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Medieval Smoke Vents and Low Room Walls in the Severn Plain

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Medieval Smoke Vents and Low Room Walls in the Severn Plain

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Smoke-stained roof timbers in any house may usually be regarded as evidence for a hearth in an open hall – an almost invariable characteristic of the medieval period, prior to *c.* 1540. Chimneys existed but were scarce, and usually entailed the use of recognizable fireplaces (Lloyd 1931, 346 and 434–6; Wood 1965, 261–290). In the 13th century some superior buildings had chimney-pots (Dunning 1961) or decorative clay ventilators (Platt 1978, 57). Elsewhere we know that the smoke passed out through external louvres (Wood 1965, 277–280), clay-lined holes within the thickness of the thatch (Peate 1946, pl. 36–37; Wood 1965, 289), or even drifted through the thatch without any hole at all. In the south-east of England many houses with hipped ends had small open gablets at the end of the ridge (Mason 1964, 76; Wood 1965, 289). Internal wattled hoods and smoke bays (Mercer 1975; Lloyd 1931, 347) must have been an improvement. But how the smoke escaped from the roof space in the humbler late medieval houses of the south-west of England has remained unclear.

The paucity of our knowledge can be explained by the number of alterations to roofs and buildings over five centuries, re-thatching, conversion from thatch to other materials, repair work and, not least, inaccessibility. During 1984 we were able to examine two houses in detail, removing wall coverings, plaster, etc., in a manner not normally acceptable to the owners of old properties. This has shed new light upon the escape of smoke from the roof space, and upon other hitherto unrecognized features of local vernacular buildings of the late medieval period. The two houses and their distinctive features are described below.

The Old Bakehouse, Colethrop, Haresfield (FIGS. 1–3)

The Old Bakehouse (SO 8219 1109) was formerly called Tantivvi and was reputedly occupied by a baker's roundsman, though there were no evidences of commercial bread ovens. It was until recently one of four timber-framed houses in a small hamlet, the north end of which may have flanked a narrow green, now incorporated into fields and gardens. This thatched house was of two-room plan and timber-framed, though the south-east side wall and the two gable ends had been rebuilt in brick incorporating some original features, but later altered and partially cement-rendered. Entry was from the north, but there is good reason to believe that the south side was formerly the more important.

When first built in the late 15th century the house comprised a single-storey structure of two rooms divided by a low wall, of which more hereafter. Only the hall would have been heated and that by a central hearth. The framing of the north-west wall comprised two rows of almost square panels with half of a curved downward brace at the western end. None of the mortice joints was held by more than one peg. The absence of pegs in several places could imply assembly from within or a failure to appreciate the rigidity derived from pegged joints. Elsewhere the pegs enable us to reconstruct the original form. The third panel from the left



FIG. 1 The Old Bakehouse, Colethrop, Haresfield: south-east elevation in 1984.

