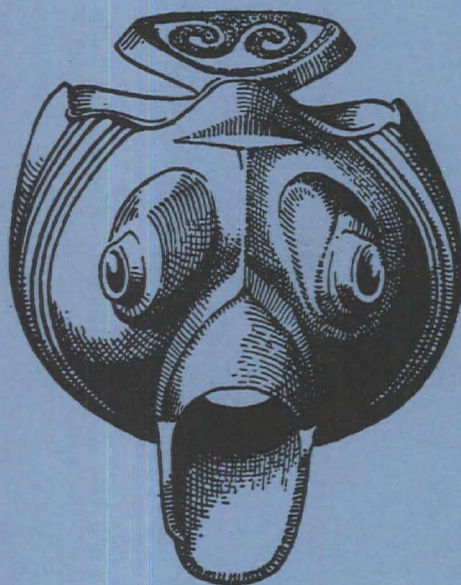


BEDFORDSHIRE ARCHAEOLOGICAL JOURNAL



Volume 14 1980

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Frederick William Kuhlicke B.A., F.S.A., A.M.A.

Will Kuhlicke died full of years and rich in the respect his fellows held for him. He was eighty-six at his death on 22 October 1979. It was sad but perhaps not unfitting that on the same day *Bedfordshire Archaeological Journal* 13 was ready for distribution. The man whose initial impetus had made the conception of large scale archaeological excavations in Bedford possible did not quite live to see their final fruition and publication.

His death reduces to two the original members of the Bedfordshire Archaeological Council who still serve on it. And as with excavations in Bedford and the continued existence of Bedford Museum, the Bedfordshire Archaeological Council, who publish the *Bedfordshire Archaeological Journal* would have been very much the poorer but for his wise council.

The qualities of a man may be measured by the degree to which he encourages others. I was encouraged by Will Kuhlicke and I shall always be grateful. For more than ten years I was given the complete run of the store cupboards of Bedford Museum; for those same years I was allowed

to look at any object I might choose to examine; throughout those years no hindrance was placed over any publication I might wish to undertake; and always there was no pressure to undertake the study of anything I might find uncongenial. It was a superb introduction to the business of being a working archaeologist.

The formal career of Frederick William Kuhlicke was recorded in *Bedfordshire Archaeological Journal* 9 (1974); a personal tribute may perhaps need do little beyond say "Thank you". It is a courtesy I know the man would have appreciated for he, himself, was a most courteous man.

He wrote gracious English and that too reflected his own quiet, gracious manner, never hurried, never perturbed and always dignified. It is that which I will remember of the man, and that I never heard him speak ill of another.

D.H.K.

All Souls' Day, 1979

The Excavation of the Acheulian site at Gaddesden Row

J.J. WYMER

INTRODUCTION

Butterfield's Pit at Gaddesden Row is immediately south west of the Chapel (at TL 039136), 166m (545 ft) O.D. It is one of the several Palaeolithic sites recorded by Worthington G. Smith from high levels in the Chiltern Hills (Smith, 1916). It is not mentioned in his book "Man the Primeval Savage", published in 1894, so was presumably unknown to him prior to that date. It was in this book that Worthington Smith recorded his numerous discoveries in the Caddington district. The more recent large scale reinvestigation of one of the Caddington sites by Drs Roe, Campbell and Sampson (Sampson, 1978) in 1971, prompted the cutting of a test section in Butterfield Pit to see whether the sequence described by Worthington Smith could be relocated and whether, as at Caddington, the archaeological areas had been worked out or not. This was done in July 1975 by kind permission of the owner of the pit, Mr J.E.H. Simon, in conjunction with the Nature Conservancy Council, as the pit is scheduled as a site of Scientific Interest. The work is part of a project of research on Lower Palaeolithic sites in Britain initiated by Professor Ronald Singer of the University of Chicago.

The section revealed (map and Fig. 1) sediments that could be broadly related to those published, although it is clear that there is considerable lateral variation in the strata. A small number of flint artifacts were found *in situ* but none were considered to be in a primary context and it must be concluded that if such material does exist in this pit (the 'floor' of Worthington Smith) it does not do so at this point.

DESCRIPTION OF SECTION

About 3m of deposits had already been removed commercially from the part of the old pit selected for cutting a test section, and over a metre of made ground had accumulated over the undisturbed deposits.

- Layer 1. Small and large flints within a pale, loessic-like silt. No trace of bedding.
- Layer 2. Gravel with similar matrix to layer above but siltier. No obvious bedding but stones mainly horizontal or near horizontal. Some iron-enriched illuvial horizons.
- Layer 3. Ochreous, mottled silt = brickearth. A few included flints, particularly in the upper part. Grading into:
- Layer 4. Paler, sandier silt with faint bedding lines. Resting on:
- Layer 5. Clay-with-flints at a steep angle with large, contained boulders of pudding-stone.

The section figured is the east face of the 2m wide cutting. The south and north faces followed the slope of the pit edge, but the gravel of layers 1 and 2 also dipped in the same direction.

Layer 2 is probably equivalent to the 'Brown stony clay' described by Worthington Smith from several sites in the district. It contained 13 flint flakes and one crude hand-axe. They are all patinated and weathered to some extent. They are slightly abraded, but this appears to be the result of soil movement rather than rolling in water or sand abrasion. Edge-chipping and faint scratches are also present and characteristic of soil movement. The only other artifact found was within the body of the brickearth (layer 3) one metre below the gravel. It is a crude flake 9cm long with a diffused bulb and negligible striking platform. It is patinated creamy-white but is neither edge-damaged nor scratched.

The crude hand-axe, possibly a reject, and three of the flakes from layer 2 are shown on figure 2. Two small ones, less than 3cm long, and no. 4 could be described as hand-axe finishing flakes, and the remainder as primary flakes. Four of these flakes, including a spall, have plain striking platforms (as no. 3) but the remainder are faceted to some degree (as no. 2). It is unlikely they are faceted as a result of intentional Levallois technique but, as emphasised by Sampson in his study

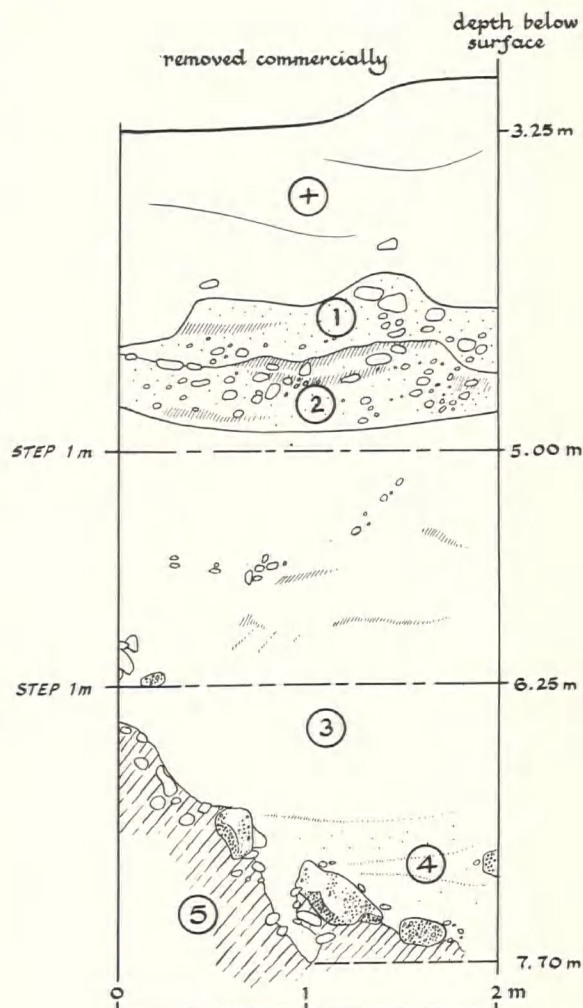
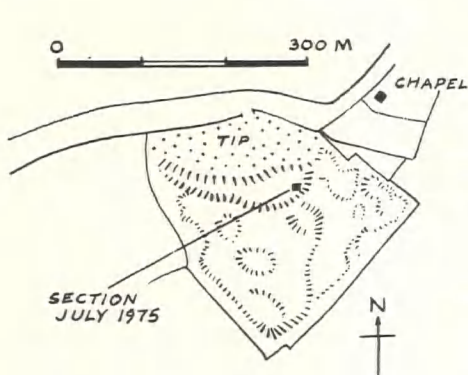


Fig 1 Section at Butterfield's Pit, Gaddesden Row, July 1975, with map showing location of section.

of the Caddington material, this was caused inevitably in the later stages of hand-axe manufacture. One of the plain-platform flakes is considerably more abraded than the others, and is also scratched and stained.

The purpose of this short note is to place on record these discoveries. The variable nature of these brickearth deposits has been well established by the more recent work at Caddington; Palaeolithic material in a primary context is likely to occur in restricted areas. Elsewhere, natural slumping, erosion, colluvial activity, solifluction and periglacial disturbances will have moved it into secondary positions. There is no need to elaborate

on the geological interpretations, as described for the Caddington area by John Catt and Richard Hagen (in Sampson, 1978). The deposits at Butterfield's Pit are equally in accordance with their interpretations: local surface drainage has added to the infilling of swallow holes in the underlying Chalk, as has mass-movement of soil during cold periods. Overlying sheet gravels must also relate to cold periods, and the subsequent contortion and cryoturbation to intensely cold periglacial climates. The loessic content of the brickearth is thought to derive from glaciation of the Anglian Stage, and that near the present surface to the last Devensian Stage of glaciation. The Palaeolithic

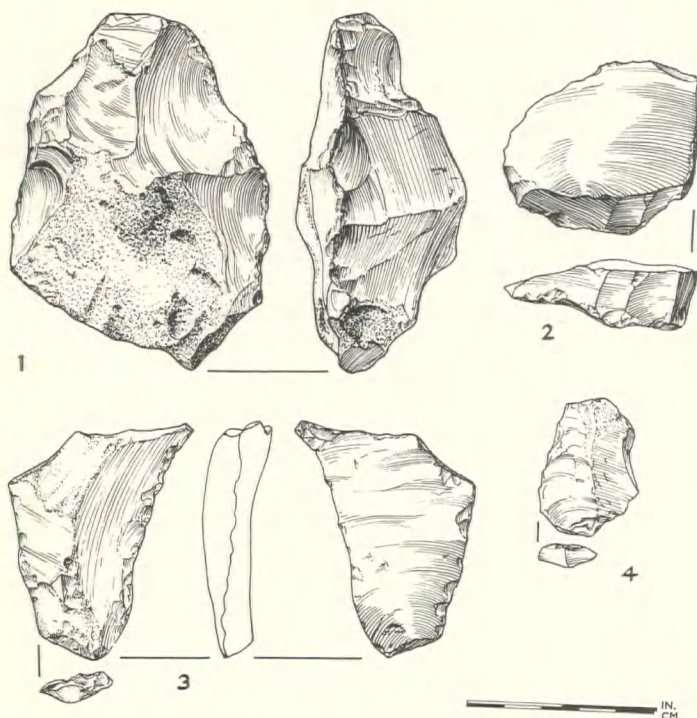


Fig 2 Gaddesden Row, Butterfield's Pit. Flint artifacts found in gravel overlying brickearth.

1. Crude hand-axe, probably a reject piece.
2. Flake with faceted striking platform.
3. Flake with plain striking platform. Some secondary working along one edge but also chipped along the same edge by soil movements.
4. Finishing flake.

occupation of the Chiltern Hills must, on these grounds, have occurred some time, or at various times, between these stages, either in the Hoxnian or Ipswichian interglacial periods, or the warmer parts of the Wolstonian Stage. They, partly on the basis of pollen analyses, consider an Ipswichian date more likely for the Acheulian material, but the author of this note thinks that this is unlikely if the Ipswichian is defined as the period represented by the deposits at Bobbitshole, Ipswich.

The flint artifacts have been placed in the Luton Museum and Art Gallery.

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- SAMPSON, C.G. 1978. *Paleocology and Archaeology of and Acheulian site at Caddington, England*. Dept. of Anthropology, Southern Methodist University, Dallas.
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The Bedfordshire Archaeological Council is indebted to Luton Museum for a grant towards the costs of this paper.

Brixworth, Northamptonshire : new evidence for early prehistoric settlement and agriculture

PAUL MARTIN and DAVID HALL

INTRODUCTION

The collection of flints from deposits exposed by ploughsoil has been undertaken over the years in many counties. In Bedfordshire finds occur almost exclusively on light soils, notably the greensand, chalk and river gravels: collections from Waulud's Bank, Leagrave,¹ and Ruxox Farm, Maulden,² have been previously illustrated.

Recent developments of theoretical archaeology have increased interest in field-walking evidence as a source of information for settlement patterns and land use. It is worthwhile considering an intensive study of some of the light-soil Bedfordshire parishes, and Woodward has studied the region around the river gravels at Roxton.³ We give here the results for Brixworth in the neighbouring county of Northamptonshire.

Northamptonshire is a county not hitherto well known for its prehistoric settlement before the Iron Age. Some of the Bronze Age pottery discovered by ironstone quarrying during the last century has been published,^{4,5} and recently Wymer has described some Mesolithic find-spots, including an important assemblage from Duston.⁶ A few Neolithic sites have been excavated, at Aldwinkle,⁷ Ecton,⁸ and Briar Hill in Hardingstone, where there is an early Neolithic causewayed camp.⁹ The stone axes of Northamptonshire¹⁰ and some Bronze Age barrows have also been studied.¹¹

None of this evidence alone is indicative of any large-scale early settlement, but further information comes from aerial photography which shows that there are many ring-ditches, and other undatable enclosures, occurring mainly on the river gravels or ironstone. In Northampton Museum there are flints mostly unprovenanced (other than by parish), suggesting a widespread activity of some kind in the central regions of the county.

Field-by-field detailed survey by the authors in some 90 parishes in the county during the last 15 years has revealed a large-scale activity of pre-Iron Age date, especially in the central regions and in the Peterborough area.¹² The details of the countywide fieldwork aspect are discussed else-

where: this account describes the parish of Brixworth in some detail, taking it as an example of one of the more densely settled regions.

The lighter soils of Northamptonshire lie in two principal regions. Various glacial gravels occur along the valleys of the larger watercourses and particularly in the main valley of the River Nene. The gravels of the Welland valley become extensive north of Peterborough, and are rich in prehistoric settlement, the cropmarks around Maxey being particularly well known.¹³ The other light soil is the Northampton Sand and Ironstone. It is almost unique to the county and varies from a brown iron-impregnated limestone through to a ferruginous sand. South of the River Nene it only outcrops as a narrow belt, but in the centre of the county there are extensive surface outcrops. Brixworth lies on one of these areas.

Early settlement is abundant on it, often yielding cropmarks of which the remarkable series at Church and Chapel Brampton have been described.¹⁴ The present work has established that the early settlement is much more extensive than air photography reveals — there being many settlement sites evidenced by concentrations of worked flints that yield no cropmarks.

FIELDWORK TECHNIQUES

A very detailed examination of each field is required to establish the presence of early prehistoric activity from the concentrations of worked flints. In 1974 the whole parish was surveyed field-by-field for medieval field remains. Sample detailed grid-walking clearly established that worked flints only occurred on the ironstone fields and never on the clay. Effort was therefore focussed on the ironstone outcrops.

It is essential for the land surface to be ploughed and weathered. Normally a field was left until young winter corn was growing and walked in five-metre strips at such a rate that an acre was covered in about an hour. When a flint concentration was discovered two metre strips were studied. Each field was visited on several occasions during the winter and over several seasons. The

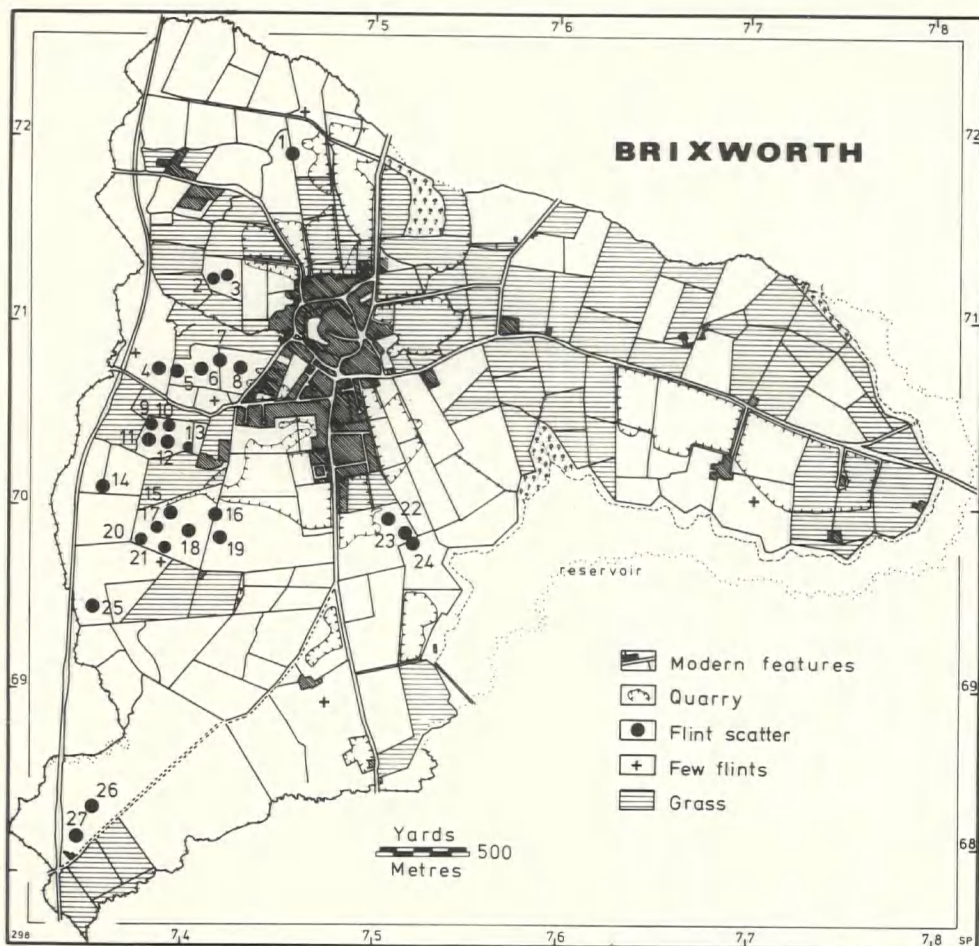


Fig 1 Brixworth, Northamptonshire; distribution of flint concentrations.

evidence given below therefore represents the work of 5 years and between 10 and 20 separate visitations.

All flint tools were plotted to the nearest metre and scatters of other worked flints and waste flakes were bagged up according to the limited area in which they were concentrated. No rigorous statistical collection of samples was attempted.

The find-spots were plotted on the 1:2,500 scale and the flints analysed.

RESULTS

A SETTLEMENT SITES

The locations of find-spots are given in Fig 1. A total of 27 flint scatters ('sites') occurs in Brixworth, which is unprecedented. The sites only occur on ironstone and sand/gravel soils and are concentrated on the western side of the parish.

Table 1 gives the analysis of the flints found on each area. It can be seen that there is a range of

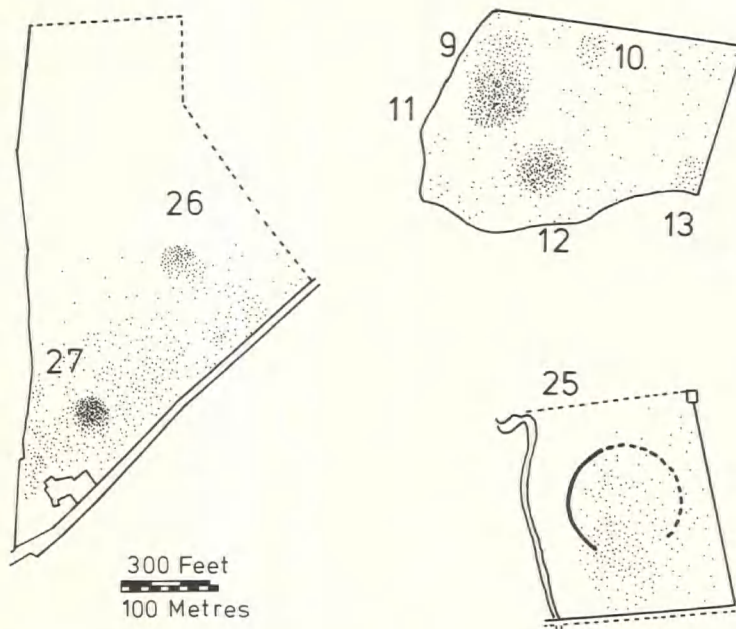


Fig 2 Brixworth, Northamptonshire: detailed flint distribution of sites 26 and 27, 9-13 and 25. Each dot represents approximately 3 flints.

material from the Mesolithic period to the Early Bronze Age. There may well be late Bronze Age sites, but in the absence of flints, or pottery capable of surviving in ploughsoil, such settlements are impossible to identify.

The exact nature of the flint concentrations and their distribution is open to interpretation and is discussed below.

The two Mesolithic flint-concentrations (nos: 24 and 27) each produced considerable quantities of material, nearly all patinated. The varying patination, from white to smokey grey, suggests a long period of activity, assuming that the degree of patination is a function of age (see below).

Early Neolithic flint assemblages are rarer, the main groups being at sites Nos 9, 11, 12 and 15. Small quantities of early artifacts were found at sites Nos 7, 14, and 16.

Secondary Neolithic sites are common, occurring at 8 sites (Nos 4, 5, 7, 9, 16, 18, 19, 21, 25 and 26), and Early Bronze Age find-spots are also common (11 sites, Nos 1, 2, 3, 6, 8, 9, 11, 12, 22 and 25).

B FLINT ANALYSIS

The enormous assemblage of flints (13,373) from Brixworth is worthy of a detailed study, but this cannot be attempted here. Four sites have been chosen which are essentially Mesolithic, Neolithic and early Bronze Age in period. For each site the plan is given on Figure 2, histograms of flint type on Figure 3 and some of the flints are illustrated on Figure 4. Most of the artifacts and waste flakes etc are well known types, so that illustration of the total assemblages is unnecessary.

(i) The flints from site No 27

The site lies on sandy ironstone and produces patinated mainly Mesolithic flints. Nearby is a Secondary Neolithic site (No 26). Only the cores from site 27 have been measured and plotted in the form of a histogram (Fig 3).

The commonest maximum dimension falls between 3 and 4cm (68%) which is very similar to the Mesolithic group from Bourne Poole, Staffordshire. No analysis has been made to classify the cores by the number of striking platforms. The average weight is 26 grams.

<i>Number of site</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>
Waste flakes	205	245	227	29	95	152	62	1964	40	30	83	73	233
Utilized serrated flakes	52	69	110	2	23	77	15	378	12	7	34	43	97
Broken flakes	58	48	89	16	32	51	19	630	19	12	44	30	77
Broken utilized flakes	28	8	41	2	7	48	5	81	4	4	5	18	35
Burnt flint	14	8	33	6	9	14	4	50	2	2	4	6	16
Burnt stone								2					1
Stone axes or fragments						2		1					2
Flint axes or fragments						3		9					1
Scrapers	67	14	54	13	11	46	11	265	4	4	18	16	127
Leaf arrowheads	2	2				1		17				2	1
Asymmetrical arrowheads	1					1							1
Transverse arrowheads			3			2		12					
Laurel-leaf arrowheads		1						3					1
Tanged and barbed arrowheads	1	2			2			2	1				
Plano-convex knives	3	2	1		1	1		5				1	
Borers	7	11		1	2	4	2	29	1		1	3	1
Hammerstones	2	4	8	1	2	18	3	7		2			8
Re-worked material	29	18	9	1	2	10	2	5	2	2			5
Re-worked flakes		5	3	2	7	12		75	1		6	8	
Quern			1					2					
Rubbing Stones	1	1				3		2				1	2
Fabricators								3				2	
Polished edge		1											
Discoidal flints					1								
Complete cores	13	14	18	4	14	25	1	188	4	5	13	9	24
Fragmentary cores	14	20	25	4	5	31	4	95	1	2	7	14	32
Chipped lumps	2	5	3	1	3	6	1	53				3	4
Re-worked cores	1	4	2					15				1	1
Core Scrapers	1	1					1	8			3		
Burnt cores								10					
Mesolithic implements													
<i>Totals</i>	<i>500</i>	<i>483</i>	<i>627</i>	<i>82</i>	<i>218</i>	<i>507</i>	<i>130</i>	<i>3911</i>	<i>91</i>	<i>81</i>	<i>218</i>	<i>230</i>	<i>669</i>

Table 1

These cores are larger than those of Bourne Poole, (in spite of comparable maximum dimension) and are similar to Mesolithic sites in areas accessible to good quality flint.¹⁵ Nevertheless, the quality and size of the flint nodules available at Brixworth is poor.

The characteristic flints are the geometrical arrowheads and microliths (Table 1, Fig 4).

The assemblage contained 1,248 artifacts consisting of the types listed in Table 2. A large number had some remaining cortex.

(ii) *The flints from sites 9-13. (Upper Park)*

These sites all lie in the same modern field fairly close to each other, and in the first instance were not identified separately. The artifacts were, there-

<i>Type</i>	TABLE 2		
	<i>A</i>	<i>B</i>	<i>C</i>
Complete cores	106	12	90.7
Broken cores	63	10	82.2
Chipped pieces	30	7	100
Secondary worked flakes	169	6	47.2
Worked flakes	67		43.9
Scrapers	15	5	
Waste flakes	342	89	26.0
Broken flakes	178	23	12.9
Burnt flints (hearthstones)	26		
	1096	152	
Per cent patinated	87.8		

A - Patinated

B - Nonpatinated

C - Per cent with cortical remains

16a	17	18	19	20	21	22	23	24	25	26	27		
115	47	176	72	89	291	7	89	285	193	66	431	5299	Waste flakes
56	25	55	18	32	167	14	9	128	119	76	67	1685	Utilized serrated flakes
47	23	81	9	35	108	2	30	108	46	35	201	1850	Broken flakes
12	20	14	7	6	25	2	2	57	28	20		4479	Broken utilized flakes
1	4	6	22	2	18		3	17	43	8	26	318	Burnt flint
1	2		1		2							9	Burnt stone
2					1							8	Stone axes or fragments
1		2	7	1					1	2		29	Flint axes or fragments
20	12	10	19	12	41	7	5	36	44	36	20	912	Scrapers
			1		1							27	Leaf arrowheads
												3	Asymmetrical arrowheads
							1					18	Transverse arrowheads
												5	Laurel-leaf arrowheads
1					2	1			2	1		15	Tanged and barbed arrow-heads
			1		1	1		1				18	Plano-convex knives
7	3	5	4	2	10	2	3	9	13	10		130	Borers
3	1	6	14	2	9	1		8	2	2		103	Hammerstones
5	4	12	6	7	2	1		21	12	23		178	Re-worked material
9	8	4	13	9	25	7	55	81			269	599	Re-worked flakes
												3	Quern
3		1	2		4							20	Rubbing stones
						1						6	Fabricators
1										1		3	Polished edge
		1							1	1		4	Discoidal flints
23	14	8	20	10	53	4	7	81	67	25	118	762	Complete cores
15	10	27	22	14	56	2	2	40	32	17	73	564	Fragmentary cores
4	3	6	15	4	15	1	4	7	10	12	37	199	Chipped lumps
1	6	4				2	14	12				63	Re-worked cores
1	4	2	1		4			3	6			35	Core scrapers
							1					11	Burnt cores
								6			10		Mesolithic implements
328	186	422	255	225	835	55	225	906	619	335	1248	13373	

The material from site No. 1 was not available for study

The material from sites Nos. 11 and 12 are included in site No. 9.

fore, bagged up together and have been analysed as one assemblage. The material ranges from the Early Neolithic to Early Bronze Age (Table 1). It is by far the largest collection from the parish.

The cores from sites 9-13 had been roughly worked to obtain no more than 4 flakes, and 20% had one or more platforms worked to more than 90% of the surface. The proportion of cores to waste flakes was 1:24. This ratio, which is very much smaller than other known sites in England, seems also to have occurred at the excavated Neolithic site at Ecton, Northamptonshire, where a ratio of 1:30 was obtained.

The preferred scraper length is 3-4cm and the

breadth 2-3cm (Fig 3). This compares with the Beaker period site of Belle Tout, Sussex, 3-5cm length and 4cm in breadth; i.e. the Brixworth scrapers are larger and less squat than those from Sussex. This is consistent with the Brixworth assemblage being rather earlier on average. The figures from Broome Heath, Norfolk, show that Beaker scrapers are smaller and thinner than those of the Neolithic phase,¹⁶ and Bradley demonstrated this trend in a series of sites.¹⁷ The striking feature of the Brixworth scrapers is the very wide range of thickness, which is best accounted for by the assemblage being a mixed group of Neolithic and Early Bronze Age date.

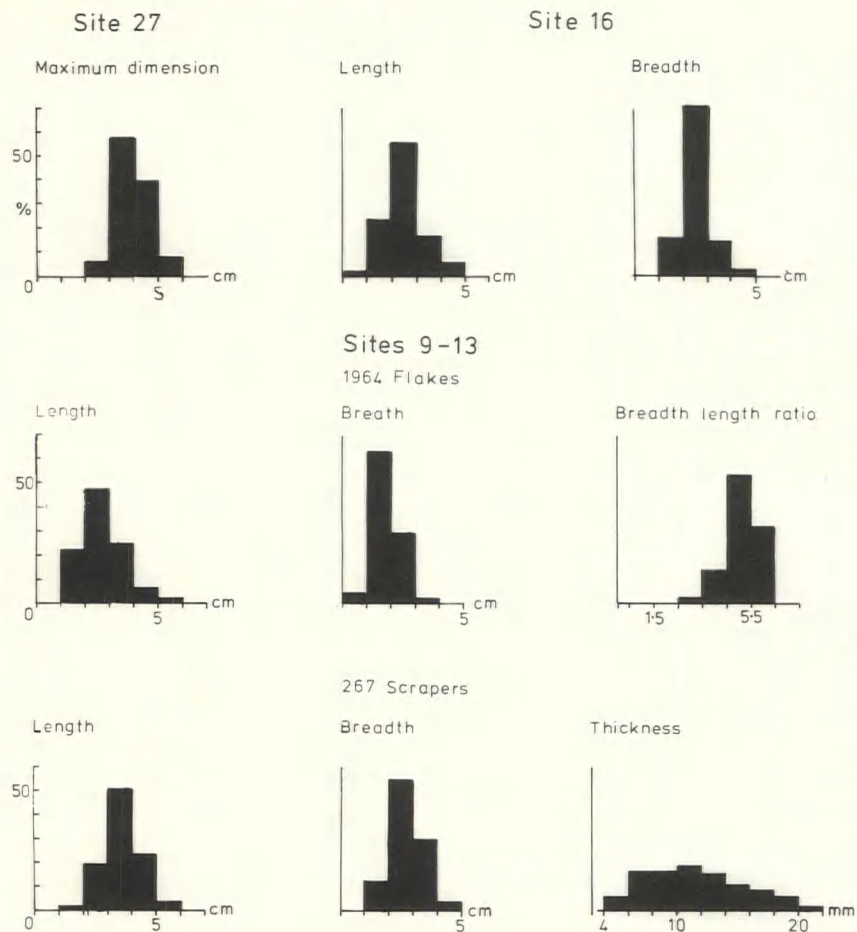


Fig 3 Brixworth, Northamptonshire; histograms of flint assemblages from sites 9-13, 16, and 27.

Similarly with the flakes the commonest ratio (breadth : length) is 3:5 and 4:5 which is more in accord with the late Neolithic of Durrington Walls than the earlier Neolithic. Again there is the trend towards shorter wider flints with the progress of time.

The flake and scraper analysis thus confirms the implement evidence (Table 1), that the Upper Park site is of mixed period Early Neolithic through to the Early Bronze Age. Characteristic tools of the three periods were found in abundance: polished axe fragments, transverse arrowheads, barbed-and-tanged arrowheads etc.

(iii) *The flints from Site 25*

The distribution plan is given in Figure 2. No

histograms have been plotted but the material is all of secondary Neolithic and Early Bronze Age date, similar to Upper Park. The finds lie substantially within or near the entrance of the crop-mark of a possible henge monument, (see below).

(iv) *The flints from Site 16*

The site is essentially a Secondary Neolithic assemblage. Histograms of the scraper analysis are given in Figure 3. The commonest length (3-4cm) and breadth (2-3cm) are reasonably in accord with a Secondary Neolithic grouping, e.g. from Broome Heath, Norfolk.¹⁶ Allowing for the small pieces of raw flint available at Brixworth, there is no great difference in the assemblages from the two sites.

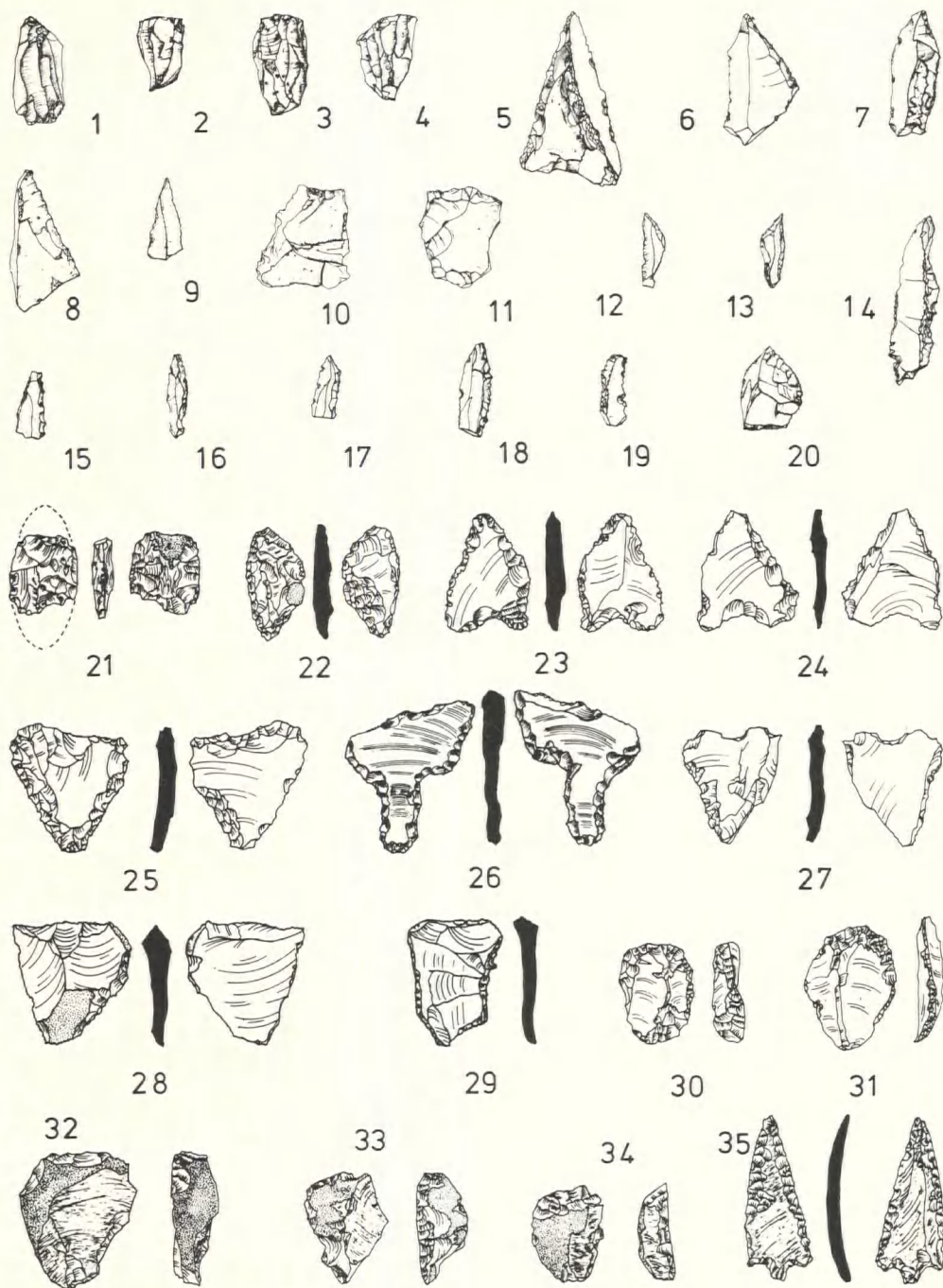


Fig 4 Brixworth, Northamptonshire; flints from various sites (scale 1-4, $\frac{2}{3}$ and 5-35, $\frac{1}{3}$).

(v) *Descriptions of Drawn flints* (Fig 4)

Mesolithic (all flints patinated)

Blade Cores

1, 2. Site No. 24

3, 4. Site No. 27

Blunted points

5-7 Site No. 24

8-11 Site No. 27

Scalene triangles

12. Site No. 27

13. Site No. 24

Rod-form microliths

14-17. Site No. 27

18, 19 Site No. 24

Other form

20. Site 19

Arrowheads

Laurel leaf

21. Site No. 9

22. Site No. 16

Asymmetrical

23. Site No. 2

24. Site No. 16

Transverse

25. Site No. 4

26, 27. Site No. 7

28. Site No. 9

29. Site No. 23

Bronze Age implements made from Mesolithic flint (the reworking is not patinated)

Thumb scrapers

30. Site No. 6

31. Site No. 14

32. Site No. 20

33, 34 Site No. 23

Barbed-and-tanged arrowhead

35. Site No. 10

DISCUSSION

The flint concentrations marked on Figure 2 probably approach the total number occurring in Brixworth. There are still a few unploughed grass fields on the ironstone belt, and obviously it is possible for some sites to be obscured. In addition there are flints in Northampton Museum that may represent lost sites. In particular there is a group, consisting of 72 flints, that includes 18 blades and 9 cores of Mesolithic type. The site is described as 'opposite to the cafe' which would place it at about SP748700, and off the ironstone belt. More

likely the group came from sites No 23 and 24.

The interpretation of the flint scatters requires care.

The most compelling evidence is that of the re-worked patinated flints. The two Mesolithic sites have a very high proportion of patinated material – for instance, Site No 27 (Table 1) yields 87.8% patinated flint. The pH of the soil on these sites does not differ from that of the others (all are acidic). Similar patination has been noticed elsewhere on sandy soil, e.g. at Bourne Pool, Staffordshire.¹⁵ Most of the Brixworth Neolithic and Bronze Age flints are as fresh as new, i.e. dark brown or black in colour. It can be safely assumed, therefore, that patination is a function of age, only the older flints being grey or white.

Nearly all the flint scatters yield some patinated material (called 're-worked' in Table 1). It could be assumed that they had a small scale Mesolithic activity before their later, main period, but this is not convincing with the remarkable total of 27 separate areas producing flints, implying an unprecedented Mesolithic settlement. Much more probably is that the two main Mesolithic sites (24 and 27) were under agriculture in the Neolithic period and subsequently. It would be a simple matter for the ancient farmers to pick up useful flint and take it away for re-use. If this be accepted then the occurrence of re-worked patinated flints demonstrates widespread agriculture on the Brixworth redlands. If there was agriculture then there must have been settlement, and this seems most likely to have been at, or close to the flint scatters where the patinated material had been taken.

The flint scatters have been interpreted as the remains of sporadic hunting parties or as flint-knapping sites. Except for the Mesolithic period the hunting-party theory seems unlikely. The evidence of Table 1, showing the presence of many flint tools, saddle querns and fire-cracked flints, makes transitory hunting encampment improbable. Since flint-concentration sites, similar to those of Brixworth, are the major remnant of early pre-historic activity in the county there arises the problem that if these sites are the result of sporadic hunting then where did the hunting parties come from? In addition the evidence from excavated sites shows that even in the early Neolithic period most of the deposited animal bones derive from domestic species. The 'hunting' arrowheads

were, therefore, presumably used mainly for sporting purposes.

An interpretation as flint-knapping sites is quite untenable. The only outcrops of flint are glacial deposits along major brooks and rivers and these are clearly the sources being used. Why should this poor quality flint be taken from source to higher ground on the ironstone level if the main purpose was merely an industrial activity?

The only likely explanation is that the Brixworth flint-scatter sites are domestic settlements. Pryor has recently discussed the interpretation of flint (and other) deposits pointing out that people do not usually live on their rubbish.¹⁸ However, we are considering the Brixworth sites on a macro-scale, and not trying to define the precise whereabouts of house sites within the flint-deposit areas.

Except for site No 25 there are no cropmarks associated with the settlements. This does not prove they were ephemeral. The only cropmarks given by early sites are henges (with cursuses if any), barrows, and specialized cattle-breeding paddocks of the Fengate type;¹⁹ the Brixworth sites are none of these.

Site 25 does differ, and perhaps offers the explanation for the marked westerly distribution of Beaker period settlements. The evidence from a single aerial photograph suggests that there is a henge monument in Stratfold (site 25). Half the field is covered by alluvium and in this a segment of a large ditch is evident. The other half of the circle is less clear on the gravel terrace. The whole of the Beaker-period flint scatter is concentrated within the cropmark. If further photographs can confirm the existence of this henge then an obvious explanation of the site distribution is evident. Nearly all the Secondary Neolithic/Early Bronze Age sites in the neighbouring western parishes of Spratton and the Bramptons lie on an eastern aspect looking towards Brixworth.

The fieldwork evidence, therefore, has demonstrated several useful points relevant to an understanding of prehistoric settlement.

Firstly, there are a large number of sites producing flints that are only detectable on the ground — they rarely yield crop or soil marks visible from the air. Generally the 'sites' appear to be domestic, according to the evidence of re-used flint, the discovery of which is attributable to agriculture. The sites are limited to light soils, in the Brixworth case to ironstone, sand and gravel.

Taking the evidence of fieldwork in other

parishes¹² it is possible to identify a limited settlement in the Mesolithic period in Northamptonshire. This is also being recognized in other Midland areas. During the Secondary Neolithic period and early Bronze Age the density of the settlement was considerable. In areas of light soil occupation seems to be comparable to that of Wessex, and has been for the most part hitherto unrecognized. The settlement is also river orientated, so that far inland, away from rivers, light soils can be found without much prehistoric settlement (e.g. at Shenington, north Oxfordshire).

