An Excavation and Watching Brief at Rock House Farm, Great Haywood, Staffordshire

Birmingham University Field Archaeology Unit
Project No. 902.1
August 2002

An Excavation and Watching Brief at Rock House Farm, Great Haywood, Staffordshire

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1.0 Summary

In May 2001 Birmingham University Field Archaeology Unit undertook a watching brief during the demolition of a pair of semi-detached houses, Rock House Farm and Rock Holme, Great Haywood, Staffordshire, (NGR SJ997225); the properties comprised a multi-phase structure the earliest component of which was a cruck truss of late medieval origin. Subsequently, an excavation was carried out on the site of Rock House Farm. The work was done for Miller Homes, and was informed by building recording and an archaeological evaluation that had been completed shortly before demolition. This previous work had suggested the possibility of recovering further evidence about the character of the medieval building and the early development of the site.

Additional structural details of the timber-framing were noted during the watching brief, and, during the excavation, isolated areas of medieval or early post-medieval occupation layer were recorded, and a small quantity of later 13th century pottery was recovered. A shallow rock cut pit, related to hearth activity, was discovered at the northern end of the building, on the site of the 17th century fireplace. Dendrochronological analysis of samples taken from the principal (cruck-framed) truss provided a felling date for one of the crucks of A.D. 1424.

2.0 Introduction

Between 9 and 29 May Birmingham University Field Archaeology Unit carried out a watching brief during the demolition of Rock House Farm and Rock Holme, a partially timber-framed house of late medieval origin. Subsequently, between 6 and 7 June, an excavation was undertaken on the site of Rock House Farm. The work was done for Miller Homes, and was the sequel to an earlier archaeological evaluation that had highlighted the possibility of recovering further evidence for the structural character of the timber framed building, and for the early development of the site (Hislop 2002).

The archaeological work adhered to a brief issued by David Wilkinson for Stafford Borough Council (Stafford Borough Council 2002). In addition, the building recording was carried out according to the specification laid down by the Royal Commission on the Historic Monuments of England (RCHME 1996) and the standards and guidance issued by the Institute of Field Archaeologists (IFA. 1999). Timber-framing terminology is based on that of the CBA (Alcock *et al* 1996).

3.0 Site Location

The site is located in the village of Great Haywood, Staffordshire, approximately 4 miles east of Stafford, at NGR SJ997225 (Figure 1). The buildings were situated on a small sandstone outcrop, on the east side of the main road that runs from north to south through

the village. The excavation was carried out on the site of the north bay of the cruck building (Figure 2).

4.0 Objectives

- Recovery of further structural information concerning the standing buildings
- Recovery of timber samples for dendrochronology.
- Total excavation of the south bay of Rock House Farm.
- Uncovering and recording of any early floor and occupation layers.
- Recovery of any surviving evidence for structures and/or an open hearth.

5.0 Method

The buildings on the site were demolished prior to excavation. After demolition, sections were cut from selected parts of the cruck truss with a power saw and sent to the University of Nottingham for dendrochronological analysis. Also, further information about the timber framed structures, which was inaccessible before the demolition stage, was added to the existing drawings at a scale of 1:20.

A single trench was excavated by hand, down to the natural bedrock. A metal detector was also used during the excavations. Archaeological contexts were recorded by means of pro-forma record sheets supplemented by section drawings at a scale of 1:10, plans at a scale of 1:20, and colour slide and print photography. Recovered finds were recorded by context, cleaned and marked. All archaeological deposits and features were assessed for their potential for environmental remains.

6.0 The Watching Brief

The watching brief recovered further constructional details about the timber framing. Removal of later accretions from around the cruck truss revealed two further mortices in the soffit of the tie beam, and further stave holes along the soffits of tie beam, collar and yoke (Figure 3). The mortices show that at ground level there was a central stud secured by a single peg (Plate 1), and, roughly mid-way between it and the western cruck, another, apparently smaller unpegged stud.

It is also clear, from the wattle stave holes, that the truss was closed from ground level to apex. A peg hole through the yoke, confirmed that the cruck truss originally carried a ridge plate. In addition, it was discovered that the western end of the tie beam, unlike the eastern end, was tenoned into the main wall post immediately behind it (Plate 2). This post, in common with its eastern counterpart (Hislop 2002, 6), had mortices in its north side for cross rails, but none on the south side. Finally the dismantling of the truss led to a re-identification of the joints securing the three vertical members to the crucks as halved rather than halved lap joints (Hislop 2002, 4).

Following the demolition of the outside lavatory at the north east corner of the house, a well was uncovered. It was cut through the natural sandstone, and had several courses of 19th century red brick at the top (Plate 3). It retained a pipe for a former pump.

7.0 The Excavation

On arrival, both the brick and the tiled surfaces overlying the area of interest were found to have been removed. A very loose silty rubble spread (2006) could be seen to cover the whole of the area. The composition of this layer suggested that it was heavily contaminated with debris from the recent demolition of the building and removal of the solid floor level. Having cleared the upper layer it was apparent that only minimal (in no case exceeding 0.10m in depth) stratigraphy was present in slight hollows in the sandstone platform on which the structure was founded. The platform was slightly higher at its centre, shelving away in all directions (Figure 3).

On the eastern side of the platform, covering an area of roughly 2.80 m^2 was a red/brown sand-clay layer flecked with charcoal (2003), probably identifiable with context 1007, a layer from Trial Pit 6, containing 17th century pottery (Hislop 2002, 8) that directly overlay bedrock. The variable depth of this layer appeared to directly relate to the uneven surface of the natural sandstone (2000).