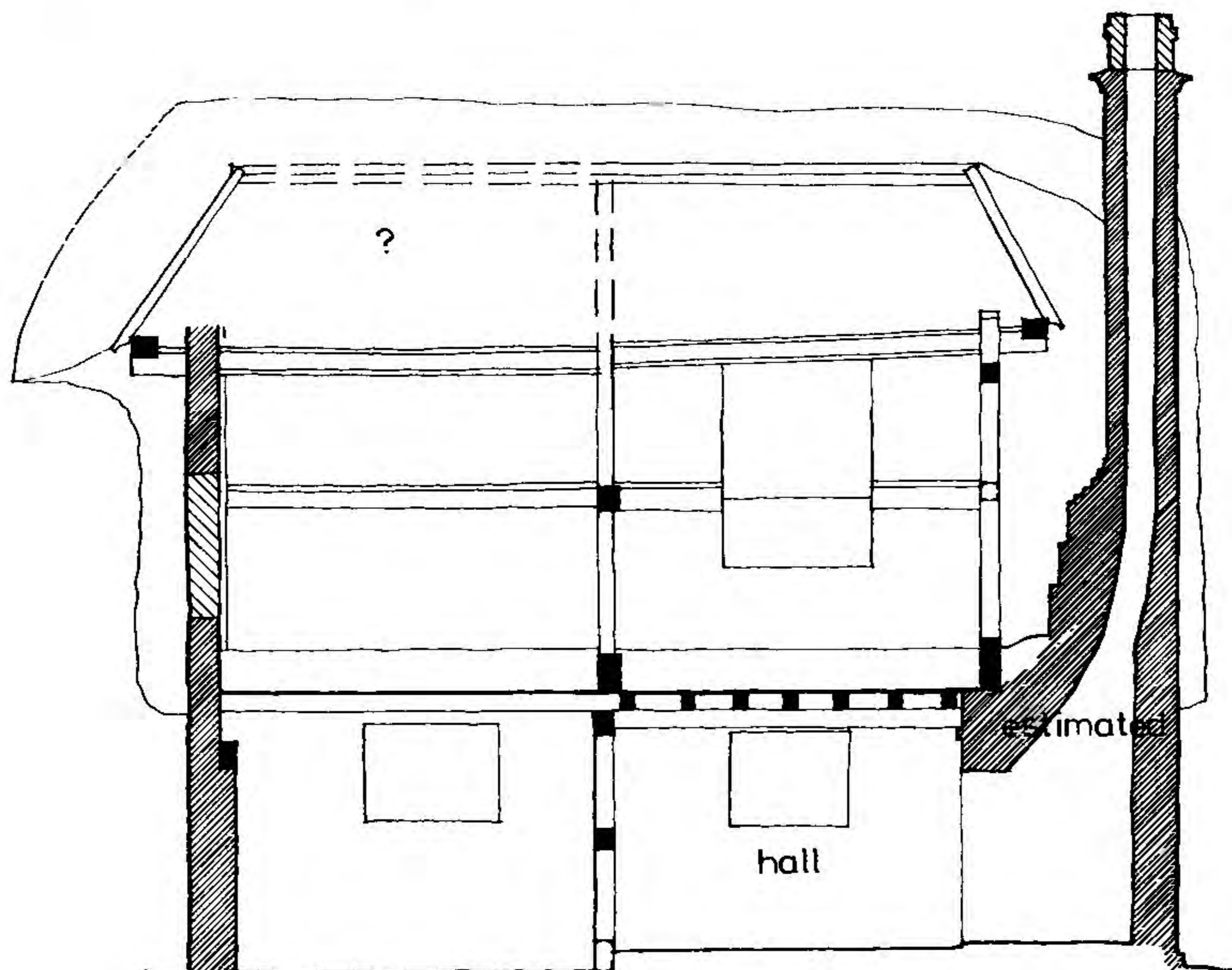
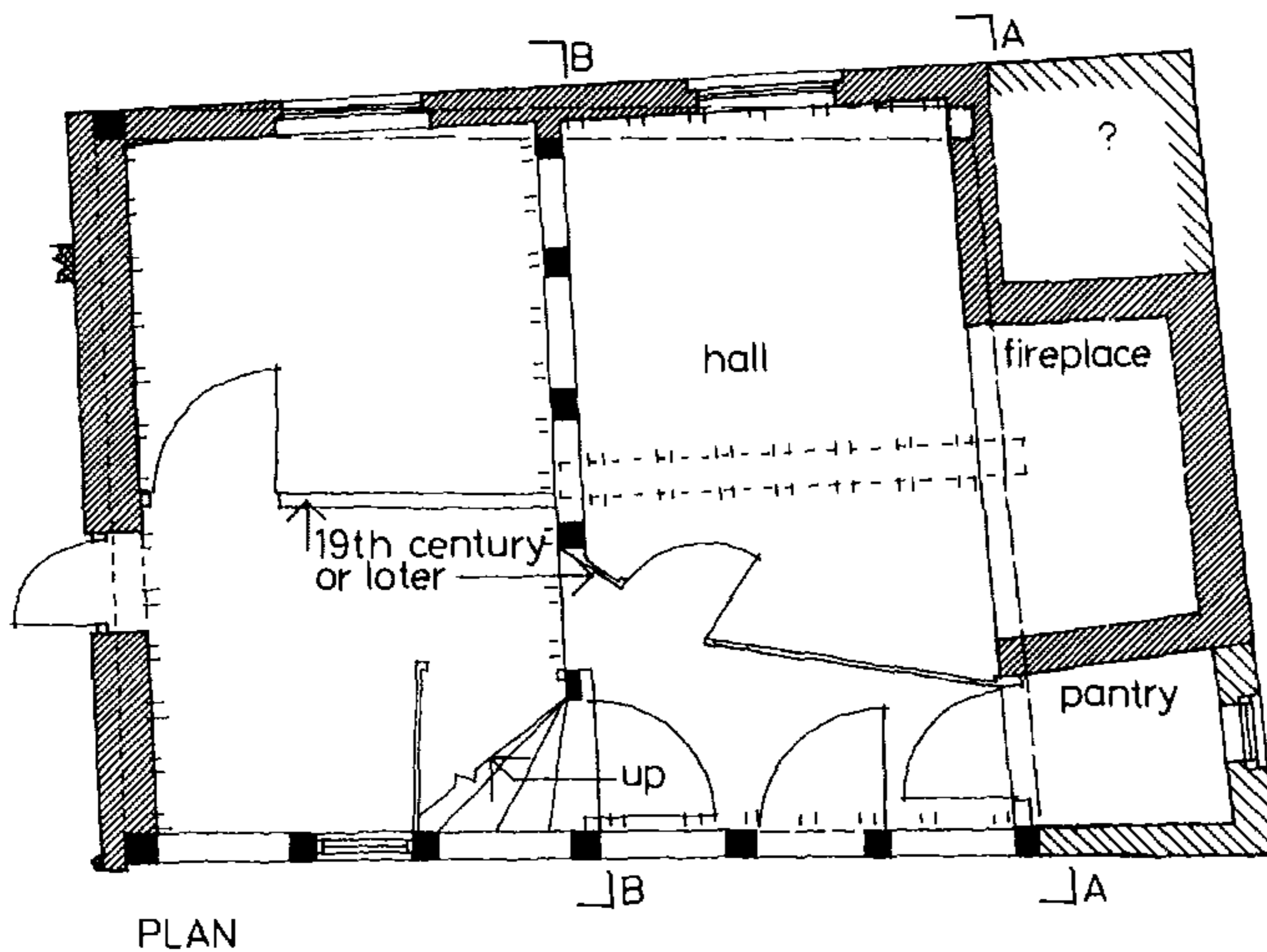