The flint types appear to be quite normal and there is no evidence to support the early suggestion of Clark that in the Midlands there was a 'hang-over' of Mesolithic culture into subsequent periods lasting longer than elsewhere.²⁰ This of course cannot be tested without excavation, but at Briar Hill the dating of the causeway camp is early.⁹ Evidence that the landscape was open grassland in the Nene Valley area was found at Ecton.⁸ A recent study of stone axes in Northamptonshire has shown that there was the usual range of imports, particularly from Langdale and Cornwall.¹⁰

Fieldwork, therefore, is seen as an essential tool for studying prehistoric settlement. Similar work in Cambridgeshire is revealing intensive early pre-historic settlement on even the smallest pocket of sand or gravel.²¹ There is doubtless still scope for fieldwork on chalkland — it is remarkable how few settlements have been recognised in the areas around Avebury or Stonehenge. In Northamptonshire the fieldwork will be extended to examine the whole of the light soils in the county to establish the early pre-historic settlement pattern.

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Excavations at Harrold Pit, Odell, 1974-1978

A Preliminary Report

BRIAN DIX

Three and a half years' continuous excavation in advance of gravel extraction at Hall Aggregates' Harrold Pit in the upper Gt. Ouse valley came to a close in March 1978.¹ The examination of an extensive and complex spread of cropmark features in the south-west corner of Odell parish, covering some 7-8 ha. and approximately centred at SP 956568, indicated intermittent human activity in the area over the past few millennia.²

PREHISTORIC FEATURES

Although the major phase of settlement and land-use at the site occurred from later Iron Age times onwards, various earlier features were noted. Of these, several shallow disturbances may be of neolithic origin while the survival of fragments of beaker pottery in later contexts denotes further activity at that time.

More tangible was an almost circular ditch enclosing an area approximately 12m by 10m: the ditch was probably originally continuous although later disturbances broke its circuit. Where its course survived, the ditch was roughly 1.5m wide and between 50 and 60cm deep from the base of the modern ploughsoil. It had been dug in an area where pockets of calcareous gravel occur and the distinctive upcast of white sandy gravel containing small lumps of chalk appears to have been mounded or, at the very least, banked close to the inner lip of the ditch. This material subsequently slipped into the open ditch where it reprecipitated to result in a very leached infilling. A similar fill was observed in a grave within the area defined by the ditch and implies contemporaneity or near-contemporaneity with it. It further suggests that the feature was designed as a funerary monument.

The grave, approximately 70cm wide, had been so disturbed by a 1st century A.D. ditch that only the upper part of the inhumation it had originally contained survived. There were no associated finds. However, fragments of two flint tanged and barbed arrowheads found in the infillings of adjacent later ditches presumably derive from the monument and suggest a Bronze Age date for its construction.

THE IRON AGE AND ROMAN FARMS

Most of the cropmark features related to a type of site which although known along the Great Ouse valley gravels and elsewhere in midland and eastern England has hitherto rarely been extensively examined.³

The Early Farm

A prolonged agricultural activity began at the site a generation or so before the Roman Conquest, perhaps as the result of so-called 'Belgic' expansion.⁴ Settlement was initially based on a sub-rectangular enclosure 40m wide which occupied the south-west corner of a large field unit. It contained two round houses, both of which were twice rebuilt. These structures were each between 10 and 12m in internal diameter and were defined by fairly evenly spaced post-pits and curving lengths of gully. Hearths survived in places while in one dwelling a large earthenware vessel had been set in a water-filled pit presumably to serve as a cold store.

At first the structures were enclosed by a timber palisade but this was subsequently replaced by a series of ditches. To the north and east, entrances opened into several large contiguous enclosures which formed an area of arable fields; smaller plots would also have been cultivated. Subdivisions within some of these suggest that they were grazed on occasion, but the main stockyards appear to have been to the west where a group of enclosures had their ditches interrupted in a way best suited to controlling and penning livestock. Animals would have been moved along ditched drove-ways and watered at ponds, disused quarry pits and other points. A series of wells showed considerable variety in their original designs and their infillings preserved a rich variety of organic remains. Preliminary analysis of the large but fragmented beetle fauna from the only deposit that has been studied in any detail so far, shows ground-living and leaf-feeding species to have been present in addition to water beetles.⁵ Among the various wooden objects which the waterlogged deposits of the wells and similar features had preserved is part of the share of a crook-ard type of

plough.⁶

Renewal of many of the well structures, particularly at enclosure entrances, combined with the frequent scouring of ditch bottoms and the periodic re-cutting of whole alignments, suggests that similar farming requirements arose each year. The provision and maintenance of such permanent ditched boundaries equally shows the farming practice of the area to have been already at a sophisticated level of organisation by the time of the Roman Conquest. With similar traces elsewhere, the indication is of an agriculture based upon a single-family unit engaged in a mixed cereal and pastoral economy.

Two cremation cemeteries datable to the period A.D. 25-50 lay outside the homestead of the early farm. Within a narrow plot, roughly 10m by 5m, five circular pits each contained cremated human remains. Although subsequent earthworm activity had caused some of this material to become scattered throughout the infillings, a sufficient concentration remained in most of the pits to indicate that the cremated remains had previously been deposited fairly centrally on the clean bottoms of the excavated pits. The discovery of bronze brooches, themselves unburnt, with this material suggests that the comminuted bone was originally contained within fastened textile bags or leathern pouches. Pig bones were the evidence for food offerings, while other food and drink could have been contained in some of the twenty-eight pots found buried in the pits. However, a few of the vessels contained further cremated bone, perhaps representing the remains of some predeceased.

The other cemetery appears to have been earlier in date and covered an area of some 57 sq m. It comprised six urned cremations which had been shallowly buried upright in small circular pits. Three of these showed a deliberate placing of skull fragments either to one side of or directly beneath the containing vessel, whilst a small grave nearby contained only a human skull.

The human head was regarded as a symbol of divinity and other-worldly power and it figures prominently in Celtic cult practice.⁷ Closely allied to these superstitions was the veneration of sacred waters and wells and elsewhere at the site the severed head and neck of an adult woman had been carefully placed behind the woven framework of a late 1st century A.D. well. Several ordinary inhumations had been laid in disused quarry pits in addition to being interred in specially dug graves.⁸

The Roman Farms

Towards the end of the 1st century A.D., as the economic improvements of the early Roman period perhaps began to be felt, the homestead was transferred to a more open situation where it overlay the levelled ditches and other features of an earlier series of pens.

A sequence of circular and rectangular timber-framed buildings evidenced the longevity of occupation at the new site. However, while the absence of an enclosing palisade or ditch allowed more space for yards and ancillary structures, the main inhabited units probably only ever occupied a small plot of land which at any one time may not have been more than 250-300 sq. m. Within an area of just over 1,000 sq. m., houses were successively rebuilt and their positions often shifted, thereby occasioning several clearance and levelling operations. These, together with the replacement of individual timbers and the overlapping between the various rebuildings, made identification of the exact number of different structures and refurbishments difficult. Several individual buildings, mainly of circular design with diameters varying between 10m and about 14m, could however be distinguished.

The building sequence ended with the construction of a rectangular farmhouse containing several rooms. Its survival at a comparatively high level directly beneath the ploughsoil resulted in its plan being only recoverable where the increased soil cover of a headland and the ridges of later cultivation had protected it from the effects of pre-modern and recent ploughing. Its walls had formerly stood on broad gravel bases, although stone does not appear to have been a major feature of its design and construction.⁹ This late farmhouse occupied an area approximately 28m by 14m and was probably abandoned at the middle of the 4th century A.D.

To the south of the area which the successive farmhouses occupied, a yard contained two stone-lined wells which had been dug down to the water table in the 2nd century A.D. Other ancillary features included a small circular hut, the exact purpose of which could not be demonstrated. In late Roman times, a drying kiln stood within an almost square enclosure, approximately 11m by 11.5m, roughly opposite two entrance gaps in its perimeter ditch. Four post-pads in a rectangular arrangement indicated that the feature had formerly been covered. The kiln was built of local limestone and had been sited on a slight rise with its oval stoking area at the lower end : together

with the slightly tapered effect provided by clay 'cheeks' at the flue mouth, this would have ensured a maximum draught. Its wide main flue bifurcated at a clay platform into side channels which were connected by a back flue, from which an exhaust or vent led into the open ditch of the contemporary enclosure. The date of the kiln is not entirely clear. Pottery buried at its abandonment dates to the 4th century A.D., but a structure such as this could have been in use throughout several generations, as earlier material from the re-cut perimeter ditch of the associated enclosure suggests. The kiln might reasonably have been used for a variety of activities requiring a warm drying heat rather than to have been restricted to one particular purpose.¹⁰

Throughout the period of its occupation, the later homestead site and its yard continued to be a central part of the surrounding field system. This preserved many elements of its early design, suggesting that the farming practice was essentially unchanged. Modification was often confined to an alteration in the design of an enclosure entrance or the shape of an individual small land unit. Among the smaller cultivated plots, two types of enclosure can be recognised: those covering between 250 and 700m², and larger ditched areas enclosing upwards of 1500m². Both forms could be contemporary although there may have been a preference for smaller enclosures at an earlier date. The larger arable fields seem always to have been integral to the farm and their ditches were frequently re-cut. In time live hedges could have become established, thereby perpetuating some of the field boundaries after the ditches themselves had finally filled. Such an interpretation would explain the limited evidence from the latest phases for linear features when compared to such other landscape features as quarry pits, wells and structures. Cut branches and twigs from the silting ditches might also indicate an incipient hedgerow management.

SAXON AND LATER ACTIVITY

There is a break in the settlement history of the site from the mid- to late-4th century A.D. until the middle Saxon period when renewed activity led to five timber-lined wells being opened. While each occupied a large circular pit which had been dug to between 0.5 and 1m below the level of the then contemporary water table and most were sited upon relatively clay-free gravel, the details of their construction varied. Two of the wells each

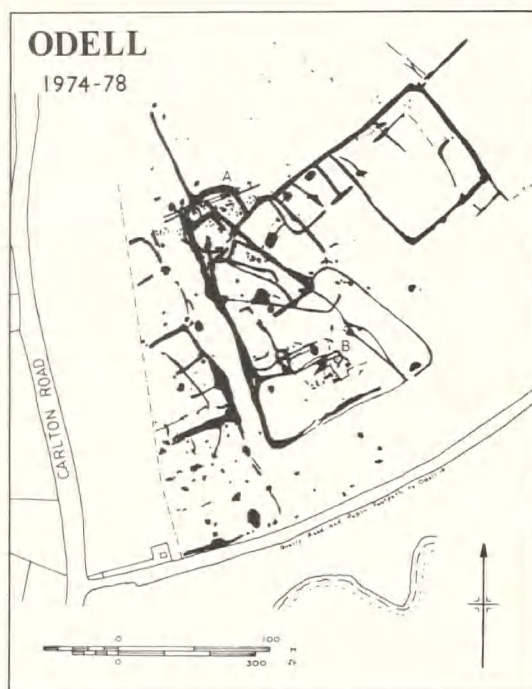


Fig 1 Excavated features at Harrold Pit, Odell.

The main arable areas of the late Iron Age and Roman farms lay to the north and east of the successive homesteads (A, B) while the distinctive stockyards occupied the west with the river Ouse and associated meadows on the south continuing beyond the lower border of the illustration.

Drawing by Joe Prentice

contained an oval framework of small branches and twigs woven around a series of short uprights which had been either driven into the underlying gravel or were resting on the slope of the pit sides. The material used in their construction was mainly hazel with some oak and other woods. The wattle lining of one lay to the side of a platform of re-used planks and had a woven osier basket suspended from it by braces of small twigs. The basket was roughly circular, a little under 80cm in diameter, and perhaps had originally been between 60 and 65cm tall. Repairs to its weave and the complete absence of its bottom suggest that it was re-used in the well, presumably to act as a kind of filter. A further example of basketry was found in a third well where renewal of the partly collapsed original lining incorporated a specially

woven oval frame, 82cm by 70cm and 15-18cm deep. Of the other two wells of this period, one contained various timbers mainly of oak and hawthorn which had sometimes been split radially and laid as a square around four uprights, while the other comprised little more than a series of vertical timbers lining a water-hole into which a roughly made ladder of rung width 40-45 cm descended.

Radiocarbon measurements of material used in the well constructions suggest that the features were opened in the 7th-8th centuries A.D.¹¹. The pottery of the period comprised hand-made forms in a hard black gritty fabric.

Surface scatters of pottery combined with fragmentary structural evidence to indicate that any associated settlement traces had been largely lost to the plough. However, a *grubenhaus* with main axis almost 4.5m long was identified while a 7th century cemetery and possible hut sites were discovered during previous quarrying in the vicinity.¹²

Apart from a metalled road of an uncertain but ? Roman date, all the later features at the site related to agricultural use.¹³

NOTES

- 1 The excavation was undertaken as part of a programme of such work carried out in the county by the Planning Department of Bedfordshire County Council in conjunction with district councils and the Ancient Monuments Inspectorate of the Department of the Environment. It was made possible through the exemplary co-operation of the landowner and quarrier, Hall Aggregates (Eastern Counties) Ltd., a part of the RMC Group of Companies. Unfortunately, space does not allow adequate recognition of the contributions to the results made by those numerous individuals who undertook work of special skill and responsibility: but it is to them and to all the other people associated with the project that the highest praise and thanks are due.
- 2 The site was discovered from the air and photographed by Professor J.K. St. Joseph of Cambridge University: see R.C.H.M., *A Matter of Time* (HMSO, London, 1960), 53. It should be seen as part of the ancient settlement pattern of the area, for which cf. B.N. Eagles & Vera I. Evison, 'Excavations at Harrold, Bedfordshire, 1951-53', *Bedfordshire Archaeol J*, 5 (1970), 17-55. Relevant air photographs and summaries of previous knowledge of the site are contained in the county Sites & Monuments Record at PRN 543.

- 3 Cf. the partial investigation of such sites as Wyboston (*Proc Cambridge Antiq Soc*, 50 (1957), 75-84), Bedford (*Bedfordshire Archaeol J*, 7 (1972), 81-2), Elstow (*CBA Group 9 Newsletter*, 7 (1977), 18; *Bedfordshire Archaeol J*, 12 (1977), 27-54), Bromham (*Bedfordshire Archaeol J*, 8 (1973), 23-66), Radwell (*ibid.*, 67-91), and Emberton (*Rec Buckinghamshire*, 19.4 (1975), 387-8) — all comparable sites along the upper and middle Gt. Ouse.
- 4 The earliest pottery from the site recalls many of the forms and styles of finish, as well as some of the decorative elements of the vessels known from the central 'Belgic' areas and with its use of 'grog' must belong to the same tradition. Subsequent ceramic developments, for which additional evidence has been obtained at other sites, are a further indication that the area was greatly influenced by so-called 'Belgic' trade and expansion from the close of the 1st century B.C. on. For further details see *A Summary of the Romano-British Pottery Seminar held at Hardingstone on 4th June 1977* (Northants CC, 1978), 10-11. Cf. also, *Bedfordshire Archaeol J*, 8 (1973), 5-22; *Rec Buckinghamshire*, 19.4 (1975), 373-421.
- 5 The deposit came from a pond within a small enclosure to the east of the early homestead site. Whilst dung beetles of the genera *Aphodius* and *Onthophagus* indicate herbivorous mammals in the vicinity, their relatively low numbers would suggest that the feature was not situated immediately adjacent to a grazing or stalling area. Information and identifications by Miss M.A. Girling, DOE Ancient Monuments Laboratory.
- 6 Cf. P.V. Glob, *Ard og Plov i Nordens Oldtid* (Universitetsforlaget, Aarhus, 1951), 14 ff., 'Krog-arde'.
- 7 Anne Ross, *Pagan Celtic Britain* (RKP, London, 1967), 94-140; 140-9. See also the same authoress, 'Shafts, pits, wells — sanctuaries of the Belgic Britons?', in J.M. Coles and D.D.A. Simpson, eds., *Studies in Ancient Europe* (Leicester, 1968), 255-85.
- 8 Other burials were found during previous quarrying on land between the site of recent excavation and the River Great Ouse, *Bedfordshire Times and Standard*, 13 April 1956.
- 9 Despite this, the later farmhouse was probably as comfortable and spacious as many of the contemporary lower-scale 'villa' dwellings.
- 10 Earlier drying kilns were also recorded. They were small and key-hole-shaped.
- 11 They include dates of ad 720 ± 70 (HAR-1038) and ad 710 ± 80 (HAR-1427). Two earlier dates were obtained for materials re-used in the well constructions (HAR-1428, HAR-1838). Publication in *Radiocarbon*, forthcoming.
- 12 See *Bedfordshire Archaeol J*, 5 (1970), 38-50.
- 13 Paper first submitted May 1978 and subsequently revised to incorporate the results of research to the end of 1978. Full publication is anticipated for 1981.

The Bedfordshire Archaeological Council is indebted to the Department of the Environment for a grant towards the costs of this paper.

The Bedford Southern Orbital Sewer: a watching brief

R.F. WHITE

SUMMARY

Archaeological sites in the River Ouse valley affected by sewer construction are discussed. They include an updraught pottery kiln of the 2nd century AD and a shrunken medieval settlement. A feature previously recorded as a 'ring ditch' was found to be a former meander.

INTRODUCTION

The Southern Orbital Sewer was designed to replace existing overloaded sewage works in villages immediately south and west of Bedford and to provide spare capacity for future development in the area by transporting effluent to a modern sewage plant at Summerhill. Since the sewer passed through an area of considerable archaeological interest, the Ouse Valley River Gravels, a preliminary archaeological survey was undertaken by Angela Simco, utilising information from the Bedfordshire County Council Sites and Monuments Record (SMR) and County Record Office as well as air photographs and field observation.¹ This suggested various priorities for archaeological action prior to, and during construction, principally involving excavation, earthwork recording and a watching brief. These activities were undertaken by various members of the Bedfordshire County Council Archaeological Field Team, grant aided by the Department of the Environment, primarily P.J. Woodward and R.F. White. Two excavation reports have previously been published.²

The Construction Method

The sewer was constructed by Miller Buckley (Civil Engineering) Ltd., for North Bedfordshire Borough Council and the Anglian Water Authority.³ It was built in various sections, between Spring 1977 and Autumn 1978, with 2, sometimes 3, gangs working on separate lengths at the same time. The construction methods varied according to geological and topographical features but were mainly open trench, involving the removal, by box scraper, of c. 0.20m of topsoil along a c. 50m wide working strip and the excavation

of a c. 8m wide, 3m deep, trench by dragline or Poclain RC 200 crawler excavator. The sewer pipes were protected during installation by a steel shield dragged along by the Poclain. A temporary rubble track was laid alongside the sewer line to facilitate vehicular access.

SITES AFFECTED BY THE SEWER

The route of the sewer is shown in Figure 1. Sites mentioned in this note are marked by Roman numerals.

I Settlement site.

Multi-period

TL 050473. SMR 1624.

A cropmark site excavated by P.J. Woodward prior to sewer construction.⁴

II Building platform.

? Post-Medieval.

TL 050184727. SMR 9989.

A low building platform approximately 9 by 13 metres marked by a spread of limestone pieces and clay roofing tile. Preliminary clearing of part of the platform revealed limestone footings and a pea grit-gravel surface but failed to produce any pottery or dating evidence other than disturbed post-medieval pottery. Buildings are shown in this area of Elstow on a 1757 estate map.⁵ The position, offset from the main north-south road suggests a post-medieval agricultural building possibly utilising stone robbed from Elstow Abbey.

III ? Settlement Site.

Multi-period.

TL 05404730. SMR 8356.

A number of small pits, gulleys and a partially robbed clunch wall cut into gravel were observed with pottery of 'Belgic', Roman and Medieval types. The Roman road, Viatores No. 210, whose suggested alignment crosses the sewer line to the east of this site was not observed in either the working strip or the sewer trench.⁶

IV Natural Feature

TL 06354752. SMR 8357.

Following topsoil removal a supposed 'ring ditch'

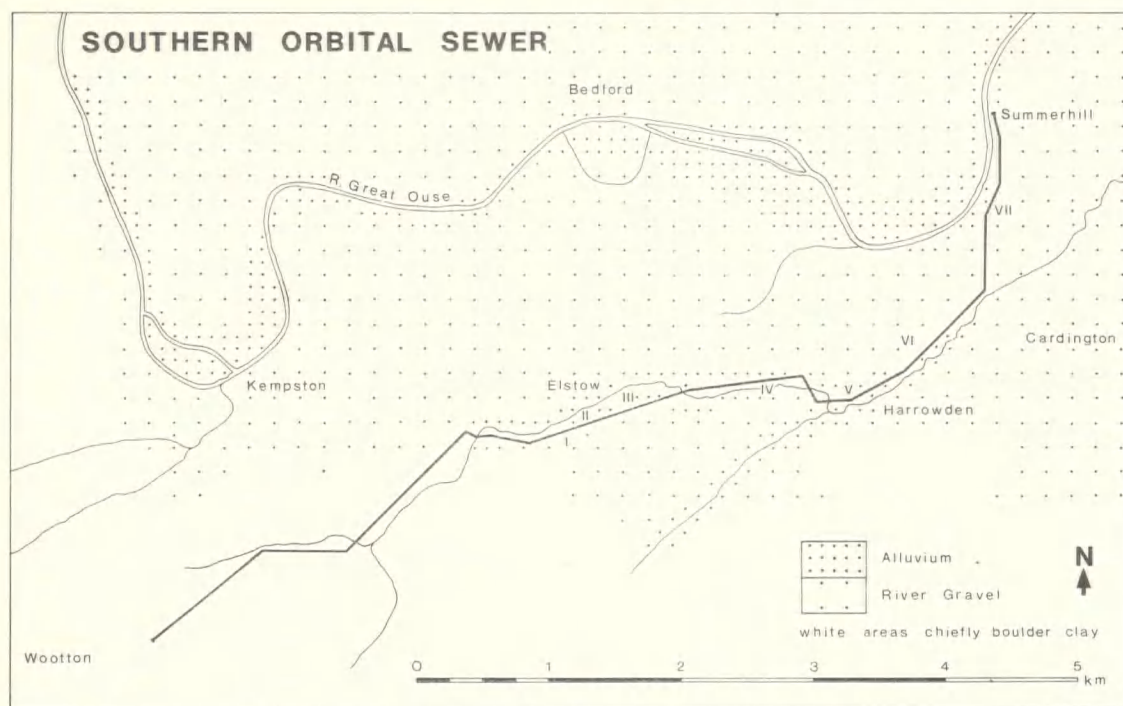


Fig 1 The route of the Southern Orbital Sewer.

was marked by an irregular, though roughly circular, spread of gravel and alluvium. After cleaning the non-concentric shape, and the intermittent nature of the 'ditch fill', suggested that the feature was the remains of a shallow meander or overflow channel. Two sections across the 'ditch' and examination of the central part of the site failed to produce any evidence to refute this interpretation.

V Earthwork remains.

Medieval and later.

TL 072475. SMR 3920.

The earthwork complex at Manor Farm, Harrowden, was surveyed at 1:1250 (figure 2). Preliminary documentary survey had indicated that the earthworks might be medieval in origin. Eighteenth century map evidence shows that this was an area of old enclosure and depicts a small complex of buildings.^{8,9} This was concentrated at 'a' but extended eastwards, south of a lane which continued across the Bedford-Sheffield road. A small track led to a ford across the stream at 'b'. Post-medieval pottery was observed between these two points after topsoil removal. An area of

cobbling with some late-medieval and post-medieval pottery was noted at 'c' but no other traces of buildings were found. Periodic cleansing of the stream has accentuated the northern bank, e.g. at 'd'. The earthworks continue south of the stream with a moat at 'e'.

The site had been previously disturbed by construction of the Midland Railway, Leicester to Hitchin extension, opened in 1857, and the embankment of the Bedford-Sheffield road, the present A600. The majority of the features affected by topsoil removal can be interpreted as close boundaries; some are shown on the 1794 map.⁹ The settlement focus may be represented by the disturbed platforms east of Manor Farm, e.g. at 'f', and perhaps continued under the modern terrace at 'g'.

VI Pottery Kiln.

Roman.

TL 07704790. SMR 1623.

Scatters of Roman pottery and slight soil marks were noted following topsoil removal at TL 078480 and TL 076478, immediately south-east of a crop-mark complex photographed by Professor St.

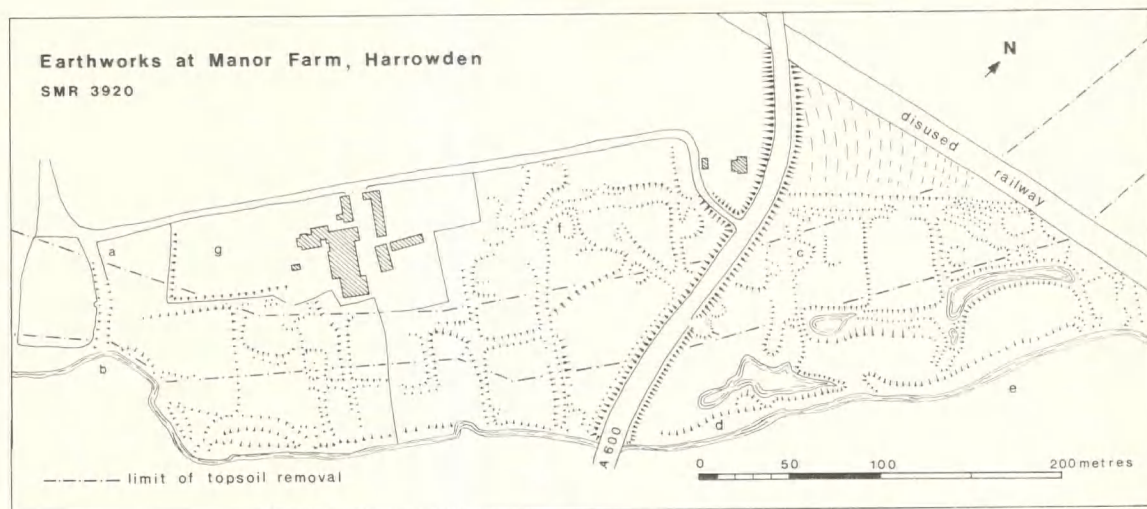


Fig 2 Earthworks at Harrowden, partially destroyed by construction of the Sewer.

Joseph.¹⁰ These features were not visible on the air photographs due to the presence of alluvium from the stream to the south. It was not possible to investigate them further due to other excavation commitments but the pottery retrieved indicated occupation in the 1st and 2nd Centuries A.D.

The presence of a pottery kiln (figure 3) was suggested by a kiln bar in the spoil from a temporary drainage trench running parallel to the sewer line. Investigation revealed an area of dark brown clay loam to the south. While this was being rapidly cleaned excavation for the sewer trench damaged the feature and partially sectioned it. Further examination of the kiln would have delayed installation of the sewer pipes so, after recording, the oven was carefully removed in the bucket of the Poclain and deposited by the side of the working strip.

The kiln appears to have been of updraught type and comprised a circular chamber or oven, 1.1m in internal diameter and probably had a flue on its north-east side. However, the extent of mechanical disturbance was such that only part of a clay flue cheek survived. The walls were preserved to a height of 0.40m. The scorched natural gravel and clay and the clay lining surrounding the sides of the oven fell after its deposition leaving the dark brown clay loam fill upstanding. This was sectioned and contained kiln furniture and 1.5kg of pottery.¹¹

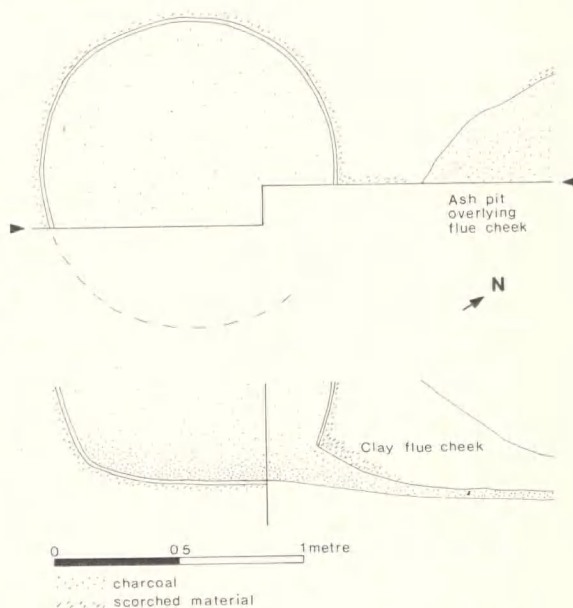


Fig 3 Plan and section of kiln.

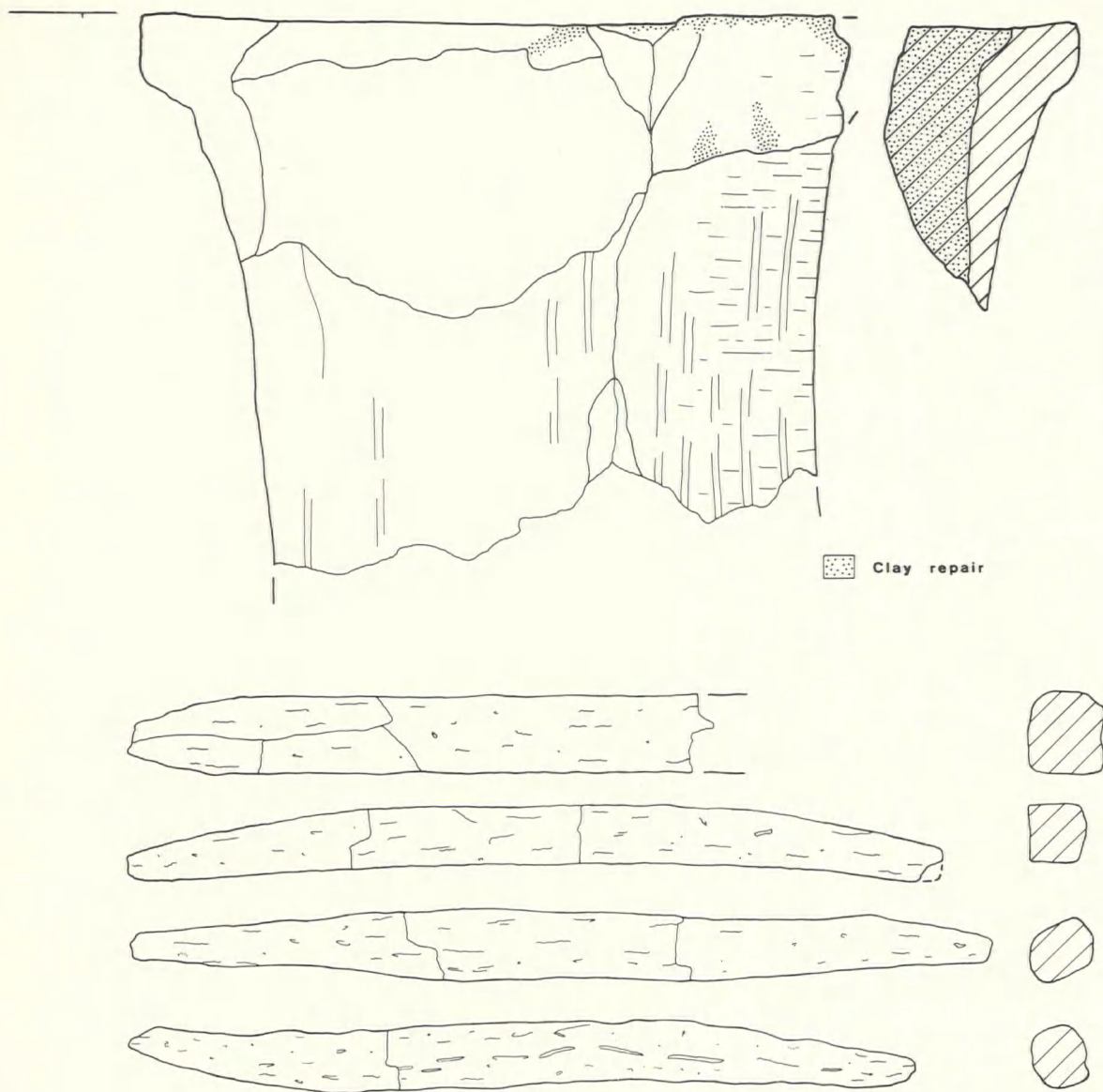


Fig 4 Kiln furniture, The pedestal, with section showing the repair, and kiln bars.

Kiln Furniture (Figure 4)

The Pedestal. Part of a clay pedestal was found dislodged near the centre of the oven. It had been roughly made from a large lump of clay and bears finger marks from its initial shaping. The broken bottom edge rested on the kiln bottom. The expanded top of the pedestal had been previously broken and repaired with its lip remoulded

with additional clay for support.

The Kiln Bars. A minimum number of 32 kiln bars was found. Two distinct types were recognised; the majority were roughly circular in section while a few were angular, almost square, in section. There were some intermediate forms. Complete kiln bars ranged from 33cm to 37cm in length. All tapered towards their ends and showed

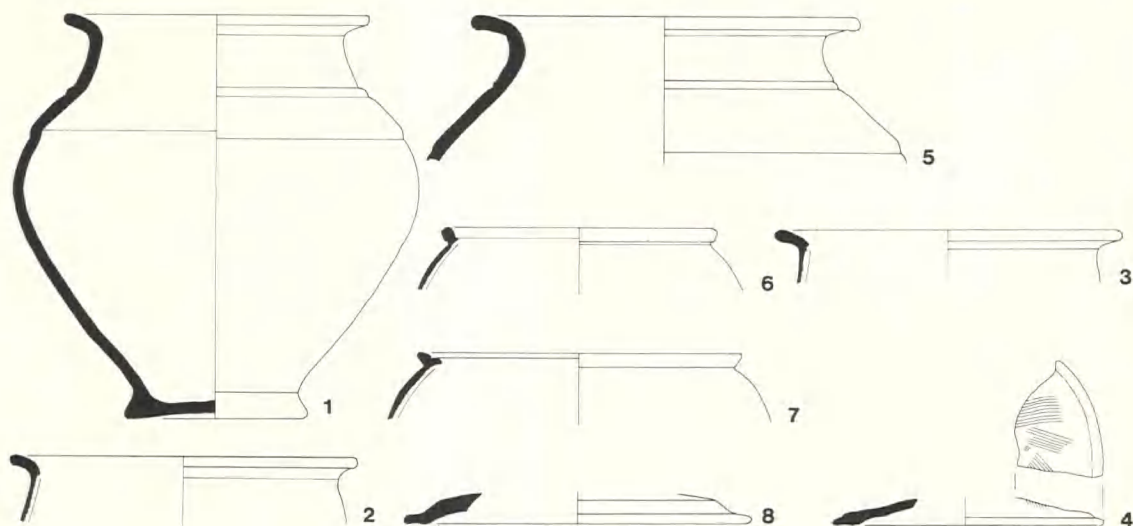


Fig 5 Pottery found in kiln. Scale $\frac{1}{4}$.

signs of having been roughly made by hand rolling on a flat surface; they have grass marks and fingerprint impressions. Most have a relatively smooth surface texture but some are of a sandier fabric. The colours range from dark grey brown to pale grey.

3.5kg of miscellaneous pieces of baked clay probably represent parts of the kiln superstructure.

The Pottery (Figure 5)

Macroscopic inspection indicates that 70% of the pottery is of one fabric type, present in both oxidised and reduced versions. It is likely that this material represents the product of the kiln. The oxidised pottery has a very pale brown core and surfaces, is moderately hard, has a smooth, slightly sandy texture and has sparse quartz inclusions. The reduced variant is characterised by its black core with surfaces ranging from dark grey to light grey brown in colour. It is perhaps less sandy. Other fabrics were also present.

- 1 Medium mouthed jar. Reduced fabric, Waster product.
- 2 Rim. Oxidised fabric. Interior section reconstructed.
- 3 Rim. Oxidised fabric. Top of rim partially reduced. Interior section reconstructed.
- 4 Lid. Reduced fabric. Surface partially oxidised. Comb marked.
- 5 Rim. Light brownish grey core and surfaces. Moderately hard. Rough texture. Moderate well sorted quartz and sparse grog inclusions.

The similarity in profile between this sherd and vessel 1 suggests that it could either have served as a model for the kiln products or may indeed represent a finished, non-spoilt vessel.

- 6 Rim. Black core and surfaces. Moderately hard. Rough texture. Moderate well sorted quartz inclusions.
- 7 Rim. Greyish brown to black core, dark grey brown surfaces. Moderately hard. Smooth texture. Moderate irregular voids.
- 8 Lid. Black core, dark grey brown surfaces. Moderately hard. Rough texture. Moderate, well sorted quartz inclusions.

Date

The reason for the abandonment of the kiln is not known. The small quantity of waster material suggests that the last firing was probably successful. It is likely that the kiln was backfilled with rubbish material from the immediate vicinity. This would explain the broken pedestal, the kiln bars and the presence of pottery other than the suggested kiln products.

Dating the kiln is hindered by the fragmentary nature of most of the kiln products, which, as wasters, may not be typical of the normal finished article. A 2nd century AD date is suggested by the shape of the one near complete vessel: its form displays 'Belgic' antecedents, the body profile still being fairly rounded and not yet having assumed the flattened appearance which may perhaps characterise later vessels of this general

type. No identifiable post-2nd Century material was present in the kiln infill. Closer dating must await the identification of the product in securely stratified deposits elsewhere.¹²

VII Settlement remains.

Iron Age and Roman.

TL 080490. SMR 302.

A small excavation in 1957,¹³ to investigate cropmarks shown on air photographs by Professor St. Joseph¹⁴ found slight evidence of building materials and suggested that the site might be a small farmstead similar to that excavated at Newnham on the opposite side of the River Ouse. Later photographs show the cropmarks continuing in the fields to the south-east of Mill Farm.¹⁵ No traces of buildings were observed during the watching brief but a lime kiln cut by the sewer trench was salvage excavated. Other features cut by the trench contained pottery of Iron Age, 'Belgic' and Roman forms but no evidence to indicate their function.¹⁶

DISCUSSION

Two new sites, other than those identified during the preliminary survey, were discovered during the watching brief (nos II and III), but relatively little information was gained except from the excavations. The sites mentioned in this report all lie on, or close to, the gravel terraces. This may reflect the difficulty of identifying features along such a disturbed trench line, especially when they cut into boulder clay. A major source of information for the initial survey was air photography: it is regretted that time and resources did not permit geophysical survey of sensitive areas and intensive fieldwalking of the proposed sewer line — activities which would have identified the kiln sites (nos VI and VII) resulting in a different excavation

policy and more effective information retrieval from these sites.¹⁷

NOTES

- 1 Bedfordshire County Council file reference 900. Ex. 11.
- 2 P.J. Woodward, 'Excavations at Pear Tree Farm, Elstow, Bedfordshire, 1976'. *Beds. Arch. J.*, 12, 1977, 27-54. R.F. White, 'A Roman Lime Kiln near Cardington Mill, Bedford', *Beds. Arch. J.*, 12, 1977, 23-26.
- 3 I would like to thank these organisations, and especially their site personnel, for their co-operation. I would also like to thank the friends and colleagues, especially Peter Woodward, who were involved in this watching brief, and Brian Dix for his post-brief comments.
- 4 Woodward, 1977.
- 5 Bedfordshire County Record Office (CRO) map X 1/6/1.
- 6 The Viatores, *Roman Roads in the South East Midlands*, 1964, 254, 457.
- 7 D. Kennett, (ed), *Bedfordshire Archaeology 1970 — 1971*, *Beds. Arch. J.*, 6, 1971, 84-85.
- 8 J. Jeffreys, *The County of Bedford*, 1765.
- 9 *Beds. CRO map W 2/6/1*, 1794.
- 10 e.g. APs AXT 70, BJF 56-58.
- 11 These, and other finds from the sewer, will be deposited in Bedford Museum.
- 12 6 Roman pottery kilns were excavated at Mile Road, Bedford, TL 058476, less than 2km to the west of the Harrowden kiln, between 1965 and 1970. No pottery has yet been published from these kilns but the brief description given in the interim report indicates that the pottery, a grey ware, and kilns are in a similar tradition. G.J. Dring, 'Romano-British Pottery Kiln Site near Elstow', *Beds. Arch. J.*, 6, 1971, 69-71 and also *Beds. Arch. J.*, 4, 1969, 85.
- 13 D.E. Johnston, 'Excavations at Newnham and Mill Farm, Bedford', *Beds. Archaeologist* 2, (1958), 17-19.
- 14 e.g. AP GW 0047.
- 15 e.g. St Joseph APs AGA 29, BJF 61.
- 16 White, 1977.
- 17 Paper submitted for publication in October 1979.

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The Anglo-Saxon Settlement of Bedfordshire

KRYSTYNA BILIKOWSKA

INTRODUCTION

This paper aims to assess the evidence for the appearance, colonisation and subsequent growth of the pagan Anglo-Saxon settlements in Bedfordshire. Particular attention is paid to settlement location, the character of the settlement and related economic aspects. Previous assessments of the Anglo-Saxon archaeology of the region have been very few and must now be reconsidered in the light of recent developments. The last, and indeed the only full assessment of the archaeological evidence for the Anglo-Saxon settlement in the county was by Morris (1962, b), and was influenced by the then recent discoveries at Marina Drive, Dunstable. Morris favoured a far reaching Kentish migration, seeing the Marina Drive burial ground as that of 'a small colony of Kentish men established on hostile territory in Bedfordshire', (Morris, 1962b, 57). Writing of an unusual type of girdle hanger which was found in the cemetery and which can be exactly paralleled in Selzen near Mainz in the territory of the Alamanni, Morris concludes that although 'no parallel is known from Kent, it is at least likely that a rare object so characteristic of the Rhineland should reach Dunstable by way of Kent'.

More recent studies have been concerned primarily with grave goods, their typologies and relationships. There has been no attempt to study the locational character of the settlements. At present in Anglo-Saxon studies there is a need for regional studies to determine the available material, its limitations and possible interpretations. It is only after this assessment of the evidence that problems concerning the origins of nucleated villages, the economic and tenurial organisation of settlements, and their associated land units or parishes can be considered.

This study has been limited to the area within the modern county boundary of Bedfordshire. In area Bedfordshire is one of the smallest counties and has few natural boundaries which could form a territorial state such as those of Kent or Sussex. Bedfordshire possesses a very transitional character due to its geographical position, geology and relief.

It lies in the south-east Midlands, neither in the Midlands proper nor in East Anglia. The Great Ouse and the Icknield Way, crossing the northern and southern areas respectively, are two communication routes which have resulted in enforcing the marginal nature of the area. As the county lies on a cultural periphery it received a mixture of 'Anglian' and 'Saxon' influences. This marginal character was formally recognised in the Late Saxon period by the course of the Danelaw which passed through Bedfordshire dividing the county. The county was not formed as a distinct unit until the eleventh century.