The northern edge of the platform revealed a different deposit overlying the sandstone. This layer (2004) covered approximately 3.20m^2 in a strip running north-west/south-east, widening and deepening to the northerly end. The layer was composed of a dark brown clay-silt with some sand and charcoal inclusions and frequent pebbles. Again, the layer respected the natural undulations of the uneven sandstone surface. Seven sherds of pottery, dating from the second half of the 13th century, were recovered from this context, several of which had internal sooting. In addition, however, three small fragments of red brick were retrieved, though it is possible that these may represent contamination of the layer.

Cutting through this context in the area of the Phase 4 fireplace was a sub-rectangular feature identified as a shallow pit (F200, Plate 4). It cut into the sandstone to a depth of 0.18m and was filled with two ashy deposits (2001 & 2002). The primary fill of this feature (2002) contained two sherds of 18th century pottery, a fragment of clay pipe, and three iron nails. Approximately 0.40m to the west was a large (0.38m x 0.18m) blackened stone.

A further dark deposit (2005) was located on the western edge of the excavation area and was later discovered to be associated with tree root disturbance. The southern edge of the platform was immediately adjacent to the area in which the natural sandstone had been cut away probably in the 19th century in order to create a level surface; no archaeological deposits were seen in this area.

8.0 Dendrochronology

The condition of the timber within the cruck truss was poor. Death watch beetle, woodworm, and fungal infection had contributed to a deterioration of quality. In addition, none of the members contained a substantial number of growth rings. However, three samples were taken (Figure 4), one from the eastern cruck truss (Sample A), one from the collar (Sample B), and one from the stud between the tie beam and collar (Sample C). The growth rings of samples B and C cross-matched to form a single site chronology of 63 rings, but could not be satisfactorily cross-matched with the reference chronologies for oak, and were therefore undatable. Comparison of Sample A with the reference chronologies, however, provided a reliable cross-match, the first ring being dated to 1365, and the last to 1424. As the sample contained a full complement of sapwood, 1424 represents the felling year of the tree from which the eastern cruck was fashioned. The full report from Robert Howard of Nottingham University is reproduced as an appendix at the end of this report.

9.0 Conclusions

The Watching Brief

In the report on the evaluation and building recording (Hislop 2002, 5) it was argued that the wall-plates of the first timber framed phase were at a lower level than those of the second phase, and that they were carried on the ends of the cruck tie beam. The discovery that the west end of the tie beam was tenoned into the main wall post, in contrast to the arrangement at the east end, does not invalidate this argument, but suggests, perhaps, a flexibility of approach during the reconstruction of the north bay of the early house, that was dictated by the condition of the cruck truss.

No unequivocal evidence for a doorway between the two bays has been discovered; in fact the stave holes that extend all along the soffit of the tie beam suggest that the truss was completely closed. In view of this apparent lack of communication between the two buildings, the possibility should be considered that the structure was originally built as two properties. If this were so, the reconstruction, in the 17th century, of the north bay only, without regard for the south bay, is entirely explicable. Further, the survival of the central cruck truss as the sole remnant of the first phase of the building is also understandable, if it formed the party wall between two properties.

Other instances of multiple-property cruck-framed buildings are known, including examples from the West Midlands. A terrace of crucks has been recorded in Much Wenlock, Shropshire, where each of five bays formed an independent heated cell (Moran 1992), whereas in Lichfield there was a pair of semi-detached houses, each two-bayed (Shepherd, 1959). Both these examples were in towns, where planning considerations and social conditions may have been different, but the structural evidence at Great Haywood suggests that similar concepts are to be found in rural housing.

The Excavation

The evaluation carried out prior to demolition indicated that uneven depths of archaeological deposits might be expected across the site, ranging from 0.11m at the south west angle (Trial Pit 2) to 0.37m towards the north-west (Trial Pit 6), and that although most of these layers were post-medieval in date the comparatively high incidence of medieval pottery from the lowest context of Trial Pit 1 (1001) hinted at the possible survival of medieval contexts (Hislop 2002).

After the removal of the tile and mortar floor levels, very little could be seen with regard to the stratigraphic sequence described in the evaluation report (Hislop 2002, 8). The deposits immediately overlying the sandstone bedrock appear to have been packed into the hollows of the uneven stone platform in order to create a more level surface. One of these, layer 2004, may have been medieval or early post-medieval in date, though possible contamination with later material makes this uncertain. The presence of 13th century pottery, however, poses the question of whether there was an earlier house on the site. On the whole, given that concentrations of sherds were recovered from both context 1011 (Trial Pit 1; see Hislop 2002, 8) and context 2004, it seems probable that the platform has been occupied by domestic buildings since the late 13th century.

The only visible feature, the shallow pit, at the north end of the site, which cuts through 2004, was probably related to the occupation phase that immediately followed the reconstruction of this bay of the cruck house in the 17th century. The position of the pit indicates that it would have been situated within the area of the hearth, and ashy deposits within it suggest that it was connected with burning activity. It seems probable that it acted as an ash pit within the early post-medieval fireplace.

The northern end truss of this Phase 2 house, some 0.6m north of the feature, incorporated, a 1.8m long x 1.5m high section of stone blocks (Hislop 2002, 6, 9, Figure 14), which was situated directly opposite the pit. The most likely explanation for this stonework is that it formed a fireback connected with a timber framed firehood.

The Implications of the Dendrochronology

The tree ring date for the felling of the cruck truss timbers provides an all too rare datum for the chronology of cruck construction in Staffordshire. Of approximately sixty surviving examples in the county, only two (including Great Haywood) have been dated through dendrochronology. [1] At last we have a *terminus ante quem* for the introduction of the carpentry features that distinguish this particular frame. One of these distinguishing characteristics of the truss is the H-type apex, another is the general use of halved joints for securing the horizontal members. The tree ring date has provided some indication of when these and other features were current in Staffordshire.