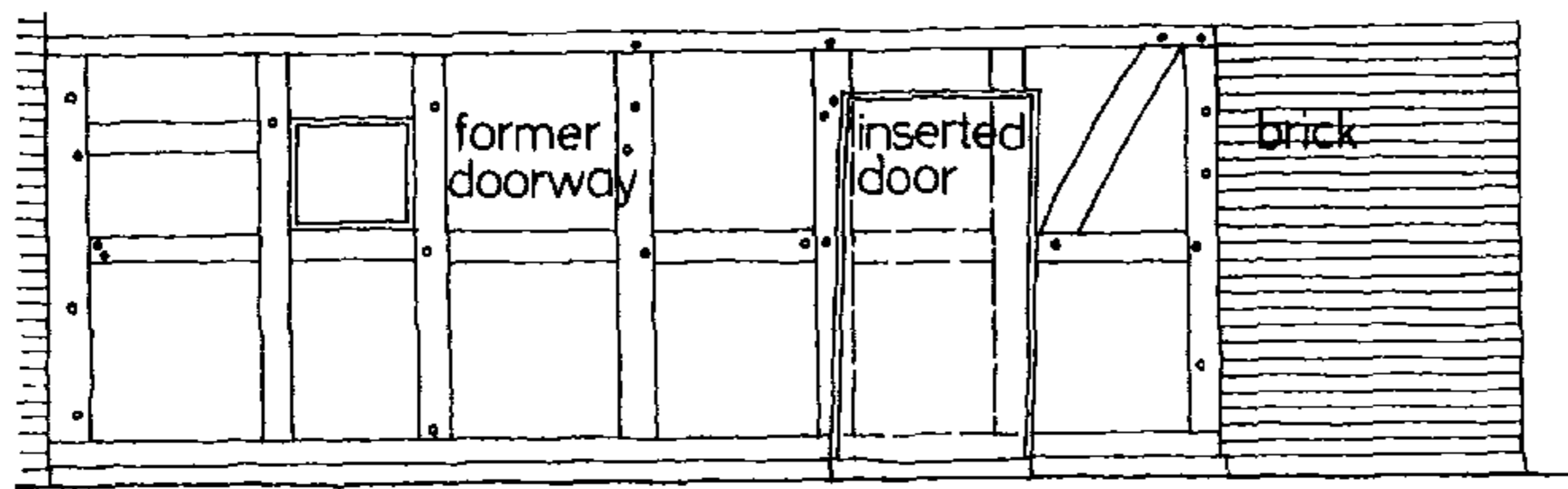
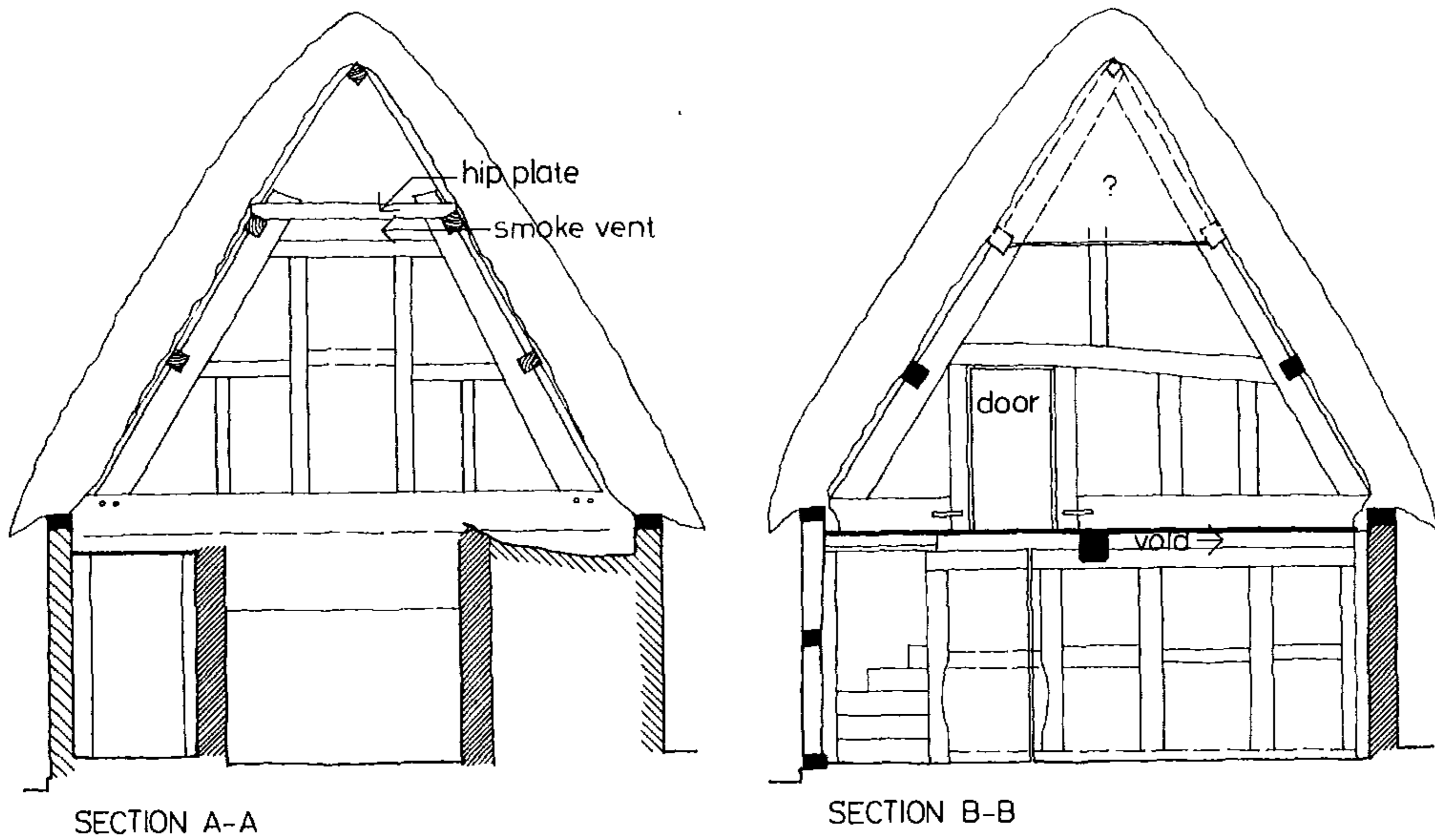