SOURCES

Evidence for the evolution and nature of the pagan settlements comes from place-name studies and archaeological evidence. Both categories of evidence have been considered in this study but each have severe limitations in their application which should be recognised. Place-name study is the most productive line of approach but must be combined with site reappraisal. Problems involved in the usage of place-name evidence generally and particularly in relation to Bedfordshire are discussed in Part III. Part II considers the archaeological evidence together with the biases in the archaeological record which inevitably affect any subsequent interpretations. One factor of extreme importance involved in an examination of settlement location is the geology-soil relationship. This is outlined below while its specific application to the settlement is presented in Part IV. This final section will also attempt to evaluate the evidence and suggest further lines of research.

I: THE BACKGROUND TO THE SETTLEMENT GEOLOGY AND TOPOGRAPHY

The main features of the solid geology are distinct but complications arise when the superficial or drift deposits are taken into account. Although there are large tracts of uniform or gently undulating country there are great variations in the soils influencing the location and nature of settle-

ment in the region.

The general trend of the geological outcrops lie from south-west to north-east and they dip mainly towards the south-east, therefore the oldest strata are exposed in the north-west. From Leighton Buzzard to Sandy there is a prominent ridge which defines the limits of the Jurassic and the Cretaceous rocks, and which delineates the Ouse valley from that of its tributary the Ivel. This Greensand ridge is underlain by Boulder Clay while the overlying drift deposits are very varied. Oxford Clay extends over the greater part of north Bedfordshire and north of the county town it is largely overlain by Boulder Clay. South of the town it forms topographically, a damp and undulating lowland, the 'Vale of Bedford'. South of the Greensand ridge a narrow tract of Gault Clay runs parallel to the ridge. This Gault vale is drained by many small streams. The chalk covers practically all the rest of the county south-east of the Gault Clay and next to the Oxford Clay it occupies the largest area of all the underlying deposits.

The most prominent feature of the relief is this Chalk escarpment rising 200ft above the plain. The typical features of scarp and slope are well developed but due to drift deposits the only typical downland landscape is at Luton, Dunstable and Whipsnade. The Barton Hills and the Dunstable Downs attain a considerable altitude. The highest part of the Dunstable Downs, a continuation of the Chiltern escarpment, is between Kensworth and the Five Knolls, 800ft above sea level. Most of the rest of the county is below the 400ft contour line.

SOILS

'Every soil and every admixture of soil commonly seen on high land in the United Kingdom may be found in this county, from the strongest clay to the lightest sand'.

Thomas Batchelor, 1808.

The extent of the superficial deposits are of extreme importance, almost every farm in the area shows differences of soil depending on the underlying rock. Even the Oxford Clay in the Vale of Bedford shows considerable variety from its drift deposits. Extensive areas are covered with glacial deposits and other deposits of the Pleistocene and recent age. These fall into three distinct groups:—

- a) Clay-with Flints — overlying the chalk.
- b) Glacial deposits — mainly Boulder Clay, parti-

cularly in the north. In the Oxford Clay and the Gault Clay regions this admixture lightens and improves the texture of the soil resulting in good agricultural land. Glacial sands and gravels cover a small area mainly in the Ivel valley.

- c) Valley deposits. Considerable widths of gravel have been formed by the River Ouse. Between Felmersham and Bedford the river is very sinuous and below Oakley the gravel exceeds one mile in width, below Bedford two miles and in some parts it exceeds four miles in width. The rivers Ivel, Hiz and Lea have formed similar but less extensive tracts of gravel. The most recent deposits are of alluvium, being confined to the river valleys.

The county can be divided into eight distinct regions on the basis of the soils, underlying parent rock and superficial deposits.

- 1) *Chalk Plateau* : overlain by Clay-with-Flints. Together with Brickearth this masks the Chalk at a high level. On the dip slope deposits of sand and gravel occasionally support poor grassland or heathland. The chalky Boulder Clay beyond the River Lea is good arable land.
- 2) *Icknield Loam Belt* : this area runs roughly parallel with the Icknield Way. Along the scarp slope erosion has yielded rich loamy soils and resulted in one of the most productive agricultural regions of the county. On top of the escarpment there is a rough scrub. The lower chalk is extensively quarried for lime and cement, and in the east of the region Boulder Clay deposits have been quarried for the brickworks.
- 3) *Gault Clay Vale* : Boulder Clay covers large parts of the surface. This results in a light soil good for cultivation. Glacial sands and gravels occur in 'islands' as at Toddington. Fitchett (1943, 69) has remarked that although 'the whole region was probably forested few relics of this now remain'.
- 4) *Greensand Ridge* : this separates the two clay regions and is mainly covered by sandy soils, often too hilly or acidic for cultivation. The clays and loams in the valleys however, are very fertile. Greensand soils, peaty soils and alluvium deposits are localised, elsewhere the soils are mainly sands and gravels.
- 5) *Ivel Valley* : most of the soils are light sands and gravels. Areas of medium and heavy soils lie on the Oxford and Gault Clays which are difficult to drain.

- 6) *Oxford and Boulder Clay Region* : this lies in the north of the county. The Boulder Clay overlies the Oxford Clay and has a high clay content. South of Bedford there are large areas which have been and still are exploited for the brickworks.
- 7) *Ouse Gravels* : although the gravels predominate the soils are varied and change to loams and clays in the north. The Great Oolite and some Cornbrash come to the surface in this region.
- 8) *North Bedfordshire* : fairly heavy soils cover the region. The characteristic clays are not derived from the underlying Oxford Clay but from the drift deposits. High chalk content makes the Boulder Clay more workable.

Although the soils in Bedfordshire are varied there are many areas suitable for settlement and rich, or potentially rich, for agriculture. Lighter soils are found on the glacial sands and gravels. Present land use shows the greater elevations to be arable and the lower areas with heavier and damp soils are in permanent pasture. Consideration of the areas occupied and farmed during the Roman period will help to determine the extent to which early agriculturalists could exploit the various soils available and indicate the regions utilised during the late Roman period.

THE ROMAN BACKGROUND TO THE SETTLEMENT

Intensive fieldwork between the Nene and the Ouse valleys has produced interesting results showing that the traditional interpretation of the primeval forests being cleared by the Romans and the Saxons is false (Hall and Hutchings 1972, 8). A uniform and relatively dense distribution of sites occurs all over the area on light and clay soils alike in the Iron Age and Roman periods. The total area of Romano-British occupation in the 76,000 acres surveyed was 130 acres which is more than twice the size of the Roman settlement at Irchester (see fig 1, a). Of the 191 Romano-British sites in this area 43 were in Bedfordshire. Thus the Domesday woodlands in this area of north-west Bedfordshire must have been secondary regrowths and scrub which grew up during the late Roman or sub-Roman periods.

The main distribution of Roman finds and settlements are in the Ouse, Ivel and Lea valleys and in the Icknield loam belt. The traditional interpretation of the district being sparsely inhabited does not now hold. The absence of large

communal settlements suggests a population primarily concerned with farming. Two major Roman roads passed through the county, the chief evidence for this is from the 'Itinerarium Antonii'. Watling Street crosses the county at its south-west corner. The course of the road is certain as it is still in use and it often forms a parish or county boundary. The Icknield Way enters Bedfordshire from Buckinghamshire. At its crossing with the Watling Street a small minor communal settlement grew up. There is a distinct lack of evidence for the boundaries and the streets of 'Durocibrivae'. It has been suggested that it was a 'town with walls, gates and a bridge . . .' (Bagshawe 1961, 20). But it may have been no more than a posting station or alternatively if a minor communal settlement did exist, it may lie under the modern town. Sandy, a minor communal settlement in the Ivel valley seems to have been of distinct local importance (Johnston 1975, 94). Discoveries in the Roman cemetery during the seventeenth and eighteenth centuries show a wide range of exotic goods, an indication of a rich, although unwallled, settlement. A dense and Romanised population seems to have dwelt in the Ivel valley, particularly around the agriculturally rich areas of Biggleswade, Sandy, Blunham and Shefford.

One of the richest agricultural regions in Bedfordshire is the edge of the Chiltern escarpment and the adjacent Loam Belt. There are two villas in south Bedfordshire which can be associated on the basis of economy and siting with those in the Chiltern group (Branigan 1967, 158). Totternhoe villa was sited at the foot of the Chiltern scarp and another villa at Kensworth was sited in the valley of the River Ver. The Chilterns were naturally suited to a mixed economy as the land in the valleys is potentially very rich. Occupation at the large courtyard villa at Totternhoe continued until the late fourth century. Tessellated floors, hypocausts and an ornamental gateway of red sandstone attest a comfortable standard of living. Occupation at Kensworth continued until at least the early fourth century.

In mid Bedfordshire the density of Roman finds and occupation sites is lower. But evidence for an area of settlement comes from the Flitt valley in the Amptill area. A Romano-British settlement, fairly large and wealthy, occurs at Ruxox, east of Amptill (*Beds. Arch. J.*, 4, 1969, 86). Roman cemeteries have been discovered at Flitton and

Maulden. It is generally assumed that this lack of settlement in the mid-Bedfordshire region is due to an aversion to settling on the clay soils. Roman occupation in this central region is concentrated on the greensand soils and the peaty soils along the Flitt but it also occurs on the Boulder Clay as in the north-west of the county (Hall and Hutchings 1972, 1-16). Rodwell (1975, 96) has indicated that the distribution of the minor towns and villas in the Trinovantian area is due to geological considerations. Settlement was mainly concentrated on the Boulder Clay which was easier to cultivate and which yielded higher grain harvests, in preference to the London Clay. The same pattern occurs in Bedfordshire where the Boulder Clays in the north-west were heavily utilised. Those areas of Boulder Clay which have not yielded evidence of Roman occupation occur in the area north of Ampthill where there is a wide expanse of Oxford Clay. Due to a lack of fieldwork in this region it can not be safely asserted that there was no Roman settlement particularly as one would expect some Roman occupation along the river valley in the Stewartby area and two possible Roman roads 170b and 173c cross the area (Margary 1964, 356-357).

Along the Ouse valley, Roman occupation was concentrated on the river gravels and the areas of Great Oolite and Cornbrash. A Roman villa of the fourth century was sited at Newnham and other substantial buildings have been found at Bromham, Radwell, Podington and Yelden. A large Roman cemetery was sited at Kempston but the associated settlement has not been discovered. There does not seem to have been a Roman settlement at Bedford although there was a nineteenth-century report of a Roman mosaic having been found somewhere in the town, (information from D.E. Johnston). Farmsteads, enclosures and occupation scatters are widespread in the region, many having been found during the course of gravel extraction on the terraces.

II : ARCHAEOLOGICAL EVIDENCE FOR THE SAXON SETTLEMENT

THE CHARACTER OF THE EVIDENCE

Before considering the archaeological evidence for the Anglo-Saxon settlement of the county it will be necessary to discuss the character of the evidence. The main source of evidence is that from pagan burials and some settlement sites. Very few of these have been discovered by archaeological re-

search. Most are due to accidental discoveries in the nineteenth century during the course of mineral extraction and others are the result of finds made during modern quarrying and urban expansion.

The results of fieldwalking in north-west Bedfordshire has had an effect on the known distribution of Roman occupation but has had little corresponding effect on our knowledge of the Anglo-Saxon period. There was also a lack in evidence for the pre-Roman Iron Age. There were very few surface finds (e.g. pottery scatters) presumably because they were covered by the respective succeeding periods. There are also particular difficulties in recognising the pottery of these periods. The hand made pottery of the Iron Age and the pagan Saxon periods are very undistinctive. When divorced from its settlement context pagan Saxon hand made pottery looks deceptively like that of the pre-Roman Iron Age.

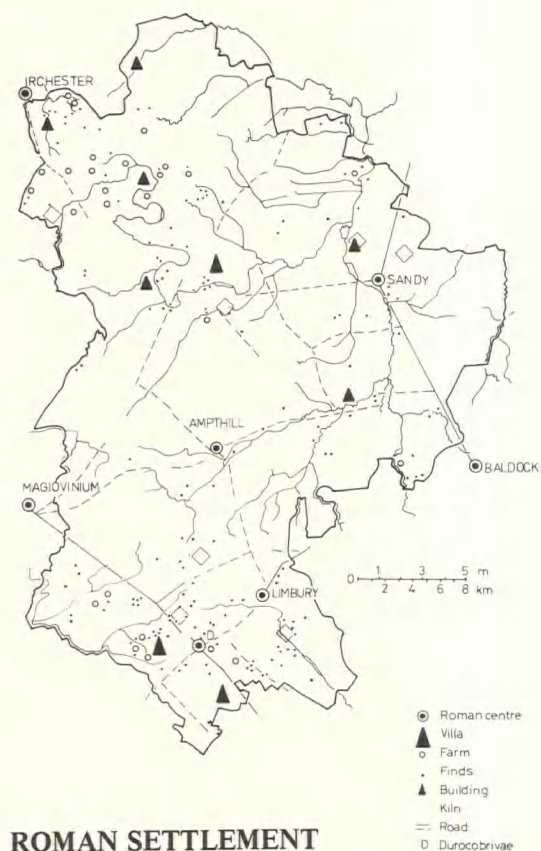
In north-west Bedfordshire slag patches were found, also during this intensive fieldwork. Ninety-seven appeared in the area under discussion. These are probably Romano-British and Saxon but as yet they can not be dated with any certainty.

The third category of archaeological evidence is that of stray finds which, divorced from their settlements, can only yield information on typological, artistic and technological aspects. A present problem in Anglo-Saxon studies is the difficulty in distinguishing the material culture of the Anglo-Saxons from that of the sub-Roman Britons.

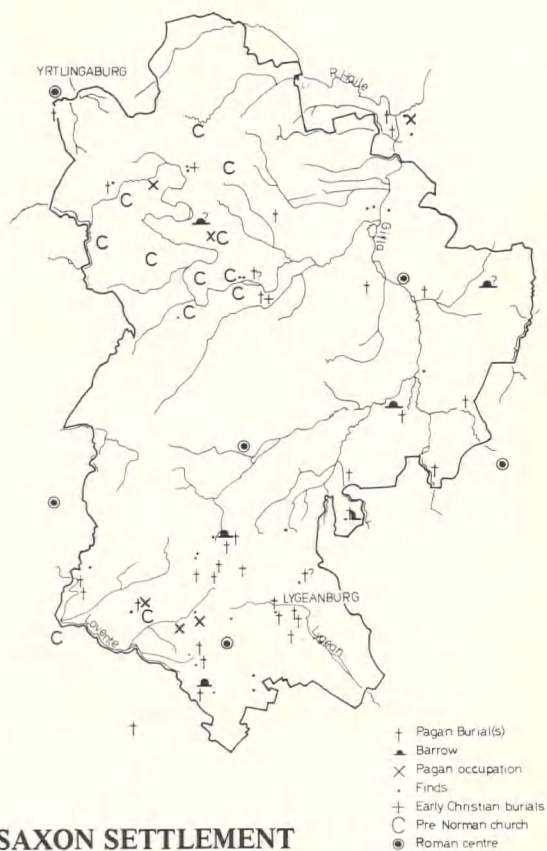
THE EARLIEST EVIDENCE

Indisputably 'British' objects are rare and the majority of finds which are found in post 'Adventus' contexts are attributed to the Anglo-Saxons (Longley 1975, 1). Germanic influences were being felt at a relatively early date and 'controlled settlement' (Myres 1969, 34) was occurring in the mid-fourth century. It is difficult to determine the exact nature of the presence but distinctly Saxon features are found at this point in time.

Romano-Saxon pottery certainly has a Roman origin but the beginnings of its manufacture are too early to be influenced by the fourth century disposition of 'foederati'. Jutish pottery of an early type was found at Sandy and ceramic evidence from the early Saxon cemeteries at Sandy, Kempston and Dunstable seems to indicate Germanic presence in the early fifth century.



ROMAN SETTLEMENT



SAXON SETTLEMENT

Fig 1 a. The Roman Settlement
b. The Anglo-Saxon Settlement

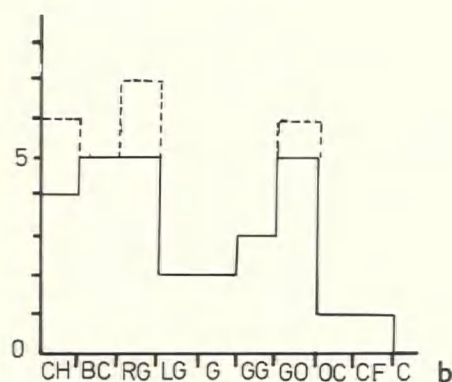
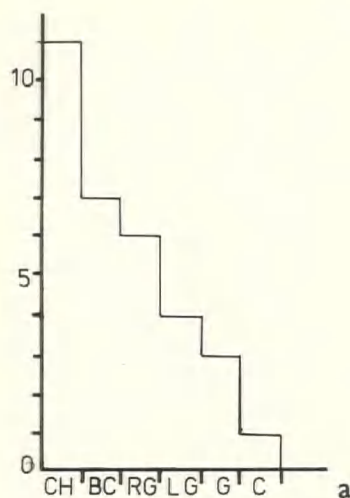
Metalwork also shows indications of Germanic influence. Military 'cingula' (Hawkes 1974, 386-393) are traditionally seen to suggest the military disposition of troops. Types I and II occur at Kempston and Luton and are of a kind which probably were made in British workshops as copies of the Germanic styles. If this does not indicate the exact presence of Germanic forces it suggests a strong Germanic influence on sub-Roman metalwork. The present climate of opinion is tending towards the identification of a separate, sub-Roman school of metalwork.

PAGAN SAXON BURIALS AND SETTLEMENT SITES

The main evidence for Saxon presence occurs in the archaeological record during the early fifth

century and is closely associated with Roman or subsequent sub-Roman centres. Myres (1969) first noted the relationship of many large cremation cemeteries to Roman walled towns. There are no walled towns in Bedfordshire but Taylor's findings (1974, 7) in eastern Northamptonshire where 'every one of the known pagan Saxon cemeteries . . . is inside or very close to a Roman settlement' can be seen to apply in Bedfordshire.

The site of the large Roman cemetery at Sandy was very closely associated with an early pagan Saxon cremation cemetery. This early fifth century burial group was the latest group of burials on the northern edge of the site. Some thirteen cremation vessels were found. Of these, three are of types which are of the early fifth century and which have been assigned to Myres' Phase of



- CH - Chalk
- BC - Boulder Clay
- RG - River Gravel
- LG - Lower Greensand
- G - Gault Clay
- C - Cornbrash
- GG - Glacial Gravel
- GO - Great Oolite
- OC - Oxford Clay
- CF - Clay-with-Flints

Fig 2 a. The Siting of Pagan Burial Sites
 b. The Siting of Settlement Sites (dotted lines) and Early Place Names (-ham and -ingas formations).

Transition, 410-445 A.D. (Kennett 1970,17-33).

Roman cemeteries are often the focus of early fifth century cemeteries. The large and important mixed cemetery at Kempston adjoined and partially overlapped a Roman cemetery. There is from this site evidence for an extensive and substantial Roman presence in the area although no settlement is known. Dunstable does not illustrate such a close relationship between the Roman and Saxon periods due to the difficulty in defining the nature of the Roman settlement. However there is an early fifth century settlement in the vicinity at Puddlehill.

Thus two Romano-British minor settlement centres of local importance both exhibit evidence of early Germanic settlement. Both towns are strategically situated on the Icknield Way, a route which leads into the interior of the country and the rich agricultural lands of the Chilterns. Dunstable commands the crossing point of the Icknield Way with Watling Street and a 'satellite' Saxon settlement at Puddlehill, three-quarters of a mile to the north, was on the top of one of the highest points in the area, where the Icknield Way was forced to curve around the west side of the hill. Branigan (1967, 150) suggests that, 'In the Chilterns, where the Saxons were late arrivals the villas slowly grow smaller and evolved into farmsteads not very different from those which the villas had themselves replaced . . . our search for fifth century occupation in the Chiltern valleys should be directed not to the villas themselves but to the immediate surroundings . . . '.

The area around the Totternhoe villa and the Kensworth villa would offer unrivalled opportunities for evidence connected with the changing focus of this settlement pattern, the continuity of the local working population and agricultural systems. The region does seem to offer evidence to support this disintegration into dispersed agricultural settlements. The settlement at Puddlehill dates from the early fifth century, one kilometre away more huts were found at Sewell. Both sites were situated along the Totternhoe ridge and it would be fair to say that hill sites seem to have been a favoured location. At Eggington the Saxon site was situated on Gault Hill, the summit is just above the 400ft contour. Eggington is a good example of a 'Non-static' rural settlement (Wade-Martins 1974). During the last three to four centuries the village gradually moved westwards but in recent years modern expansion has resulted in

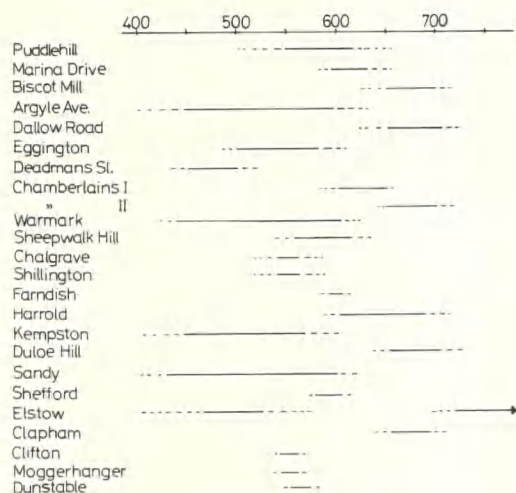


Fig 3 Date Ranges of Pagan Burials

the village gradually moving nearer the Saxon site.

The problems of dating in the Saxon period can be illustrated by archaeological evidence from Eggington. There, handmade pottery was associated with late Roman material. A Saxon vessel with a pinched up lug similar to a vessel from the Saxon cemetery at Leighton Buzzard, has been dated to the seventh century and was associated with the Saxon handmade sherds which are probably fifth century. The Roman material does not seem to have been acquired out of interest by seventh century Saxons as there were equal proportions of handmade and wheel-turned wares present.

Thus Germanic settlements appear in Bedfordshire during the early fifth century but it is difficult to determine the progress of the Anglo-Saxon settlement using only archaeological evidence. The distribution of Anglo-Saxon finds in the county (fig 1, b) closely corresponds to that of the Roman period (fig 1, a). The two main areas which were settled and exploited were the Ouse and the Ivel valleys, and also the Icknield Loam Belt. Although the distribution may be biased, generally this distribution pattern does correspond with the two main lines of communication across the area. The Ouse was navigable, at least as far as Bedford, when the Danes sailed up the river in the late Saxon period. The Icknield Way is a natural and long used route. The pattern of Roman settlement was dispersed and largely of a rural nature.

Therefore the Saxons were compelled to settle near Roman sites or on remote or marginal land.

Taylor (1974, 8) has stated that all the mid-Saxon occupation sites in Bedfordshire and Northamptonshire are unrelated to the medieval villages and he cites the settlements scattered along the Totternhoe ridge at Puddlehill as an example. But this is surely an unwarranted generalisation for the number of pagan settlements on which Taylor has based his observations are too few. The settlement at Eggington is not completely divorced from the medieval village neither is that at Felmersham nor the later seventh century site at Clapham.

Apart from the settlement sites the main evidence is from pagan cemeteries and burials. The main date ranges of these where available (Meaney 1964, 35-42; Morris 1962, 63-76) have been plotted (fig 3). It must be stressed that these dates are not absolute but merely indicates the *date ranges of the associated grave goods*. The dotted lines accentuate that they may only be taken as an indication of the period during which the cemetery was in use. Some burials have been omitted due to a lack of dating evidence. As an example, Toddington has three cemeteries in its vicinity, presumably not all in contemporary use. Fancot remains undated, Warmark has been dated to the early fifth and sixth century and the cemetery at Sheepwalk Hill has been dated to the sixth century probably contemporary with the nearby cemetery at Chalgrave. This either represents a dispersed settlement pattern of small hamlets using three cemeteries simultaneously or, more probably, a change in burial site with the earliest at Warmark succeeded by that at Sheepwalk Hill and then a late seventh century site as yet undiscovered.

The move to a new cemetery site in the late seventh century would correspond to that generally seen at other Saxon cemeteries in England. Such a change is well illustrated at Leighton Buzzard. Deadmans Slade is 500 yards north-west of Chamberlains Barns and is the earlier. In these new cemeteries cremations are altogether absent and the percentage of grave goods is high, the majority being orientated with their heads to the south-west. Hyslop (1963, 198-200) has indicated that this change seems to occur all over England at the same period with the abandonment of old cemeteries and the start of new ones. This has been held to be due to the Christian conversion,

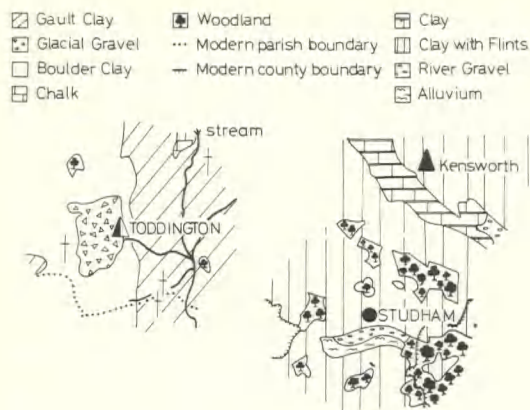


Fig 4 a. Toddington
b. Studham

and the main characteristics of this group of cemeteries do seem to be due to the influence of Christianity. But this influence does not seem to have been very deep as pagan practices continued well into the eighth century. The features of these burial groups are more likely to be due to the results of fashion. At Kempston where there is some evidence for this 'fashionable' burial rite, there did not seem to be a change in burial site (Kennett 1968, 399), while at Astwick, Harrold, Clapham and Bletsoe there is as yet no evidence for preceding earlier cemetery sites.

Of the pagan burials from the fifth until the late seventh centuries, thirty-two out of forty may be located with fair accuracy (fig 5). Of these none are situated on the Great Oolite, the Oxford Clay, the Clay-with-Flints or the islands of Glacial Gravel (fig 2). Sixteen are cemeteries and sixteen are burials, including one primary burial in a barrow and three occurrences of burials in pre-existing monuments. The cemeteries obviously indicate the existence of settled communities and of these six show recognisable fifth century burials indicating early settlement. All these thirty-two pagan burials lie within two kilometres of present day settlements. Six (20%) of the burial sites appear to lie actually on parish boundaries while the other twenty-six (80%) lie within 500

yards of the parish boundary. A sixth-century inhumation burial at Farndish was incorporated into the agger of a Roman road which was later taken as the parish and county boundary. This corresponds with Bonney's findings in Wiltshire (1966, 25-30). But it is not possible in the present state of knowledge to say whether these boundaries developed from an older system of land tenure or whether they evolved during the pagan Saxon period.

The predominance of burials on the chalk has been interpreted as evidence for the preference, by the Saxons of light, easily drained soils. But this is due, in this area to the recovery record. Of the seven sites on the Boulder Clay, five are of the sixth century and this could indicate some settlement of the Boulder Clay in the early stages of the Saxon colonisation, perhaps in an area previously farmed during the Roman period. It is debatable as to whether burial sites indicate places of burial only or whether they indicate the existence of *adjoining* settlement sites. Edwards (1972, 95) found that in north-west Kent the proximity of burials to settlements of the 'secondary phase', i.e. of place-names in *-ingas* and *-inga-*, and their unsuitability topographically as habitation sites indicated places of burial only. This would explain how, of eleven pagan burials on the Chalk in Bedfordshire, four of the associated modern settlements are situated on 'islands' of Glacial or River Gravels and one is sited on the Boulder Clay. Burial was probably directed on to the marginal land or that land in the immediate exploitation area of a settlement which was the least suitable for agriculture. Settlement on the Boulder Clay can no longer be held to be due only to a later, early medieval activity.

III : PLACE-NAME EVIDENCE FOR THE SAXON SETTLEMENT

THE CHARACTER OF THE EVIDENCE

Currently place-name studies are receiving a re-examination from a linguistic viewpoint, of their relevance to the problems of the Anglo-Saxon settlement. One of the basic limitations in the study is the lack of knowledge of the basic distinctions in the regional distributions of dialect features and their relationships to the contemporary continental forms. Thus there have been frequent assumptions made if linguistic information is not available.

Interpretations are further complicated by the problem of the historical survival of place-names. The original form of a place-name is the form chiefly concerned in such studies. Scribal errors obscure dialect features as well as complicating the recognition of the original form. The 'Laws of Phonology' help in arriving at the earliest form and therefore the earliest meaning of the place-name. For this the archaeologist must rely on the phonologist.

The problem of chronology is not only confined to the recognition of the earliest form of a place-name, it is often difficult to determine when a place-name was formed. The medial use of the suffix *-ing-*, as in Eggington ("oak-grown hill"), was probably in current use until the eleventh century (Dodgson 1966, 7). Bedfordshire possesses a group of pagan place-names. These are Harrowden (O.E. *hearga-dun*, "a hill with heathen temple"); Harrowick (O.E. *heargawic*, "farm by the sacred grove"); Wenslow (O.E. *Wodneslawe*, "hill sacred to Woden"); Sundon (O.E. *Sunnan-dun*, "down of the goddess Sunne"). Others which probably indicate heathen worship are Thurleigh (O.E. *Thur-lea*) and Swineshead (O.E. *Swines-heaford*). Although these names may have originated at the time of pagan worship it is also possible that these heathen names may have been formed in the Christian period out of folk memory, or alternatively they may only have come to denote settlements later in the period after worship had taken place there for some time already. This lack of absolute chronology in place-name studies leads to difficulties in their archaeological application although occasionally in the light of archaeological evidence interpretations of individual place-names or groups of place-names may be questioned or corrected.

THE PROGRESSION OF THE SETTLEMENT

The confusion in the chronology of place-names with the suffixes *-ingas*, *inga-*, *ingaham* and *-ham* is of direct relevance to the progression of the Anglo-Saxon settlement. Ekwall in *English Place-Names in -Ing* (1923) suggested that the suffix *-ingas* was originally the collective name designating the people of the village or district, and that this type of name applied to the colonisation of the first Anglo-Saxon migrants. Smith (1956, 74) demonstrated that of this large group of names only the termination in *-ingas* and the medial *-inga-* were relevant to the early stages of the

EARLY PLACE NAMES



Fig 5 Early Place Names

Anglo-Saxon settlement. Recently there has been a complete reversal of the traditional place-name progression principally led by Dodgson (1966, 5-29). It is this scheme as summarised by Edwards (1973, 81-85) which has been applied in this study. This progression places *-ham* as the earliest form. This is succeeded by place-names in *-ingaham* and finally *-ingas* names belong to the post-pagan era.

A final point which must be emphasised is the importance of topographical studies as a necessary accompaniment to the application of place-names. Too often in the past place-name studies have lacked the accompaniment of topographical analysis and fieldwork which is often necessary. Sometimes even fieldwork can not determine the true interpretation of a term, thus Swineshead may refer to the Germanic practice of head sacrifice or it may be descriptive, the fanciful name of a natural object.

THE APPLICATION OF PLACE NAME STUDIES TO BEDFORDSHIRE

Cox (1973, 15-73) noted that the distribution of place-names in *-ham* in the Midlands and East Anglia was closely related to the system of Roman roads and ancient trackways and also to major and minor Romano-British settlements and villas. Dodgson (1973, 2) also noted this same relationship in Sussex and Hertfordshire. The formation of place-names in *-ham* is certainly early as the element never enters post-Conquest place-names combined with O.Fr. personal names. Cox postulates that these early sites were settled from Roman roads under Roman or sub-Roman regional government and that the formation of these names continued through the years of migration into the pagan period.

In Bedfordshire two place-names can be positively identified as *-ham* names. Studham (O.E. *stod-ham*, "a place where horses are bred"), lies on the highest ridge of the Dunstable Downs. It has been suggested (Cox 1973, 67) that this could have been a settlement of some importance for the mounted cavalry of the *foederati*, lying as it does on open downland suitable for horses. Studham lies four miles south of Dunstable, two miles from Watling Street and three miles from the Icknield Way, a crossing possibly of some importance. While not doubting the possibility of this interpretation it must be pointed out that other names *Stotfold* (O.E. *stod-fald*), and *Stodden* (O.E. *stod-denu*), also occur. These too apply to the breeding of horses and may equally indicate

the breeding or enclosure of horses in the Roman or late Saxon period.

The second *-ham* form is found in Higham Gobian (O.E. *heagh*, "high"), situated two miles from the Icknield Way at 247ft above sea level. This belongs to a group of villages called Higham which, without exception, overlook roads. Higham Ferrers, Northants., is an example close to the modern county boundary in the north-west. These upland sites are well drained, easily cleared and would have afforded good visibility and a defensive position.

There was a fusion in Middle English of O.E. *-ham* with O.E. *-hamm* which has a range of meanings with a series of contrasts between natural and man made features. Gelling (1960, 140-162) has constructed a typology but it is sufficient to record here that these meanings range from "land in a river bend" to "an enclosed plot or close". Blunham, Biddenham, Bromham, Pavenham, Felmersham and Clapham are all situated on the River Ouse and are enclosed by loops of the river. As there is a lack of O.E. forms for the Bedfordshire Ouse series and a corresponding lack of M.E. forms in *-hamm* it is not possible to determine satisfactorily whether these place-names were formed from *-ham* or *-hamm*. The siting of these villages in a *-hamm* topography serves to confuse the issue further. But *-ham* is possibly present in some of these forms. All, except Blunham, are sited on Cretaceous deposits desirable for settlement and all are situated close to Roman roads and buildings. This area was densely occupied in the Roman period. The Folly, Clapham has produced evidence of pagan Saxon occupation as has Felmersham where the occupation has been considered to be not later than the sixth century (Jope 1951, 49). Harrold, two miles west of Felmersham and the cemetery at Kempston attest to fifth century occupation in the Ouse valley. It is probable that the Ouse series are *-ham* formations.

Roothams Green in the north of the county, one mile west of Begwary Brook needs investigation. The name is not mentioned in the English Place Name Society volume for Bedfordshire and consequently it has not received attention from Gelling (1960), Cox (1973) or Dodgson (1973). Like Blunham it is sited in the Oxford Clay region but the overlying soils are varied. Blunham exploits light loams and gravels, easily worked and manured. These place-names in *-ham* are all situated on good agricultural soils in one of the main

areas of preceding Roman occupation.

The Saxons brought the word "stead" (O.E. *stede*) with them to England as an active name forming element in the fifth century (Sandred 1973, 72). When compounded as in *-hamstede*, the middle element *-ham* was liable to undergo phonetic reduction as early as the O.E. period. Wilshamstead (O.E. *Wilshamstede*, "Wil's home-stead") is an example. Although still marked as Wilshamstead on the O.S. map it is still commonly referred to in local usage as 'Wilstead'. In all three compound place-names of this type occurred in the region. Wilstead is the only one which can now be located with any accuracy. Greathamstead (O.E. *greet*, "gravel") is a reference to an area on which settlement was most favoured, the gravels.

Place-names in *ingaham* are possibly the earliest of the *-ingas* and *-inga-* names. Cox (1973, 74) also considered this name to be significantly associated with Roman roads, sites and pagan Anglo-Saxon cemeteries. In Bedfordshire only one modern example exists or has survived, but Bramingham is probably a late formation. Discussion of the place-name in the English Place Name Society volume indicates that if its association as the Victoria County History suggests lies with the ancient manor of Bramlehange (1240), then it must have undergone an archaising process. Bramingham's regional archaeological context indicates that the possibility of an earlier formation can not be ruled out and must be considered. Bramingham lies 1.5 kilometres from the River Lea, 1.25 kilometres from the pagan cemetery at Sarum Rd., Leagrave, and one kilometre from the inhumations in Waulud's Bank, Limbury.

There is no reliable succession for the later settlement expansion. Extensive and exhaustive use has been made of the supposed progression to the element *ton* (O.E. *tun*). But this was in use as a place-name suffix until the thirteenth century. Place-names in *-ingas* (nom. pl.) are of two types. The first is those in which the basis is a personal name, of which there are four examples in Bedfordshire. The second category is one in which the basis is a topographical term or an older place-name. Knotting ('Cnotta's people' or 'dwellers at the hill') could belong to either group.

Personal names with an *-inga-* or *-ingas-* formation are largely associated with settlements removed from areas with any immigrant phase burials. Thus these place-names probably do refer to an

expansion phase in the Saxon period. The medial use of the suffix *-ing*, as in *-ington*, *-ingdon*, *-ingley* and *inghoe* occurred into the late pagan period but very few were formed in the succeeding Christian period. (Kuurman 1974, 34). The chronology for these terms, if there is one has not yet been established.

Other types of place-names have been suggested as denoting early settlements. Edwards (1973, 82) noted that in Kent centres bearing place-names signifying a water relationship appeared as the closest settlements to five out of nineteen pagan burials and suggests that further research may reveal a widespread degree of association between pagan burials and certain water based forms. This does not occur in Bedfordshire. Of thirty-nine burials none are situated particularly close to settlements with *-ham* names and only seven are close to settlements bearing place-names denoting a water relationship. Only two of these seven burials belong to the early pagan period.

One feature common in the Bedfordshire area, and which is concentrated the most in the area, is the prevalence of place-names from O.E. *hoh*, a hill spur. The number of place-names with this element indicates a considerable period over which the Anglo-Saxon settlement extended. There are thirty nine examples in Bedfordshire. Although it is difficult to distinguish the Anglo-Saxon *hoh* from the O.N. *haugr* (a natural height), the majority of these place-names are clearly Anglo-Saxon due to the presence of Anglo-Saxon personal names in their formations.

The Tribal Hideage (Davies and Vierck 1974) gives some indication of the early divisions of the Mercian district in the seventh century. Three hundred families formed the folk whose names appear in the genitive plural as the Giffle. The River Ivel is described in Domesday Book as the River Gifla. The name of the Ivel seems to have undergone a reduction in the names Northill (Nortgieule 1086) and Southill (Sudgieule 1086). Each village is situated two miles from the river but as the river name is the source of the Giffle territorial name it is supposed that Northill and Southill are descriptive of settlements in the north and south of that territory. Yelden (Giveldene 1086) is another of the Giffle settlements.

The Chilternsaetan, about four thousand families occupied the plain beneath the Chilterns and the Hicce of three thousand household occupied the area around Hitchin in north Hertfordshire.

The tribal Hideage is only a rough approximation of the actual number of family lands contained in the kingdom and these early tribal divisions were obliterated by the later tenth century administrative reorganisations by the kings of Wessex.

The Anglo-Saxon Chronicle records that in 571 Cutha fought against the Britons at Bedcanford and took four towns, Limbury (Lygeanburg), Aylesbury (Aegelesburg), Benson (Baenesingtun) and Eynsham (Egonesham). Bedcanford was originally identified as Bedford. Recent considerations have cast doubts on this identification. Lygeanburg has been identified with the modern form Limbury in south Bedfordshire. This would suggest if Bedford is not accepted as the site of Bedcanford that the West Saxon conquest under Cuthwulf reached its most northerly point at Limbury. The Ouse valley does not seem to have been under the West Saxons and this accords with the cemetery evidence of the region.

IV : DISCUSSION

The basic requirements for the successful study of settlement patterns (Taylor 1972) are that the recoverable pattern must be reasonably complete in an area and it must be possible to obtain an approximately accurate idea of the form, size, purpose and organisation of most of the settlements. It is therefore impossible to ascertain the true pattern of settlement and type of settlement by archaeological means only. The areas beyond the river gravels in Bedfordshire are not of the type which reveal soil or crop marks from the air and a lack of surface material does not imply an absence of occupation. But it is possible to ascertain to a degree the nature and growth of the Saxon settlement pattern using archaeological and place-name evidence. Some comparisons with the later nature of the region in the Domesday survey may also produce useful information.

The two main areas of settlement in the Roman and subsequent Saxon period seem to converge, although expansion in the later Saxon and Medieval periods probably resulted in the more even distribution of settlements present at Domesday (Campbell 1962, 10). It is probable that expansion, which was a gradual and continuous process from the sixth century onwards, resulted in growth to an already existing pattern of dispersed farmsteads and small hamlets sited on good agricultural land. New 'colonising' villages can be documented to some extent during the late Saxon period and the early medieval period by place-names in *-leah*.

A consideration of the *-ingas* and *-inga-* place-names in Bedfordshire and its immediate border areas produces an interesting 'mother-daughter' relationship between some place-names. Three pairs of place-names in *-ingas* are situated with less than two miles between the mother and the daughter settlement, (fig 5). It is not possible to say which of the pair in each relationship was the earliest, 'mother', settlement but in each of these three cases the mother and daughter settlements do not occur in the same parish.

The area enclosed within the modern county boundary is an area in which, during the eleventh century, the distribution of settlements was fairly even. This was primarily due to the widespread distribution of superficial deposits, principally Boulder Clay. The physical contrast between the upland and the vale is not markedly distinct but in the Domesday period as in the preceding Saxon and Roman periods two agricultural localities can be distinguished, the southern part of the county underlain by the Chalk and the area of the county north of the Chalk, (Campbell 1962, 32-37).

Analysis of the siting of the villages with early forms of place-names on the lines of work done by Ellison and Hariss (1972, 921-962) also shows accordance with observations in eastern England made by Gelling (1974, 93). There is a recurrent relationship between place-name types and the soils on which the settlements were sited, on islands of sand and gravel in preference to the clay areas. Two kilometre circles were drawn round settlements to contain, theoretically, their most intensive exploitation areas. The Agricultural Land Classification Map (Ministry of Agriculture, Foods and Fisheries 1968) was used to obtain a general idea of land quality. Land is classified into five grades according to the degree to which its physical characteristics impose long term limitations on agricultural use. The main physical factors used are climate, relief (particularly slope), and soil (with reference to wetness, depth, texture, structure and stoniness). The boundaries indicated by a line on the map are not sharply defined and grades may merge abruptly or over long distance with one another. The majority of the land in Bedfordshire is shown as Grade III land which ranges from good land of above average quality to land of below average quality. Thus the map may only be used as a framework and guide to the value and suitability of land for settlement. As found in south England (Ellison and Hariss 1972, 961-962)

many of the sites were located close to the junction between two different land categories thus enabling different exploitation of the differing resources (fig 4). The majority of the present day settlements with early forms of place-names were situated on Grade III land with Grade II land in their immediate proximity. Grade II land is generally suitable for a wide range of agricultural crops.

Studham (fig 4a) is of interest and may reflect a situation pertaining in general to the Anglo-Saxon settlement of Bedfordshire. The near non-coincidence of Studham and the Roman villa at Kensworth's site catchment areas is further delineated by the presence of woodland along the edge of the resulting theoretical boundary. This also occurs at Felmersham and its related Roman rural settlement at Radwell and also at Puddlehill and the Roman villa at Totternhoe.