[1] The other is the Old School, Ford, Grindon in the Staffordshire Moorlands of 1600 (Howard *et al*.1997).

10.0 Acknowledgements

This project was managed for BUFAU by Steve Litherland. The watching brief was carried out by Emma Hancox and Malcolm Hislop who also obtained the samples for dendrochronology. Kate Bain and Mel Conway undertook the excavation. The report was compiled by Kate Bain and Malcolm Hislop. Robert Howard of the University of Nottingham undertook the tree ring analysis of samples from the cruck truss and compiled the report that constitutes the appendix of this report. Nigel Dodds prepared the illustrations and Stephanie Ratkai commented on the date of the pottery.

11.0 Sources

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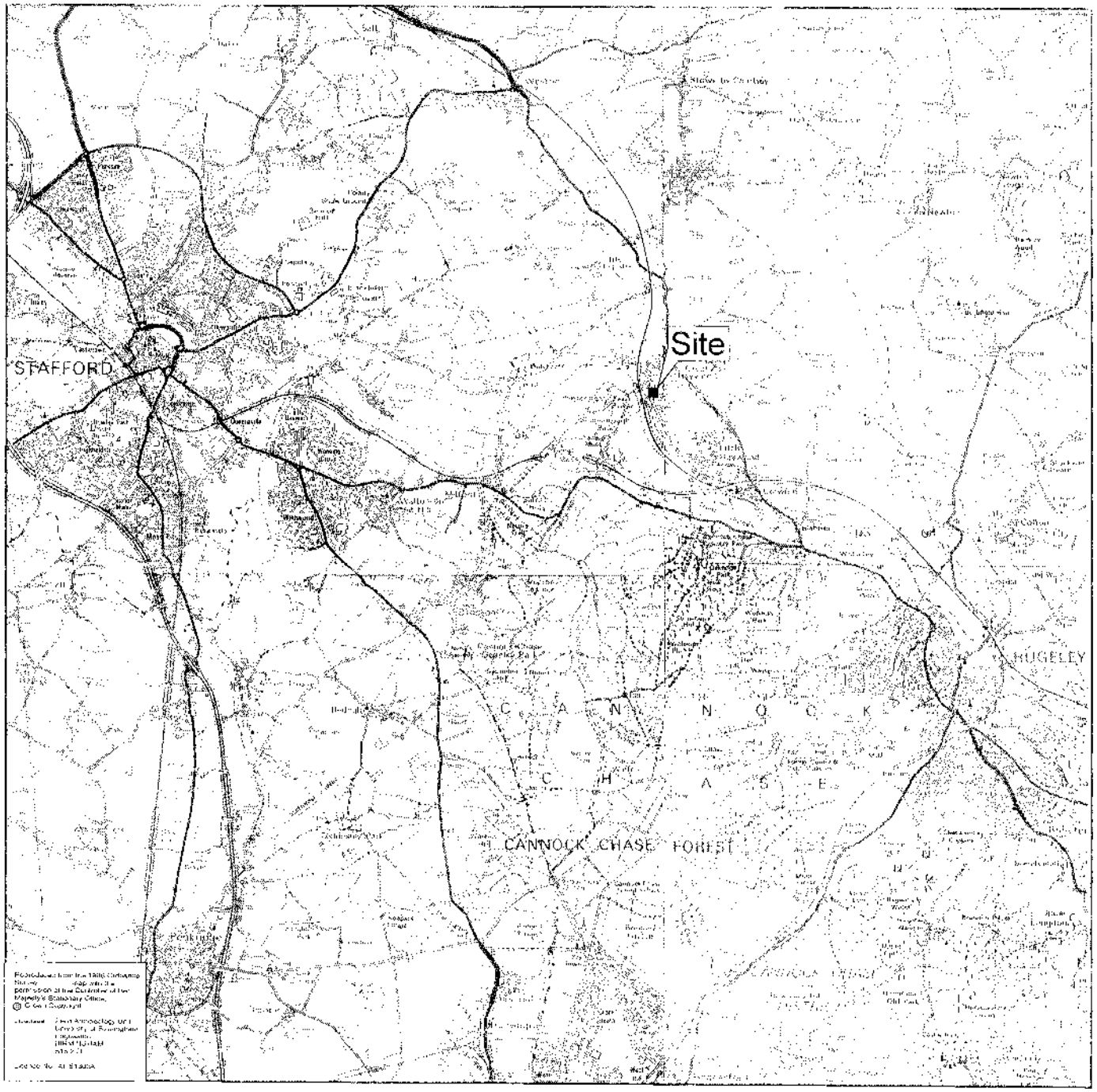