FIG. 2 The Old Bakehouse, Colethrop, Haresfield: section along the ridge. The entire roof space was originally open from end to end.



**THE OLD
BAKEHOUSE,
COLETHROP,
HARESFIELD**

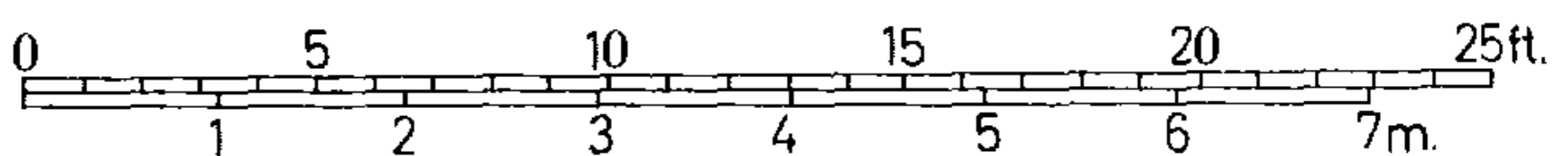


FIG. 3 The Old Bakehouse, Colethrop, Haresfield: plan, elevation, and sections.

appears to have contained a door head, giving access into the inner room at the point where a stair was later inserted. The principal entry is assumed to have been on the opposite side leading into the hall close to the south-west gable. The doorway through panel 5 was a Victorian modification and replaced a window. Pegs here and in panel 1 suggest that the windows were of oriel type projecting only a few inches (FIG. 4). The mullions would have been fixed into the sills, which were pegged to the main frame (cf. Denfurlong Farm, Frampton on Severn; demolished). The upper timber would have been pegged or nailed. A plank may have been fixed over the top of the sill beam partly for protection from rain and partly to inhibit plant growth from rotting the timbers.

A mortice in the east corner post may have taken a bracket to support the end of the wall plate, a feature which from the evidence of peg holes may have been repeated at each corner. As far as could be ascertained none of the framed panels had side grooves (Walrond 1984, 309) but there were basal grooves, perhaps the work of an apprentice, where no wattle superstructure was intended.

The three roof trusses were dissimilar. At the north-east gable the rafters were bird's-mouthed over the raised tops of the corner posts between which was a low-set tie beam. Elsewhere the posts carried the wall plate and tie beam in the usual manner. Apart from the collar beam, the central truss was intended to be open, though it was closed at a later date.

Smoke from the hearth in the hall would have filled the roof space, escaping at either end through vents under the half-hip of the thatch (FIG. 5). Both smoke vents had survived. One was examined in detail having been sealed in a void beside a chimney of *c.* 1600. The original thatch had gone, but the pattern of the smoke stains showed beyond all doubt, and for the first time in this county, that half-hip roofs could and did have a functional purpose.

The upper purlins were notched across the gable truss and extended to carry a hip plate. A small notch in the top of the plate carried a short rafter which joined others from either end of the plate at the ridge, which stopped short less than a foot inside the line of the truss. The truss itself was stopped short just above the collar. The smoke was sucked by external air turbulence over the collar and under the hip plate, which was completely blackened except for lines left by the ties which had held down the original thatch. At the opposite end such timbers as could be seen indicated a similar construction. The central hip rafter extended over the plate and a second plate had been inserted to support the thatch, which projected 4ft 6in (1.37m) beyond the footings.

Too little is known about the chronological sequence to be able to give a precise date for the early work in the house. The curved brace, the bird's-mouth joint, the window form, and the simple plan are early features, some of them associated with cruck houses, and a tentative date of *c.* 1490–1500 is suggested.

The open hearth was replaced *c.* 1600 by a brick fireplace and chimney occupying only part of the gable. The brickwork was, however, carried along the south-east side wall and into the north-east gable. The side wall did not follow the line of the timber wall, with a resultant instability and damage to several common rafters. The hall was ceiled over at this time, the upper room being reached from a ladder, by way of the opening under the collar beam. The ceiling beam across the hall was notched over the low central wall and both it and the fireplace lintel were painted brown (Walrond 1984, 314), and had broad chamfers with 45-degree stops.

At some much later date, probably in the 19th century, the lower room was ceiled over, a stair built across the original side entry, the central truss cut to form a doorway, and the remainder closed off with re-used timbers. The chimney block was widened to the width of the gable creating a pantry on the one side and a possible bread oven on the other. Also added were a detached washhouse and at the north-east end a service room and a stable complex.