This theoretical 'circular' catchment area for a settlement is distorted by the topography, historical factors and the location of critical resources. A classic characteristic distortion is the resulting long strip parish of the downlands in the south. A group of strip parishes is to be found in Wixamtree Hundred to the south-east of Bedford, and to a less clear cut extent those on the downlands in the south of the county, south of Manshead Hundred and south of Clipstone Brook are distorted in the same manner. In the northern group the strips run across the gravel and riverine deposits, the clays in the Vale of Bedford and the Oxford Clay regions.

Further analysis of present day settlement patterns in the region combined with badly needed reassessment of place-name studies generally and particularly in relation to Bedfordshire would greatly assist in the reconstruction of the changing, non-static rural pattern. Settlements are not static and farm names may often retain the name of a previous settlement as at Pilling farm, near Wootton. The archaeological evidence calls for a multi-disciplinary approach to the problems concerned with the Anglo-Saxon invasion of England and the resulting growth of settlements. Recent studies have shown that the 'Adventus Saxonum' was a gradual process, a slow penetration of the English country side. Nothing illustrates so well the need for reassessments and new thoughts and approaches in Anglo-Saxon archaeology as the contrasts in distributions obtained from the archaeological evidence compared with that of the place-name distributions.

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Tithe Meadow Excavations, Stevington, Bedfordshire

PETER TILSON and BARBARA TILSON

SUMMARY

Excavations at Tithe Meadow, Stevington, uncovered part of a large stone and timber constructed building, of early twelfth century date, possibly the tithe barn attached to Stevington manor, and a small early medieval lime kiln.

INTRODUCTION

An invitation to investigate the field known as Tithe Meadow, Stevington, was given during the autumn of 1971 by Mr J. Prentice, the owner of Church Farm, after a large amount of pottery had been found by his son, Joe, over two consecutive years of ploughing. The site at SP 992536, lies adjacent to the lane leading down to the 'Holy Well' and on a small escarpment of the river gravels, 100 feet above sea level. A field survey showed that the pottery was of early medieval date and that the area was covered by a considerable amount of building stone. Excavations commenced in the spring of 1972 and continued until the end of that year.

THE EXCAVATION

There was no evidence from aerial survey photographs of any occupation and a rapid documentary search did not reveal any firm indications; therefore due to the size of the site and the time factor, it was decided to open four trial trenches each 9m long and 1m wide. Trenches T3 and T7 were placed parallel with the axis of the church, with T1 at right angles to these. The initial trenches were subsequently enlarged where it was found necessary. T5 was situated where there was a large amount of surface building rubble. All trenches were excavated down to natural limestone and gravel. After the clearance of the top soil it was found that, due to deep ploughing, only a thin layer of undisturbed soil remained over most of the features.

The ditch (fig 1 F4) ran from north to south across the site but only one end was traced. It contained a sandy brown silt with little pottery and bone, most of the pottery being developed St. Neots shelly wares consisting of Olney Hyde

cooking pots with large handles. Where the ditch was revealed in T2 it was found to have cut an earlier hearth and the fill here was mixed with burnt charcoal and stone. Little can be said about the ditch as only a small area was excavated but it is possible that it formed part of a communal animal enclosure away from the dwellings as little occupation material was found in it.

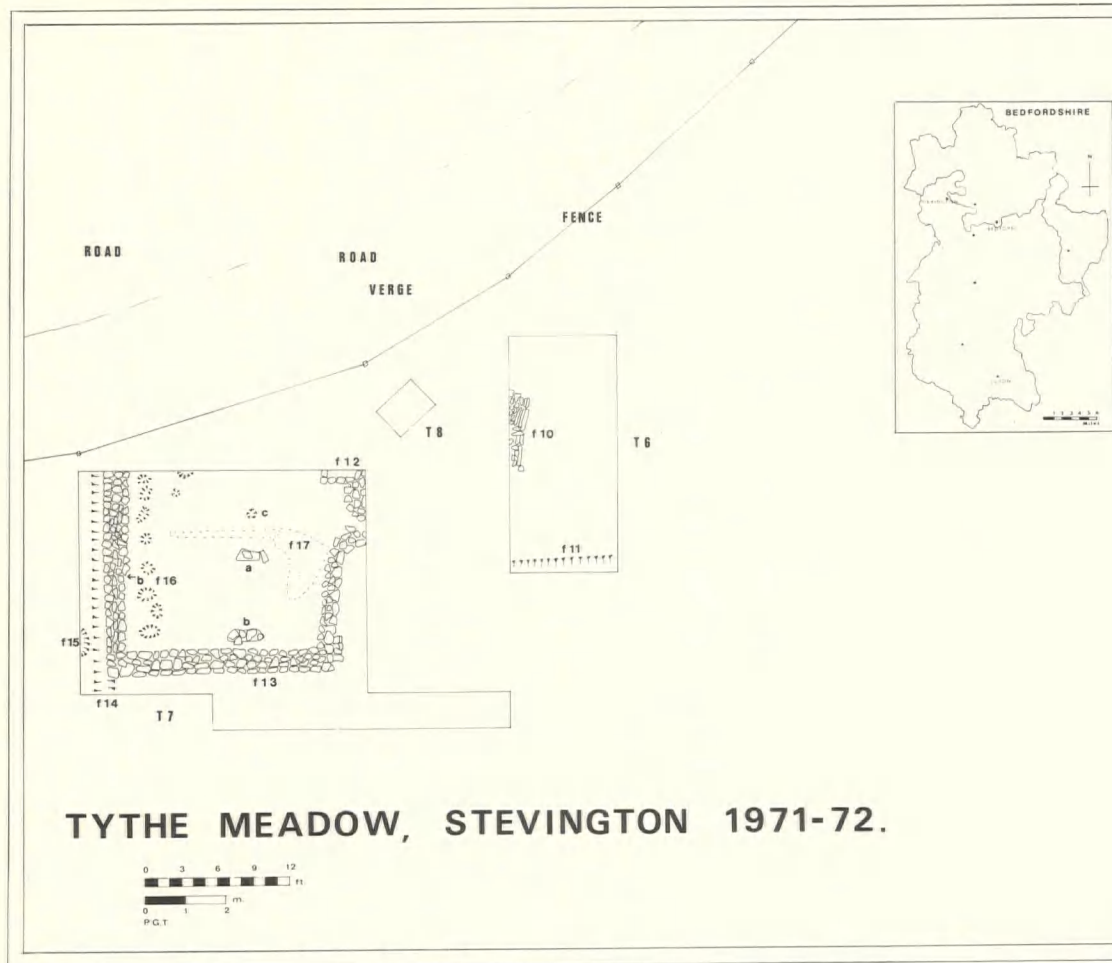
The post holes F1 and F3 found in Trench 1 (fig 1) contained no finds and were only sealed by topsoil. It is probable that they are of modern origin.

In Trench 2, the remains of a hearth, F5, was found, constructed of packed limestone and clay. Part of a curfew (fig 3, no 18) was found in the burning. Not enough of the surrounding area was excavated to ascertain the plan of the associated buildings, but stone footings, F6, found in Trench 3 and Trench 4, may well be connected. Ploughing had destroyed all but one of the original limestone footings. Some large cobbles and mortar were also present in the foundation course and the wall had been built without a construction trench. Dating evidence was provided by a group of pot sherds found in the rubble footings which seem to have been thrown in during construction. These consisted of several sherds of Saxo-Norman shelly pottery of the tenth and eleventh centuries incorporating pagan Saxon type stamps, (fig 3, no. 17) as also found at Bradwell and Lavendon, Bucks. The end of the ditch, F4, was found in Trench 3 (fig 1) and again contained little pottery, most of which consisted of the base of a large developed St Neots ware cooking pot.

THE LIME KILN

Trench 5, (fig 1 and fig 2)

The lime kiln had been constructed in a shallow scoop made in the natural lime stone and gravel, probably to help with the drainage problem and having been built this way so survived the plough. About half the circumference was left intact, the rest being destroyed by a later ditch and sump construction, (fig 2B). The kiln, 2m diameter, was dome shaped and built of



TYTHE MEADOW, STEVINGTON 1971-72.

Fig 1 Tythe Meadow, Stevington: site plan.

limestone slabs. Its base was cut into natural and a layer of packed clay 5mm thick spread across to form the base.

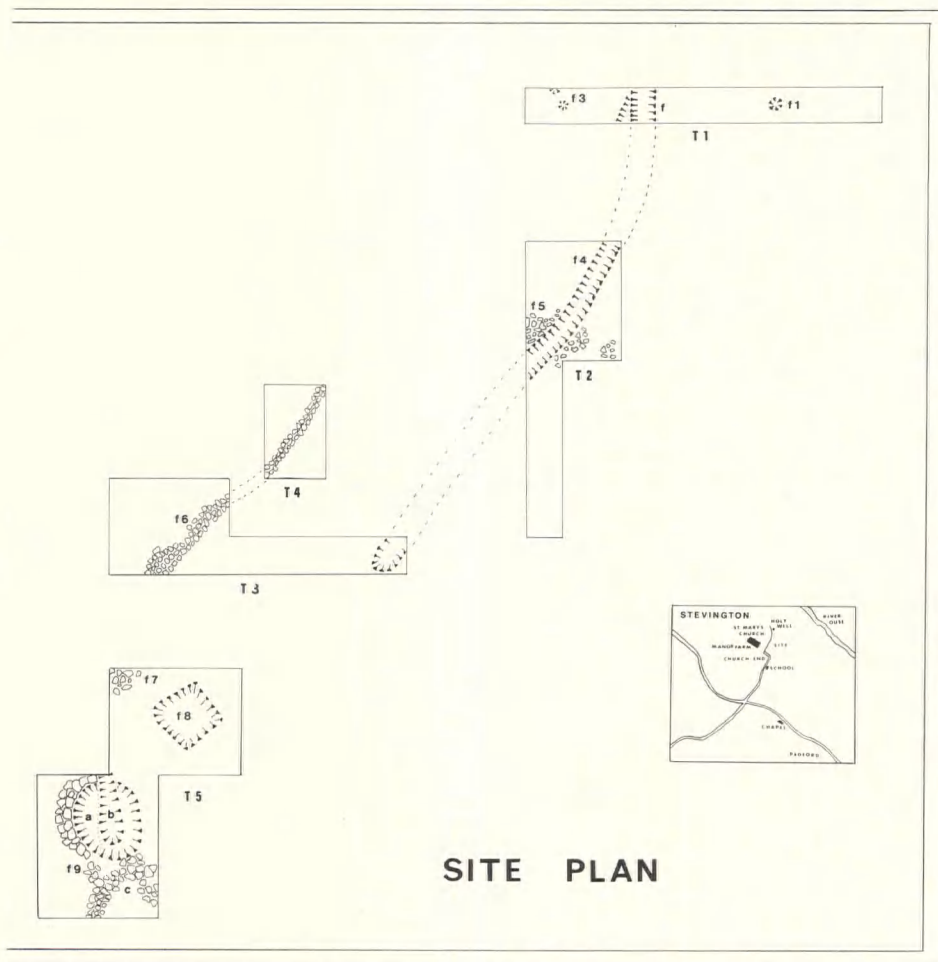
Traces of the flue, (fig 2, F9) were found leading to the kiln from the south side.

Pottery and bone found in the undisturbed kiln fill contained a number of early St Neots ware bowls with inturned rims, probably of eleventh century date. A number were also found in the plough disturbance above the kiln. It would appear that the kiln went out of use by the beginning of the eleventh century and was filled with domestic rubbish before the digging of the ditch and sump. The lime kiln was probably one of a number built to serve the construction of the tithe barn or manor extensions.

The ditch cutting the lime kiln is part of the same system as ditch F4, forming a large complex. Little is known of the pattern and this could only be ascertained through total excavation of the field. Dating of the ditch is put at about late twelfth to early thirteenth century, from the small amount of pottery found.

TRENCH 6

An area outside the tithe barn (fig 1) was excavated in an attempt to locate features connected with both the possible ditch system and the barn. A small area of fallen limestone (fig 1 F10) was all that remained of a ploughed out wall, also disturbed by tree roots, which was probably part of the main building complex.



Pottery associated with the rubble was mostly inturned rimmed bowls and cooking pots, St Neots wares not later than twelfth century. Part of the ditch system F11, was traced in the south end of the trench but no finds were made in the primary silting. A thin occupation layer of burnt stone and charcoal sealing the ditch and partly over the stone feature F10, contained a number of pottery sherds of developed St Neots wares. The area was dotted with a large number of small stake holes whose exact date and purpose are unknown.

This area was spread with the greatest concentration of surface rubble and it was decided to ex-

The building had initially been timber-framed with limestone filled walls: evidence for this was admittedly slight being only discernable as slight depressions within the stonework (F14). It had a drainage ditch running down its west side. The floor was of packed yellow/brown clay and at one end an area of burning was found associated with a shallow pit (F17) containing bone and pot sherds

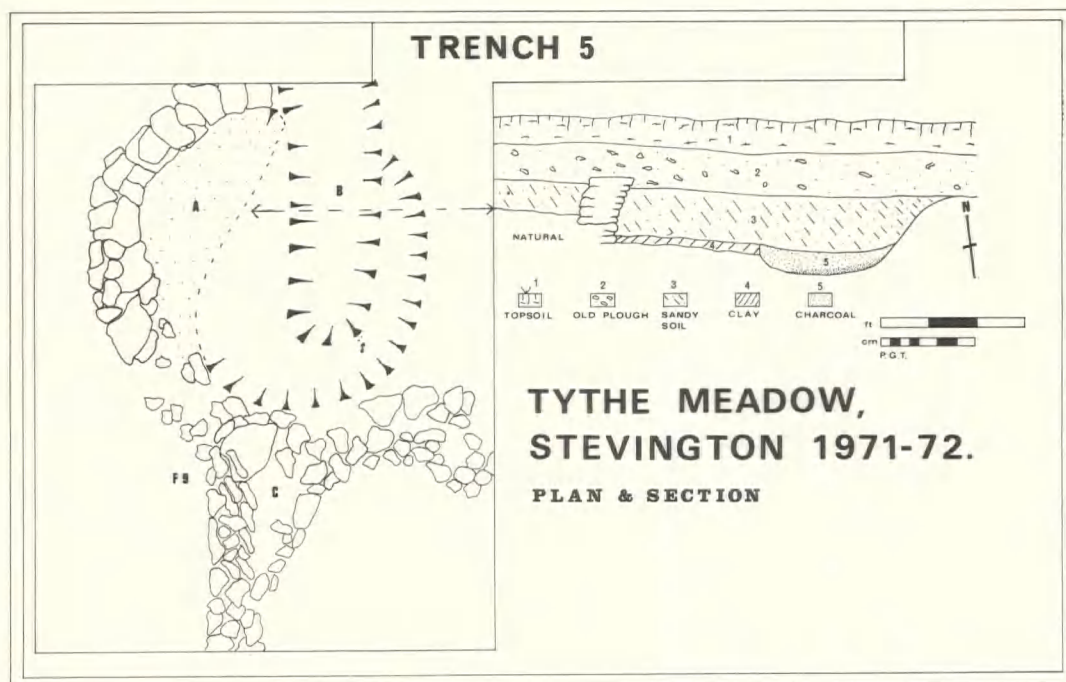


Fig 2 Plan and section of lime kiln at Tythe Meadow, Stevington.

of inturned bowls and cooking vessels of early medieval date. This is presumed to be the original tithe barn. By the middle of the thirteenth century the building went out of use as a store and became ruinous for a short time. Evidence for this was the thick layer of building debris, roofing tile and general soil deposits found over the last occupied floor level.

Part of the building lies under a modern road, so the complete layout is unknown. However, from the excavated area it is clear that the walls were rebuilt, the building was divided by partitions, seen as timberslot beside F17, a doorway made in the west side and a fireplace inserted in the other room, F12. The converted barn was used as a dwelling for only a short time. The reason for it being abandoned is not clear: none of the pottery is later than the end of the thirteenth century.

THE FINDS

THE POTTERY

Apart from one pit group from Trench 5, most of the pottery came from the occupation layers associated with floor levels in the buildings. A large amount of pottery was found in the top soil

due to the deep ploughing and tended to be of the same date as that found *in situ*. This will be published in a later report. Very little pottery came from the ditch system. Without exception, all the pottery found had been wheel thrown and a good proportion was bowls with inturned rims. Fabric was found to vary, but the shelly type was dominant.

Most of the pottery is twelfth to thirteenth century in date; a few sherds of yellow glazed Stamford ware were discovered in the earliest floor level of the building and one body sherd, late eleventh century, showing the Pagan Saxon style of stamp impression in a grey shelly ware which was also applied with strips of clay and finger impressions. Most of the pottery, however, consisted of early St Neots shelly wares and none of the pottery is later than the mid thirteenth century. A few developed St Neots potsherds found on the surface may have come from an unexcavated area to the north of the site.

Trench 5

Pit group from primary fill of the lime kiln (fig 3).

- 1 Cooking pot with inverted rim in buff orange fabric. Large to extra large shell.

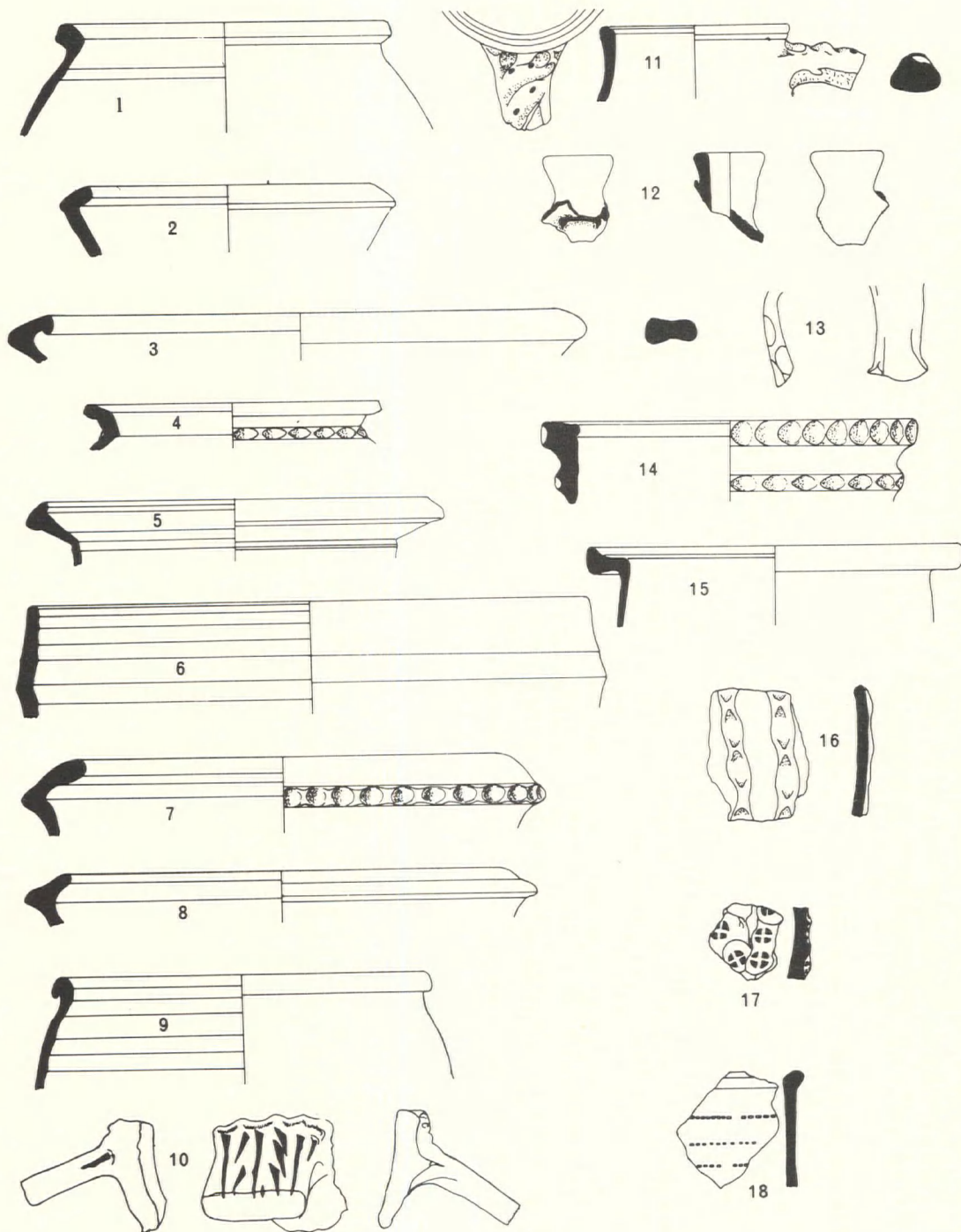


Fig 3 Pottery; scale $\frac{1}{4}$.

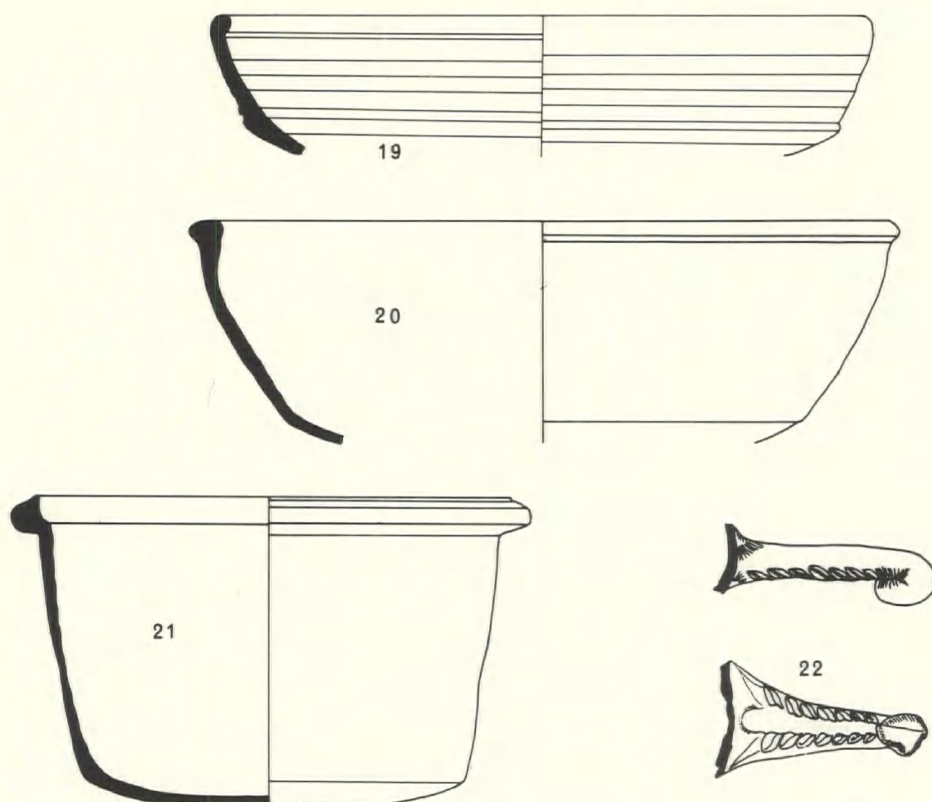


Fig 4 Pottery; scale $\frac{1}{4}$.

- 2 Inturned rim of a small bowl. Fabric light brown, coarse with some small shell and grit.
- 3 Inturned rim of a medium size bowl with the inner rim turned over. Fabric as No 2.
- 4 Inverted rimmed cooking pot with the rim topped in a grey sandy fabric. Strapping with finger impression around the neck.
- 5 Large cooking pot with a flared rim. Some medium to large shell in an orange fabric.

Trench 6

Pottery associated with building debris (fig 1 F10).

- 6 Large bowl with upright rim in medium brown fabric. Large to extra large shell and some medium grits. Signs of burnishing on exterior of the rim.
- 7 Inturned rim of a large bowl with finger impressions on outer edge of rim in light orange fabric with some fine to medium shell.
- 8 Inturned rim of a small bowl in light grey/brown fabric. Some small to medium shell.

Trench 7

Associated with building destruction (fig 1).

- 9 Cooking pot with rim turned under to form a recess for a carrying strap or rope. Burnt orange fabric, small to medium shell. cf Bedford, Cauldwell St. 79, fig 7, No 27.
- 10 Handle from a large jug in grey sandy fabric. Deep slashing on exterior surface and finger impressions.

Trench 7

From floor occupation sealed by building destruction (fig 1).

- 11 Handle and rim from a half-cabled and dot jug, in burnt orange fabric, signs of burnishing on exterior. cf Harrold, 31, fig 5, No. 23.
- 12 Neck and top of a 'Stamford ware' jug in yellow glaze on buff fabric, some very fine grits.
- 13 Strap handle from a small green glazed jug in orange fabric.
- 14 Thick rim of a large bowl in dark orange to

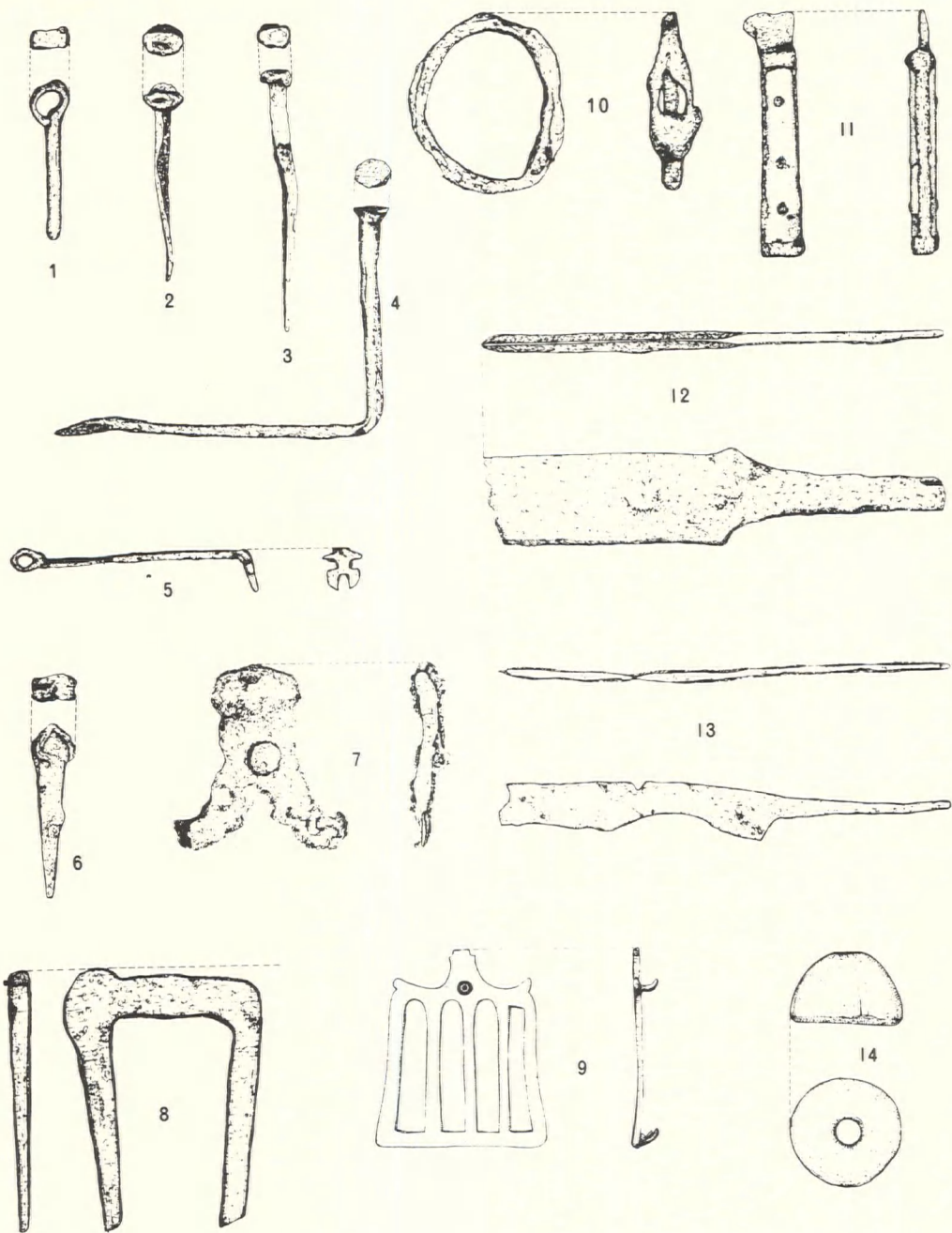


Fig 5 Small Finds; ½.

brown fabric with medium to large shell. Exterior showing two parallel rows of finger impressions.

- 15 Flat rimmed bowl in burnt brown fabric with some small shell and grits.

Trench 3

Pottery associated with stone wall, (fig 1 F6).

- 16 Body sherd from a large bulbous pitcher with strips and finger impressions running down the body. Fabric medium brown in colour with some small shell. Interior badly pitted and light grey in colour.
- 17 Body sherd from same type of pot as No 16 but showing the Pagan-Saxon type stamp impressions of crosses at the join of the strips. Similar types found at Bradwell and Lavendon, Buckinghamshire are unpublished.

Trench 2

Fireplace (fig 1, F5)

- 18 Part of a curfew, in orange fabric. Medium to large shell, decoration of parallel rows of square dot impressions on exterior and rim. cf Bedford, Cauldwell Street. 78, fig 6, No 23.

Trench 5

From the old plough soil sealing pit (fig 2)

- 19 Large dish or bowl in medium buff fabric with small to medium shell. Heavily burnt on exterior.
- 20 Large bowl in orange fabric. Traces of burnishing on rim and body. Small to medium shell. Olney Hyde ware, cf Warrington, 43, fig 1 No 2.
- 21 Deep sided bowl, base uneven with burning on exterior. Orange fabric with small to medium shell.
- 22 Handle from a small ladle in orange with finger impressions on the underside. The end folded and turned over. Some small shell.

SMALL FINDS

Numbers 1 to 9 and from the destruction of the building in Trench 7, (fig 1). The remainder were found as noted individually.

- 1 Small iron pin, forged in one piece and turned at the top to form a ring.
- 2 Iron nail, square with a flat top.
- 3 Iron nail, square but the top folded over.
- 4 Large round iron nail, top very small and tapered.

- 5 Iron key from a barrel lock. The end turned to form a ring for carrying on a belt. Late thirteenth century.
- 6 Flat iron nail.
- 7 Flat iron strip divided to form a Y shape with a large rivet in the middle. The ends of the Y are hooked. Use unknown.
- 8 Large iron staple probably used on a door latch.
- 9 Bronze buckle, with three rivets on the back.
- 10 Iron ring split at the top. Possibly part of a horse harness. (Trench 2).
- 11 Iron knife with a bone handle fixed by three rivets (Trench 6).
- 12 Large iron knife. Possibly part of a large meat cleaver (Trench 7).
- 13 Iron knife. Sharpened on one edge (Trench 6).
- 14 Spindle whorl made from clunch stone. Pieced and tapered to the top where burning marks are left from use. (Trench 7).

COINS

No coins were found *in situ* from any of the occupation levels but in the top soil from Trench 7, four coins were found.

- 1 Penny, George V, 1921.
- 2 Halfpenny, George V, 1914.
- 3 Halfpenny, George V, Worn.
- 4 Nuremberg counter floral device with crowns. Late sixteenth century.

ACKNOWLEDGEMENTS

We are grateful to Mr and Mrs Prentice for permission to excavate the site and to them and their family for all the help they gave. The excavation was partly sponsored by the Bedford Archaeological Society and we would like to give our thanks to all those who helped, particularly to the late A. East and the children of Clapham Village and to Mr T. Roberts for all his time spent on drawing the pottery.

We are indebted to Mr D. Mynard for his advice and information about the pottery, the small finds, drawings and for the help in the preparation of this report. The small finds drawings are by B. Tilson.

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Excavations at Bushmead Priory, 1978

ANGELA SIMCO with ROBERT MUSTOE*

SUMMARY

A trial excavation was undertaken during September 1978 on rectilinear soilmarks west of Bushmead Priory. Boundary features, yard surfaces and possible building platforms of a late medieval/early post-medieval agricultural complex were identified.

INTRODUCTION

Bushmead Priory, situated in the north-west corner of the historic parish of Eaton Socon and the modern civil parish of Staploe, Bedfordshire, national grid reference TL 116607, was founded c1195. It adopted Augustinian rule in the early thirteenth century, and was dissolved in 1536.¹ All that survives above ground is the refectory, currently being restored by the Department of the Environment.²

Since the last war, rectilinear soilmarks have been recorded from the air in an arable field 200 metres to the west (see plates 1 and 2). They have been variously interpreted as the site of the church and cloisters,³ and as an outer court.⁴ A map and survey of 1624⁵ shows a field in this location called 'Barns Yards' of which the southern boundary, a long narrow stretch of water, accords well with the southern limit of the soilmarks. This suggested that the site was agricultural in function, though no buildings were shown in 1624. Comparison of aerial photographs of different dates shows that the marks are becoming less distinct as cultivation continues. In order to identify the source of the soilmarks, and to assess the degree of any plough damage, a three-week excavation was undertaken in September 1978 for the Department of the Environment by Bedfordshire County Council's Archaeological Field Team.⁶ I am grateful to the

*The excavation archive, which is deposited with the finds in Bedford Museum, was produced by Robert Mustoe, who also drafted the excavation section of this report. Angela Simco prepared the rest of the text and was responsible for the final production of the report.

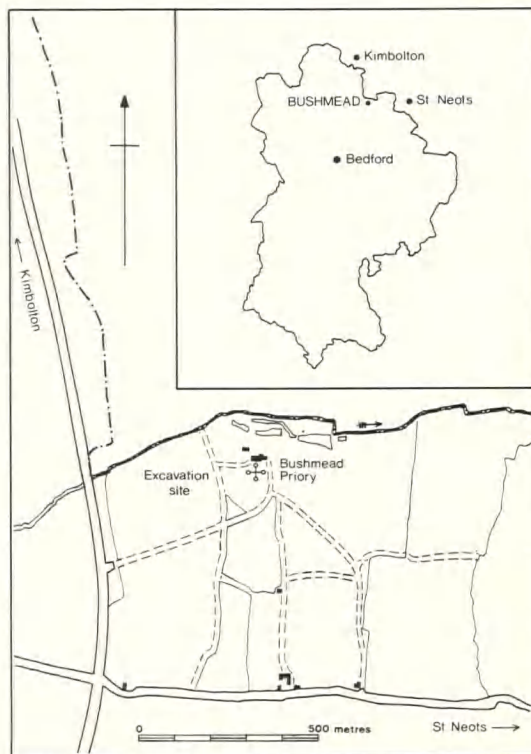


Fig 1 Bushmead Priory: location plan.

owner, Mrs Wade-Gery of Bushmead Priory, and to the tenants, R. Spencer Thomas Ltd, for permission to excavate.

The site lies on the south side of the valley of Duloe Brook, which forms the county boundary at this point and runs east to join the River Great Ouse at St Neots. The south-north slope across the soilmarks is from 62.9m to 57.6m above Ordnance Datum. The underlying geological deposit is chalky boulder clay.

Immediately before the excavation was due to begin, the field was mole-drained and ploughed, thus giving an unusual opportunity to investigate the effects of these two cultivation techniques. Examination of the recently ploughed field surface demonstrated that the soilmarks were caused



Plate 1 RAF aerial photograph, flight 541/483, print 4142; taken 7 April 1950. North to top.
[Photo: Crown copyright reserved]

by the disturbance of underlying natural boulder clay, and not by the presence of building stone or other foreign material. There was a marked difference between the very clayey plough soil of the soilmarks and the darker, more friable, loam in the rectangular area in the centre of the site. In addition, the recent ploughing had in many places sliced off a further centimetre or so from the surface of the natural clay, which had been turned on to the top of the plough soil. Few surface finds were noted, other than roof tile fragments and undressed cobbles.

As part of the excavation record, a plane table survey was made of the soilmarks as then visible on the ground (fig 2).

THE EXCAVATION

METHOD

As no structures could be identified from surface scatters, excavation concentrated on testing as many apparently different features of the site as possible, such as boundaries, the internal "blank" area, a further smaller enclosure and other areas of lighter plough soil. A complete north-south profile of the site was also recovered.

Most trenches were opened by hand, with the aim of retrieving all finds, including building debris, from the plough soil, and plotting their distribution. In this way it was hoped to quantify 'plough

shift', and also to identify very closely the depth to which ploughing had penetrated. However, the sparsity of archaeological deposits prevented any meaningful conclusions being drawn, and some of the trenches were later extended mechanically, using a JCB back-actor.

TRENCH I (Fig 3)

This trench, measuring 12.0m by 1.0m, was excavated by hand and was designed to examine a light-coloured linear soilmark representing the west boundary of the site. A slight rise could be detected on the ground over this feature. Boulder clay lay at a depth of 0.70m below the centre of the soilmark; above it was a turf line, in which a single sherd of 13th/14th century Oxford-type pottery⁷ and an iron arrowhead (fig 4 no 2) were found. This turf line was sealed by 0.3m of redeposited boulder clay forming the remains of a bank, which produced no finds. Recent mole drainage channels running north-south approximately 0.50m below the surface of plough soil and 1.0m apart had cut through the bank material.

This trench was not extended to the west, and it is possible that this boundary also consisted of an external ditch.

TRENCH II (Fig 3)

A trench 36.0m by 1.0m was excavated by



Plate 2 St Joseph aerial photograph, BBK 93; taken 20 April 1970. North to bottom left.
[Cambridge University Collection: copyright reserved]

hand across a rectangular area of light-coloured plough soil immediately south of Ditch B. It was subsequently extended by removing the plough soil mechanically to both north and south to obtain a complete profile, 123m long, across the soilmarks and to section the north and south boundaries of the site.

Excavated features from north to south were as follows:

Ditch A This feature, forming the northern boundary of the site, survived as an earthwork into the late 1950s or early 1960s, after which it showed as a dark linear soilmark turning through a right angle at each end towards the main soilmark complex. This was the only ditch excavated which showed evidence of more than one phase. The first phase had a rounded 'V'-shaped profile with steeply inclined sides and a maximum depth of 2.0m, filled with dark silty clay. This was sealed by a 60mm deposit of silty material with a high organic content, which formed the bottom-most fill of the recut. The profile of this second phase was 4.40m wide at the top, with steeply inclined sides, a horizontal floor 2.70m wide and a maximum depth of 1.25m. The main fill consisted of a mixed boulder clay to the north and a more loamy material to the south, suggesting that a

bank may have been pushed in from the north; it contained a few sherds of late medieval/early post-medieval coarse ware and fragments of animal bone and tile. A mole drainage channel had been cut through the top of the ditch fill.

Ditch B The south edge of this ditch was located in the original hand-excavated length of the trench. Its gently rounded profile had a width across the top of 4.80m and a maximum depth of 1.50m. All the ditch fills were of weathered and redeposited boulder clay and sealed by a turf line, 0.15m deep, which lay immediately below plough soil. Four sherds of late medieval/early post-medieval coarse ware came from the main clay fill; other finds consisted of animal bone, a few pieces of slag and fragments of roof tile. A field drain of the earlier 20th century had been cut into the ditch fill to a depth of 0.70m below the surface of the plough soil.

Between, and to the north and south of, Ditches A and B, the light soilmarks proved to be areas of clayey plough soil, approximately 0.30m deep, directly overlying clean boulder clay.

Cobbled surface At the south edge of the area of lighter plough soil removed during the early stages of the excavation of Trench II, and 17m south of Ditch B, the surface of boulder clay

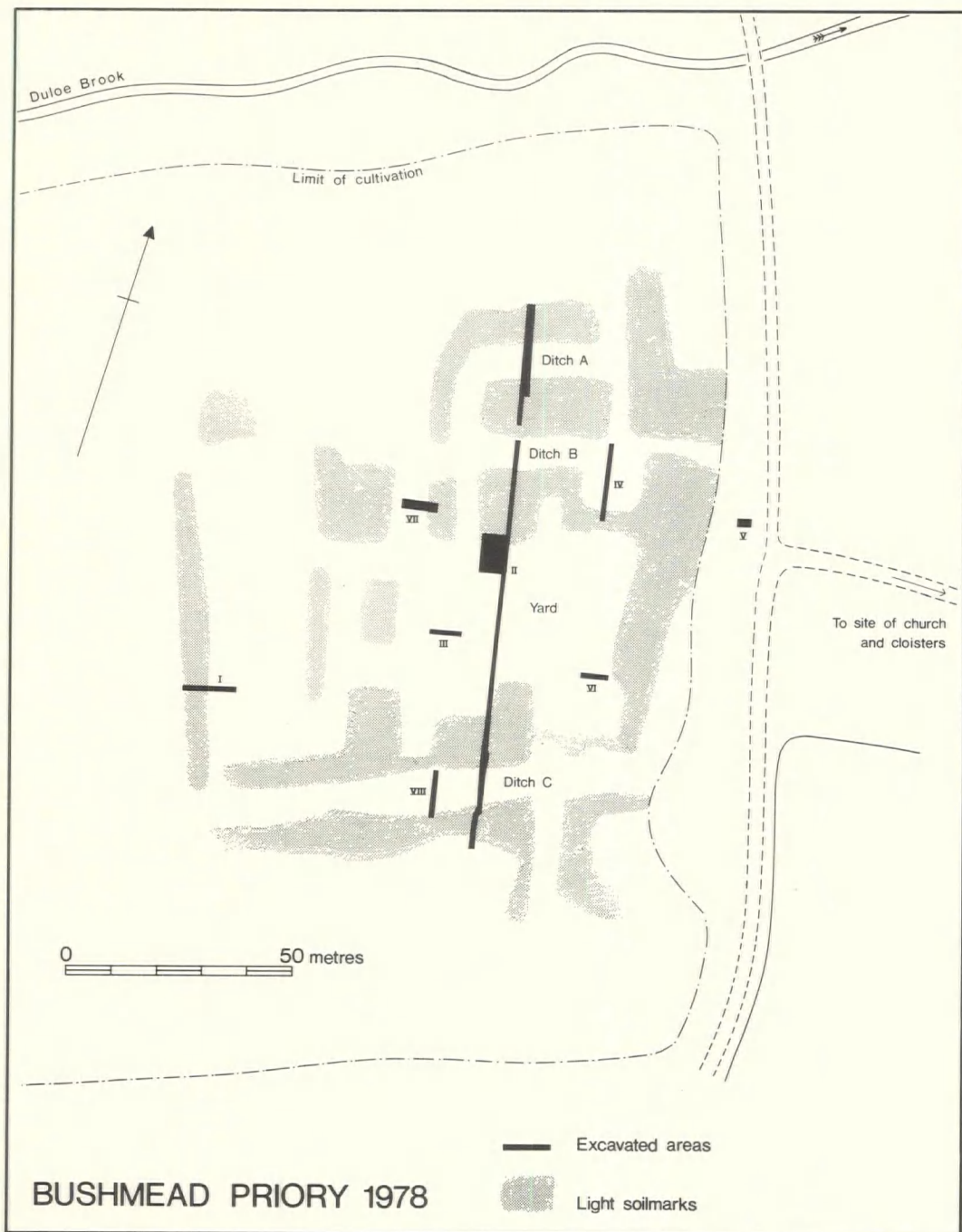


Fig 2 Bushmead Priory: site plan, showing location of trenches.