Fig.1

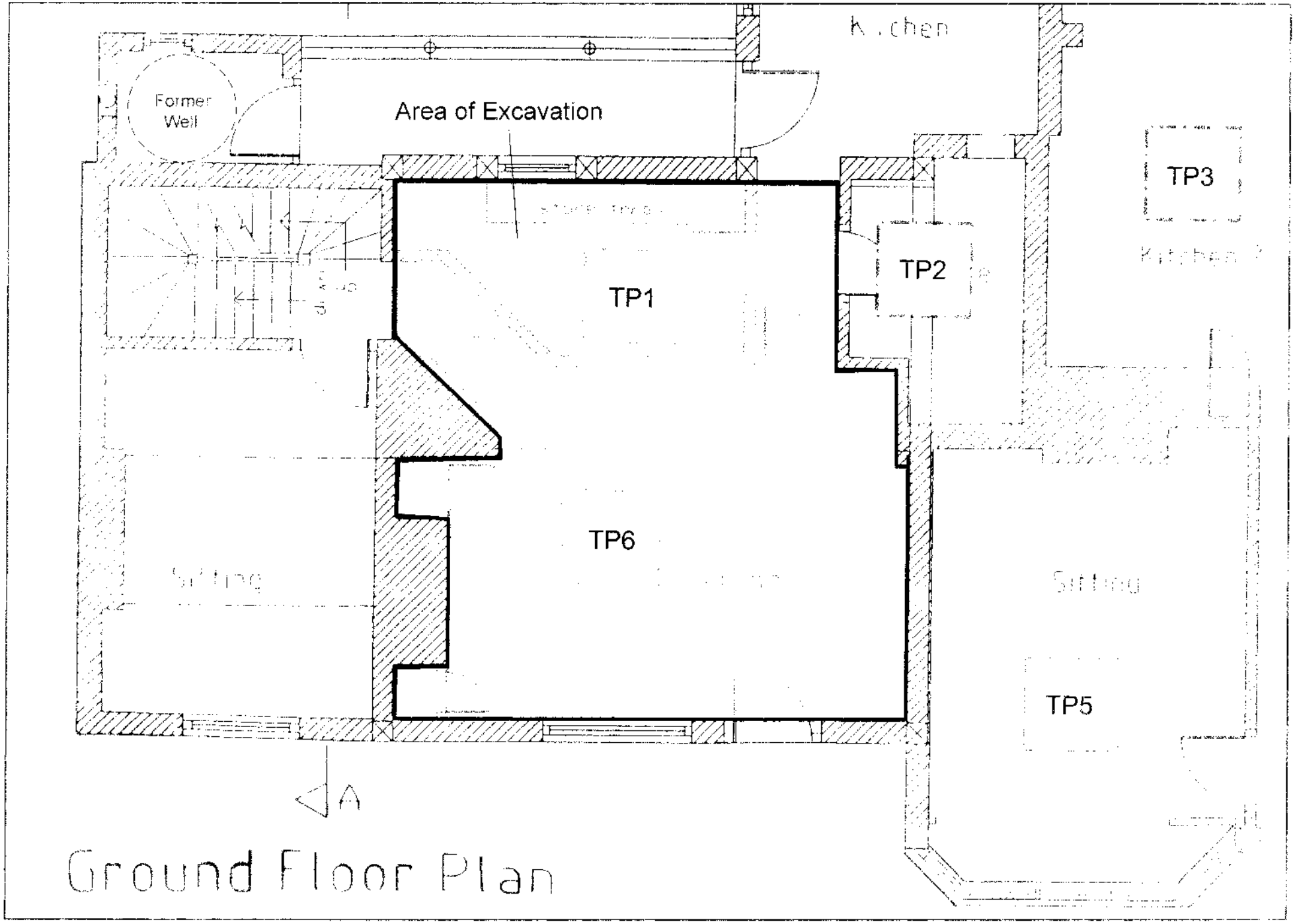

Former Well
Area of Excavation
TP1
TP2
TP3
TP5
TP6
A
Ground Floor Plan

Fig.2

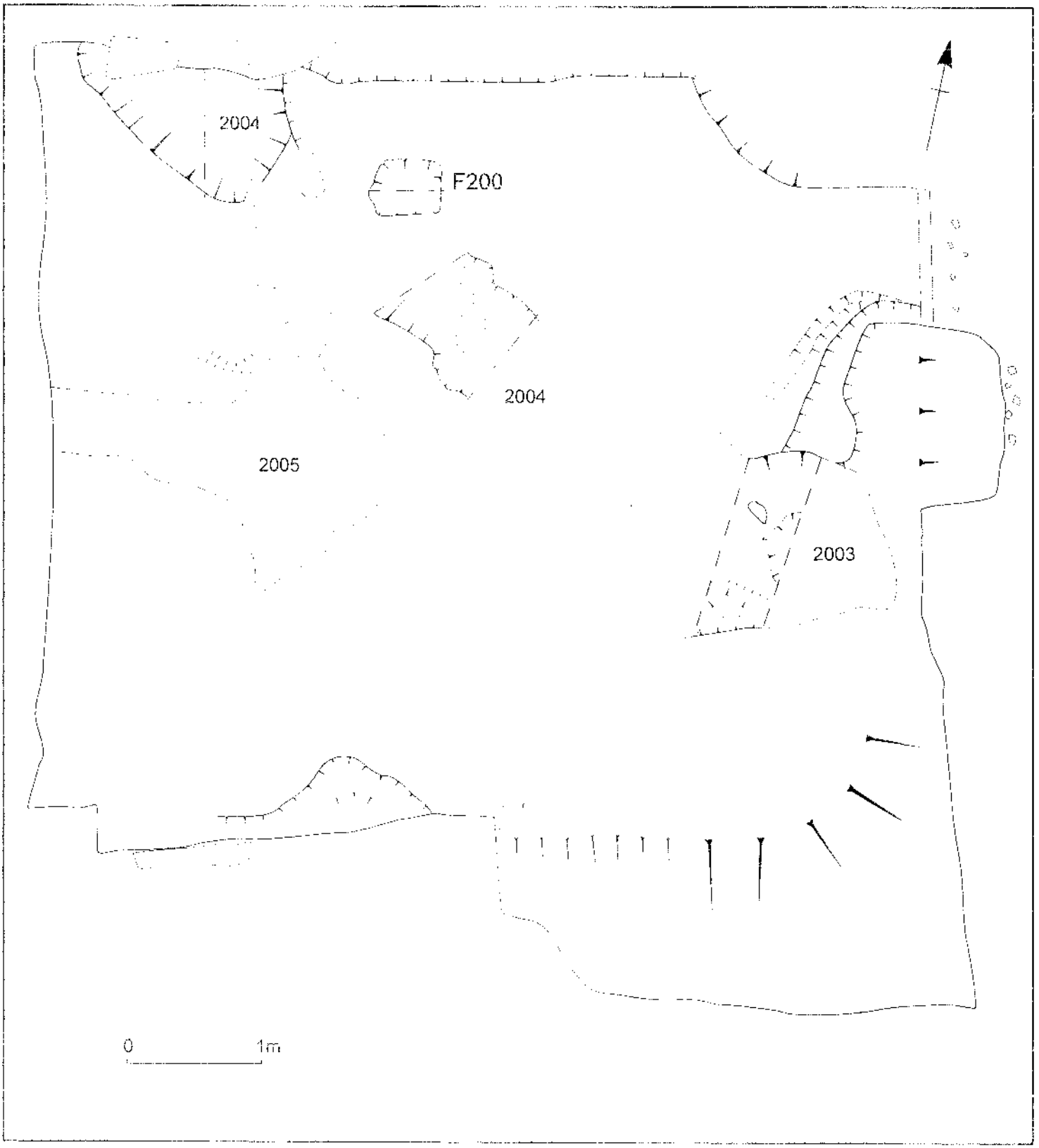


Fig.3

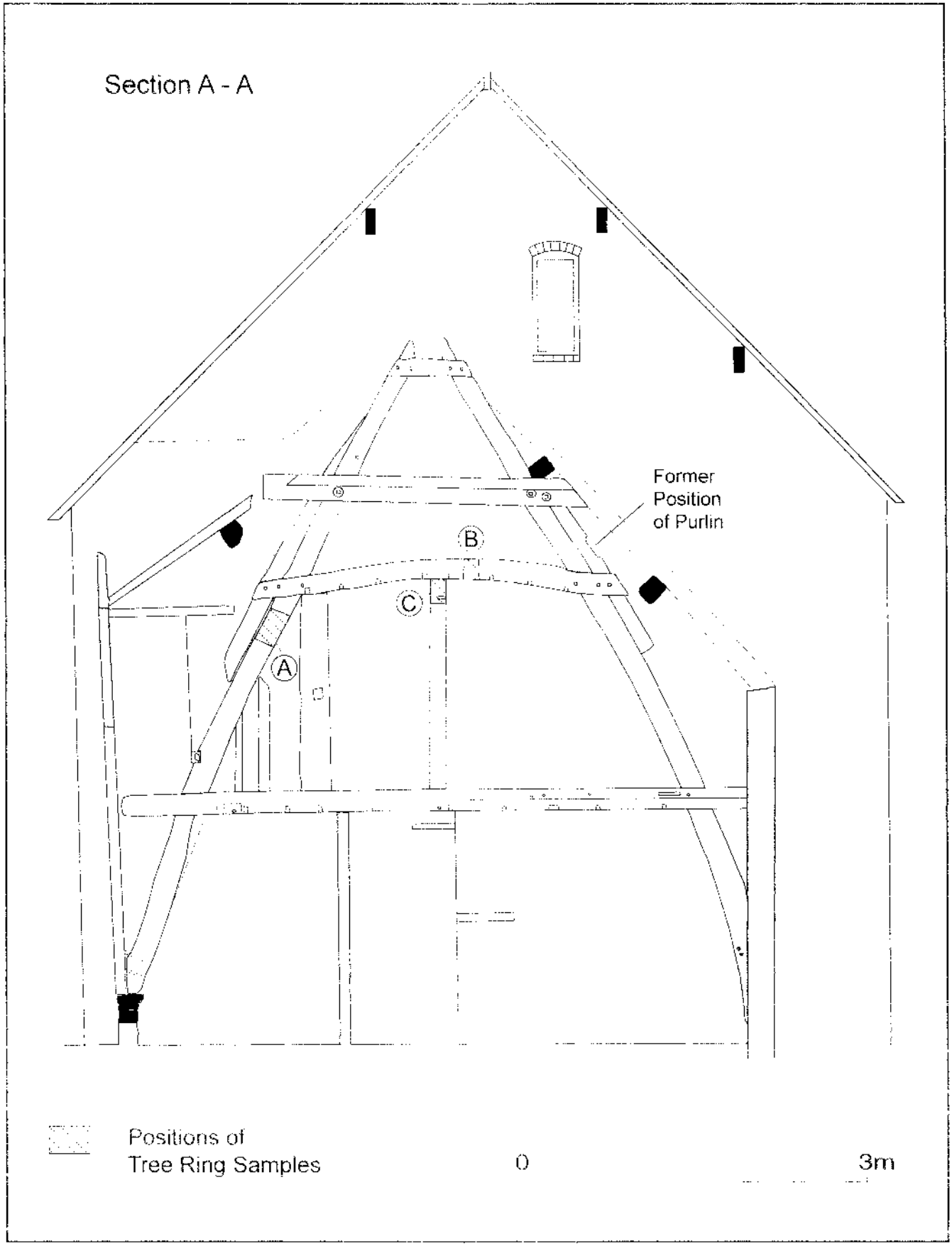

Section A - A
Former
Position
of Purlin
B
C
A
Positions of
Tree Ring Samples
0
3m

Fig.4

Plate 1

Plate 2

Plate 3

Plate 4

TREE-RING ANALYSIS OF TIMBERS FROM ROCK HOUSE FARM GREAT HAYWOOD STAFFORDSHIRE

R E HOWARD

TREE-RING ANALYSIS OF TIMBERS FROM ROCK HOUSE FARM, GREAT HAYWOOD, STAFFORDSHIRE

R E HOWARD

Summary

Three samples from a cruck truss at Rock House Farm were analysed by tree-ring dating. This analysis produced a single site chronology, RHFASQ01, consisting of two samples and having 63 rings. This site chronology could not be dated.