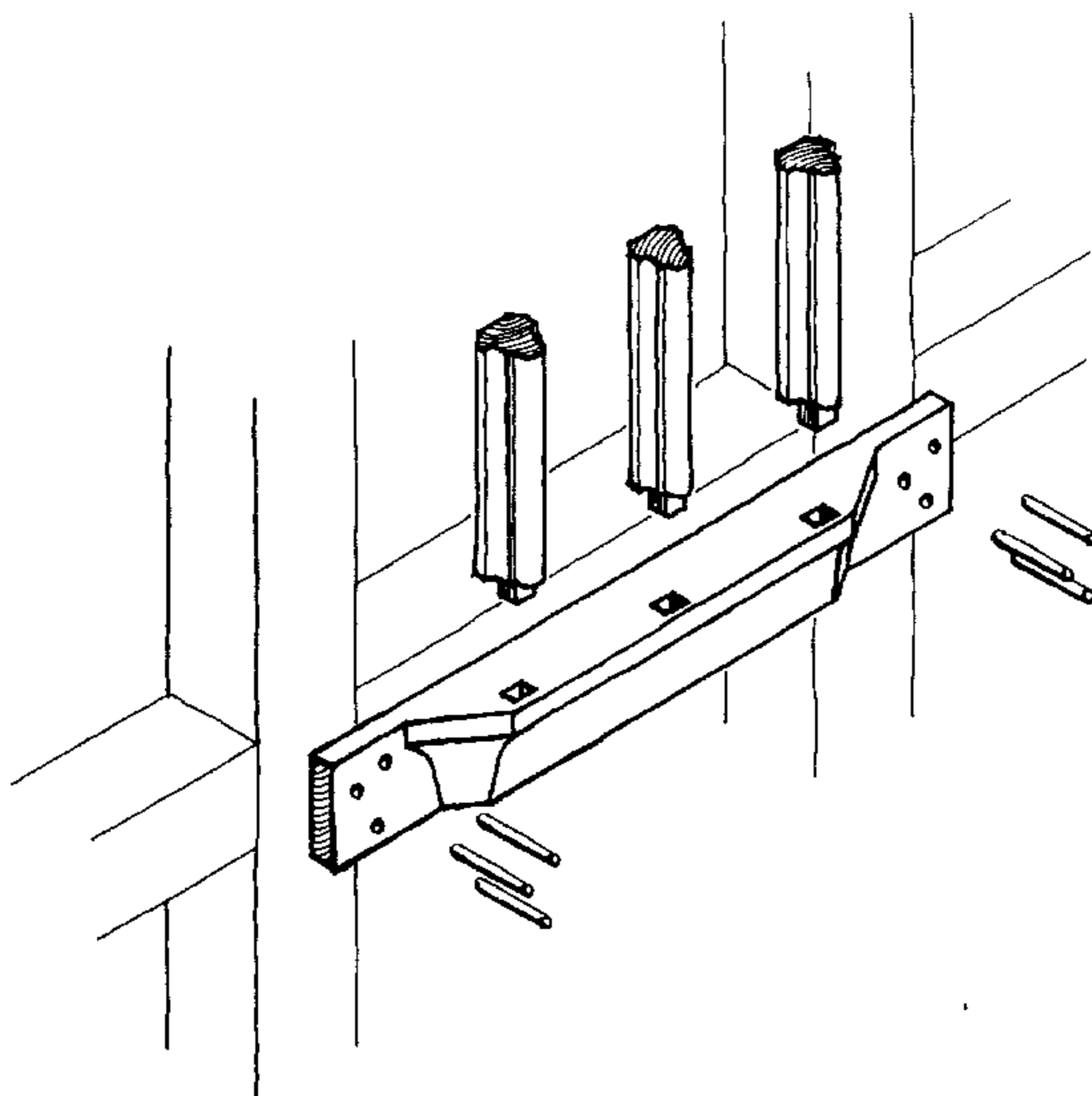


FIG. 4 Conjectural exploded view of the oriel window sill, not to scale.