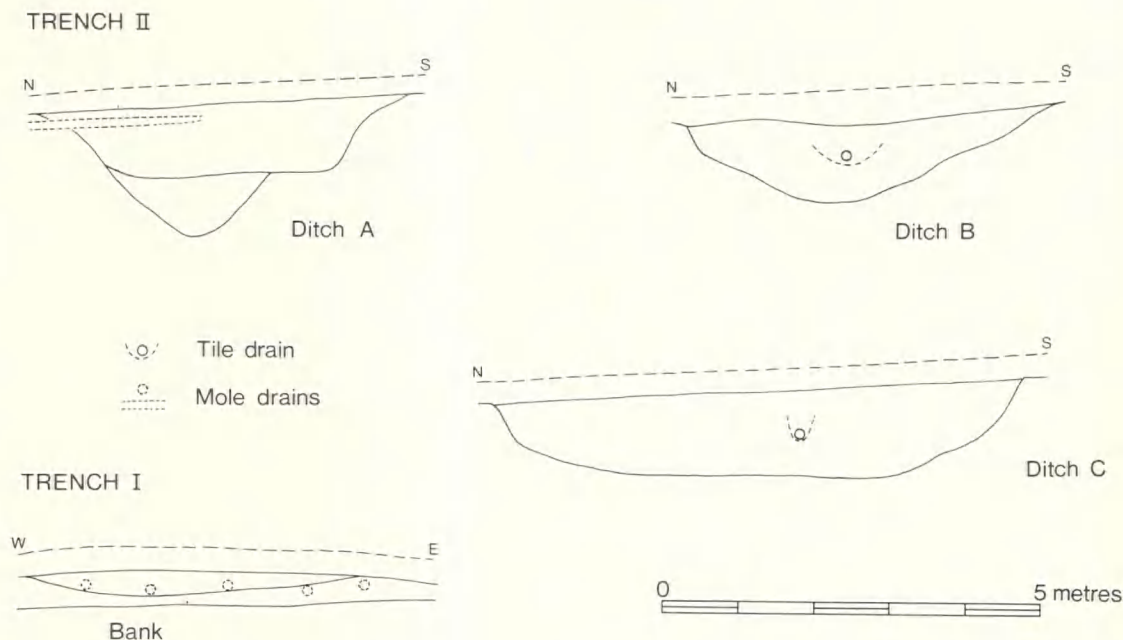


Fig 3 Bushmead Priory: profiles, Trenches I and II. (Surface of ploughsoil plotted according to average depth).

sloped down below a layer of large rounded cobbles with occasional pieces of limestone, flint and tiles; the cobbles averaged approximately 100mm in size, though some were considerably larger. A deposit of loam 0.11m deep, with few pebbles, overlay the best preserved areas of the cobbling. Subsequently, an extension of 12.0m by 5.0m was opened mechanically to the west, in order to give a clearer indication that the cobbles were not the debris from collapsed walls, and that the boulder clay surface contained no archaeological features. Both these points were confirmed. The cobbled surface survived fairly substantially (except for mole drainage channels) to a width of approximately 12.0m north-south; scattered cobbles occurred to the south for a further 27.5m, suggesting that a surface of some sort had been removed by ploughing. Between the southern limit of these scattered cobbles and Ditch D was 13.0m of clean boulder clay. There were no finds from the cobbled surface, or from the loam layer immediately overlying it.

Ditch C This ditch, which formed the southern boundary of the site, was 7.0m wide, with steeply inclined sides, a horizontal floor 6.0m across and a maximum depth of 1.5m. Various mixed clays formed the fills and the finds,

coming from the upper levels, consisted of animal bone, nails, roof tile, relatively modern pieces of metal debris and a sherd of willow pattern. A field drain had been cut into the ditch fills to a depth of 1.0m below the surface of plough soil.

TRENCH III

A wide scatter of cobbles in the plough soil similar in size to those of the cobbled surface found in Trench II was investigated by a hand-excavated trench 7.0m by 1.0m. Boulder clay, with a sparse spread of cobbles depressed into its surface, lay immediately below the plough soil. Other depressions with a fairly fresh appearance marked the position of other cobbles pulled out of place by ploughing. The cobbling, apart from being less intact, was identical in character to that in Trench II. There were no finds from its surface.

TRENCH IV

A hand-excavated trench 8.0m by 1.0m, orientated north-south across a square feature in the north-east corner of the site, was mechanically extended north for 9.0m. At 5.40m from the south edge of the trench, the surface of boulder clay was cut away to a depth of 0.75m by a

gully 2.80m wide running east-west. Its south edge was cut away by a field drain. To the north of this gully, continuous from its bottom-most fill but approximately 0.25m higher, was a surface made up of small pieces of hard-packed chalk with the occasional piece of flint and pebble. It had the appearance of having been artificially laid, though may have been caused by erosion of the boulder clay leaving its chalk content on the surface. It extended for 1.10m to the north and continued northwards as a thin irregular spread of pebbles, as far as Ditch B. A mole drainage channel had damaged part of the northern area of this surface. Ditch B was partially sectioned and proved at this point to have a width across the top of 3.80m with a gently inclined south edge and steeper north edge, and a flat bottom of at least 0.60m across at a depth of at least 1.10m. All the ditch fills were of mixed boulder clay and included a tip line of very chalky material, over the primary fill, where the chalk surface to the south appeared to have slumped into it. Roof tile, oyster shell and animal bone were the only finds recovered.

Except for the southern 5.40m, all the features within this trench were sealed beneath a layer of grey-brown clayey loam, up to 0.20m thick, with noticeably fewer pebbles than the other deposits. It produced the largest pottery group from the site, consisting of late medieval/early post-medieval coarse wares, Cistercian ware, imported Raeren ware, 17th century embossed slipware and post-medieval earthenware. Other finds from it were a fragment of window glass, a small part of a limestone pillar 10mm in diameter, roof tile, animal bone and iron nails. This deposit suggests that the area was used for refuse disposal over a number of years, in order to fill in the depression formed by the square enclosure and to restore it to the level of the surrounding ground.

TRENCH V

A scatter of building debris adjacent to the ditch which formed the east boundary of the field was investigated by a hand-dug trench 4.0m square. It proved to be a fairly recent dump of debris, containing bricks, ironwork and even plastics. However, there were two architectural fragments which may have been re-used from an earlier building. One was part of a limestone plinth, and the other a sandstone pillar block, 350mm in diameter and 190mm thick, with a slightly chamfered upper edge.

TRENCH VI

A "control" trench, measuring 6.0m by 1.0m, was excavated by hand in an area where there were no soilmark features or surface scatters. Boulder clay was found immediately below the plough soil at 0.30m. A few large cobbles set in the boulder clay were all that remained of a surface severely damaged by ploughing and mole drainage. There were no finds other than from plough soil.

TRENCH VII

This trench, measuring 8.0m by 2.0m, was excavated by hand in an area where a medieval tile fragment (fig 4 no 1) and a sherd of Olney Hyde/Harrold type pottery (13th century) had been found on the surface of plough soil. Clean boulder clay lay at approximately 0.40m immediately below plough soil, which produced a sherd of Oxford-type ware and the usual scatter of animal bone and roof tile.

TRENCH VIII

A section was excavated mechanically across the southern boundary (Ditch C) in case the section in Trench II could not be completed manually in the time available. It was not cleaned or recorded.

MOLE DRAINAGE

All trenches, with the exception of Trench V which was outside the area of cultivation, showed the effects of recent mole-draining. This process involves drawing a cylindrical horizontal 'mole', attached to a tine, through the subsoil to create channels to assist drainage. It is used on heavy soils and is carried out every four or five years, usually when a root crop is to be grown.

At Bushmead, the mole drainage channels were 80mm in diameter and ran north-south. Their average depth was 0.50m, that is approximately 0.10m to 0.20m below the bottom of plough soil, and were between 0.75m and 1.80m apart. The effects varied according to the type of deposit. Where the channels ran through boulder clay, they were perfectly cylindrical. The cut made by the tine had closed up, and the line of the drains could not be detected from the surface of the clay; in fact, they were only identified when archaeological features cutting through them were excavated. In loamy deposits, the channels were noticeably more ragged. Where cobbled surfaces survived, these had been badly damaged by the

drains, and the stones considerably displaced, though not always pulled out into the plough soil.

There were no signs of any previous channels, though the field has been regularly mole-drained for many years.

THE FINDS

POTTERY⁸

72 sherds were recovered, of which 31 came from plough soil. The earliest pottery consisted of the Olney Hyde/Harold type sherd from the plough soil in the vicinity of Trench VII, and two sherds of Oxford-type ware, one from the turf line sealed by the bank in Trench I and one from the field surface. Otherwise the main range of pottery lay in the late medieval/early post-medieval period (15th century – 17th century), predominantly of coarse wares; jars, jugs and bowls could be identified, though there were few diagnostic sherds. There were also some later earthenwares and occasional fragments of more recent glazed china. Apart from the 31 sherds from the loam deposit in Trench IV, the pottery was scattered thinly across the site, with no indication of particular concentrations of occupation or activity.

ROOF TILE

Roof tile was present in many contexts, though not in any quantity sufficient to identify the location of buildings.

FLOOR TILE⁹

Figure 4 no 1 was found during survey work on the surface of plough soil in the area where Trench VII was subsequently opened. The embossed decoration, raised 3mm above the general surface, consists of part of an elaborate fleur-de-lis. The tail and leg of a bird standing on a petal make the tiles similar to, but not identical with, an example from Warden Abbey, 16km to the south. The fabric is of smooth slightly sandy clay with occasional small pebbles, hard fired to a light grey core, with oxidised orange surfaces and margins. The top surface has been thickly coated with opaque bubbled pale olive green slip. This type of tiling was most popular in East Anglia, and can be dated to the first half of the 13th century.

ANIMAL BONE

Animal bone was present in a small quantity in

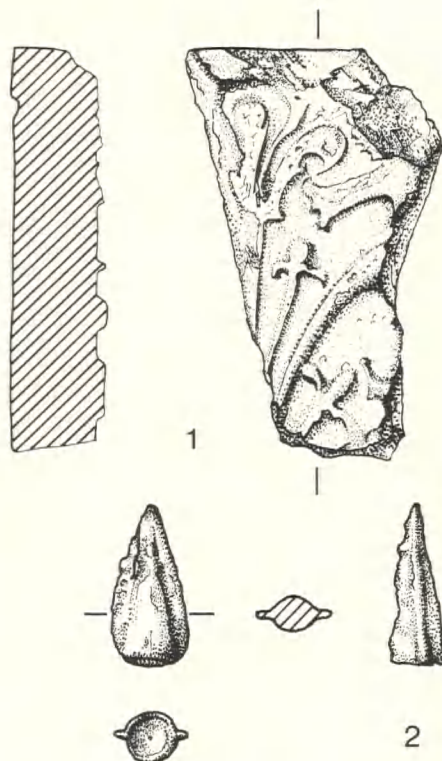


Fig 4 Finds from Bushmead Priory:
1 – Medieval floor tile, see Trench VII.
2 – Iron arrowhead, Trench I. (Scale 1:2).

most contexts; ox, pig, sheep and fowl have been identified in a preliminary sort, but no specialist analysis has been undertaken. Oyster shell was present, but very infrequent.

OBJECTS OF IRON

The iron arrowhead (fig 4 no 2) was found in the turf line sealed by the bank in Trench I. It is 43mm long, with a leaf-shaped blade and a socket 12mm in diameter. The base of the socket may have been broken off in antiquity. It is possibly of a type developed during the 13th century.¹⁰ There were several unidentifiable iron fragments from plough soil and the upper fill of ditches, presumably of an agricultural origin, and two horseshoes.

ARCHITECTURAL FRAGMENTS

The pillar fragment (Trench IV) and the worked limestone and sandstone pieces (Trench V) presumably originated from stone monastic buildings, but no other dressed stone was recovered.

DISCUSSION

The presence of a cobbled surface in Trenches II, III and VI, together with scattered cobbles in the plough soil, suggests that the central rectangular area showing dark on the aerial photographs performed the function of an open yard. Erosion of the surface by continued use would have required some form of metalling to be laid down, over which there developed a typical yard deposit (fragmentarily preserved in Trench II); eventually this resulted in the formation of a deeper and richer plough soil. The rectangle sectioned in Trench IV probably served as a smaller enclosed yard, for which a less crude metalling was desirable. More intensive use would explain the greater wearing of the boulder clay surface, and the deeper loam deposit backfilling the resultant depression.

Of the light-coloured soilmarks, the linear examples were produced by plough erosion either of banks (as Trench I) or of the lips of ditches (as Trench II). The rectangular and subrectangular areas are more problematical. Where excavated, there were no features cutting boulder clay, nor any particular concentrations of finds in overlying plough soil, to indicate a function. However, they were clearly the site of a different activity from that resulting in the sunken yard surfaces, and the boulder clay had thus been protected from wear. One possible explanation is that they mark the location of insubstantial timber buildings, which were either of sill beam construction resting on the surface, or of very slight posts, all traces of which have been removed by the plough. The absence of large quantities of roof tile suggests a predominance of thatch, though some structures in the vicinity would presumably have been tiled. The slight nature of these buildings, together with the scarcity of items of domestic refuse and the 'Barns Yards' field name, supports the interpretation that the complex served as an agricultural annexe to the main priory buildings to the east.

The limited date range of the finds and the sparse evidence for ditch recuts both suggest a short period of activity on the site. The lack of stratigraphy would tend to support this, though recent intensive cultivation will have disturbed the upper 0.5m. The 13th/14th century sherd of Oxford-type ware sealed below the bank in Trench I provides a *terminus post quem* for that part of the site. From the rectangular layout of the site (see especially plate 1), it is reasonable to assume

that the other boundaries were laid out at the same time, though the smaller enclosure to the north, defined by Ditch A, might conceivably have been added later. No features were shown on the Estate Map of 1624, other than the stretch of water along the southern boundary, providing a terminal date for occupation. (The buildings on the priory site to the east were however shown in some detail, and it is unlikely that buildings would have been standing in 'Barns Yards' without being depicted). If the predominance of late medieval/early post-medieval pottery over earlier finds is taken into account, a late monastic/early post-Dissolution date range is clearly demonstrated. Within this period, it is more likely that a late monastic (15th century?) development was abandoned during post-Dissolution re-organisation, than that a later 16th century layout should have been abandoned in so short a time.

Of more general interest is the information gathered on the effects of the mole drainage technique. It is clear that, on a site thus treated, any stonework would be seriously displaced, though not necessarily completely ripped out into plough soil. In this event, any wall lines preserved in rubble spreads would soon disappear. Where timber structures or earth-filled features are involved, the soil is squeezed aside and subsequently falls back into place. On large features the effects of this would be negligible, but in more complex deposits it could result in the blurring of fine stratigraphical distinctions. The fact that previous mole drains could not be identified at Bushmead suggests that isolating the damaged areas on a mole-drained site without stone structures is likely to be extremely difficult, if not impossible. The displacement of finds within features is also difficult to assess. The application of mole drainage does not result in the overall loosening of the soil, as does pan-busting, and finds are unlikely to drop to a lower level, but they might well be moved horizontally. Clearly, in assessing the value of any ploughed site in terms of information survival, mole drainage is an agricultural technique which must be taken seriously into account.¹¹

NOTES

- 1 G. Herbert Fowler and Joyce Godber, 'The Cartulary of Bushmead Priory', *Beds. Hist. Rec. Soc.* 22, 1945.
- 2 See also David Sherlock, 'A Medieval Alabaster from Bushmead Priory', *Beds. Arch.J.* 14, 1980.

- 3 J.C. Dickinson, 'The Buildings of the English Canons after the Dissolution of the Monasteries', *Jnl. Brit. Arch. Assoc.* 31, 1968, 71.
- 4 N.W. Alcock, 'Bushmead Priory, Bedfordshire: a Thirteenth Century Hall and Roof', *Jnl. Brit. Arch. Assoc.* 33, 1970, 50-57.
- 5 Beds. C.R.O. Document GY 4/1, 2.
- 6 The excavations were directed by Angela Simco, with day-to-day supervision by Robert Mustoe. The labour force consisted of employees recruited under the Special Temporary Employment Programme of the Manpower Services Commission.
- 7 Bedford fabric number C9. See David Baker, Evelyn Baker, Jane Hassall, Angela Simco, 'Excavations in Bedford, 1967-1977', *Beds. Arch. J.* 13, 1979, 173.
- 8 I am grateful to Evelyn Baker for examining the pottery. The analysis is based on the pottery sequence from Bedford, Baker *et al*, *ibid*.
- 9 This description is based on a specialist report by Evelyn Baker.
- 10 London Museum, *Medieval Catalogue*, 1967, 68.
- 11 Paper submitted 1 February 1980.

The Bedfordshire Archaeological Council is indebted to the Department of the Environment for a grant towards the costs of this paper.

A Medieval Alabaster from Bushmead Priory

DAVID SHERLOCK

The fragment of alabaster sculpture illustrated in Plate 1 comes from the remains of the small Augustinian priory at Bushmead near Eaton Socon.¹ It was discovered in November 1976 by staff of the Department of the Environment during conservation work on the gable end of what is presumed to have been the priory frater. This wall has a large late-13th-century window which was reduced in size and given Perpendicular tracery when a first floor was inserted in the frater some time in the 15th century. The alabaster was found with other disused pieces of stone and brick in the loose infilling above the tracery.² It has now (1978) been treated by the Ancient Monuments Laboratory and placed on loan in Bedford Museum. I am grateful to Dr Barry Knight, assistant conservation officer, Department of the Environment, for the following report on the conservation work and description of the painting:

Conservation

As received, the carving was broken into two pieces (a recent break) and covered with orange sandy mud. Nevertheless, some paint was visible in places. The carving is in high relief with a flat back. No means of fixing are apparent on the part surviving.

Dimensions:

Maximum length	29cm (11 ³ / ₈ ins)
Maximum width	17cm (6 ⁵ / ₈ ins)
Maximum thickness	6cm (2 ¹ / ₄ ins)

The stone itself is true alabaster or gypsum (CaSO₄) rather than a form of calcite (CaCO₃), since it is still soft enough to be scratched by a finger-nail, and does not effervesce with dilute acid.

Tests showed that where the paint remained, it was firmly attached to the stone. Accordingly the painted surfaces were cleaned using cotton-wool swabs and water containing a small amount of detergent to aid the removal of the mud.

Since only small patches of paint remained on the stone, it was decided not to take samples for analysis. However, the durability of the pigments

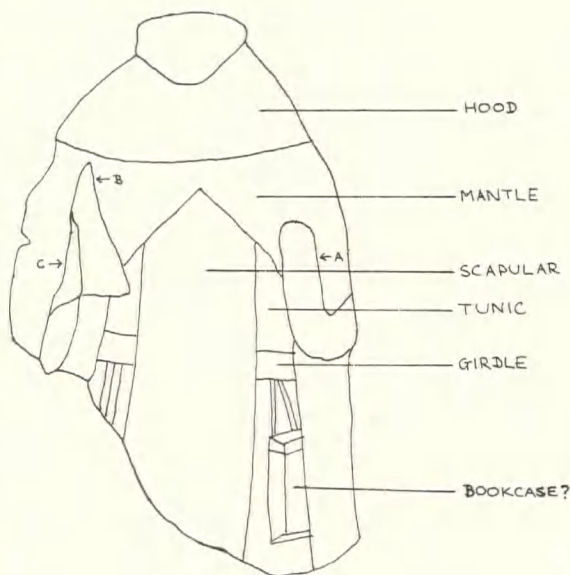


Fig 1 The alabaster figure.

suggests that they are earth colours. Several layers of paint were detected, which are discussed in detail below. An interesting feature was the use of silver foil on the hanging straps. As received these were blackened and tarnished, but it proved possible to reduce them to metallic silver by swabbing with a 15% aqueous solution of ammonium thiosulphate, which was afterwards washed off with large quantities of water.

After the surface had been cleaned the break was mended with Araldite, taking care that no adhesive was squeezed out of the crack.

Finally, the whole painted and formerly painted surface was consolidated with a solution of soluble nylon in ethanol. This has the additional effect of increasing the brightness of the colours.

The Painting (Figure 1)

The hood, mantle and scapular were originally painted black, while the tunic appears to have



Plate 1 The medieval alabaster from Bushmead Priory.

been left as white unpainted stone. The black areas have a pink undercoat, followed by a grey layer with conspicuous brush strokes and the black topcoat.

The two sections of the girdle are ochre with orange underpaint, while the hanging straps on both sides are silvered, as mentioned above, with lower layers of scarlet, orange and black. The book-case on the figure's left side has a pink undercoat, followed by red and orange. Its upper part is gilded, the edge of the gilding being marked by a lightly incised line.

The mutilated object held in the left hand appears to have been painted dark green: traces can be seen on the outside edge (Fig 1, A). Another mutilated object held in the right hand has on the inside (Fig 1, B) gilding over brown over pink and on the outside (Fig 1, C) orange over brown, which is also partly overlaid by the black paint of the mantle.

Discussion

From the foregoing description it will have been gathered that the alabaster represents the

fragment of an ecclesiastic, who, coming from Bushmead, must surely be an Augustinian or black canon. It is unusual in that it shows him in his day-to-day processional vestments and not in his choral or mass vestments which priests are sometimes shown wearing on, for example, monumental brasses.³ He is wearing the hood, mantle and scapular of his religious Order. From his girdle a case for a book (?) hangs on one side; on the other would have hung perhaps a penner for his writing implements or a purse. His left hand possibly held a missal and his right, probably a staff. The staff would make it almost certain he was a prior, but whether a prior of Bushmead or some other father venerated by the monks there we cannot say. He cannot be the hermit, Joseph, who, according to Leyland, was venerated by the monks of Bushmead as their founder (c 1195) but might represent William of Colmworth the first prior of the regularised Augustinian priory. There are no other names of note that have come down to us from the early history of Bushmead.

Alabaster (derived from Alabastrum in Egypt where it was presumably first worked) occurs widely in its natural state. When freshly quarried its softness makes it ideal for carving. Its gentle translucent texture is suitable for polishing but is also ideal for painting and gilding. In England it was chiefly quarried from the hills some 20 miles from Nottingham where an industry of alabasterers grew up early in the fourteenth century and flourished until the Reformation.⁴ The alabaster was generally used for making momental effigies and altar-pieces of multiple panels, richly painted and framed; also for individual statues and figures in the round. The scenes in the panels which are usually from the New Testament or lives of the saints, are lively if somewhat repetitive in style but fulfilled the need which other medieval arts such as glass and painting also fulfilled, to provide an aid to devotion and a means of telling a story without words. The output of the Nottingham alabasterers and the lesser schools (there was possibly one at Lincoln, in whose diocese Bushmead then lay) was enormous. There is scarcely a Dissolution inventory of a religious house that does not list a "table of alabaster" (ie, a retable). Today there are fragments of so-called Nottingham alabasters from churches and houses throughout England, while many of the best-preserved

are among the 3,000 or more that were exported to the continent.

In Bedfordshire there are fragments of alabasters still to be seen near Bushmead in Blunham and Sandy parish churches. These are parts of New Testament scenes. For comparison of subject matter with the Bushmead fragment there is part of the figure of a bishop at Toft Church (Cambs)⁵ and closer still in both subject and design, the figure of a Dominican friar at Barling Church (Essex) which is described as follows in the catalogue of the great 1910 exhibition of alabaster: "A headless figure in brown habit with green girdle, scapular and black cloak with white tippet, holding up a large red book in his left hand and a staff in his right. From his girdle hangs on the right side a pair of paternosters with red beads, gold gauds and gilt tassel. Lower part of figure lost 15½ x 9 ins."⁶

The style of the Bushmead alabaster provides no clue for its date of manufacture and the context of its discovery offers only a wide date margin. It must be earlier than c 1450, the date of the late window above which it was inserted, and it is unlikely to be before c 1350 when alabasters first became widespread. The fairly shallow relief in the carving suggests a date of about 1400. It probably came from an altar-piece in the priory church. Such an altar-piece could well have had a statue of Prior William and another of Joseph the hermit either side of it. But it could equally well have stood in the refectory itself and been abandoned when it was accidentally broken at the time the west window was being altered.

NOTES

- 1 For a bibliography on the priory, which is partly in the guardianship of the Department of the Environment, see N.W. Alcock, *Bushmead Priory, Bedfordshire: A Thirteenth-century Hall and Roof*, *Jour. Brit. Arch. Assoc.*, 3rd ser., 33 (1970), 50-56.
- 2 I am grateful to Mr Dennis Smart, chargehand for reporting the find to me.
- 3 For an effigy of an Augustinian abbot in his choir vestments see eg. the brass of Richard Bewforest (c 1510) at Dorchester, Oxon, published in Herbert Druitt, *A Manual of Costume as illustrated by Monumental Brasses* (1906), 95-96.
- 4 For a general introduction to the subject, and one on which this paragraph is partly based, see Francis Cheetham, *Medieval English Alabaster Carvings in the Castle Museum Nottingham* (1973).
- 5 See *Arch. Jour.*, 82 (1925), 35, pl. IV, 2.
- 6 See *Illustrated Catalogue of the Exhibition of . . . Alabaster . . .*, Society of Antiquaries (1913), No 84, pl. XXX.

The Bedfordshire Archaeological Council is indebted to the Department of the Environment for a grant towards the costs of this paper.

Thurleigh Church Excavations

DAVID HALL and JOHN HUTCHINGS

SUMMARY

Excavations at Thurleigh Church during restoration work revealed well-preserved floor levels. With the help of architectural fragments found in the 15th-century clerestory a complete sequence of medieval building-stages became clear. The close dating of the phases is useful for assigning reasonably precise dates for some of the pottery groups.

INTRODUCTION

The north Bedfordshire parish of Thurleigh covers over 3,000 acres and lies on boulder clay at about 300 feet above the ordnance datum. The underlying bedrock is mainly Oxford clay. Originally the parish contained eight separate medieval settlements; two of these have been destroyed by an air-field, and the remainder survive but have all suffered considerable shrinkage. Church End appears to have been the principal village with a 'castle' mound and the church (TL052 585) which serves the whole parish. The building has a low, Norman central tower, and nave and aisles which are 15th century work. Adequate detailed descriptions of the building have been previously published.^{1, 2}

The nave roof became unsafe some years ago, necessitating congregations to meet in the chancel from 1957-1971, the body of the church being sealed off. The Parochial Church Council authorized restoration work in 1970 that involved removal of the 15th century nave roof and clerestory, and concreting much of the nave floor where the wooden pew platforms were rotten and infested. As the latter work involved digging out earthen floors with destruction of archaeological levels, excavation was undertaken. Plates 1a and 1b show the state of the church before restoration.

Figure 1 shows the church plan and the areas excavated. Total excavation of the pew area on the south side of the nave showed that preservation of levels was poor to the east and remarkably good to the west. All the available area at the west end was therefore excavated, but some of the eastern

part was not studied.

The many architectural fragments recovered from the clerestory walls supplemented the excavated evidence in a useful way, increasing the confidence of interpretation. A fairly complete account of the church development can now be given.

The excavation method was to remove levels in the normal way. No attempt was made to identify and dig out whole phases or strata at once — a series of artificial cuts was taken, the depths being carefully recorded so that 'layers' could be plotted on the sections and eventually assigned to an archaeological stratum.

The excavations began at Easter 1970 and continued intermittently until 1972. Grid VIII held up a sudden burst of building work and had to be completed during an evening and into the early hours. It caused much amusement in the village that the church had been disused for some 20 years and the excavators had run out of time.

THE EXCAVATIONS

Four phases were clearly defined during the excavation; it is convenient to state these at the outset for clarity.

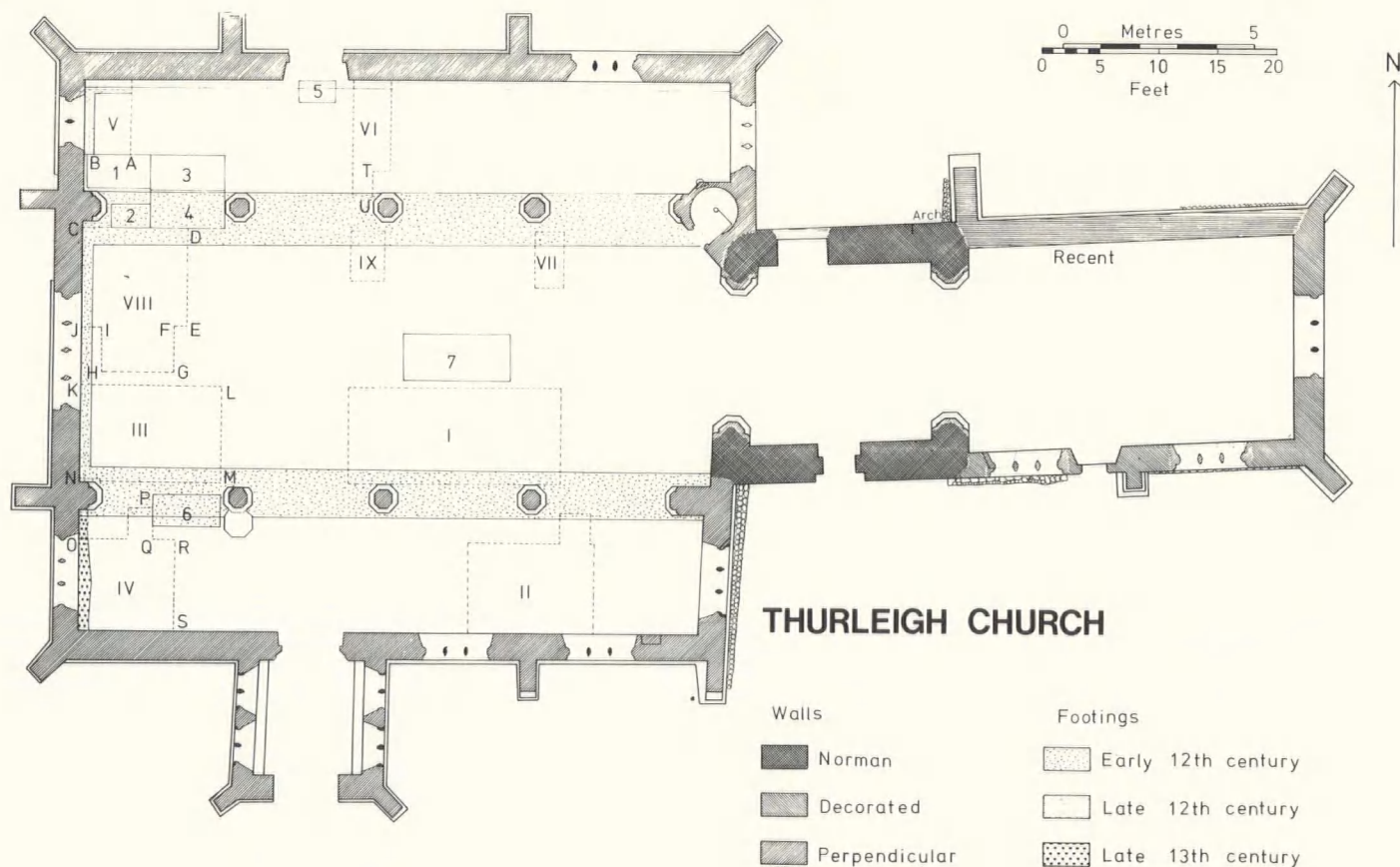
- I Nave only, early 12th century.
- II Nave and north aisle, late 12th century.
- III Nave, south aisle, and replacement north aisle, late 13th century.
- IV Nave and aisles completely rebuilt, late 15th century

Most of the graves encountered were post-medieval (except G8-11) and not relevant to the excavation in any way. None was excavated. A total of 16 was identified and these are marked "G" on the sections and plans.

PHASE I

The first nave, early 12th century

The earliest building was a rectangular structure corresponding approximately to the present nave, 18ft 6in wide, by not less than 42ft long (Fig 1). It is likely that the east wall corresponded to the



present tower west wall making the total length about 52ft. The north wall survived as a footing made of pebbles bonded with clay, 4ft 6in wide and 3ft deep in grid VI. The south wall had a similar footing about 5ft wide at the bottom, but above 2 or 3 courses of pebbles it narrowed to about 3ft 9in leaving a kind of plinth on the north side (Fig 2a, 4a). Iron slag was also included in the footings. At the west end courses of laid dressed limestone bonded with a very hard lime mortar survived on top of the footing; the total depth here was 4ft 9in below the present floor level. At the west wall the laid limestone went down to at least 4ft. Post-holes for scaffolding this preliminary phase were easily identified (Fig 2a P 1-4), being dug into the subsoil to about 6in and sealed by all the floor levels.

The nave west wall was also rebuilt, the robber trench being filled with clay which accumulated as a thin layer on the nave floor (Fig 4d).

Contemporary with the first building was a channel about 3ft wide and not less than 11ft long, cut 3ft deep into the subsoil (Fig 2a, 4a). The sides were burnt to a hard black and red crust and the fillings contained much similar burnt clay and many fragments of bronze and bronze slag. It seems that this channel was a pit or flue used by bell founders. The footings of the church, at least, had been completed when the pit was dug because it cut through a layer of lime which overlay the footing trench of the north wall (Fig 4a). The pit was sealed by all the early floors (Plates 2a, b).

The dating of the first phase is in the first half of the 12th century: two sherds of pottery from the bell-founders' pit are consistent with this date, as also are sherds found in the lowest levels of the south aisle which was the outside ground surface of the first phase. The wall thicknesses are typical of the early Norman period, and can be paralleled elsewhere,³ they must be early in the period because the first north aisle, added later, is still in the 12th century. Architectural fragments of applied shafts and chevron moulding in limestone (Fig 6, 1 Plate 5) were found re-used in the later clerestory; a north door or chancel arch would be likely places for their origin.

Floors were made of plaster and sand, and were frequently renewed forming many layers of various colours. Fires were lit indiscriminately over the west end area, without any definable hearth; presumably there was a hole in the roof for smoke to escape. The sunken area over the bell-pit

was a hearth in the first instance (Fig 4a, H1) and then the area to the north of it. A series of stake holes probably represents some attempt to hem in the fire area. An infant burial (Fig 2a, G5) had been inserted through the floors to a total depth of 1ft.

PHASE II

The first north aisle, late 12th century

The church was enlarged by knocking down the north wall to its footing and adding an aisle. Post-holes associated with this building stage cut through the nave floors (Fig 2a, P5, 6). The west wall was of similar construction to the nave; a flint-and-clay footing in the subsoil with a laid-stone wall on top. The width of the aisle was 8ft 3 in. Again the floors were earthen, and the finishing-off was quite rough with a pile of builders' sand left against the west wall (Fig 4f). In about the middle of the aisle, in grid VI (Fig 1), there was a small bronze-smithy hearth 1ft diameter, with burnt clay and pieces of bronze slag in abundance. The west end had many blackened and redened fire areas (Fig 3a, H3, 4).

The dating is best given by the architectural fragments found re-used in the clerestory. The distinctive building material of the period was Totternhoe clunch, and several carved pieces from the abaci of the piers were recovered, including stiff-leaf and scallop motifs (Plate 5b), closely datable to the close of the 12th century.⁴ Both types are found at Cranford St John, Northants. The clerestory window contained re-used parts of the Norman piers, also in clunch, 30in in diameter which is a typical width for the period. The square plinths had been re-used in the west-end window. Pottery found in the old topsoil underneath the north aisle, along with a large number of clunch fragments trodden in by the builders, is consistent with this date.

The clay features F1, F2 were laid down during phase II; they are not exactly contemporary, F1 being earlier (Fig 2b). Both were 2ft 3in wide and not less than 10ft long, being made of clay previously used for bronze-smithy work, full of burnt clay and bronze slag. F2 had a small groove cut into it and was revetted on the north by a line of stones. The purpose of these features is not known. F1 could be associated with the hearth phases, as it was placed on a black hearth area, and was also partly covered by hearths, F2 was dug into the early floors a little. Both features existed for



Pl 1 Thurleigh church

(a) Exterior view looking SW before restoration

(b) Interior view of N aisle

an appreciable time because floor levels accumulated and partly buried them (Fig 4a, 5a). Fig 2b shows the features and associated floors at the end of this period. There had been another nave hearth (H5).

PHASE III

Addition of the south aisle and general rebuilding, late 13th century

The old nave south wall was knocked down and a south aisle, 9ft 6in wide, built. The wall footings were made of flint. A destruction line of mortar from the nave south wall can be clearly seen in Figure 4b.

Figure 3c shows the new west wall, and post hole (P7) for the arcade, superimposed on the rough surface left by the nave builders. When the new aisle was completed the level was brought up with a layer of clay.

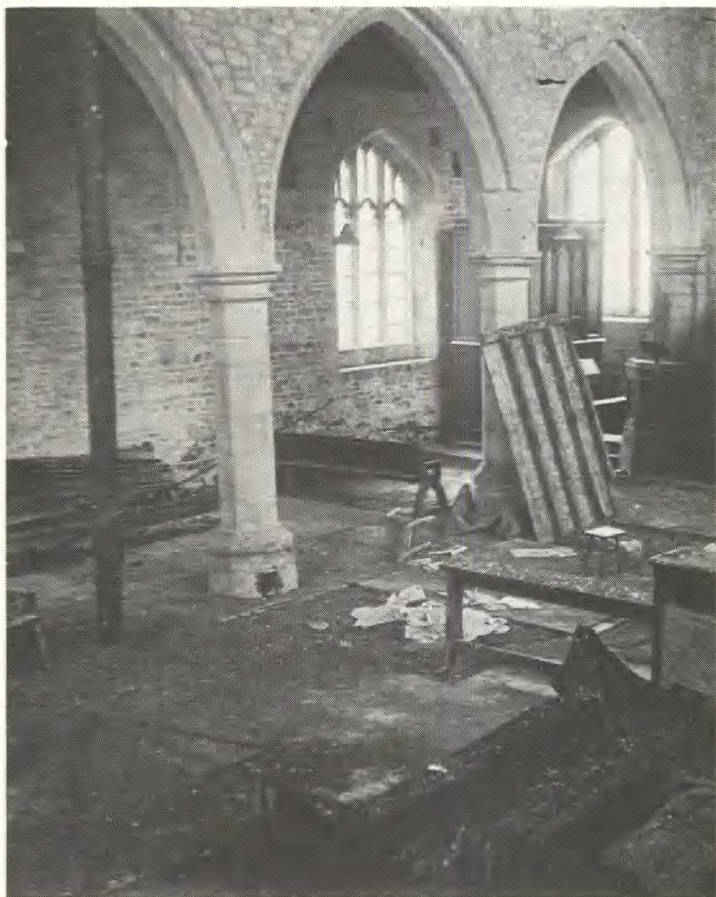
Post-holes associated with this building phase in the nave are P8–P13 (Fig 2b).

The north aisle was also rebuilt, the north wall being set farther back, and the west wall re-using the old flint footing and having a plinth (Fig 4f).

The earlier earthen floors were cut to take very substantial footings for a new pier (Fig 4e). After completion the floor level was raised by covering accumulated builders' sand and mortar with clay (Fig 4f); the robber trench at the west end was firmly mortared over.

The dating of the south aisle is given by coin C2, of Edward I, 1279-1302, which was found in the clay make-up layer. This would suggest an architectural style early in the Decorated period. Several architectural fragments from the clerestory are consistent with this, including parts of a double chamfered arch jamb from a larger arch, door mouldings, and window mullions (Fig 7, 9-10). The small fragments of pottery found in the make-up layers are probably of this date. There is no direct evidence that the new nave and the second north aisle are exactly contemporary with the first south aisle but, it seems likely. The nave was cleared out thoroughly so that no building layers remained, only the scaffolding post-holes.

Earthen floors continued to be in use and to accumulate. Ill-defined, irregular hearth areas rapidly replaced each other in succession, grouping



together in major areas H7-H8. A better defined hearth H9 (Fig 2c) was dug in the south-east of grid III, 7ft long and about 3ft wide and with a 3 inch footing of clay. It had been used many times causing many layers of ash and charcoal to collect. In grid VIII yet another clay feature 2-3in thick (Fig 2c, F3) was found; its length could not be determined.

Fig 2c shows the early stages of this phase which are the only ones to survive. Four graves were dug at the west end of the north aisle (Fig 3b, G8-G11) which were the only internal medieval burials found, they were not excavated.

PHASE IV

The 15th-century rebuilding

In the late 15th century the whole body of the church was rebuilt; all the west wall, the arcades and the aisles. Much of the earthen floor was dug out leaving only the earliest levels of the previous phase.

In the south aisle the destruction of the old south and west walls is represented in the sections by triangular spreads of sand (Fig 4b, F4; Fig 4c, F5), the new west wall was built 1ft back; that on the south is on exactly the same alignment and footing. A new series of earthen floors was laid on the clay make-up of the previous period, and is drawn on Fig 3d.

In the nave the rebuilding is represented by the large post holes P14 and P15, and the smaller ones P16, P17 (Fig 2c). In each case the section, about 4-5in square, was preserved by the stones used to wedge the post in the hole. The north-aisle north-wall was completely rebuilt on a footing of larger stone which destroyed all traces of any phase II aisle, and cut through all previous floor levels (Fig 3b). The west wall was rebuilt on the previous footing. A layer of sand and small stones was spread over the nave area, getting thicker nearer walls and arcades (Figs 4,5).