A third sample with 60 rings was dated as spanning the years 1365 – 1424. Interpretation of the sapwood would indicate a felling date for the timber represented of 1424.

TREE-RING ANALYSIS OF TIMBERS FROM THE ROCK HOUSE FARM, GREAT HAYWOOD, STAFFORDSHIRE

Introduction

Sliced samples from three different timbers forming part of a cruck truss at Rock House Farm, Staffordshire (SJ 997225, Fig 1) were sent to the Laboratory for analysis by members of Birmingham University Field Archaeology Unit. The cruck truss, which appears to have been closed, formed the central cross-frame of what was probably a two-cell, single-storey building. Both the timbers and the wattle and daub infill were heavily smoke blackened. Archaeological test pits within the building produced residual thirteenth/fourteenth century pottery.

The truss (fig 2) has blades that do not meet at the apex, being held apart by a yoke, and conforms to N. W. Alcock's type 'H' (CBA Research Report No. 42, 1981, *Cruck Construction an introduction and Catalogue*). The ridge plate has been removed. The truss has a tie beam at the former eaves level, and a collar, both are halved and pegged. An upper collar had been bolted to the frame at a later date.

Tree-ring dating

As is commonly known, trees (particularly oak trees, the most frequently used building timber in England) grow by adding one, and only one, annual growth-ring to their circumference each, and every, year. The new growth-ring is added to the outside of the previous year's growth, just below the bark. The width of this annual growth-ring is largely, though not exclusively, determined by the weather conditions during the growth period (roughly March – September). In general, good conditions produce wider rings and poor conditions produce narrower rings. Thus, over the lifetime of a tree the growth display a climatically determined variation of wide and narrow rings. Furthermore, and importantly, all trees sharing a common growing period and growing in the same area will be influenced by the same growing conditions, and the annual growth-rings of all of them will respond in a similar, though not identical, way.

Because the weather over a long period of time is unique, so too is the growth-ring pattern of the tree. The pattern of a short period of growth, 20 or 30 years, might conceivably be repeated two or even three times in the last one thousand years. Also, the growth pattern might well be repeated at different time periods in different parts of the country because of differences in regional micro-climates. In essence a short period of growth is far less reliable that of a longer period of growth. The growth of about 55 years is the usual satisfactory minimum, and the longer the period of time under comparison the better.

Tree-ring dating relies on obtaining the growth patterns of trees from sample timbers of unknown date by measuring the width of the annual growth-rings. This is done to a tolerance of 1/100 of a millimeter. The growth patterns of these samples of unknown date are then compared with a series of reference chronologies, the date of each ring of which *is* known. When "cross-matching" between sample and reference chronologies occurs repeatedly at the same date against a series of different relevant reference chronologies the sample can be said to be dated. The degree of cross-matching, that is the measure of similarity between sample and reference, is denoted by a "*t*-value"; the higher the value the greater the similarity. The statistically accepted fully reliable minimum *t*-value is 3.5.

However, rather than attempt to date individual samples, it is usual to first compare all the samples from a single building, or individual phases of a building, with one another other and attempt to cross-match each one with all the others from the same building or phase of building. When samples from the same phase do cross-match with each other they are combined at their matching positions to form what is known as a "site chronology". As with any set of data, this has the effect of reducing the anomalies of any one individual (brought about in the case of tree-rings by some non-climatic influence) and enhances the overall signal, the signal in dendrochronology being produced by the climate. As stated above, it is the climate that gives the growth pattern its distinctive variation. The greater the number of samples in a site chronology the greater is the climatic signal of the group and the weaker is the non-climatic input of any one individual.

Furthermore, combining samples in this way often has the effect of increasing the overall length of the site chronology or time span that is under comparison. As also mentioned above, the longer the period of growth under consideration, the greater the certainty of the cross-match. Any site chronology with less than about 55 rings is generally too short for satisfactory analysis.

Sampling

The three samples provided were given the code RHF-A (for Rock House Farm, site "A"), and numbered 01 – 03. The positions of the timbers sampled are shown in the drawing provided by BUFAU, reproduced here as Figure 2. Details of the samples are given in Table 1.

Analysis

Thus, in the case of the three samples supplied, each one was prepared by sanding and polishing and the annual growth-ring widths obtained by measuring. It will be seen from Table 1 that the number of rings on two of the samples are adequate but on one, sample RHF-A03, they are low. The growth-ring widths of all three samples were compared with each other.

This resulted in two of them, samples RHF-A02 and A03, cross-matching with each other with a *t*-value of 6.1 at positions as shown in bar diagram Figure 3. Because of this cross-matching the growth-rings of the two samples were combined at their relative off-set positions to form site chronology RHFASQ01, with an overall total length of 63 rings. Site chronology RHFASQ01 was then compared with a full range of reference chronologies for oak but there was no satisfactory cross-matching at any position and these two samples must remain undated.

The remaining ungrouped sample, RHF-A01, was compared individually with a full range of reference chronologies. This indicated a consistent and reliable cross-match when the date of its first ring is 1365 and the date of its last measured ring is 1424. The evidence for this dating is given in the *t*-values of Table 2.

