of interest to note that Roman numerals were used on the

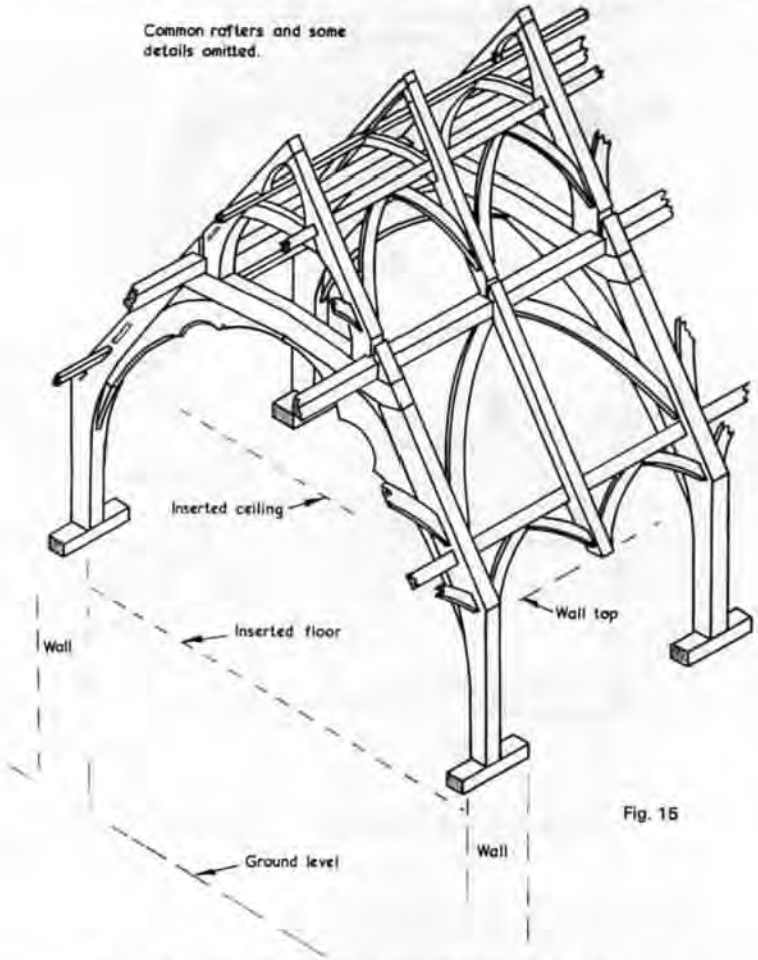

Fig. 15. Priory of St. John, Isometric view of one bay

west front of Wells Cathedral to identify the figures with their respective niches when the former were temporarily removed to build the south tower in 1380, but arabic numerals were used when the north tower was built in 1420.[13] Although Arabic numerals began to be introduced into England in the early 14th century they were not commonly used until the late 15th century, and in fact the Exchequer only changed from Roman to Arabic in the 16th century.

There are five raised base-cruck trusses (Fig. 16) and four intermediate trusses (Fig. 17); the superstructure on the main trusses is of small upper crucks tenoned into the tie beams; small steps on the outside of the feet of the upper crucks clasp the square set roof plates which are further secured in place by triangular locking pieces tenoned into the ties, but these are not joined into the upper crucks (cf. the absence of any securing arrangements in the Abbey barn). The main trusses are numbered 'IIII' to 'I' starting at the north gable, thus the south gable truss must have been '0', but no