The level of the south aisle was as required but

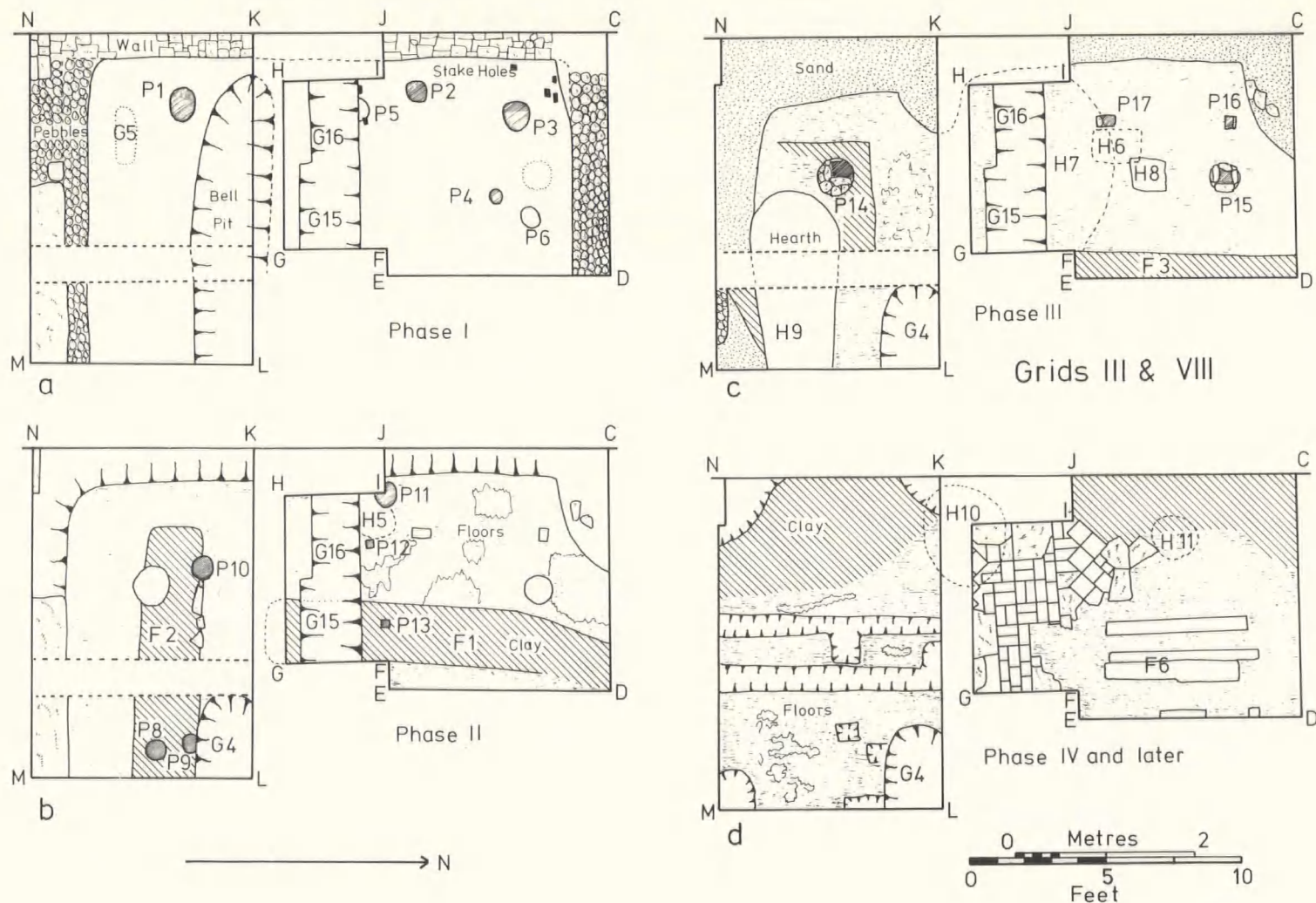


Fig 2 Thurleigh church: plan of grids III and VIII.

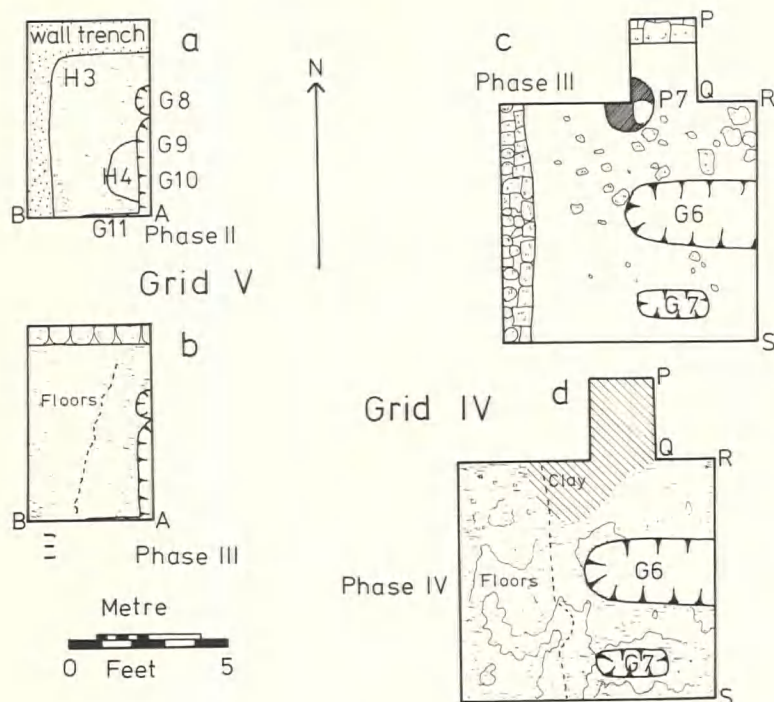


Fig 3 Thurleigh church: plan of grids V and VI.

those of the nave and north aisle had been raised by adding a thick layer of brown clayey material, probably taken from the churchyard, since it contained many fragments of human bones. Two glaziers' lead-hearths were found underneath the west window (H10, H11, Fig 2d, 5c), these were 3ft in diameter and about 5in deep, filled with lead fragments, charcoal and burnings.

This final stage is that of the present church and would appear to be late in the Perpendicular period according to the architecture, i.e. late 15th century. The finished building must have been fairly ornate. Painted and stained glass fragments survive in the upper lights of the north aisle west window; the roof beam was painted and inscribed (Plate 3b). Some plain blue-painted plaster was found in the 19th century restoration levels which almost certainly belonged to this last medieval period.

Earthen floors yet again began to accumulate to a depth of several inches. At some time in the 16th century the whole building was floored with large green-glazed tiles. A few were found *in situ* in the nave west end (Fig 2d). During the next two centuries they became uneven and worn and

were replaced by pieces of stone and then brick. Bricks and tiles were found in all the post-medieval graves, and large quantities of both were re-used as joist sleeper walls and supports in the 1882 re-flooring.

Sometime during the 18th or 19th century some of the tiles at the west end were removed and wooden pews placed there (grid VIII, Fig 2d); large numbers of pins were found that had fallen through the joints between the boards.

The whole church was thoroughly restored in 1882, when new timbers were placed in the roof, all the wall plaster was removed and the stone pointed, and all the floors flagged, tiled and pewed. This re-flooring removed most of the 15th-century earthen floors from the south aisle.

DISCUSSION

The phasing outlined above was arrived at by considering the following major building evidences from the sections:

In the north aisle there are three phases of walls and associated robber trenches at the west end (Fig 4f) Grid VI (Fig 4e) shows earthen floors

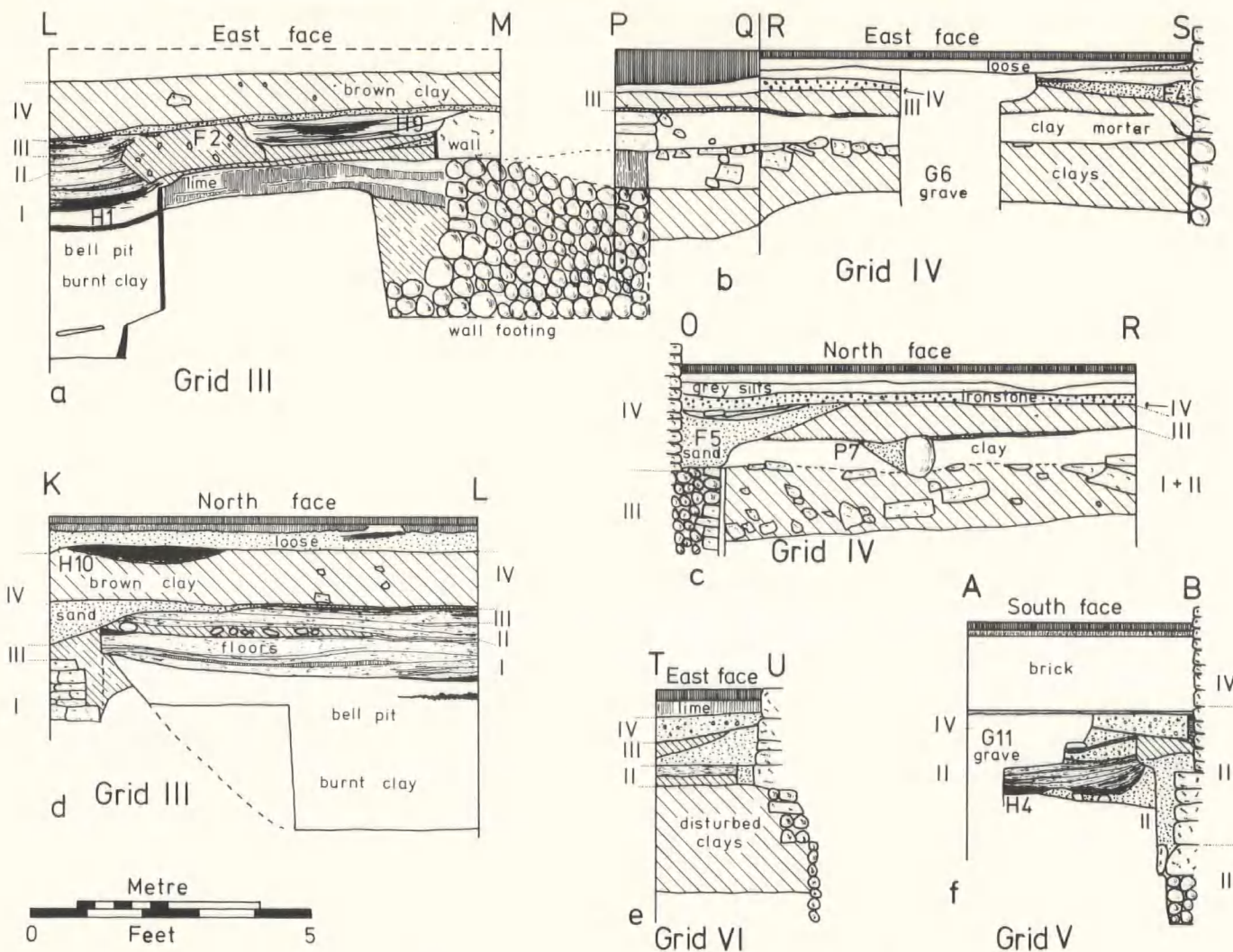


Fig 4 Thurleigh church, sections: (a) Grid III E face, (b) Grid IV E face, (c) Grid IV N face, (d) Grid III N face, (e) Grid VI E face, (f) Grid V S face.

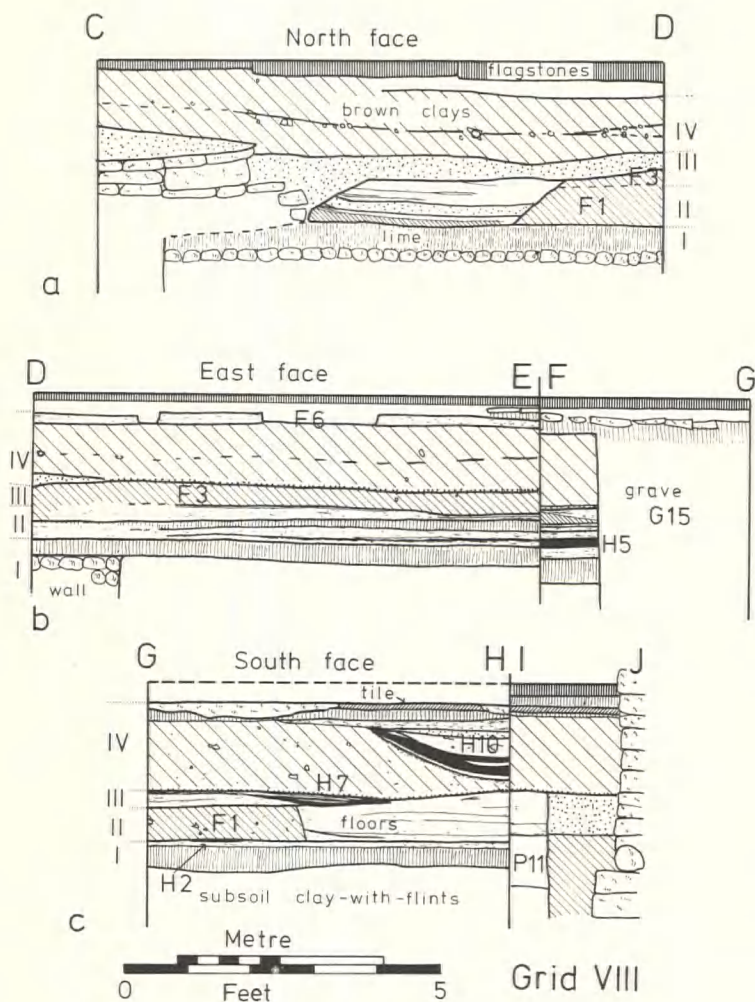


Fig 5 Thurleigh church sections: Grid VIII, (a) N face, (b) E face, (c) S face.

(cut by a pier footing) with two separate and different layers of builders make-up representing major building works. There are therefore clearly three phases of this aisle. The first north aisle cannot be contemporary with the first nave because the masons' chippings from the clunch columns are only found in the aisle on the old ground surface and not the nave. Doubtless pieces were dropped in the nave but as they fell on existing floors these were cleaned up whereas in the north aisle they were trodden in the clay surface. Thus, with the prior existence of the nave, the north aisle establishes four building phases overall.

The evidence from the nave West end (Fig 4d) shows three building phases. This does not clash

with the assertion above if it be assumed that the west wall survived through two of the phases when the church was being altered.

The south aisle has only two phases. Although the dating evidence outlined in the previous section is meagre and may be considered tenuous, there is just enough information to assign the dates given to each period. In all cases the latest phase is the extant 15th century building. For the south aisle its only previous phase is dated by coin C2 to the late 13th (or early 14th century). The first north aisle is dated by its architectural fragments to the late 12th century. The first nave must necessarily be earlier than the first north aisle: the great thickness of the walls suggests a date

early in the 12th century.

When the total number of phases and dating evidence is put together the sequence described above is arrived at.

We shall now use the excavation evidence and introduce architectural information to give an account of the history of the development of the church.

Considering the plan of the church as a whole (Fig 1), and the excavation evidence it is clear that the process of enlargement from the earliest building to the present large structure is not simple. The ground under the north aisle had been disturbed to a depth of 3ft 7in; the only finds were a few fragments of human bone. The most plausible explanation of this is that it was an old graveyard with the skeletons dug out and reburied elsewhere. Probably for this reason, the early Norman 12th-century nave had a thicker wall on the north than the south, implying that the Normans knew that there had been a disturbance. The presence of the graveyard shows that the earliest building revealed by the present excavations was not the first church on the site. No trace of any earlier building was found in the body of the present church, so it is likely that it was to the east, probably under the present chancel and tower. It would make good sense if a primary Saxon church, under the present tower, were made the chancel of the new Norman church added on to the west. This pattern of westwards expansion has been found in various continental churches.

The tower lower parts are essentially Norman; since the walls (3ft 3in) are appreciably narrower than the first nave (4ft and 4ft 3in) it must be later in the period, very probably contemporary with the first north aisle (late 12th century). In the east end of the tower north-wall is a sealed doorway with half of a semi-circular arch surviving (Fig 1) which can be explained as a door of a Saxon chancel whose wall was incorporated in the late Norman tower. An explanation suggesting piercing the corner of a massive tower seems unlikely. The 3ft 3in width of the tower walls would be consistent with Saxon lower parts, e.g. Brixworth, Northamptonshire is 3ft thick. A late Norman chancel would be expected to the east of the tower under the present chancel.

The iron slag in the footings probably gives a 12th-century date for the extensive smelting industry identified in Thurleigh parish in the form of areas of slag in the fields.⁵

The rebuilding in the Decorated period, at the

end of the 13th century, was very extensive, although few obvious traces of it now survive. The excavation evidence was not able to prove that the first south aisle and the second north are contemporary, it seems likely in view of other changes in the tower and chancel.

When the 1976 restorations removed the clerestory the line of an earlier nave roof was clearly visible; also the top part of the tower was in a different kind of stonework being of more even courses of limestone than the irregular pebbles of the Norman wall below. The old roof line cut through the lower few courses of the newer stone work (Plate 3a) and the actual roof lead survived embedded in the tower corners, penetrating no less than 23in east into the tower wall. This means that the top part of the tower was rebuilt sometime after the late Norman period and before the Perpendicular. The only phase corresponding to this is the early Decorated rebuilding. From the roof line it is clear that the arcade wall was 25ft high, the roof ridge 35ft high, and the nave internal width about 20ft.

The chancel is substantially Decorated, although the double piscina is presumably re-used. The east window has restored tracery, the priests' door and the small square headed window are characteristic of the style.

The rebuilding of the 15th century was extensive and seems to have been done for fashionable reasons and to get more light. All the old foundations were used again so they could not have been considered unsafe. Apart from the east end of the nave and aisles all the walls and arcades are at right angles or parallel, which must mean that all were set out together; in particular, the west wall of the aisles and nave is exactly straight, which would be difficult to do with the pieces intervening if it were built piece-meal. The earlier nature of the south aisle (noted by the Victoria County History) is at variance with this; the windows have two-centered arches compared with the four-centered arches of all the other Perpendicular windows. The tracery is, however, Perpendicular judging by the west window, which is original. There is clear evidence at the west end of the wall being raised to take the 15th-century roof; and inside at the east there is the lower half of a blocked-up window or niche. Also the two eastern buttresses are more complicated than the north aisle. The best explanation seems that the east end is the original wall of the late 13th-century re-building (although marked Perpendicular



Pl 2 Thurleigh church. Grid III
 (a) Bell pit and floor levels looking NE
 (b) Floor levels looking E.

**THURLEIGH CHURCH
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on Fig 1) and the remaining walls are early Perpendicular; at a later date in the period all the rest of the church body was aligned on the south aisle.

The final version of the church must have been quite spectacular. The eastern beam on the clerestory roof had an inscription on the north now damaged, which probably said *DICTI PATRIS MEI (VIT)AM ETERNA* (the words of my Father are eternal life), although the grammar is not correct (Plate 3b). Below on the north brace was a painting of an angel. On the south part of the beam: *ITE MELEDICTI IN IG(NIS)* (go evil ones into the flames). The brace below was painted with flames and images of evil-doers being pushed down with a staff. No doubt the chancel arch had a doom painting on it originally.

No attempt was made to elucidate the post-Reformation history of the church fabric; it would be very difficult in view of the paucity of surviving documents.

CONCLUSION

It can be seen that much information can be gained from limited excavation during church restoration work. In the case of Thurleigh the floor levels were remarkably well preserved at the west end because of the sloping nature of the site precluded a west end door or tower; there was a continued build up of levels until the internal floor was horizontal. The removal of the clerestory produced a series of architectural fragments which supplemented the archaeological evidence. The net result is a closely dated sequence of building phases.

Perhaps the most important archaeological result is the close dating of the pottery and other finds, afforded by the architectural evidence. Unusually the structures date the finds rather than vice versa.

In view of the general excellence of preservation in churches we recommend an 'archaeological presence' whenever there is any church restoration work. When a redundant church is to be knocked down there should be total excavation beforehand. The presence of heavy machinery and the action of weather would rapidly destroy the floor levels and such friable remains as painted plaster.

THE FINDS

1. Small Finds

Not many small finds were recovered. There were pins from the post-medieval levels and the

upper part of a copper alloy needle from Grid III, phase II. Painted glass (probably from phase III) was found in the phase IV building level. It consisted of a weathered greenish metal with diapered and flower motifs, similar to examples from Newton Willows, Northants.⁶

2. Pottery

About 100 small pottery sherds were recovered from all levels. An everted rim in a pink shelly fabric is similar to a 12th century sherd discovered in Ravensden church (from the floor levels of the first north aisle).⁷ From the make up levels of the first south aisle there was a flat-topped rim in a sandy fabric, typical of the late 13th century or early 14th century. There were a few characteristic rims and sherds of Oxford ware laid with coin C 1. None is worth illustrating. The significance of the sherds is that they form well stratified groups better dated by the architectural phases, than by comparative typology. Material from the early levels is the most useful; later groups contain residual sherds.

3. Tile

Most tile originated from the 15th and 19th-century building layers. From the former there were a few plain medieval tiles, probably 14th-century. The dimensions varied from 3.7 by 3.7 by 1.1 to 4 by 4 by 1.1 inches. The fabrics were red or red-orange and the glaze was a yellow-green.

The 16th-century tiles, some of them *in situ* were 9 x 9 x 0.9 inches with a yellow-brown glaze.

4. Coins.⁸

C1. Long cross halfpenny of Henry III, 1249-72, Rochester mint. From the floor levels of phase II (nave).

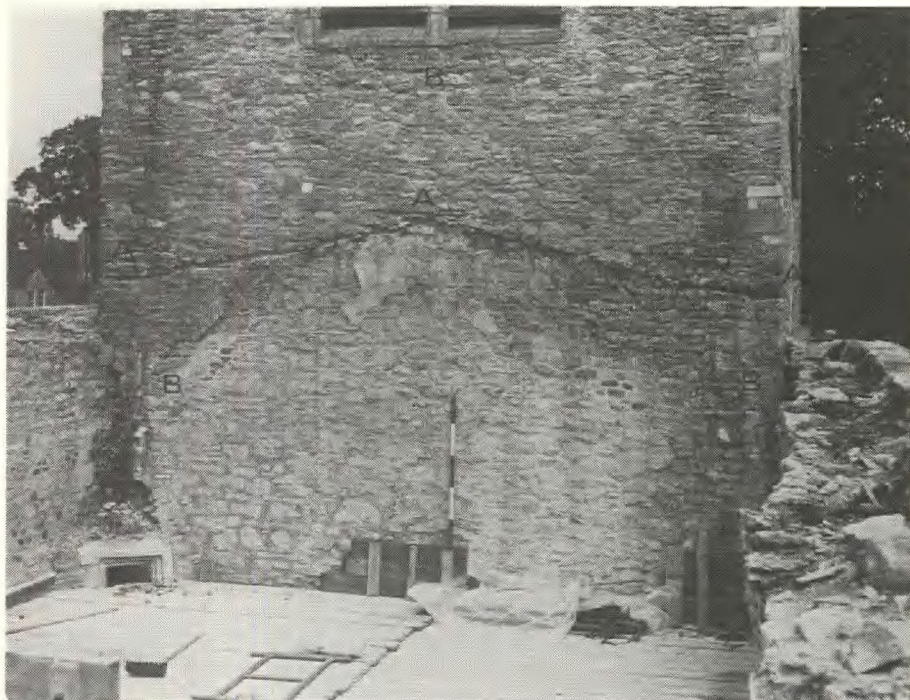
C2. Penny of Edward I, Group III e. 1279-1302. Bury St. Edmunds mint. From the floor levels of phase III (S aisle).

5. Roofing lead

The old lead roof had been repaired many times and the workmen had left graffiti, frequently of circles or feet outlines, and often with their name and date. Amongst those legible were William Foderey 1724; W.G., Harrold, 1800 with a sketch of a church; J. Laughton, Grendon, 1810; S. Bell, Radwell, 1813; B. Jefferies 1820; Edward Osborn, Thurleigh, 6 June 1855; and B. Plowright 1880, (Plate 4).

6. Architectural fragments

A large quantity of architectural fragments was obtained from the demolished 15th century clerestory. The most interesting are shown in Plate 5,



Pl 3 Thurleigh church

- (a) Roof levels; A-A late 15th century roof line. B-B-B, late 13th century roof line.
- (b) Painted, inscribed easternmost beam of clerestory roof before removal



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Pl 4 Thurleigh church; Roofing lead graffiti.

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Pl 5 Thurleigh church; architectural fragments

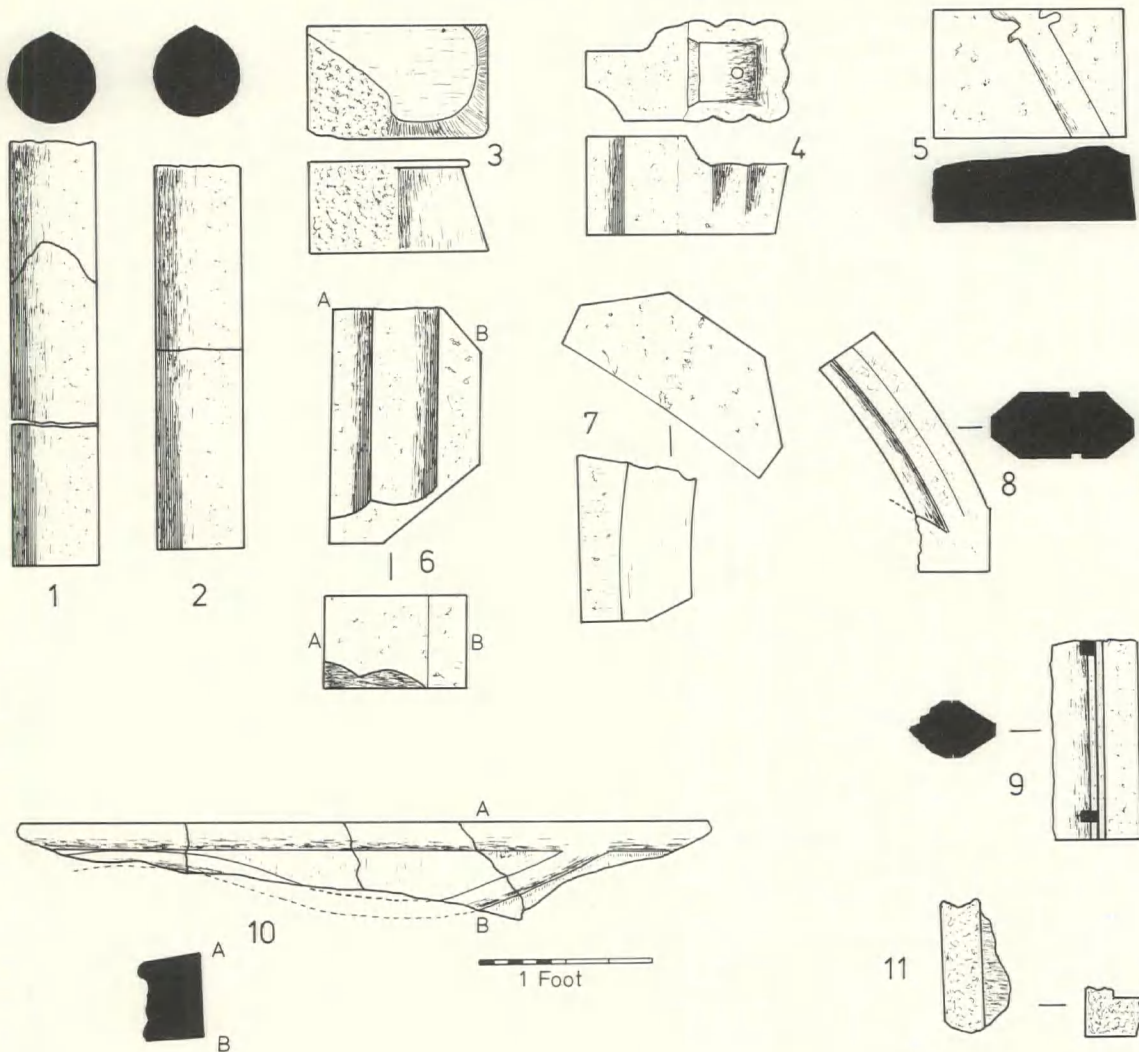


Fig 6 Thurleigh church: the architectural fragments.

other relevant fragments are illustrated in Fig 6. All fragments are Great Oolite limestone.

- 1 An applied shaft, probably from a 12th-century doorway.
- 2 Similar shaft. A total of 11 feet was recovered, many of the pieces fitted together.
- 3 Cushion capital associated with the shafts (above). Probably 12th-century.
- 4 A piscina, probably 12th-century.
- 5 Part of a base-relief coffin lid or tombstone, showing the hilt of a sword. Possibly late 13th-century.
- 6 Clerestory arch fragment (15th century), carved out of Decorated octagonal pier.
- 7 Decorated arch jambs (radius 7ft) re-used in the 15th century: traces of red paint survive on the Decorated surface.
- 8 Decorated window tracery with glazing grooves.
- 9 Mullion with glazing grooves.
- 10 Part of large motif, possibly from the arch of a recessed tomb.
- 11 Base of a stone coffin. Several plain fragments of coffin sides were recovered.

ACKNOWLEDGEMENTS

We should like to thank our co-excavators, Richard Thomas and Edgar Corby. We are much indebted to the churchwarden, George Field, for encouragement and hospitality, and to Mr Wagstaff and Roland Windsor for providing refreshments. Our thanks are due to the Rev H. Jones, Vicar of Thurleigh, for permission to excavate and to Mr J. Smith, Builder, of Great Staughton, for co-operation during the restoration work.

The authors are grateful to members of the C.B.A. Publication Grants Committee for reading this paper. As a result of criticism expressed in matters of interpretation we have very thoroughly reconsidered all the original notes, plans, sections, photographs and finds, and are satisfied that the building sequence suggested is the simplest that concords with the available evidence.

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Two Unusual Timber-Framed Buildings in South-West Bedfordshire

J.M. BAILEY

IVY FARM, STANBRIDGE

During the writer's investigation of the apparently seventeenth-century Ivy Farm at Stanbridge, a surviving pair of cruck blades were discovered within the frame work of the modified buildings, only fragments of one end bay survive. The end bay was floored and the original joists survive.

Figure 1 shows a section through the surviving cruck frame. The cruck blades stop above the collar and it would appear from inspection that they terminated at this height originally. The tie beam mortices over tenons on the top of the posts and the wall plate site over the ends of the tie beam. The termination of the cruck blades above the collar is not uncommon in the region as there are examples at 13 Castle Street, Aylesbury, Bucks and Dragon Farm, Long Crendon, Bucks.

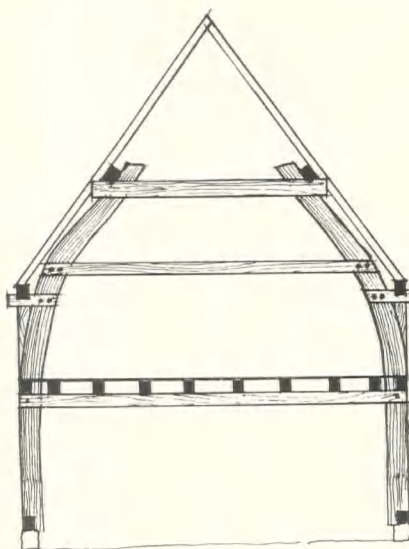


Fig 1 Ivy Farm, Stanbridge: the cruck blades.

STUDHAM HALL FARM, STUDHAM

The writer, during a survey of Studham buildings in 1979, identified a further Bedfordshire "Wealden" House. The building, Studham Hall Farm, had been modified in the sixteenth century to a continuous jetty building by the flooring of the hall. With the exception of the alterations to the front elevation the frame is remarkably complete.

Perhaps the most interesting discovery is the close parallel of the roof of the hall of this building to another "Wealden" house just over the Buckinghamshire border at Charity Farm, Edlesborough.¹ Both have butt purlin roofs over the hall with two pairs of purlins. The mouldings to purlins, tie beams, collars are similar in both buildings. The Studham building is larger having two bays at either side of the hall, the Edlesborough example has a single bay either end.

Following the publication of a basic distribution map and schedule of "Wealden" houses in Bedfordshire and the area north of the Thames² further examples have been noted by the writer;

STUDHAM BEDFORDSHIRE
Studham Hall Farm
Surveyed by J.M. Bailey

HAROLD BEDFORDSHIRE
Orchard Lane
Personal Observation J.M. Bailey

WEST WYCOMBE, BUCKINGHAMSHIRE
a) 58 High Street
b) Building immediately to east of Church loft in High Street.
Personal observation J.M. Bailey

NOTES

- 1 J.M. Bailey, *Timber-Framed Buildings*, (1979), 16-19 with figs 25-32A. The Edlesborough building is shown in fig 27; the Harrold house in fig 32A.
- 2 J.M. Bailey, 'Rowe's Cottage . . .', *Beds Arch J* 12, 1977, 85-98, esp. 96-98 with fig 1, supplemented by Bailey, 1979, fig 25 for Bedfordshire and adjacent counties. There are examples in Norfolk and Suffolk additional to those listed in the Schedule; information from D.H. Kennett.

Two Hall and Crosswing Buildings in East Bedfordshire

J. M. BAILEY

INTRODUCTION

This paper describes two "Hall and Crosswing" buildings which became available for study when modernisation work was recently carried out. From certain common details it would appear that they were built at a similar date which was most probably the 15th century. The type is fairly common in the county but to date only a limited study has been made and it is felt that this will be useful comparative material to relate to similar buildings in other counties. Typical examples of hall and crosswing buildings in Bedfordshire include Basmead Manor, Staploe; the Old Plough Inn, Bolnhurst; and Cause End Farmhouse, Wootton. Of these only the first has been studied;¹ another published building of the type is cited later in this paper.

The buildings discussed in this paper are in different situations. The first, Sun House, Potton, is a town building off the market square of a minor town; the second is in an isolated rural setting at Upton End, Shillington.

SUN HOUSE, POTTON

HISTORICAL BACKGROUND

The first known written record of the building is dated as late as 1668 when at the Winter Assizes, Andrew Rayment was presented for having a common ale house at Potton contrary to the statute.² The building was then called the Sun Inn and from a series of deeds³ dated between 1689 and 1717 Andrew Rayment's property seems to have included the two-bay cottage to the south of the building discussed in this paper. The cottage has no obvious structural relationship to the Sun Inn and the record of one Andrew Beymond in the 1671 hearth tax relates solely to the Sun Inn. The building then had three hearths, one fewer than of chimneys as the house had in 1975.⁴ During the eighteenth and nineteenth centuries references are sparse; documentation as a public house ceases when a licence was refused to the Biggleswade Brewery on 27 August 1907.⁵

THE BUILDING

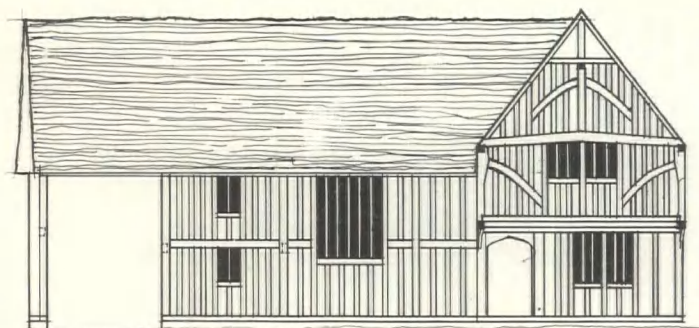
The building, in its present form, has a main two-bay block parallel to the road comprising two rooms at ground floor level and two rooms at first floor level. There is a full height wagon way to the south. At the northern end of the main block is a jettied crosswing of two bays. (fig 2; section AA).

Detailed investigation of the structure showed that the northern bay of the main block is in fact part of what was a two-bay hall. The hall was originally of two bays, the second bay being to the north where the present crosswing is situated. The evidence for this is contained in the surviving 1.5 metres of this second bay in which a late 16th century chimney stack is situated. Examination at the side of this chimney revealed the moulded post of a truss and above, embedded in the upstairs chimney breast, the corresponding moulded tie beam and evidence of the arching braces of the truss. (fig 2).

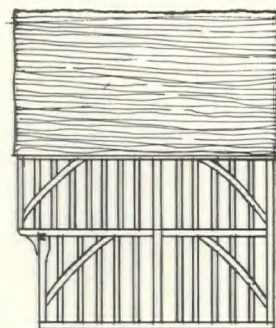
The rafters over the surviving hall bay and the 1.5 metres of the second bay are heavily sooted, as is the southern wall of the hall.

It is most unlikely that a hall would have been built with a second bay 1.5 metres in length so it seems reasonable to conclude that the hall was of two equal bays each of 3.25 metres. Presumably there would have been a further service bay on the northern end to make up the total length of the site. It was also noticed that the southern face of the later crosswing is heavily sooted. This must indicate that after the wing was built, the hall continued to be in use and was not floored, or that there was a smoke hood inserted backing onto the wall of the wing. This second alternative is unlikely for reasons discussed below.

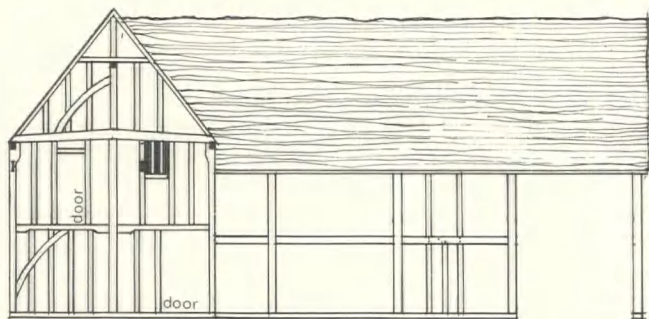
The plan of the building (fig 1) is shown in reconstructed form with studs located from surviving mortices indicated. Also indicated in figures 1 and 2 are the reconstructed elevations and sections, again with the missing studs; a front elevation with all conjectural studs shown in full line is shown in figure 1 for clarity.



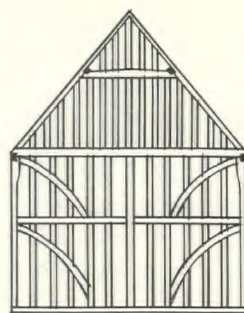
RECONSTRUCTED FRONT ELEVATION



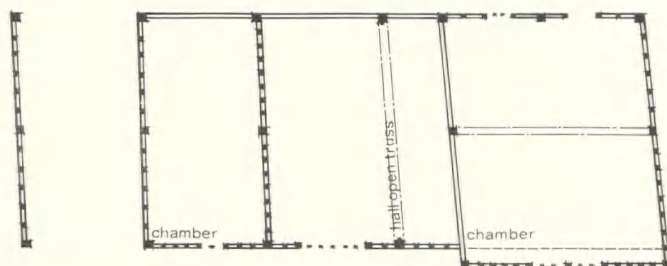
ELEVATION ON G G



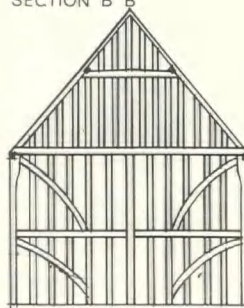
RECONSTRUCTED REAR ELEVATION



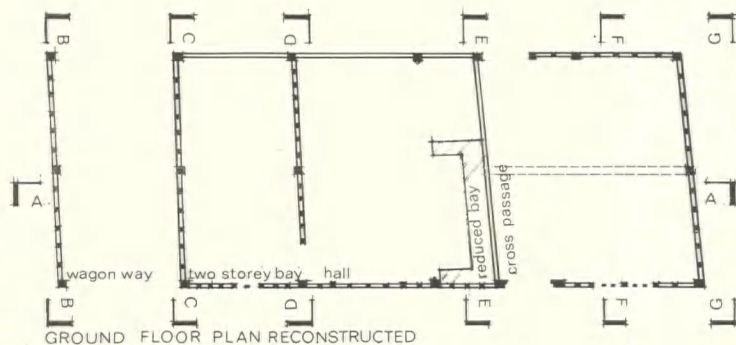
SECTION B B



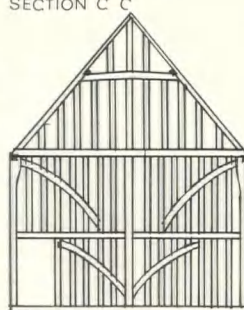
FIRST FLOOR PLAN



SECTION C C

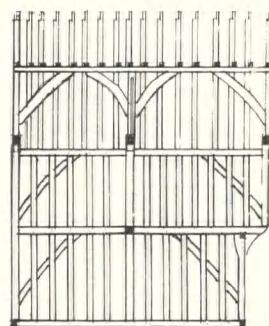
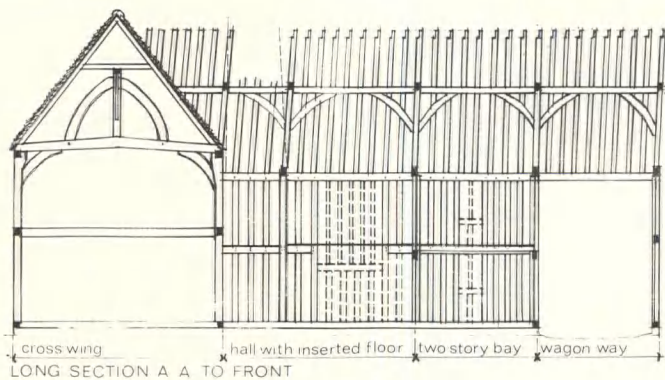


GROUND FLOOR PLAN RECONSTRUCTED

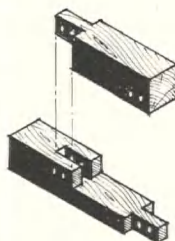
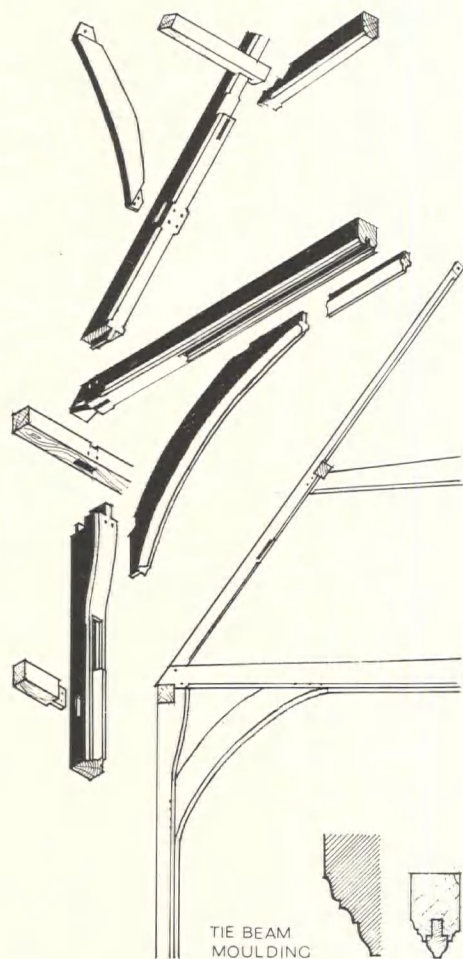


SECTION D D

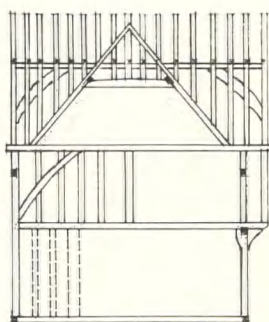
Fig 1 Sun House, Potton: plans, elevations and sections.
Scale as figure 6.