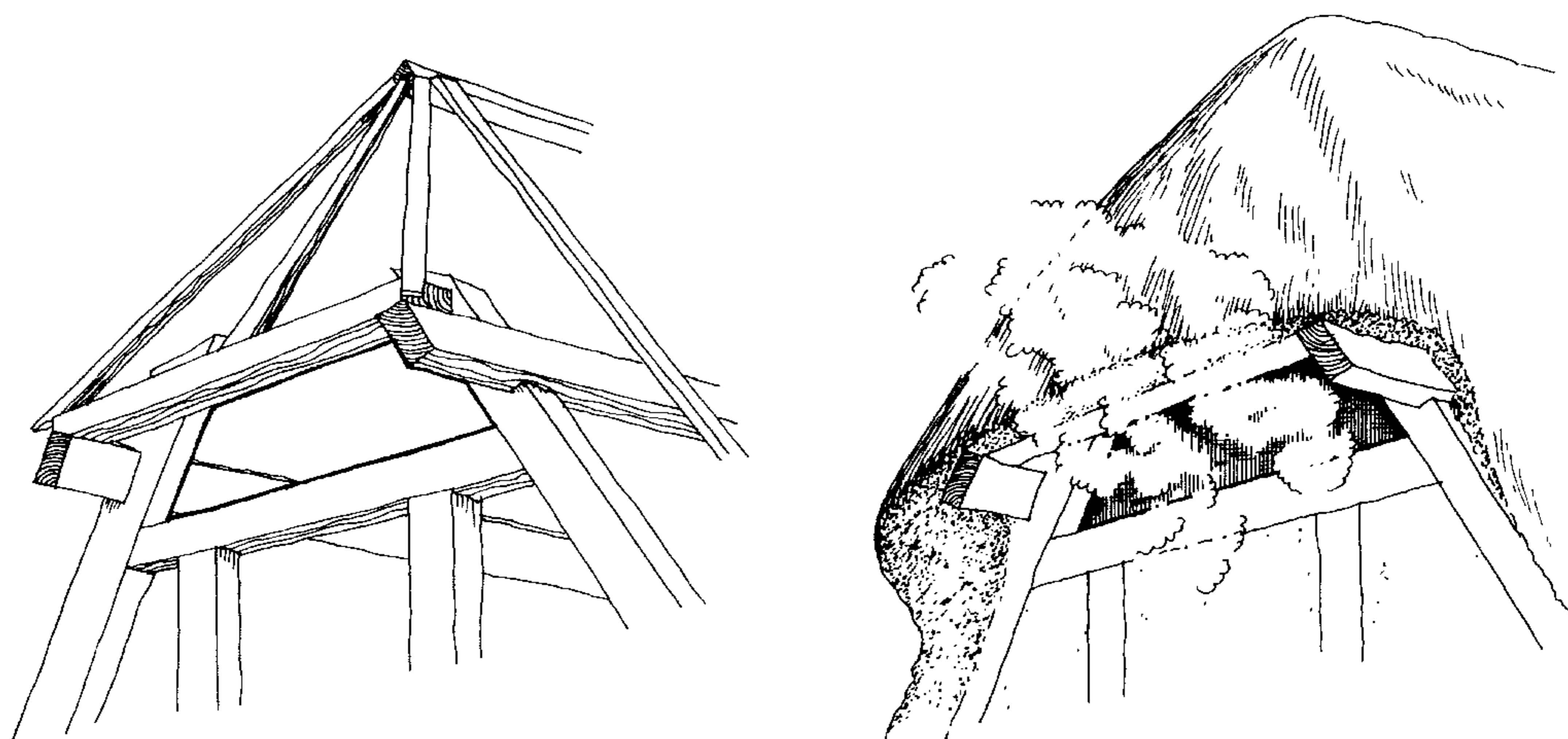


FIG. 5 Reconstruction showing the framework and function of a smoke vent, not to scale.

Doris' Cottage, Epney, Moreton Valence (FIGS. 6-7)

Doris' Cottage (SO 7639 1123) stands near the bank of the River Severn less than four miles from The Old Bakehouse. Maps suggest this house may have been at the northern edge of some enclosed land with open waste to the north. If so, access need not have been along the line of the present road. This may explain why entry into the house now appears to have been from the back. Both the (front) west wall and the south gable have been completely rebuilt. Timber-framed walls survive on two sides and the roof now tiled was formerly thatched. The two rooms were both originally open to the roof.



FIG. 6 Doris' Cottage, Epney, Moreton Valence: view from the south-east in 1985.

The panels comprising the east wall are of variable width. The shaped timber in the first is clearly a doorhead. The fifth has at some time suffered decay and contains later timbers, while the seventh originally contained a second doorway. Groups of three peg-holes suggest the former presence of two windows with oriel-type sills (see above and FIG. 4) across panels two, three, and six. The larger of these, lighting the hall, would appear to have had a bracket beneath the centre of the sill and ran from shoulder height, probably up to the line of the thatch. High-set windows were not uncommon in medieval houses (Walrond 1984, 312–313; Wood 1965, 59). The smaller window, lighting the inner room, was between the horizontal rails, and peg-holes survive for the lintel beam as well as the sill.

Three of the uprights have a large peg-hole in their lower half. These peg-holes have not been explained, and they are not associated with any mortices. Several, but not all, of the posts have shallow grooves to accommodate the sides of the wattle panels (Walrond 1984, 309). At the north-west corner there is evidence of an inexplicable structural feature. Mortices show that between the sill and the lower rail two large planks projected westwards with a smaller rail just above them. Whilst nothing similar is known to the writer, it might have been part of a low external store house – a humbler equivalent of the service room in a three-room-plan house. Other similarities with The Old Bakehouse are that several mortice joints have a single peg, or none at all, and that the stone plinth is exceptionally low.

Only two roof trusses survive, that at the south end having been lost when the gable was rebuilt. Both are of tie beam and collar type. At the north end the principals do not extend the full height and the diamond-set ridge stops short inside the line of the wall. Ridge, common