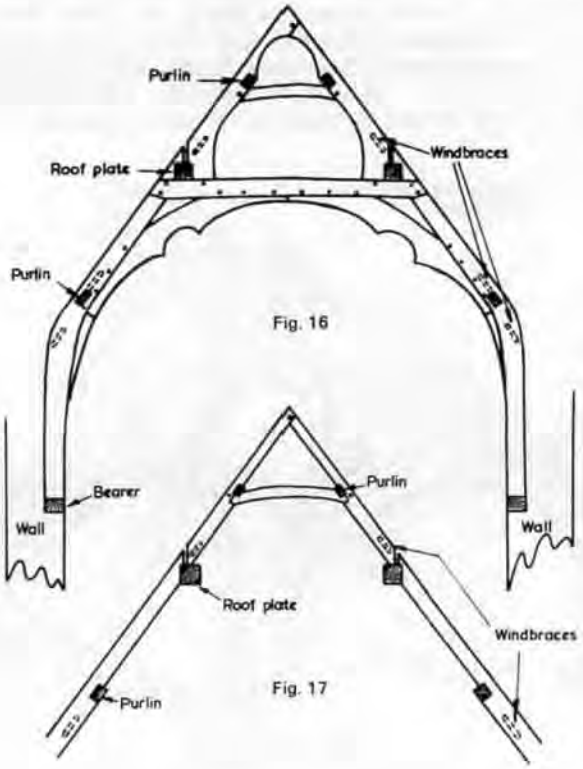


Fig. 18

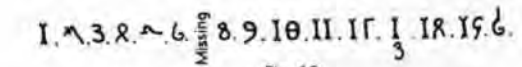

Fig. 19

Fig. 16. Priory of St. John, Main Truss
Fig. 17. Priory of St. John, Intermediate Truss
Fig. 18. Priory of St. John, Roof Plate joint
Fig. 19. Priory of St. John, Arabic numbers for Carpenter's Marks

marks are visible on the fragmentary remains. Continuity of the windbrace numbers and of the roof plates, however, proves that this truss is original.

Both gable trusses, which appear to have been similar, are of lighter scantlings than nos. 1, 2 and 3 and lack cusping and chamfers on the upper crucks. No. 4 was modified when the 19th-century building was added against the north gable; it was originally infilled above a gable-end wall of stone which rose to eaves level, with wattle and daub as far as the collar; above the latter it was open—a smoke vent? The south gable truss, no. 0, was modified when the gable wall was raised in stone to the apex and a stack added. The remaining parts of the truss were moved outwards c. 12 in. to the ends of the roof plates from their original position shown by stops on the purlin and roof-plate chamfers: these show that the gable was always aligned at the present slanting angle, presumably due to a desire to achieve the greatest possible length to the limit set by the stream, despite the problems this entailed for the carpenters.

Trusses nos. 2 and 3 over the hall are chamfered and have cusped archbraces and upper crucks; no. 1, also chamfered and cusped on the upper cruck, has plain braces. The fact that all three of these trusses are open implies that whatever partition existed between the hall and the lower end was non-structural and terminated at a low level; that there was a division is implied by the contrast between the cusped and plain braces, but its position relative to the present cross passage is a matter for speculation. The smoke blackening throughout the roof shows the building to have been single storeyed with an open hearth; when the hall stack was inserted truss no. 2 became partly buried in it.

The lower purlins are tenoned into the main blades but, unlike Glastonbury barn, the upper purlins are clasped by the collars of the upper crucks. The apices are tenoned without any housing for a ridge purlin; each pair of common rafters is side-lap jointed at the apex. The upper roof is thus a hybrid of common and principal-rafter construction.

The roof-plate joints are tenoned sloping scarfs, the tenon in two halves, part on one scarf and part on the other (Fig. 18). The direction of the joints shows that trusses nos. 1 and 2 were erected first, followed by no. 3 and no. 0 at the south gable, and finally no. 4.

The intermediate trusses (Fig. 17) consist of large rafters notched over the lower purlins above which they are reduced in thickness; these rafters terminate at the roof plates over the outer side of which they are notched. The rafters of the upper collar-beam trusses, carried on the roof plates, are notched over the upper purlins which are clasped by the collars, above which they are reduced in size.

The unusual use of the early Arabic as well as Roman numerals occurs in the numbering of the windbraces and intermediate trusses, the former numerals (Fig. 19) being on the east side and the latter on the west. In the lower and upper tiers there are two pairs of windbraces in each bay abutting on the intermediate trusses, but in the middle tier there is only a single pair to a bay.

Base crucks are not structurally necessary to span a building of only 19 ft. width and this elaborate roof can only be regarded as a 'status symbol' for a building of superior social standing, yet the timbers are of poor quality finish, many being of insufficient scantling to give a full section.

The hybridization of cruck and aisled truss construction is to be seen in the square-set roof plates, but the other main feature normally associated with such derivatives, the aisled post-and-truss structure at each end, which occurs in other domestic contexts, is here absent, as is the case in the barns.

Except for the clapsed side purlins and the absence of a ridge purlin the design is of typical Somerset type. In other than base cruck roofs, coupled common rafters with a ridge are not uncommon, but the absence of a ridge is an extreme rarity, the only other known examples being the Fleur de Lys Inn, Norton St. Philip (solar wing) and Strapp Farmhouse Chiselborough.

Evidence for low partitions is known in lesser houses but has not been noted in those of better quality. Perhaps this and the fact that it stands to one side of the main Priory complex suggests it was the guest house rather than one of the main buildings It might also indicate a date earlier than the late 14th/early 15th century which is that normally considered to apply to this type of roof.

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