The list contains some major and wide-ranging national reference chronologies, the East Midlands Chronology, England, Southern England, and Wales and West Midlands. It also contains several more local chronologies from such areas as Leicestershire, Oxon, Bucks, and from Nottinghamshire. The standard of the cross-matches is well above the significant minimum *t*-value of 3.5.

Interpretation and conclusion

Sample RHF-A01 retains complete sapwood, that is, it has the last ring produced by the tree before it was felled. This ring is dated to 1424 and is thus the felling date of the timber represented.

Where dating is based on a single sample a note of caution should always be expressed. Dendrochronology is more reliably conducted where a number of samples are cross-matched and dated rather than one. There is always the possibility that the cross-match for a single sample is spurious. The interpretation of the date obtained for a small number of samples is an archaeological one and rests upon the relationship between the timber and the building in which it is found.

Table 1: Details of samples from Rock House Farm, Great Haywood

Sample no	Sample location	Total rings	*Sapwood rings	First measured ring date	Heart/sap boundary date	Last measured ring date
RHF-A01	RGS02, cruck truss sample A (blade)	60	21C	1365	1403	1424
RHF-A02	RGS02, cruck truss sample B (tiebeam)	63	17C	------	------	------
RHF-A03	RGS02, cruck truss sample C (post)	42	h/s	------	------	------

h/s = heartwood/sapwood boundary is last ring on sample
C = sapwood is retained complete on sample

Table 2: Results of the cross-matching of sample RHF-A01 with the reference chronologies when first ring date is 1365 and last ring date is 1424

Reference chronology	*t*-value
Cadeby, Leics	6.4
East Midlands	5.8
Bridlesmith Gate, Nottm	5.7
Ansty, Leics	5.7
Watnall, Notts	4.8
Mercers Hall, Gloucester	4.6
England	4.4
Sawbridge, Warwicks	4.3
Steeple Claydon, Bucks	4.3
Oxhill, Warwicks	4.2
Wales and West Midlands	4.0
Southern England	3.8
Tusmore Park, Oxon	3.6

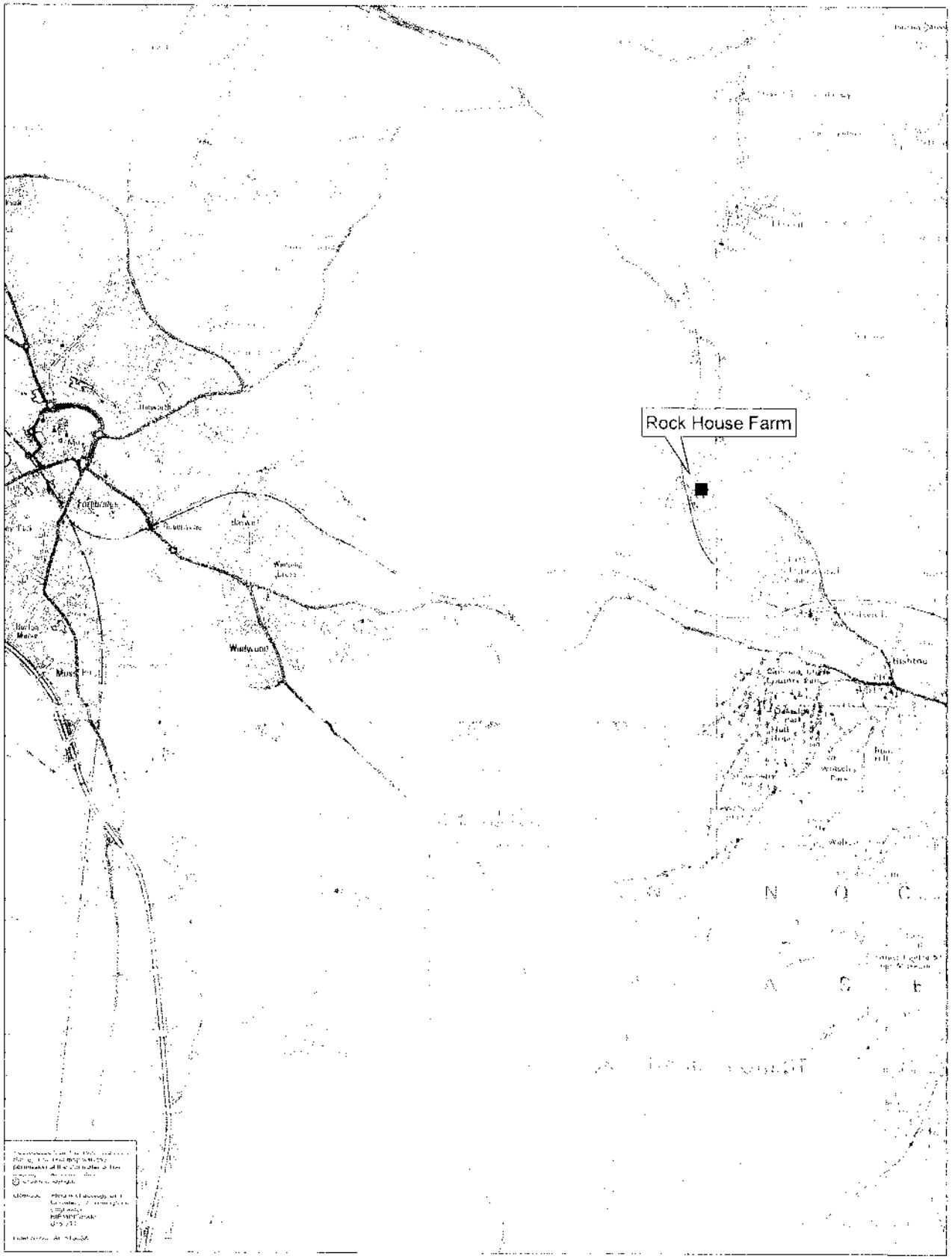


Fig.1 Map to show general location of Rock House Farm

Figure 7: Cross-sectional drawing of Rock House Farm to show location of samples A, B, and C