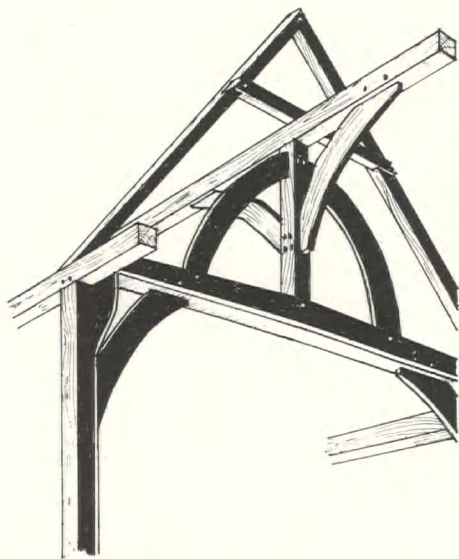
SECTION F F



HALL TOP PLATE
SCARF JOINT



SECTION E E



TIE BEAM
MOULDING

DETAILS OF HALL TRUSS

CROWN POST TRUSS TO CROSS WING

John Bailey 1979

Fig 2 Sun House, Potton: sections and framing details.
Scale for sections as figure 6.

The main block is close-studded on all elevations except the rear, and the cross walls are infilled in a similar manner. Tension braces are added to the cross walls only. The roof of the main block is of clasped purlin construction with the principal rafters reducing above the collar. Wind braces are in every bay.

The Cross Wing

The later cross wing is interesting as it has a crown post roof. This shows that clasped purlin and crown post roofs were being used at the same time in Bedfordshire during the 15th/16th century. This has been noted in other buildings in the county as at 115-117 Great North Road, Eaton Socon,⁶ and at Crowhill Farm, Bolnhurst,⁷ although at the latter it was the hall which had the crown post roof and the wing had a clasped purlin roof.

The side and rear elevations of the cross wing could be reconstructed completely (fig 1). The front elevation above bressummer level was complete except for limited damage caused by an inserted window. Below bressummer level the front elevation has been reconstructed from evidence on the underside of the mid plate.

The front elevation of the cross wing is shown in its fully reconstructed form in figure 1. When facing the front from the outside, there was a doorway on the left. Under the mid plate there is evidence of the slot for spandrel panels and there is a hollow mould on the outside extending the width of the door opening. Further along the underside of the mid plate, there were mortices for the window mullions for two three-light windows. As no studs remain in the lower half of this elevation, the sill height of the windows is conjectural. The first floor of the front elevation is infilled with close set studs. There is positive evidence from mortices under the beam of two three-light windows on centre of the wing. Tension braces curve downwards from the corner posts to tenon into the sides of the infill studs. The gable is also close-studded and here braces from either side of the crown post curve downwards to tenon into studs on either side.

The rear elevation, when reconstructed (fig 1), indicates that there may have been a contemporary extension built onto part of the rear of the cross wing. When looking from the rear there is a surviving blocked doorway to the left hand side of the elevation at first floor level. Alternatively, this could have been external access to first floor

level either as means of ingress or else for loading. There are two tenons just below tie beam in the north-west corner post and a stud forming the reveal of the first floor window. These may have been for some form of building on the rear but there is no other structural evidence for this. The window at first floor rear was of three lights. At ground floor on this elevation there was a door at the extreme end nearest the hall. This lines up with the door on the front elevation. There was a single arch brace at ground floor and only one brace to the crown post, there being no mortice whatsoever on one side of the crown post.

The external elevation (north) of the wing is infilled with close set studs. Arch braces are at both ground and first floor. (fig 1, section GG).

The construction of the internal elevation of the wing cannot be completely determined as much of the evidence is hidden by the inserted chimney (fig 2, section EE). On this elevation, unlike the other, the end girth appears to be continuous, unbroken by the centre post. At first floor level the wall is close studded with curving braces on the hall side. In the part of the ground floor level in the rear half which can be analysed, there is evidence of a door opening towards the centre. Interestingly this overlaps the inserted fireplaces which must indicate that the hall remained in use as such and was unfloored after the cross wing was built, with the screen passage now being within the new cross wing. Also, the smoking extends over the entire new truss, strutted across the later wing top plate. This must also limit the possibility of a smoke hood being used in conjunction with a floored hall.

Section AA (fig 2) is taken on the centre truss of the cross wing. A cross passage almost certainly ran through on the hall side, but as the present ceiling is plastered we cannot see if there was a partition running across the wing.

At first floor level the wing was one room. Braces spring from the posts up to the underside of the central tie beam. The underside of the tie beam and the posts are simply chamfered on both sides with plain stops.

A complete roof remains and is of crown post construction. Each crown post is braced upwards to the purlins (fig 2 detail) and downwards to the tie beams. In each instance the braces tenon centrally into post, purlin or tie. The central crown post is square without chamfer or moulding.

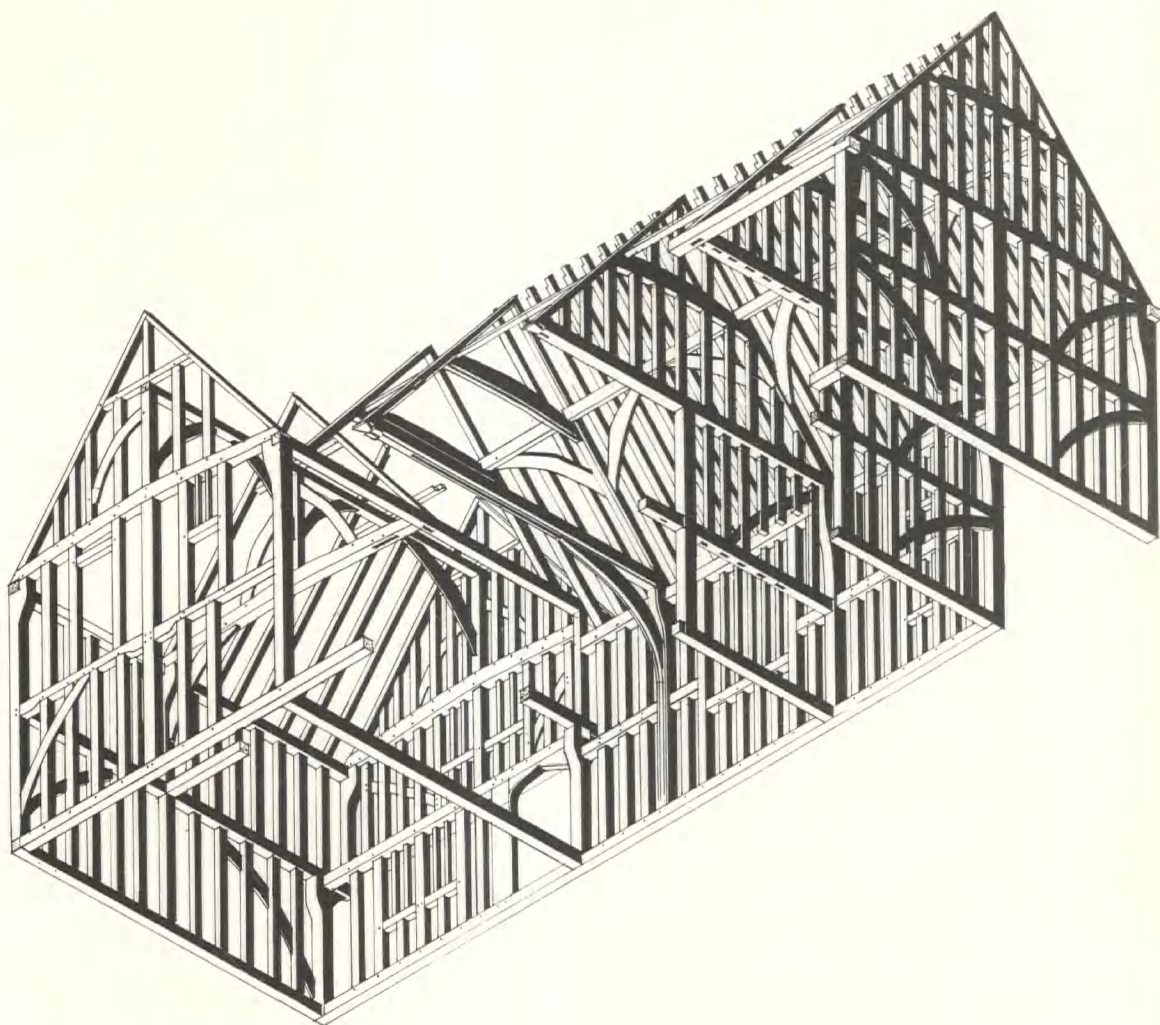


Fig 3 Sun House, Potton: isometric of frame viewed from back and below.

The Hall Wing

The hall wing surviving element is in three parts:— the wagon way; the original floored bay with a single room at ground and first floor, and the remaining $1\frac{1}{4}$ bays of the original hall now floored over and with inserted chimney at its north end. Section BB (fig 1) shows the wagon way end. It is of close studded construction. Tension braces are at both first and ground floor level. Section CC shows the wall of the original floored section of the hall wing adjacent to the wagon way. This is constructed in a similar manner to the end wall of the building detailed above. Section DD is the

partition wall between hall and the two storey part of this wing. This is of slightly different construction to the other end of the bay as a door is located at one end. The floor joists for this floored bay run parallel to the main sides of the wing and span between the mid plates.

There is no evidence of there originally being a room above the wagon way. The faces of the corner posts towards the wagon way are free from tenons that would have been provided for mid plates. There is, however, evidence of a room being inserted at some date in the wagon way as there are subsidiary top plates notched under the

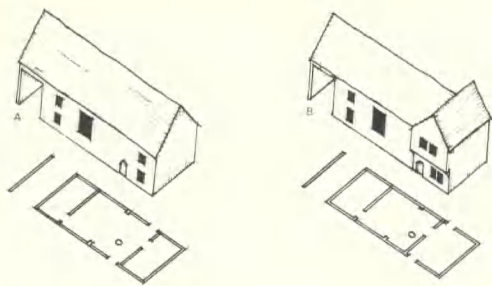


Fig 4 Sun House, Potton: development of plan from hall-house to hall-and-crosswing house.

originals which are morticed for studs.

What was originally the central hall open truss is shown reconstructed and in exploded view in figure 2. Simple chamfers with plain stops run down the principal rafters and along the underside of the collars. The chamfers stop neatly above and below the intersection of the wind braces. The chamfer is also found along the underside of the top plate.

The posts, braces and underside of the beam were fairly extravagantly moulded. Although the braces no longer survive, a conjectural reconstruction can be made which is almost certainly correct. The moulding on the inner face of the post survives as does the mortice for the brace. The post moulding is an ogee and hollow. On the underside of both sides of the tie beam is a hollow moulding. Additionally, on the south side of the tie is an ogee moulding running above the hollow (see inset sections through tie beam). This additional moulding on one side of the tie beam of a hall is common in buildings in the region and usually indicates the side viewed from the "high" end of the hall.

Section AA taken longitudinally through the building, shows the roof construction with the wind braces rising from principal rafters to purlins. The inserted fireplace and floor have been omitted from this section which shows the reconstructed front elevation of the hall wing and also the central truss of the cross wing reconstructed. Also seen in this section is the reconstructed six-light window to the original hall the two-light windows in the front elevation of the two storey element of the hall wing.

Carpentry

The hall top plate is joined with an edge-halved

scarf with bridle-butts and two edge pegs, perhaps the most common scarf joint in Bedfordshire in the period between the late 15th and early 17th century. (fig 2).

Both the hall and cross wing tie beams are secured to the top plates with lap dovetails.

The type of bracing used is uncommon in Bedfordshire. Firstly tension braces terminating into the side of a stud is prevalent in Suffolk and seen rarely in Bedfordshire. Secondly the use of arch braces in the framing, other than under a tie beam is most rare in Bedfordshire in a pre 17th century context.

Conclusion

The most logical solution to the original form of the buildings before the erection of the later cross wing is that shown in figure 4(a) that is a "three cell" four bay house with a wagon way at one end.

The central two bays were the hall. To the south side of the hall, at the high end, would have been the parlour with solar above. To the north of the hall there would most probably have been a service bay with buttery and pantry at ground floor and a chamber over. The cross passage at the north end would have most likely been at the end of the hall.

After the demolition of the north end of the hall and the replacement of any existing rooms at the end of the building by the new cross wing, the form of the building would have been as figure 4(b).

The high end of the hall and its parlour/solar bay would have remained as before. At the low end the service area accommodation is now enlarged, although the cross passage is now through the wing.

There is a substantially larger chamber at first floor in the new wing than there would have been in the previous arrangement, assuming that the site size stayed the same.

APPENDIX

3 Sun Street

At the junction of Sun Street and running along the west side of the square are the remains of a partially demolished, timber framed structure. As is most common in towns, the frame was concealed by a modern brick front and shop window. This thin veneer must have hidden a very

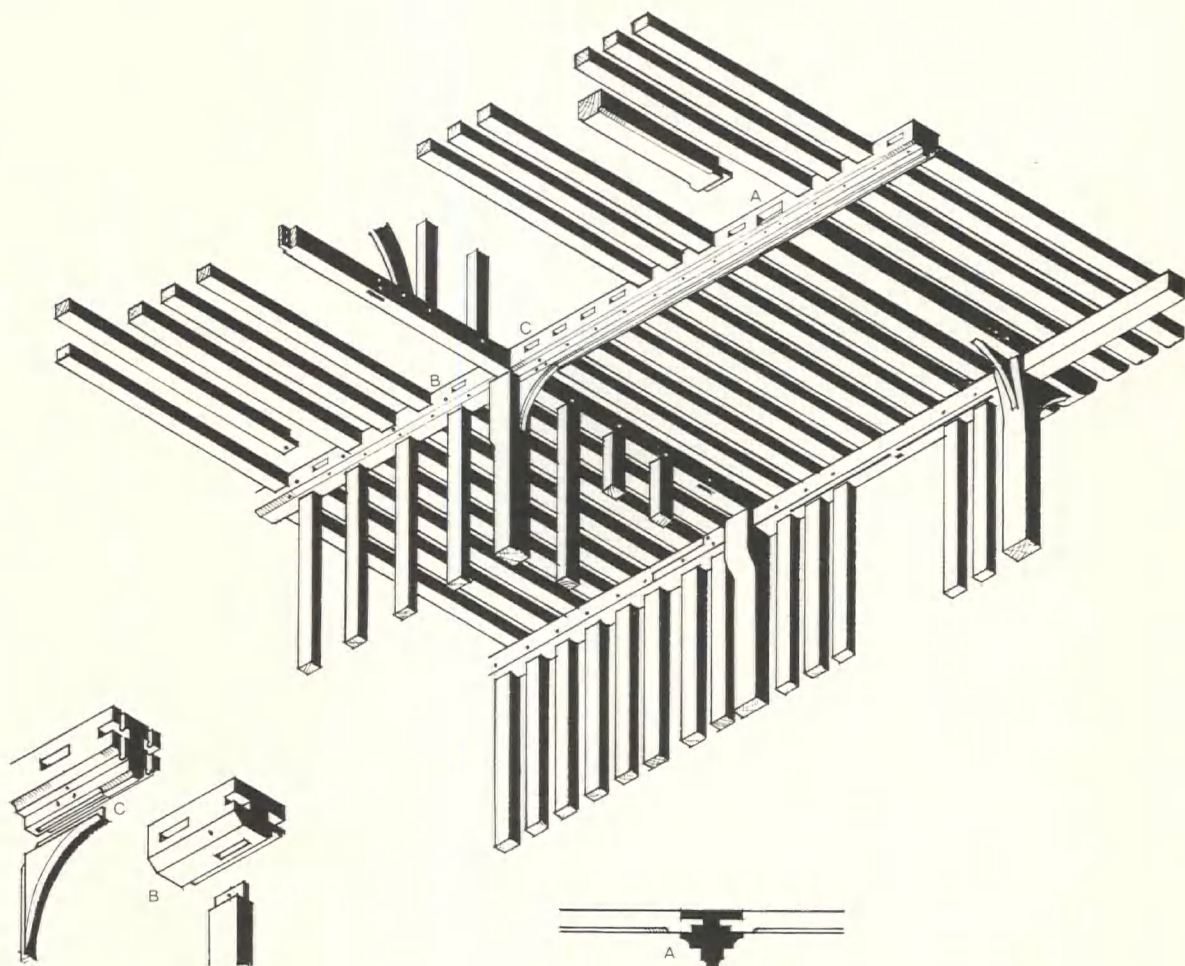
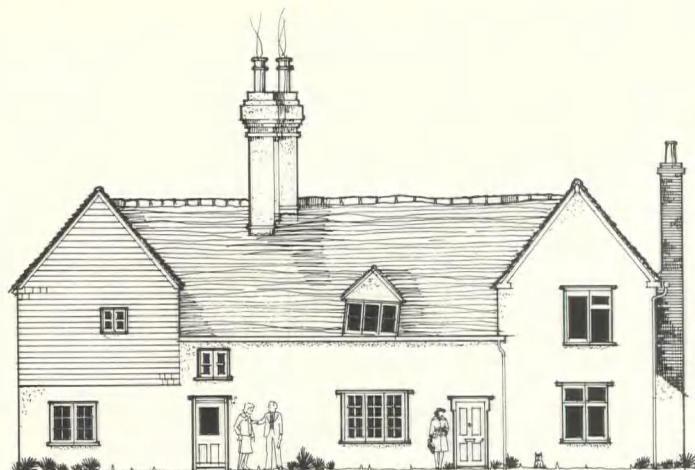


Fig 5 No 3 Sun Street, Potton: isometric view looking from rear and below.

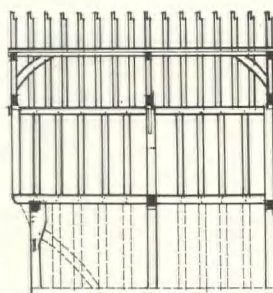
complete late medieval building if the extent of the remaining timbers at ground floor level that were standing at the time of survey are any guide.

At either end the building had been altered so it is not possible to ascertain the original length. There remained sections of $2\frac{1}{2}$ bays at ground level which included the common floor joists and binding joists. An isometric reconstruction is shown in figure 5. This building was well finished with moulded details. We can see that the building was continuously jettied to the street. The southern $1\frac{1}{2}$ bays formed a single room at ground level. The northern bay of the ground floor was divided into two rooms. Shuttergrooves run along the underside of the front mid plate of the centre

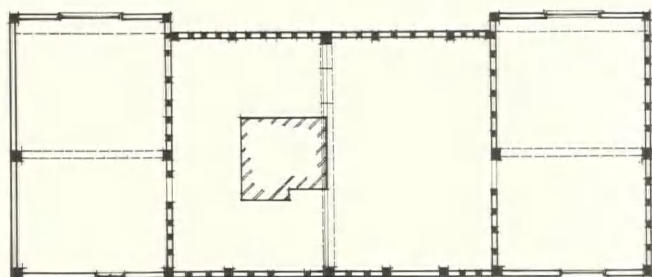
bay with a mortice for a window mullion on centre of the bay. There are two bridging joists, one running through the northern bay, the other along the southern $1\frac{1}{2}$ bays. They both tenon into either side of the same joist. Details of the two bridging joists are shown. There is a moulded knee-brace at the northern end of the southern bridging joist. An interesting feature is the splitting of the binding joist either side of the southern bridging joist. The joint used to tenon this into the bridging joist is shown in detail A. A hollow chamfer runs along both sides finished with simple stops. The common joists are all secured with bare-faced soffit-tenons with mortice and peg. A scarf survives in the front mid plate



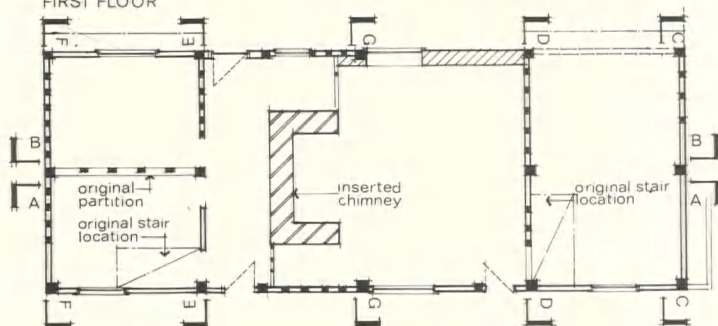
SOUTH ELEVATION



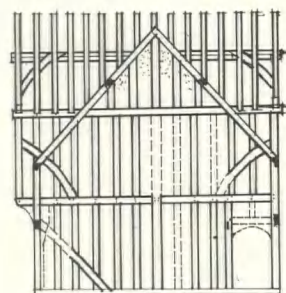
SECTION C C



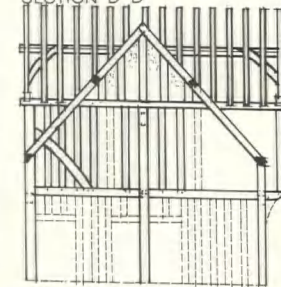
FIRST FLOOR



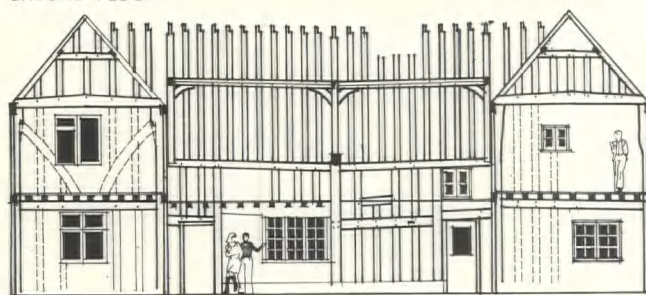
GROUND FLOOR



SECTION D D

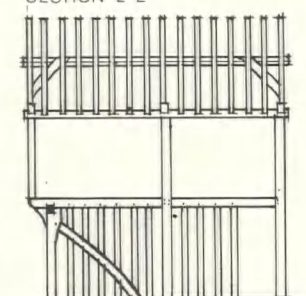


SECTION E E



SECTION A A

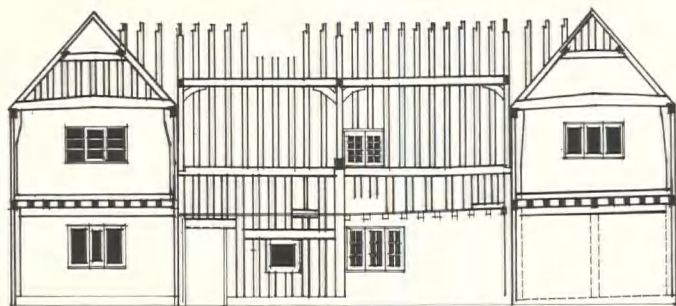
0 5 10
METRES



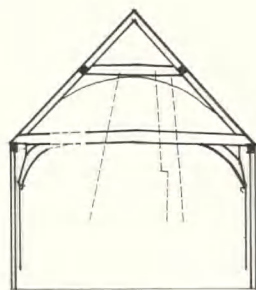
SECTION F F

John Bailey 1979

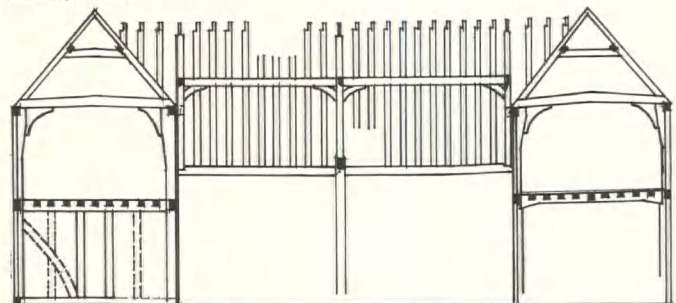
Fig 6 Clawdershill Farm, Shilling: plans, elevation and sections.



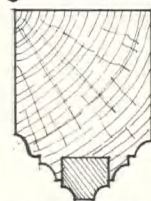
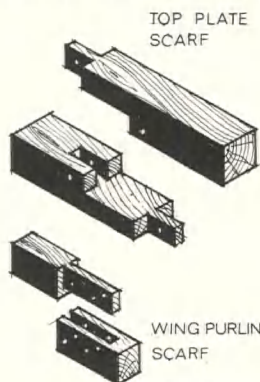
SECTION B B



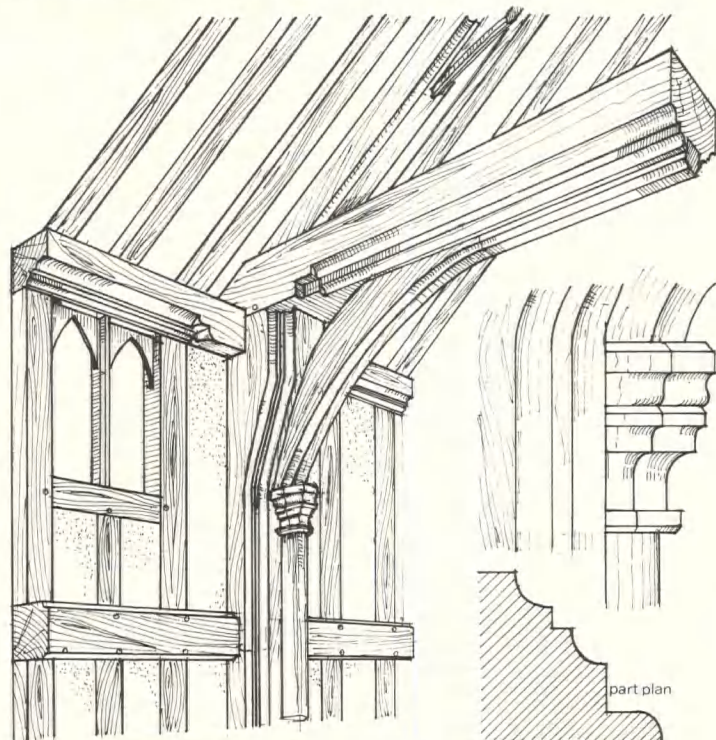
SECTION G G, HALL TRUSS



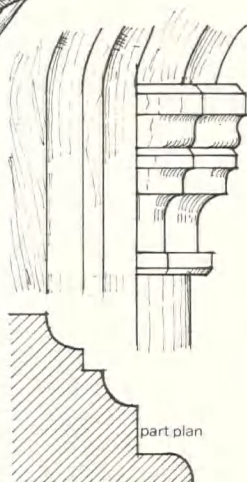
SIMPLIFIED SECTION, TO NORTH, ON CENTRE LINE OF HALL



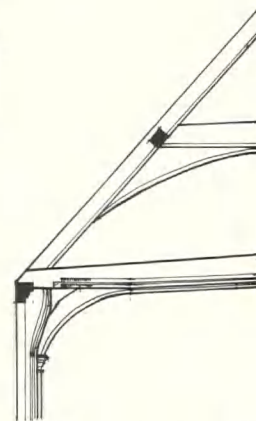
HALL TIE BEAM SECTION



RECONSTRUCTED DETAIL OF HALL TRUSS



DETAIL OF POST



PART SECTION OF TRUSS

Fig 7 Clawdershill Farm, Shillington: sections and framing details.
Scale as figure 6.

and this is edge-halved with bridle-butts and two face pegs, yet another example of this joint so often used in Bedfordshire's buildings. It is unfortunate and frustrating that there is just not enough surviving evidence to enable us to understand the use of this building. The carpentry would seem to indicate a 15th century date.

CLAWDERSHILL FARM, SHILLINGTON

Introduction

Clawdershill Farm is isolated from other early buildings and is alongside and to the east of the lane through Upton End, Shillington. It is little altered apart from external treatment and new windows and is still recognisable from outside as a classic example of a late medieval hall with flanking jettied cross wings. The building recently changed ownership and the new owners kindly allowed a detailed survey to be made. No elucidation of the historical background has been attempted.

The Present Form

Some time during the last century the original rear of the building was made into the present front of the house. The house is in two tenancies and the elevation in figure 6 shows this new arrangement with the two entrance doors. The entire building has been rendered in pebbledash and hung tile is on one end and part of the main elevation. Figure 6 shows the ground and first floor plans of the present building layout. A later chimney stack has been inserted towards one end of the hall and a first floor added. There are various new modern partitions and at the end of the east wing the ground floor has been extended northward. New windows have been inserted on the two main elevations. There have also been chimneys added at either end of the building in the 18th/19th centuries.

Sections AA and BB (figs 6 and 7) are taken longitudinally through the building and show the front and rear internal elevations as they are today.

Original Form

The conjectural perspective indicating the original form of the building is shown in figure 9. The hall is of two bays with presumably a wing containing parlour with solar over at the high end and the service wing of buttery/pantry with chamber over at low end.

There was a single door into the parlour. At the

service end there were two doors leading to buttery and pantry. The cross passage was within the low end of the hall.

Description of Construction

The various elevations, sections and plans have been reconstructed in their original form as far as the surviving joint evidence will allow. In addition, the front and rear elevations have been shown conjecturally in their most probable form.

The original front elevations was to the north. The two bay hall had the high end at the east with the cross passage at the extreme west end. Both service and high end wings are jettied to the north. The service wing was divided into two rooms at ground floor, presumably buttery and pantry. There was a single room at first floor with the stair in the south east corner.

At the high end the cross wing is entered through a door at the south east corner of the hall. There were originally no partitions in this wing at ground or first floor.

The Hall

The standard of carpentry in the hall was high with intricate mouldings to the central truss and top plates. There were also well formed chamfers to purlins and other elements.

The hall roof is one of the few known butt-purlin constructions in the county, the general roof construction in Bedfordshire being clasped purlin. The roof structure is also uncommon in that there are no tie beams at either end. The principal rafters seat directly onto the wall plate (fig 6, section DD). The inner flank walls of the wing form the ends of the hall and stabilise its structure. Top, mid and sill plates tenon into the frame of the cross wings at either end without any form of cross tie other than the conventional central truss (fig 7, section GG). This central truss is elaborately carved with the braces spanning up to the underside of the tie springing from moulded capitals (fig 7). Hollow mouldings run up the principal rafters along the underside of the collar and the purlins. There are curving panels between principal rafter and underside of collar and these also have hollow chamfers. The underside of the tie beam is moulded, as is usual on a building of this quality, more extravagantly on the side facing towards the high end. On this side there is an ogee above a hollow. Towards the low end are two hollows. The mouldings on either side terminate in staggered returned stops.

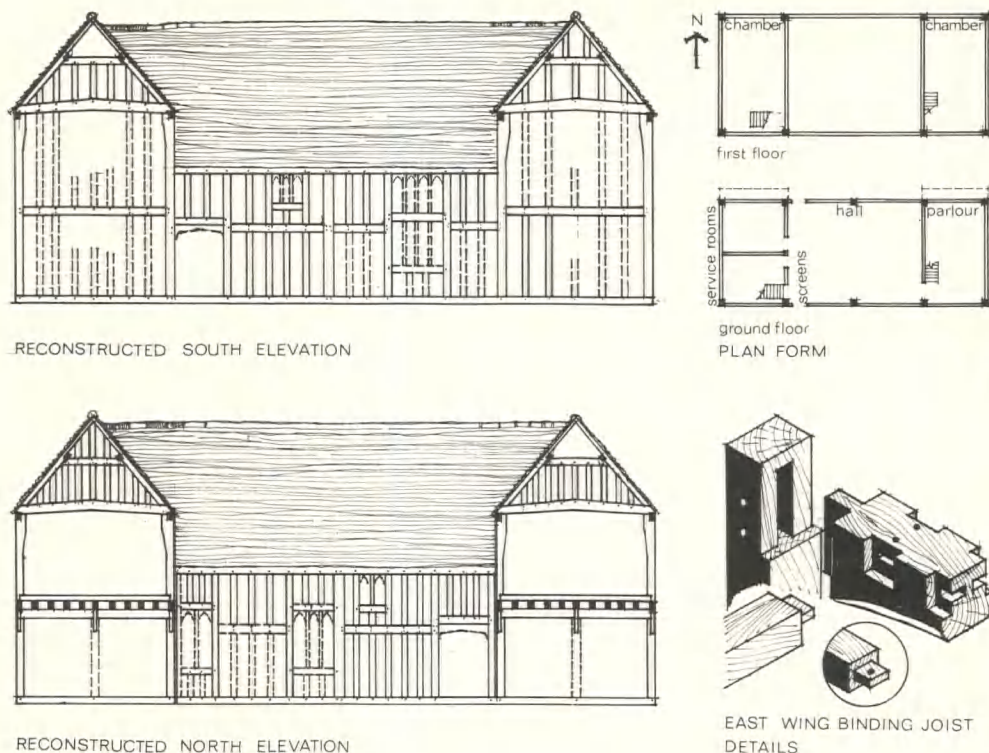


Fig 8 Clawdershill Farm, Shillington: reconstructed elevations, plan form and joint detail. Scale for elevations as figure 6.

The post moulding is shown detailed separately in figure 7 together with a section through the moulding running down the inside face of the post. It is not known how this moulding was terminated at the base of the post.

Both top plates are extravagantly moulded and the elaborate stops executed with care (see detailed drawings (fig 7). Large sections of the front and rear elevations of the hall have been destroyed at low level. Fortunately, on both of the elevations the intermediate full height posts dividing the bays into modules survive. These are distinguishable by being much larger in section than the studs and chamfered. We can therefore, on the drawings, carry these down to the sill and from evidence of mortices in them produce the partially reconstructed elevations in figure 8. The only area where there is some uncertainty is in the front elevation at the lower level of the high end. From the symmetry of the arrangement it seems logical that there may have been two further windows in this bay; these have been

shown in the conjectural reconstruction.

Mullions survive in one window together with the evidence for spandrel panels in their heads. In one instance a section of spandrel survives. This is .25mm thick with a hollow chamfer on the inner face. It slotted into the mullion only. From this evidence we have assumed spandrel panels at the heads of all windows for the reconstructed elevations. Both entrance door frames survive and in the inner face of one the slot for a spandrel panel is visible.

A perspective view of the hall looking towards the high end has been shown based on these conjectural reconstructions of the elevations (fig 10). This must be reasonably accurate except for the windows at the high end front elevations which cannot be proved.

It should be noted that the front elevation is framed by a full height post at either end abutting the flank walls of the wings. This does not occur on the rear elevation. Presumably this was to give additional stiffness where the hall abuts the jettied

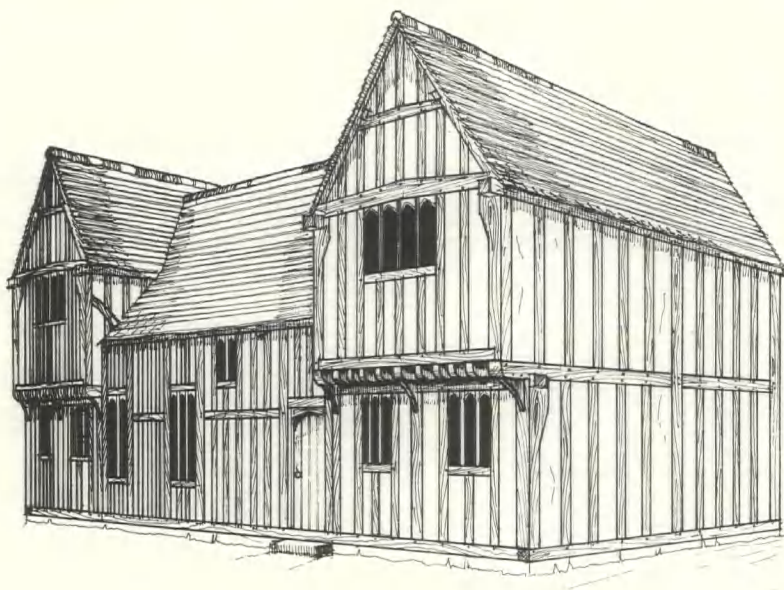


Fig 9 Clawdershill Farm, Shillington: conjectural perspective reconstruction.

wings as the top plate on this face only tenons into a stud and not a full height post as on the rear elevation.

The Wing at "High" End

With the exception of the front, jettied, elevation, this wing could be analysed in full. The side of the wing flanking the east end of the hall is shown in section DD on figure 6, close studded at both first and ground levels with tension braces at first floor between posts and girth. A door at ground floor level leads into the parlour at the south end of the partition. Evidence survives of the rail and spandrel panel at the head of the door. The external wall is also close studded (section CC) but there is not enough evidence to show any tension braces on this elevation at both levels. There is only a brace mortice visible in the ground floor front post. Presumably though, there must have been a symmetrical arrangement. The rear of the wing is infilled completely with studs and there is evidence of internal tension braces at first floor (section AA).

At the front of the wing the ground floor has been demolished in the 19th century. The floor joists survive and from the knee mortice slot in the central joist, we know that there was a stud on centre. First floor studs and possible windows

are not visible but the details of part of the gable end can be seen.

A complete roof survives over the wing. This is of clasped purlin construction with principal rafters reducing above collar. Wind braces extend between principal rafters and purlins.

There were no partitions at either first or ground floor and the central truss is open at both levels (simplified section in fig 7). The truss has solid knees at the junction between posts and underside of the tie beam and there are nostuds between tie and collar. Simple chamfers with plain stops run along the underside of the tie beam and down the posts. The posts reduce below the binding joist to provide it with an additional seating in this cross wing only. There are nine joists at the front of the wing and the same number to the rear. They tenon in either side of the binding joist and rest on the mid plate at the rear and jetty over the mid plate at the front of the building. It should be noted that the central joist is deeper in section than the others. This is presumably to provide greater rigidity as it does not occur in the other wing where there is a cross partition at ground floor level.

The exact position of the stair between ground and first floor must have been in the same location as the existing stair as the joists over the whole floor are uncut except at this point.

THE HALL
SHILLINGTON

CLAWDERSHILL FARM
BEDFORDSHIRE

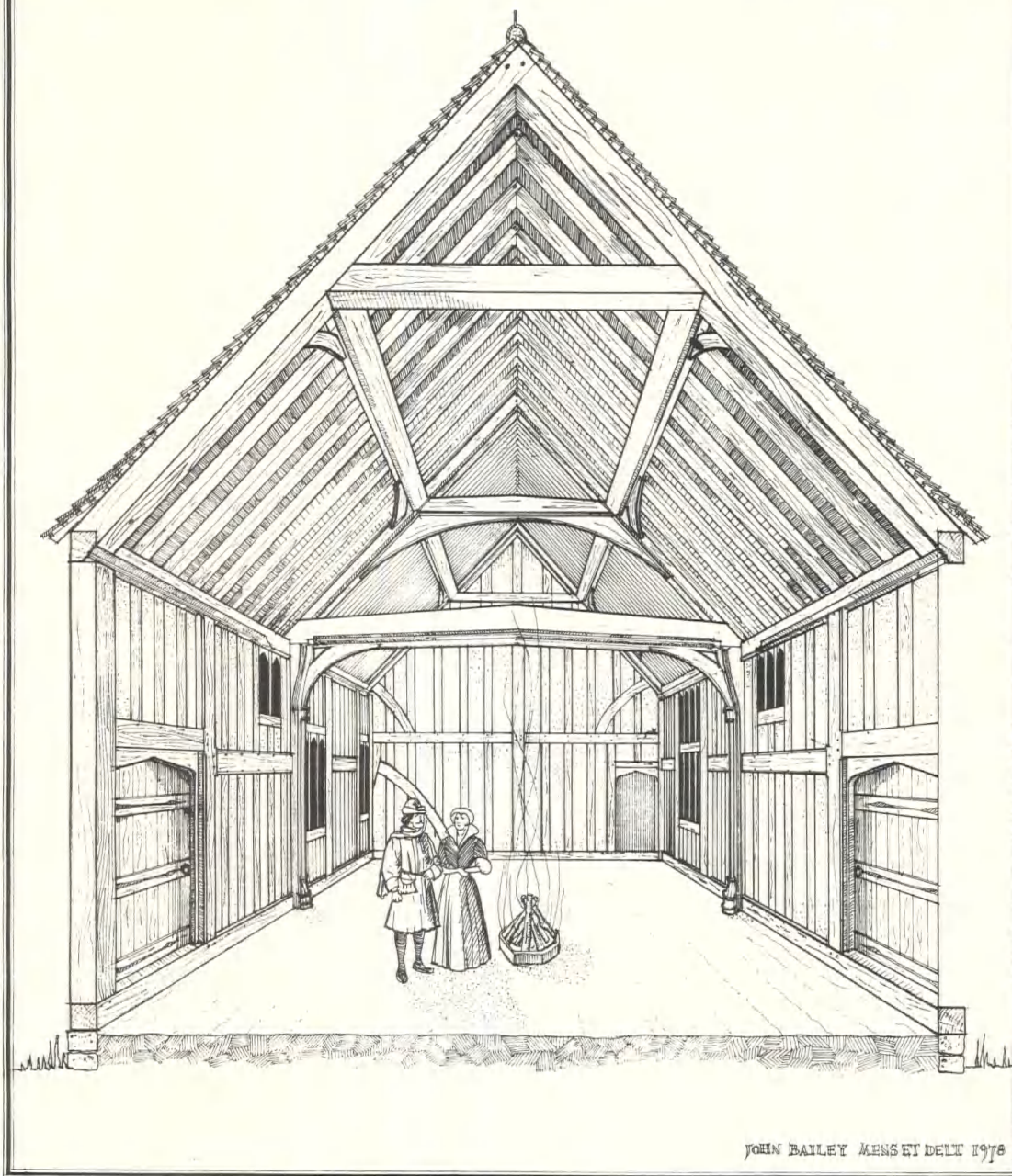


Fig 10 Clawdershill Farm, Shillington: perspective of the interior of the hall.

The Service Wing

The service wing is very similar in construction to the other wing except for its division into two rooms at ground floor, the location of stair and doors, and a slight variation in the disposition of the studs. Although fairly intact, the front elevation details are hidden. Section BB (fig 7) therefore shows little of the original work. To the rear, section AA, the wing was infilled with vertical studs and presumably there may have been tension braces but they are not visible. Details of the side of the wing flanking the end of the hall are shown in section EE. There are studding and tension braces similar to the other wing but in this instance there are two doors from the hall, one either side of the centre post. These doors would have led into the pantry and buttery. A third door appears to have been located at the south end of the wall for access to the stair and first floor as in the present arrangement. The central truss is of similar construction to the other wing, the only difference being the insertion of a cross partition at ground floor, reconstructed in the longitudinal section in figure 7. The first floor has a single chamber. There are nine joists to the front and to the rear, all of the same section.