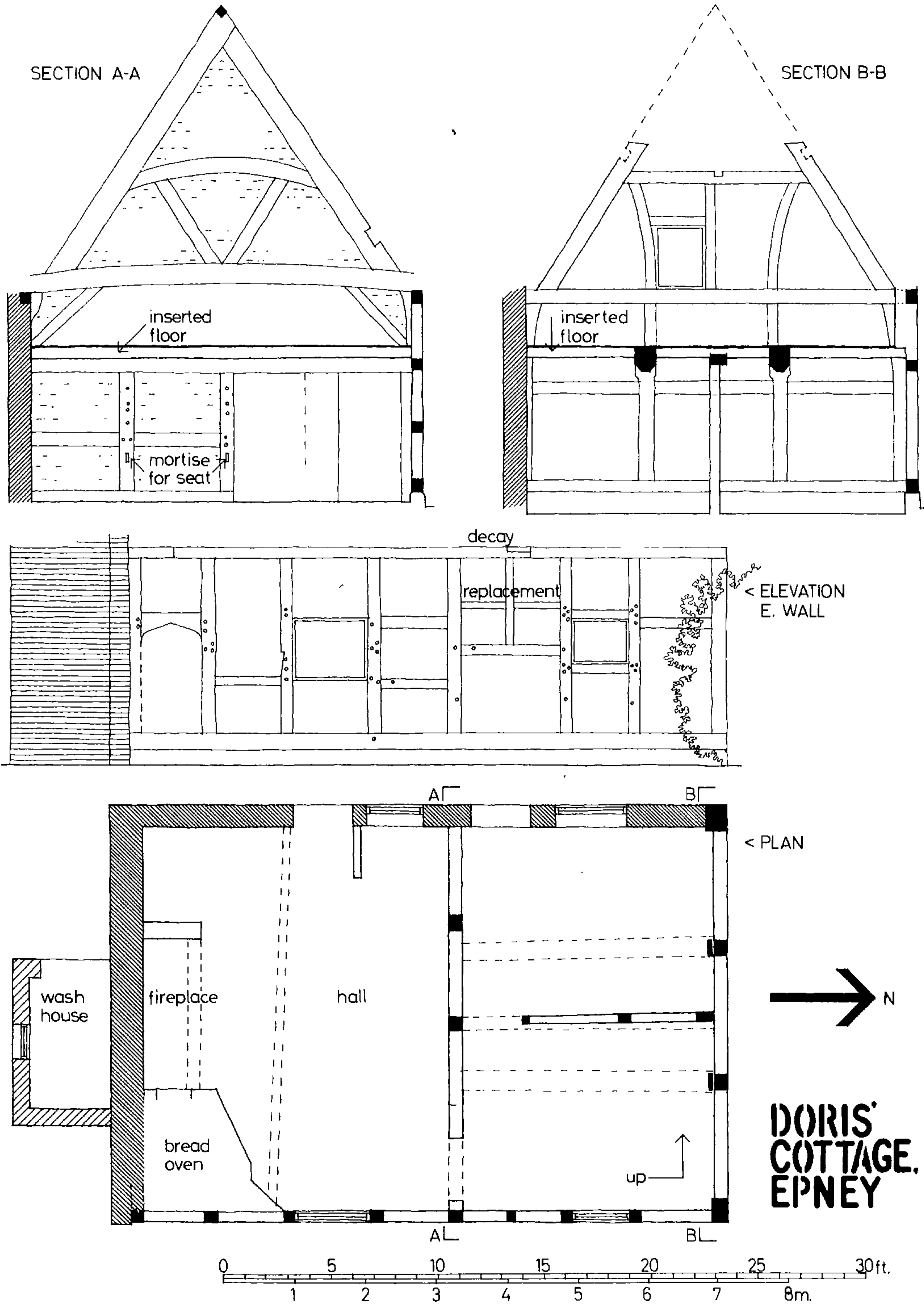


FIG. 7 Doris' Cottage, Epney, Moreton Valence: plan, elevation, and sections.

rafters, the riven slats resting on them, and even the thatch itself are smoke stained – everything pointing to the presence of another smoke vent. Some of the members have been torn or have slipped from their original position. Whilst a small roof fire could have caused this, there might have been a partial collapse when the west wall was dismantled.

This house, however, has only a single pair of purlins, the location of which could imply a very low broad vent and corresponding low half-hip roof. Credence for this is given by a notch cut from the top of the collar, probably for a stay to the hip plate. The collar beam seems surprisingly clean and may have been topped with a second timber. In contrast to The Old Bakehouse the central truss appears to have been completely closed from the time of erection, the only passage for smoke or air being below the tie beam. The amount of smoke staining over the inner room was so great as to indicate a second hearth at this end. Removal of layers of lime wash from the wall panels has revealed an abnormal amount of smoke staining.

Stylistically both houses have so much in common they must be of like date. The absence of a downward wall brace could be significant, implying a later date. But if the brace had become an aid to house erection rather than ultimate stability, one brace only might suffice for the entire house, and that on the side that has since been rebuilt.

The first alteration at Doris' Cottage involved the ceiling over of the inner-room. Two heavily chamfered beams were notched over the central wall, their opposite ends being carried on false studs that were fixed against the studs of the gable wall. A half beam was nailed to the side framing to carry the ends of the secondary ceiling joists. Entry to the upper room was through a low doorway under the tie beam, the remainder of the space below this beam being closed at this time. From then onwards the northern smoke vent was no longer operable.

We may safely infer the presence of a second smoke vent at the south gable and that this failed completely with the ceiling of the inner room. To overcome this a half beam was put across the hall and, though the upper surface could not be examined, we must assume that this carried a wattled hood or smoke bay leading to a chimney opening. The fire at this time was contained between stone jambs, creating a lobby entrance alongside.

This in turn was followed in the first half of the 17th century by the ceiling of the hall. Mortices were cut in the half beam, and the joists rested upon the top of the division between the rooms. To give access between the two upper rooms the tie beam and brace above it were sawn away to make a doorway. An opening for a ladder is thought to have existed in the south-west corner of the inner room, which was itself divided by a partition at about this time.

There were then no major changes until the late 18th or 19th century, when the gable end and west wall were rebuilt in brick. The presence of the two front doors in the latter gave rise to a tradition it was built as two cottages – unlikely in a house with only one fireplace. At this time the fireplace was given a traditional chimney and the room above enlarged accordingly. Later still a wash house was added behind the fireplace, and the thatch covered over with Bridgwater roof tiles.

Low room walls

In both houses examined the dividing wall between the ground floor rooms showed anomalies. In Doris' Cottage the partition extended only half-way across the room, not enough to divide effectively the functions of the two ends of the house. Two rectangular mortices prove this to have been the position of the high seat in the hall. Jowled posts supported the tie beam and in the space between it and the head rail of the partition there were short straight braces enclosing small wattled panels. From the central truss there was once a wind brace up to the purlin over the hall.

At The Old Bakehouse the partition extended the entire width of the house leaving a narrow

opening by the north-east wall, later blocked by the stair. The hall face could not be examined for evidence of a high seat. Although the partition was intended from the start, there was no evidence for it having been neatly framed into the side walls. The top of the head rail was separated from the tie beam by only inches – apparently a pointless duplication, indicating that the plurality of beams was a long standing custom with reasons of its own. The open truss above the tie beam was filled in at a later date and the tie beam sawn through to make a doorway.

Discussion

A detailed study of these two houses has given more than a record; it has supplied proof of several structural features that may once have been common in the Severn Plain, and has raised questions of a more far-reaching nature.

Though differing in size, both houses were of two-room plan, originally open to the roof, and of very similar construction. It is hoped that timber samples may be available for study by dendrochronology and radiocarbon analysis. Until then a late 15th-century date is given on the basis that the construction represents an intermediate stage between some of the local cruck-built houses and the more evolved buildings of the 16th century. Their importance lies not with their age, but with their survival, relatively unspoilt by later modernization, and the information deduced from them.