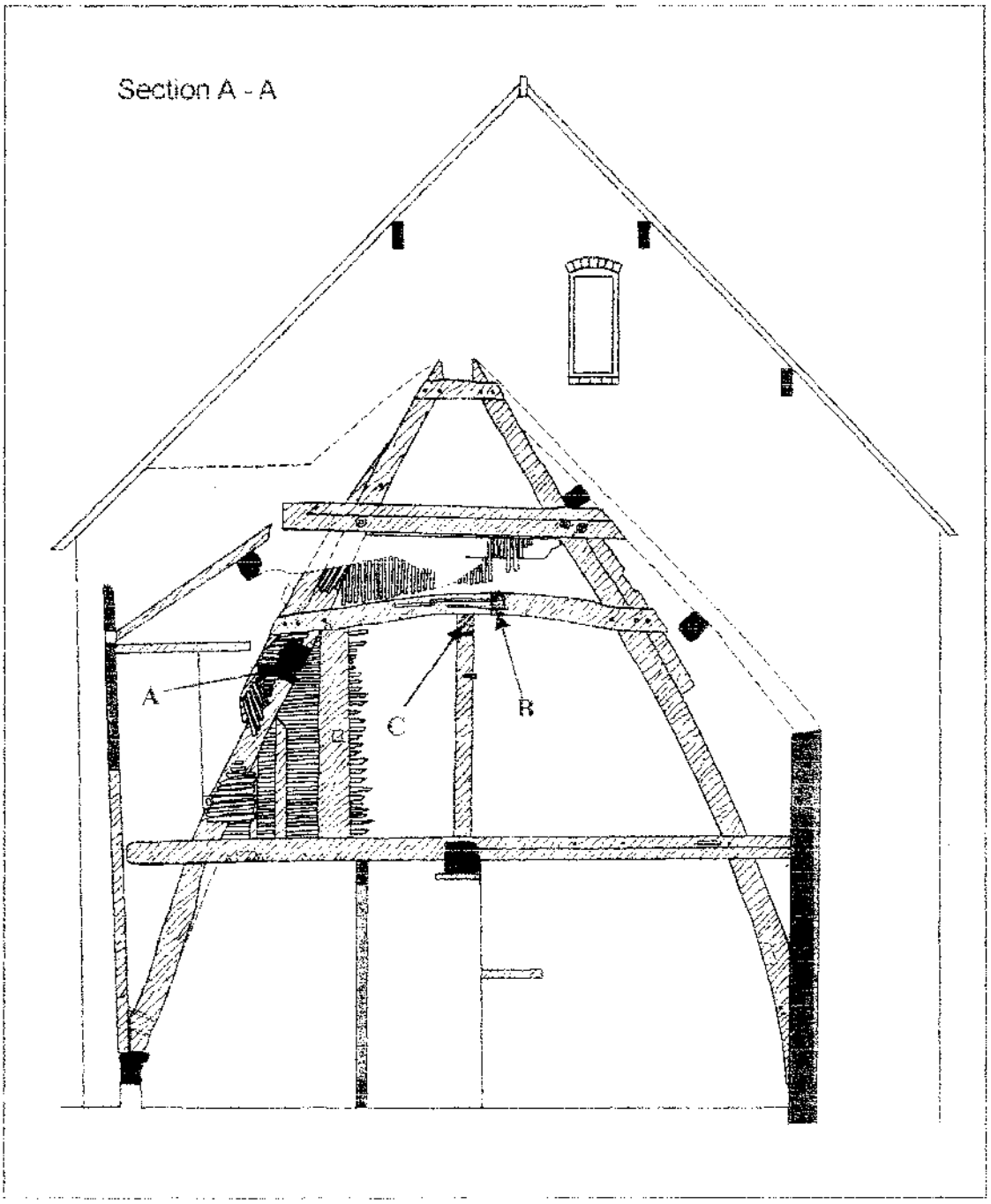
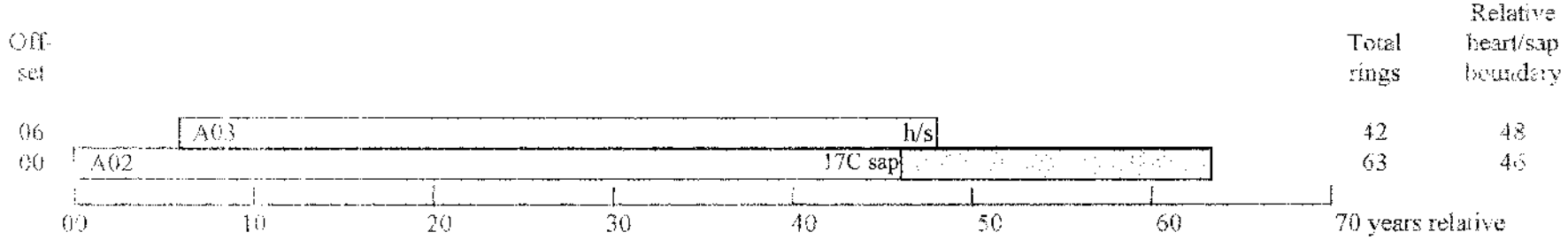


Figure 3: Bar diagrams of the samples in site chronology RHEASQ01



White bars = heartwood rings, shaded area = sapwood rings
h/s = heartwood/sapwood boundary is last ring on sample
C = complete sapwood retained on sample