The smoke vent can now be envisaged as having been in general use throughout the Plain. Since the operation of the vent depended upon external air turbulence drawing out the smoke, an alignment of the house along the line of the wind was preferable. An open central truss to give free movement of air and smoke within the roof space was essential, though clearly the principles were not understood. At Doris' Cottage the closure of the upper part of the truss coupled with the alignment, served to fill the house with smoke as evidenced not only within the roof space, but also by the smoke stains on the room walls. Life within the house must have been unpleasant if not unhealthy. At The Old Bakehouse even the roof members were barely smoked. The external members of the vent were heavily sooted due to thermophoresis, a rapid deposition of compounds resulting from a sudden loss of temperature.

Low room walls are a hitherto unrecognized feature in the area though one was noted nine miles away at Wanswell Court near Berkeley (Cooke 1881). There a stone wall between the hall and 'privee parlour' was topped by an ornate cornice and it was suggested that a gallery may have existed above. At Doris' Cottage the presence of a hearth in the inner room, prior to the insertion of a floor, suggests its use as a parlour rather than for inferior uses as may be inferred at The Old Bakehouse, which is assumed not to have been heated. The fact that the wall at Doris' Cottage extended only half the width implies it was a division rather than a barrier, comparable perhaps to the dais in the larger medieval halls.

Variants of the low room wall appear in the lower part of internal jetty construction (Walrond 1984, 313). The relationship between these house forms would appear logical, the internal jetty type being stylistically the more advanced. In a house of similar dimensions it would supply a larger hall (at the expense of the inner room) and have a first-floor chamber as well. It further raises the suggestion that these two-room houses were built as a simple box, the disposition of the internal arrangements being at the whim and social concept of the potential occupier.

Minor differences in plan, particularly with regard to doorways, may reflect our lack of knowledge of small medieval houses. Further fieldwork in this direction is much to be desired.

The subsequent periods show how, during the 16th and early 17th centuries, the houses were converted in stages into two-storied dwellings and precisely how the conventional fireplace and chimney replaced the smoke vent.

The remaining issue of importance is the extensive use of brick *c.* 1600 at The Old Bakehouse. Brick building was exceptional in the West Country until the second half of the 17th century (Mercer 1975, 130). Nevertheless it does occur in a boundary ditch near Eastington Church, at the back of St Mary de Crypt Grammar School, Gloucester (1539), in the grave vault of Sir George Huntley (d.1574) at St Peter's Church, Frocester (Gracie 1963, 155), in a chimney block at No. 19 High Street, Berkeley, and in the front wall of Cross Farm, Colethrop. None of the above buildings contain architectural features one would expect in the second half of the 17th century. In both the house at Berkeley and The Old Bakehouse (in so far as they could be seen) the bricks were laid in 'English Bond', random bonds being used elsewhere. Early brick was intended for display, and the implication is that The Old Bakehouse was intended to be seen from this side. But its use in so small a building raises the question whether it was a dower house to Cross Farm, or even the home of a brickmaker. Clay, water, and fuel were readily available, and five potters were recorded as working in Haresfield in 1186 (Taylor 1889, 179). There is a tradition of small-scale brickmaking throughout this area of the Severn Plain.

The Old Bakehouse was demolished in October 1984, due to a series of unfortunate coincidences, even as arrangements were being made for it to be dismantled and re-erected at the Avoncroft Museum of Buildings, Bromsgrove.

Doris' Cottage was deemed unfit for habitation in 1961, but no demolition order appears to have been served. It was purchased in 1984 for restoration and enlargement, and has since been listed as a building of architectural importance. Negotiations are now in progress with the Historic Buildings and Monuments Commission to consider its restoration.

Acknowledgements

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APPENDIX 1: ROOF CONSTRUCTION – MINOR DETAILS

Both houses suffered neglect in recent years – Doris' Cottage had not been lived in since 1961 – which in itself had preserved minor features intact. Not only were the principals, ridge, and purlins standing, but the common rafters, the slats nailed across them, and to a partial extent the thatch itself survived *in situ* from the open hall period if not from the time of erection.

At The Old Bakehouse the south-east side was reconstructed, probably when the brick wall was built, and both sides disrupted when the dormer windows were put in. The original common rafters measured 3½ in (90 mm) wide by 3 in (75 mm) deep, set at 18 in (460 mm) centres. The later ones were the same size and of slightly poorer quality but at 10–15 in (250–320 mm) centres. The original slats to carry the thatch were nailed and appeared to be of riven oak. They varied in size from 2½ to 5 in (65–125 mm) wide and up to ¾ in (20 mm) in thickness. The later slats were more regular, also riven, about 2 by ¼ in (50 x 6 mm). The original thatch was tied to the slats, but no sample could be taken for study. When the thatch was extended to flank the chimney, over the pantry, the ties appear to have been of young willow.

At Doris' Cottage the interior of the roof could not be approached for close examination, but the common rafters appeared to be about 4 in (100 mm) square and most irregularly placed at centres ranging from 2 to 3 ft (600–900 mm). The slats were riven, between 1 and 2 in wide (25–50 mm) at most. The thatch itself was sooted but so rotted the house must have been derelict for a period before the tiled roof was laid over it.

APPENDIX 2: SUB-FLOOR EXCAVATION

The demolition of The Old Bakehouse took place even before its importance was realized. To resolve certain problems a small excavation was carried out under the floor of the hall along the centre line from the fireplace to the centre of the room.

Beneath the Victorian quarry-tile floor 6 in (150 mm) of hardcore comprised the following layers, from the top: (1) ash with coal fragments and carbonized twigs; (2) clean limestone gravel, probably from an active stream rather than a glacial deposit; (3) scalplings of local limestone together with fragments of sawn stone; and (4) stone dust, probably obtained at the same time as the contents of layer 3 from a local quarry, lay directly upon clay subsoil. It may be concluded that the medieval earth floor, evidences for a central hearth, and perhaps dating evidence were removed to a depth of several inches in the 19th century.

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