Carpentry

One of the most interesting features of this building is the combination of the butt-purlin roof of the hall with the clasped purlin roof in the wings. The writer has surveyed another building in the region having both butt purlin and clasped purlin roofs: Charity Farm, Edlesborough, Bucks. Butt-purlin roofs are rare in Bedfordshire vernacular buildings, clasped purlin being the side purlin roof in most general usage with examples dating from the 15th century or earlier to the 18th century. The clasped purlin roof with its simplicity of construction continued to be used after the introduction of another form of butt-purlin roof where the rafters tenon into top and bottom of purlin. This later version of butt-purlin roof came into use in Bedfordshire in the early 17th century. Kempston West End Farm has examples of this form of roof, it retains wind braces but with the reverse curve.

The scarf joint in both wing and hall top plates is edge-halved scarf with bridled-butts and two face pegs.

In both wings the common joists were secured

to the building joists with a central tenon with housed shoulders, sunken butment-cheeks and pegs.

All tie beams are secured with lap dovetails in both hall and wings.

The mouldings to the central truss are of a high quality. The characteristic additional embellishment of the moulding on the side of the tie beam facing the high end occurs in this building as at Potton. In fact the moulding to the underside of the Clawdeshill tie beam is almost identical to Potton, so is the method of carrying the continuation of the moulding of the brace along the underside of the tie. In both cases a moulded fillet is tenoned along the underside of the tie (fig 7). This method saved carving from the solid of a much larger piece of timber, a detail which would be wasteful of material.

Conclusions

Presumably with the elaborate detailing and high quality of construction this building must be in the manorial class.

It is built in the medieval tradition of hall and cross wing with the elaborate detailing to the hall truss and distinction between high and low ends. This must surely be of 15th century date.⁸

ACKNOWLEDGEMENTS

My thanks are due to Mr and Mrs M. Coleman and Mr and Mrs A. Dwyer, the present inhabitants of Clawdeshill Farm, Shillington, for allowing me to enter their homes to make the survey herein published, and to Mr A. Chapman for allowing me to examine and survey Sun House, Potton. I am indebted to Miss M.C. Miller for her assistance in these surveys.

NOTES

- 1 N.W. Alcock, 'Timber-Framed Buildings in North Bedfordshire', *Beds. Arch. J.*, 4, 1969, 46 and fig 2, other buildings cited personal observation.
- 2 Bedfordshire County Record Office, document HSA 1668 W.
- 3 Beds. C.R.O., documents PE 410, 413-415.
- 4 L.M. Marshall, 'The Rural Population of Bedfordshire, 1671-1921', *B.H.R.S.*, 16, 1934, 71 section 31; D.B. Baker, A. Cox, E. Marten, *Bedfordshire Historic Buildings*, 1975, 54. The rear stack to the wing is a late addition.
- 5 Beds. C.R.O. document CIM 2.
- 6 Alcock, 1969, 44, fig 2, pl. 6-7.
- 7 D.H. Kennett and T.P. Smith, 'Crowhill Farm, Bolnhurst', *Beds. Arch. J.*, 12, 1977, 57-84, esp. 66-70 with figs 6, 7, 9. This is also a hall and cross-wing building.
- 8 Paper submitted May 1979.

The Bedfordshire Archaeological Council is indebted to the Bedfordshire County Council for a grant towards the costs of this paper.

Numbers 7 and 9 West Street, Dunstable

J. M. BAILEY

INTRODUCTION

During the last six years the writer has investigated the majority of the buildings in Dunstable which contain surviving elements of medieval and post medieval timber framing. Behind many of the eighteenth and nineteenth century planted facades evidence of previously unrecognised fifteenth and sixteenth century timber-framed buildings has been discovered. The study of this fast disappearing evidence is vitally important if the late medieval town plan is to be understood in some detail. A great deal of the information is fragmentary and in many instances neither the local authorities or the owners were aware of the existence of early timber framing within certain properties. It is hoped that a general picture of the type of buildings, their style and carpentry will be formulated from this series of sometimes fragmentary pieces of evidence each of which, viewed in isolation, appear to be of little value historically.

The survey of the town is still in progress and a later paper in a future issue of the *Bedfordshire Archaeological Journal* will summarise the evidence for the majority of the main buildings investigated. This paper describes in detail the total survey made of the late medieval shop and hall that stood at the eastern end of West Street and was demolished to make way for the new shopping centre.

THE TOWN PLAN

Medieval Dunstable grew up around the junction of two long-established and historic highways; the Roman Watling Street running north-south and the Prehistoric Icknield Way running east-west. The Charter of Henry I and the establishment of both a Dominican Friary and an Augustinian Priory encouraged the prosperous growth of the market town. The town plan was restricted to a tight cruciform centred on the crossroads until the nineteenth century. An eighteenth century plan shows how small the town was even at this date, prior to the rapid expansion over the next hundred years accelerated by the arrival of the railway in Dunstable.

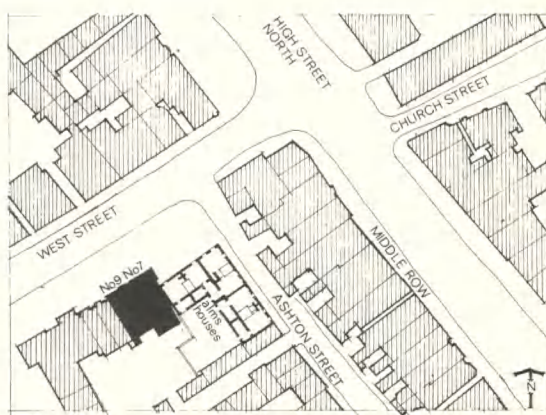


Fig 1 Plan of Dunstable cross roads showing position of nos 7 and 9 West Street.

The growth and location of the buildings in medieval Dunstable was governed by the road pattern and also the location of the two monastic houses.

The market was located on the Watling Street south of the crossroads. There grew up in this wide section of the road, a group of shops and houses called "Middle Row". These had access to their east side onto the Watling Street and to their west onto a lane that is now known as Ashton Street. This intrusion into the Watling Street also occurred for a short distance north of the crossroads.

The Augustinian Priory extended over a wide area of the south-east quadrant of the town centre. Certain of the Priory buildings fronted onto the Watling Street where it is known that was a gate house. Parts of the Priory survive in what is now the Priory Church of St Peter's.

Across the Watling Street in the south-west quadrant of the town centre the Dominican Canons erected their Priory. This was totally destroyed following the Dissolution. A considerable portion of the plan was excavated in the 1960's and 1970's.

Running out from the crossroads along all of

the road frontages the medieval buildings infilled between the boundaries of the two priories to form the characteristic Dunstable cruciform town plan with the Middle Row buildings forming a central feature alongside the market.

NUMBERS 7 AND 9 WEST STREET

The building of a shopping centre on the south side of West Street close to the town centre necessitated the demolition of a range of multi-period buildings. Number 7 West Street was known to be of timber-framed and jettied construction and the South Bedfordshire District Council donated a sum of money to allow this building to be carefully dismantled and transported to the Chiltern Open Air Museum for re-erection in its original form as a "Tudor" shop with hall to the rear. The adjacent building, Number 9, from both internal and external examination appeared, before demolition to be a three-storey Edwardian house. During demolition many timbers of a sixteenth-century jettied timber-framed building were found embedded in the later walls. There was enough evidence to establish the size and general construction of this building.

NUMBER 7

Number 7 was, prior to demolition, a barber's shop fronting onto West Street. To the east were the foundations of the demolished eighteenth-century Ashton Alms Houses.

Enough of the structure remained for a total analysis to be made and its original form as a "Tudor" shop and hall to be established. The only exception to this is the south end of the hall which appears to have been rebuilt.

Although the ground floor of the front elevation had been cut away there was enough evidence from the carpentry of the mid-plate to establish the construction of the shop front in principle.

Originally the building comprised a ground floor shop fronting the road with a jettied room over and a hall to the rear (fig 2). The front elevation of the building can be reconstructed in some detail. At the upper level of this elevation the studs survive, cut away in part by a modern window.

Examination of the underside of the tie beam showed that there was originally a window in the centre of the elevation and that it had two mullions. On this elevation at first floor level

there was apparently only one tension brace. This was on the inner face of the studs between the north west upper corner post and bressummer. Neither the north east corner post nor the eastern half of the bressummer had mortices for a tension brace. The reason for only one tension brace may be because of the construction form of the western side of the front bay of the building, discussed later. None of the studs survived at the ground floor level of this front elevation. Fortunately the mid-plate survived intact and along the underside were the slots for door and window spandrels and the mortices for door and window posts. There were also hollow mouldings running across the positions of the door and window heads. All of these details are shown in figure 2 together with a reconstruction of the door and window detail. The gable was infilled with close studding, all of which survived. A conjectural reconstruction of the front elevation is shown in figure 3.

The side walls (east and west) of both shop and hall, were infilled with widely spaced studs (fig 2) with the exception of the west wall of the shop bay. Examination of the western end girth showed that it was free from mortices on both top and underside. This must indicate that this portion of the western wall was not infilled and the wall of an existing building next door (no 9) was used as a party wall. The unstiffened nature of this section of the west wall may account for the addition of the single tension brace at the front of the upper storey. The owner of the shop presumably considered that the gain in floor area was worth the risk of omitting the stiffening infill the extra studs would have provided in the west wall. It was certainly not for access as the wall of the adjacent building was originally infilled with close studding at the lower level. Unless, that is, some of the studding of No 9 found missing during demolition had been removed when No 7 was constructed to allow access between the two buildings. The buildings were apparently under one ownership at a later period as discussed below. No evidence of windows was found in the east or west wall of the hall. Windows may have been in the south end of the hall, or in a further bay that may have existed and was demolished when the present south end of the building was rebuilt. The writer thinks it is more probable that the hall was unlit and was in effect a large smoke bay. The original roof was intact over both hall and shop and was of clasped

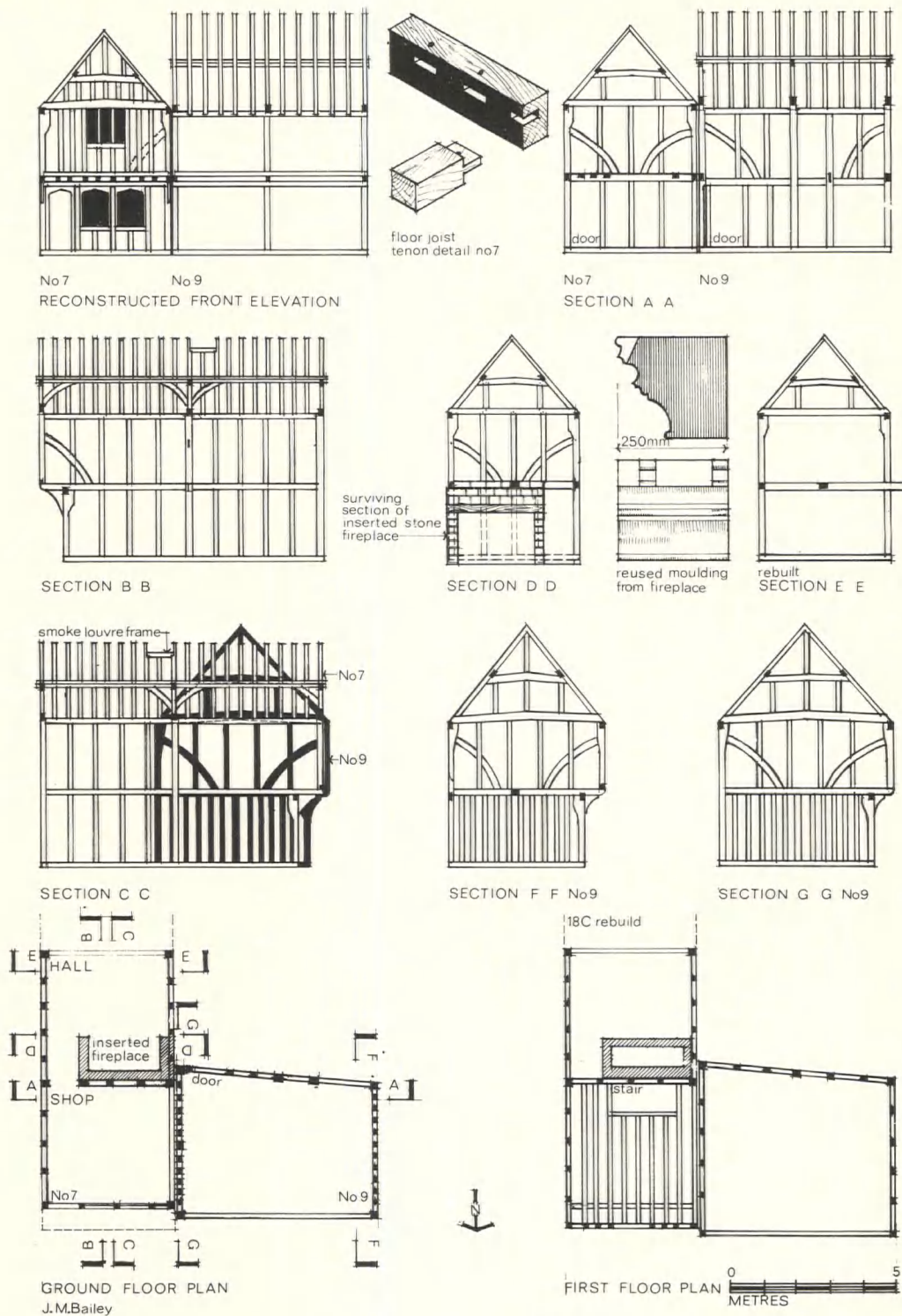


Fig 2 Plans and Sections of nos 7 and 9 West Street, Dunstable.

purlin construction. The principal rafters reduced above the purlins, and the collars tenon into the principal rafters. Wind braces between principal rafters and purlin occur in all situations except at the present south end of the hall. The absence of wind braces at the south end of the hall may indicate that the hall was originally longer. This is also discussed below. At the north end of the hall there was positive evidence of the louvre in the roof that was over the open fire (fig 3). The rafters over the hall were sooted and this was heavier towards the north end. The internal surfaces of the timbers in the room over the shop showed extensive traces of red ochre, particularly on the rafters.

A conjectural isometric reconstruction of the original building is shown in figure 3. Some time in the late sixteenth century a fireplace and chimney were added at the extreme north end of the hall and abutting to its west wall. The chimney was built from Totternhoe stone robbed from one of the two Pories, several of the stones were moulded. When the chimney was added the hall was floored over. To support the new floor joists a new primary joist was inserted across the apparent end of the hall (Section EE fig 2). This primary joist extended through the line of the west wall presumably relating to a structure to the south of No 9.

The western wall, for the length of the hall was not infilled and at the time of demolition the cut-off new primary joist was supported on the wall of No 9. It would seem that when the hall was floored the ground floor of No 7 was extended westward to the rear of No 9.

In the upper room above the shop there is evidence of a later door opening connecting No 7 to No 9. We can therefore assume that at the time of the flooring of the hall and the insertion of the new primary joist extending into No 9 that the two buildings were in common ownership. No 7 was extended or perhaps rebuilt to the south of this new primary joist line. The entire truss on this line (section EE), is rebuilt with reused timbers which do not seem to relate to what could have been the original end of the hall. It can be seen from section BB that there is no evidence of wind braces at the end of the hall. This would seem to indicate that either the hall was longer and that the purlins have been cut back or that they related to another structure at the rear.

If the buildings were originally related and No 7

built as an extension to No 9 then there could, from the beginning have been access from the hall to No 7.

In the nineteenth century the stone chimney stack was cut back to first floor level and a smaller brick chimney carried up on a different alignment. This was to allow access to either side of the chimney at first floor level.

The carpentry of No 7

The tie beams were secured to the top plates by bare faced lap dovetails with entrant shoulder.

The floor joists over the shop were jointed to binding joist by means of central tenon and morticed with pegs. There were two scarf joints used in the building. The purlins were jointed with a butted scarf with secret bridle and secured with one peg. The other joint used in the top plate and here a squint-butted scarf with secret bridle secured with two pegs was used. (fig 3).

The method of framing the end jetty is shown in figure 3.

NUMBER 9

Almost the entire original east end timber-framed wall of No 9 was found sandwiched between No 7 and the new brickwork of No 9. The relationship between No 7 and No 9 is shown in (fig 2 section CC). During the destruction of the early twentieth century brick three-storey building on the site of No 9 the following additional original timbers were found embedded in this brickwork:— rear top plate, rear mid-plate, west end girth complete.

These timbers gave the overall size of No 9 and the joints in the various timbers allowed us to reconstruct the general form of the building. The structure was a two storey continuous-jetty building fronting onto the street. The west end was some 40cm narrower than the eastern end.

The building was in two bays with an additional storey post in the rear wall of the western bay. There was a door in the rear wall adjacent to the south-east corner post. The complete east wall (fig 2 section GG) showed that the roof was of clasped purlin construction with the principal rafters the same width throughout their length.

The rear wall had widely spaced studs at both ground and first floor level with tension braces externally between storey posts and top of mid-plate (fig 2 section AA). East and west ends were constructed in a similar manner with close studding below girths and widely spaced studs

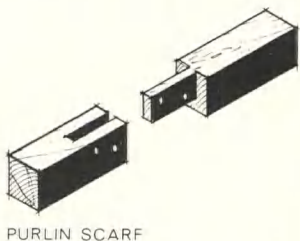
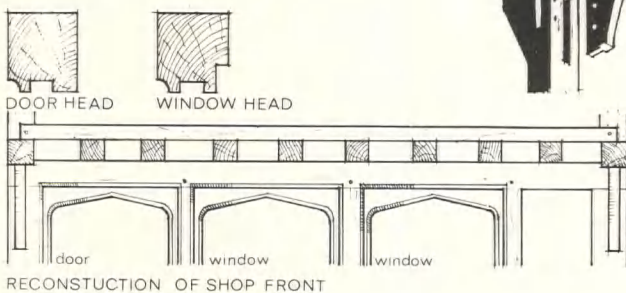
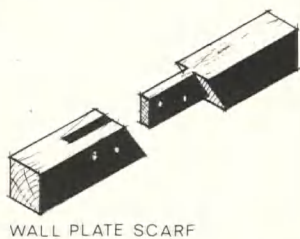
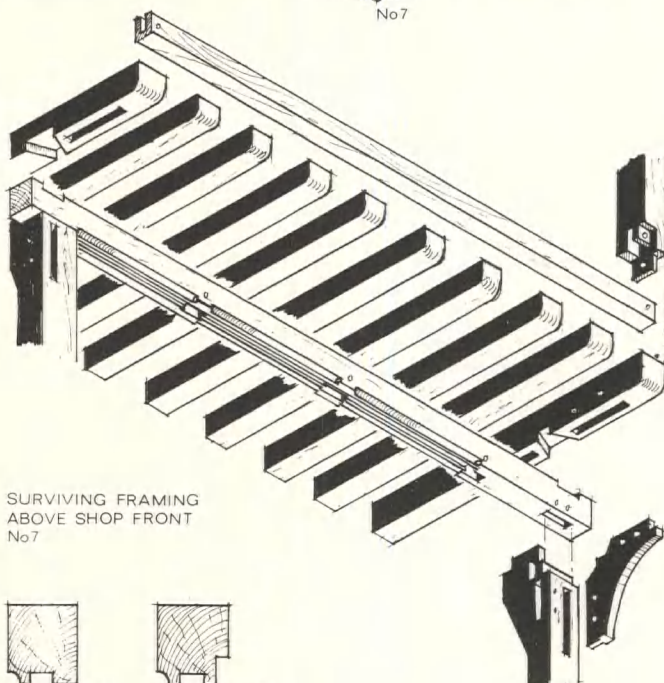
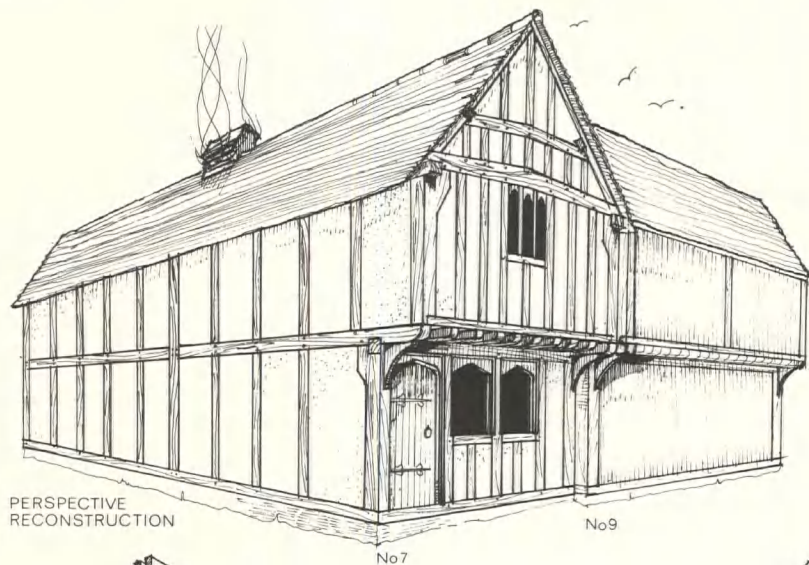


Fig 3 Nos 7 and 9 West Street, Dunstable: perspective reconstruction and framing details.

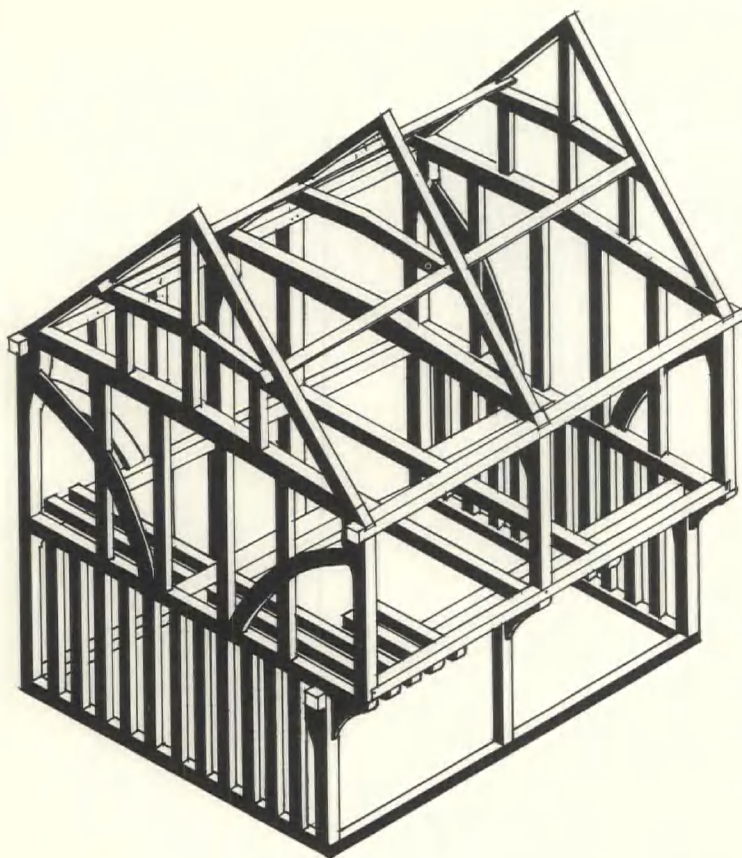


Fig 4 No 9 West Street, Dunstable: reconstructed isometric of frame.

above girths, and external tension braces at first floor level between corner posts and girth. A primary joist tenoned into the inner face of the end girths. There was a slight difference in construction between the east and west ends. At the east end the infill below the end girth consisted of closely spaced studs of equal size. At the west end, however, there was a larger post on the centre line of the ground floor level.

From the rafter notches on top of the rear top plate it was possible to reconstruct the whole roof on the drawings. Although there were two storey posts at the rear of the building only the one on the centre line related to a tie beam and truss. The secondary storey post had a mortice to receive a girth. Is it possible that this secondary girth only one metre from the one on centre

of the building was to form part of the structure for a smoke bay or smoke hood, or could it have formed the opening for a chimney stack? The chimney stack at Lancotbury House, Totternhoe, a continuous-jetty, sixteenth-century building, is set between two girths in this manner. The conjectural isometric reconstruction of No 9 is shown in figure 4.

It would seem logical to conclude that No 9 was built before No 7 as they share a common party wall built as part of No 9. The extension of No 9 east gable over the roof of No 7 in later work would also add weight to this conclusion.

Abutting to the east of No 9 were the foundations of the eighteenth century Ashton Almshouses. Following the demolition of No 9



Pl 1 The medieval shop at Ashwell, Hertfordshire, (now the village museum).
[Photograph: D.H. Kennett]

the surrounding area was briefly investigated by the Manshead Archaeological Society. Under the adjacent foundation wall of the Almshouses and slightly to the rear of No 9 a well was discovered. This had been sealed with eighteenth century material presumably at the time of the building of the almshouses. There was no evidence of the pre-eighteenth century buildings to the east of No 9 which may have related to No 9.

The carpentry of No 9

The surviving tie beam at the east end of the building was joined at the top plate with a lap dovetail. The joint halfway along the surviving rear top plate shows that the central tie beam was also jointed by a lap tailed dovetail.

The end girth is tied to the front mid-plate by a lap dovetail.

Infill panels were of two forms. The close studded sections where the panels are in the order of only 200mm had oak lath sprung horizontally into continuous vertical slots down the sides of the studs. More widely spaced panels were infilled with horizontal wattling woven across three or four vertical stakes.

CONCLUSION

The evidence for the use of No 7 as a shop is convincing and being built with a hall with open hearth it is probably of fifteenth century date. The shop elevation, if the reconstruction is correct, is of a form quite common, perhaps one of the best known parallels being at Lavenham, Suffolk; another example is at Ashwell, Hertfordshire, (plate 1). The Dunstable building's construction followed the common practice of close-studded decorative work on the front and wide panels on the hidden side elevations.

With absence of information to reconstruct the front elevation, a decision on the use of No 9 is not possible.

The use of such close studding at the ground floor of the side elevations would at first appear to be decorative. It is most unlikely, however, that this building would be isolated so close to the town centre and that views of this infill work could be seen by passers-by. Was the close infilling intended as an internal decoration? No 32-34 West Street which has a similar roof construction has unusually close studding work on an internal partition and end wall at first floor level. The use of both close and wide spaced studding on a single building is not uncommon in Bedfordshire.

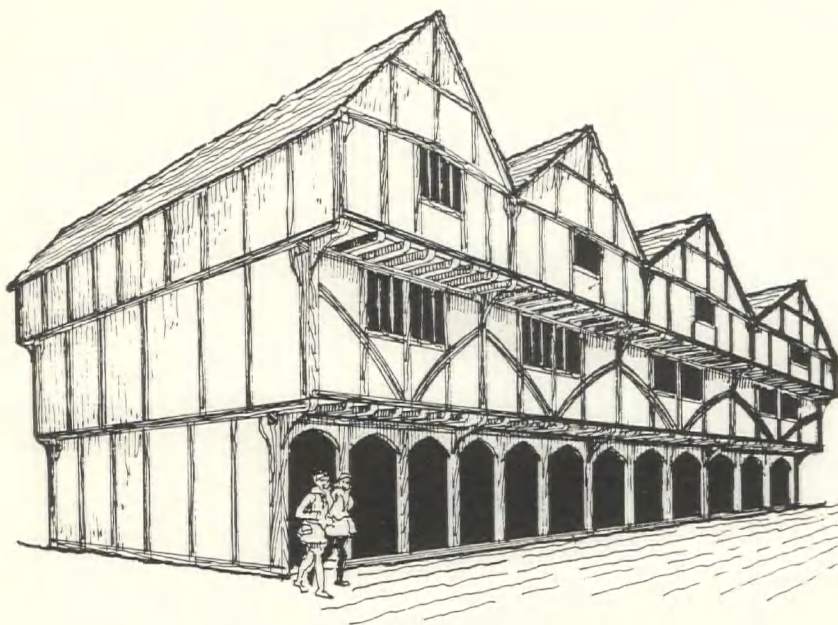


Fig 5 Reconstruction of the medieval shops in Middle Row, Dunstable.

APPENDIX

NUMBERS 26 to 32 MIDDLE ROW, DUNSTABLE

Building modernisation to several of the shops in Middle Row during 1979 gave an opportunity to investigate many of the surviving elements of timber framed buildings in detail. During these investigations enough surviving evidence was found to show that there stood near the southern end of Middle Row four pairs of back to back shops; a total of eight shops in all. These shops were at the ground floor of a three storied structure jettied at first and second floor level to both front and rear. Middle Row is a row of shops planted in the Watling Street south of the crossing with the Icknield Way at the centre of Dunstable. It is at the

site of the Medieval Market square and it is most probable that the medieval buildings on the site developed from temporary stalls. A section and reconstruction drawing of the shop at Number 30 Middle Row, Dunstable, appear as figures 40 and 39 respectively of J.M. Bailey, *Timber-Framed Buildings: a study of medieval timber buildings in Bedfordshire and adjoining counties* (Bedfordshire, Buckinghamshire and Cambridge-shire Historic Building Research Group, 1979).

ACKNOWLEDGEMENTS

My thanks are due to the South Bedfordshire District Council for allowing survey of these buildings prior to and during their demolition and to Miss M.C. Miller for assisting with the survey.

Paper submitted August 1979.

The Bedfordshire Archaeological Council is indebted to a private donation arranged by the author towards the costs of this paper.

A Timber-Framed House in Sundon Road, Harlington, Bedfordshire

DAVID H. KENNETT and TERENCE PAUL SMITH

SUMMARY

A late medieval hall-house, with subsequent alterations and additions, is recorded. The house, which has now been demolished, ended its days as a series of cottages.

INTRODUCTION

The building recorded here was demolished in November 1979. It was a long structure forming a series of cottages, numbered 59-65, at right-angles to Sundon Road, and set back a little from the latter, at the southern end of the village of Harlington, Bedfordshire (NGR: TL 038301). A preliminary examination in 1973 was followed by a more thorough investigation in 1979, when the building was derelict and scheduled for demolition.

DESCRIPTION AND ANALYSIS

Despite some later rebuilding and refacing in red brick, the building was timber-framed throughout. It consisted of five bays, defined originally by six trusses — labelled A-A to F-F in fig 1. Truss A-A had been replaced by a brick wall, which in 1973 supported a half-hipped roof, although what appeared to be the north-west corner-post was extant. Some original timbers remained, or had been reused, in the adjacent north wall.

Truss B-B, at the time of examination, was in poor condition. The principal posts, wall-plates, and cambered tie-beam were in normal assembly; on the north side was a curved knee-piece in the angle between principal post and tie-beam (fig 2, inset), whilst mortises and pegholes of a similar knee-piece were clearly visible on the south side. The studs which formed the basis of the infilling of the truss were thin sawn timbers nailed into place and clearly not primary. The absence of any indications of original studding or rail showed that this was an open truss. Above the tie-beam were a central king-stud and two queen-posts rising to a slightly curved collar. The upper surface of this was notched to take the two in-pitch side-purlins, over which the principal rafters were also notched. (fig 2, inset). The apex of the roof

was missing in 1979. From low down on the northern principal rafter a wind-brace rose to the side-purlin in bay B. A similar brace on the southern side was noted in 1973 but was no longer present by 1979.

Truss C-C was much altered when the later stack (vide infra) was inserted, but was clearly a closed truss from the first, as indicated by surviving studs and/or pegholes at first-floor level. The studs were closely spaced, approximating to 1 ft centre-to-centre, but at the southern end no mortises were seen on the tie beam, indicating an original door. The mid-rail survived on each side of the fireplace and still served to support the floor at this point. Above the cambered tie-beam were two queen-posts and a central king-stud reaching to a cambered collar, into the top surface of which the side-purlins were notched. The king-stud had plain chamfers with run-out stops. Wind-braces from low down on both sides of both principal rafters rose to the purlins.

Truss D-D was close-studded on both floors: most of the studs were seen whilst others were traced by their peg-holes in tie-beam or mid-rail: they were spaced at approximately 1 ft intervals. The studs were flush with the west side of tie-beam or rail. In the centre of the wall was a large (9 by 9 in) untrimmed storey-post rising to the underside of the tie-beam. The rail on either side of this had straight saw-cuts and it appears that the post was a later insertion — intended, perhaps, to support a weakening roof and first-floor structure. Above the cambered tie-beam was close-studding and one straight, severely functional brace nailed from tie-beam to purlin on the south side of the east face. The side-purlins were notched into the collars. Mortises for wind-braces rising to the purlins were observed on both sides of the principal rafters. There was no definite indication of original doorways through this wall: certainly none existed on the first floor, where the studding was uninterrupted; there may have been a doorway in the position of the existing one on the ground floor, though later accretions made it impossible to confirm this.

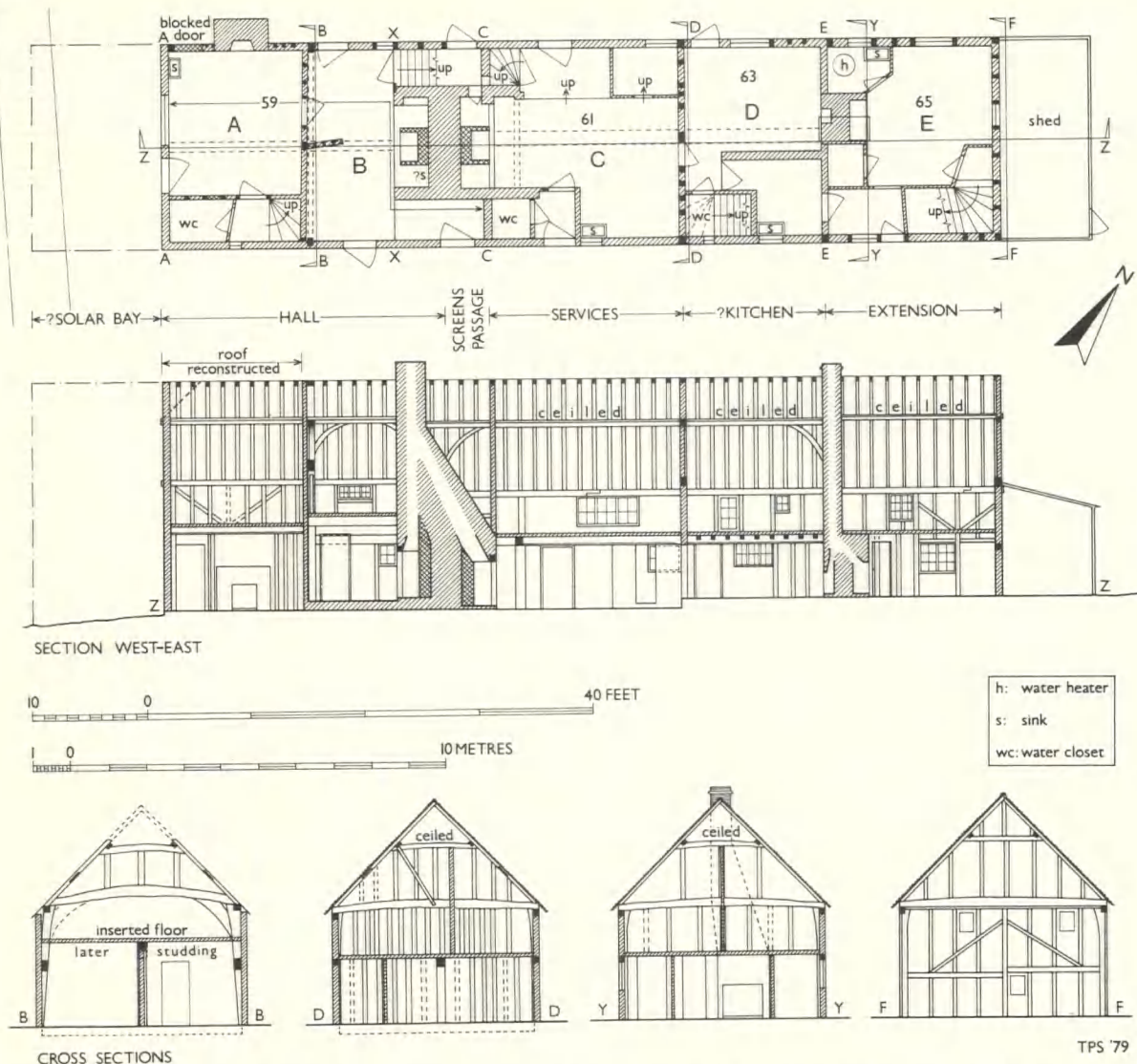


Fig 1 Timber-Framed Building at 59-65 Sundon Road, Harlington, Ground floor plan and sections.

Truss E-E was obscured by a nineteenth-century fireplace, doorway, and cupboards on the ground floor, but on the first floor studs were visible. They were flush with the east face of the tie-beam and were spaced more widely than those of trusses C-C and D-D – approximately 2ft or a little more centre-to-centre. Above the cambered tie-beam were two queen-posts and a central king-stud reaching to the slightly cambered collar. The side-purlins were notched into the collar and there were slightly wavy wind-braces from low down on the principal rafters westwards to the purlins.

The end wall, truss F-F, was entirely of later framing, with a thin central storey-post into which were tenoned mid-rails, that on the north side a little higher than that on the south. The studs above and below the rails were spaced at intervals of about 2ft 3in and were equally thin, as too were the two tension-braces from the rails to the storey-post. These were severely functional straight timbers; they 'broke' the studs in a manner which is typical of such late framing.¹

The side walls at this end (bay E) were similar in construction, with, again, a central storey-post with mid-rails at slightly different heights either

side, and straight tension-braces 'breaking' the studs.

Elsewhere (bays A-D) the side walls were of more substantial timbers. A mid-rail divided the walls and the panels were fairly wide, with studs about 2ft apart centre-to-centre. No original braces were seen in any of the walls of this part of the building, but there had been much rebuilding of the outer walls in brick: this was complete in bay C.

Fenestration in these walls had also been much altered, though some of the windows presumably replaced originals. Opposing windows at first floor level had been blocked in bay D. The opposing doorways on either side of the inserted stack in bay B may be taken to be in original positions at the ends of an original screens-passage. The latter seems to have been defined to the west of truss C-C by the southern portion of a cross-beam (X-X on fig 1); one mortise for a stud was seen on the underside of this beam close to its southern end.

The building was (when examined) floored throughout, but it has already been observed that truss B-B was originally an open truss; clearly there was not originally a first floor in bays A and B. When the floor was inserted a supporting post was placed centrally in truss B-B to take the end of a longitudinal joist in bay A; since the west end of the building (= original truss A-A) had been entirely rebuilt the western support of the joist had not survived. A similar main joist in bay B had its west end resting on top of the bay A joist whilst its east end was built into the brickwork of the stack. Both main joists had plain chamfers. The lateral joists were closely spaced at about 1ft intervals centre-to-centre.² The wood used for the flooring was pine as was the inserted timbering in truss B-B.

The stack between bays B and C had, on our interpretation, been inserted, following the common practice,³ into the original screens passage at the 'lower' end of the original open hall. It was a substantially built brick structure of inglenook type with a fireplace to each of bays B and C. The lintels were massive timbers. The stack tapered upwards to a relatively narrow chimney stack at the top.

Bay C seems always to have been floored and had oak joists. There was a longitudinal main joist with a plain chamfer and closely spaced lateral joists. At its eastern end the main joist had to be supported on a bracket when the cen-

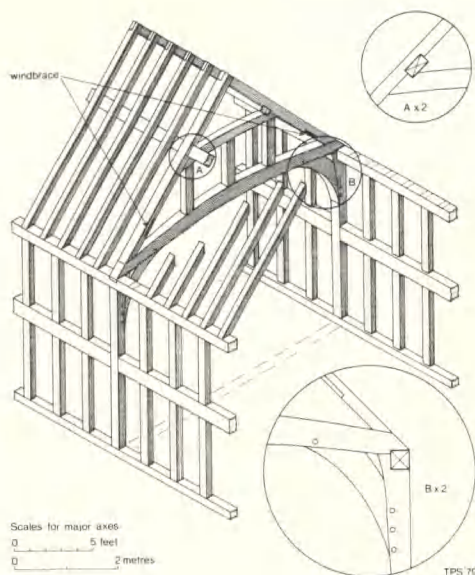


Fig 2 Isometric reconstruction of central (open) truss of hall, with inset details.

tral storey-post was inserted into truss D-D. At its west end it was tenoned into a lateral main joist, beyond which there was a further portion of longitudinal main joist. Along most of the length of the main joist, on its underside, was a series of mortises, presumably for a partition wall dividing buttery from pantry.

Bays D and E were ceiled at ground-floor level: during demolition details of floor construction in bay D were visible. These were 6 by 6in oak joists placed at 1ft intervals.

Scarf-joints, all placed over principal members, were of edge-halved type with, on the evidence of one peg, bridled butts; precise details were not ascertainable, though the general type is well represented in Bedfordshire and elsewhere.⁴ Other joints in the building were of mortise-and-tenon type. Principal posts were well jowelled, except in the late-framing extension to the east end.

Panel infills, where not replaced by brick, were of wattle-and-daub or, occasionally, laths. Where wattles were used a few had their ends in holes in the vertical timbers, but in most cases were simply sprung against the timbers.

There was little in the way of decoration in the building, except for plain chamfers on the main joists and on the king-stud in truss C-C. The latter had simple run-out stops (Jones and Smith type A1). The main joist in bay C had stops of Jones and Smith type A2.⁵

DATING AND BUILDING SEQUENCE

The original building clearly consisted of an open hall occupying bays A and B with a central open truss, B-B (fig 2). Truss A-A had been rebuilt, so there was no indication of any projection beyond this point, unless it be significant that the brick rebuilding of the west end extended *slightly* beyond what appears to have been the north-west principal post of truss A-A. It cannot be absolutely ruled out that there was a further bay or even a cross-wing westwards of the present structure and containing the usual solar above a storage room or 'cellar': certainly there was space for this between the west end and the present road line (fig 1). Certainly too this is the arrangement that one would expect in a building of 'classic' hall-house type. The opposing doorways, the cross-beam X-X, and the position of the stack are taken to indicate the 'lower' end of the hall with the screens-passage within bay B. Beyond this were the service rooms – buttery and pantry – divided by a partition wall down the centre of bay C. It is unclear why the east end walls of the service rooms should have been close-studded, especially when the side walls were of wide-panel framing. At first-floor level this is not puzzling, since the room here may be accepted as a private chamber.

The wall-plate scarfs above truss D-D and the continuous side-purlins indicate clearly enough that bay D is of one build with bays A-C. The studs of its end wall (= truss E-E), though more widely spaced than those in truss C-C and truss D-D, are still quite close; they are flush with the east side of rail and tie-beam, and probably this was the original eastern extent of the building. The purpose of the rooms here is uncertain; there was no communication with the rest of the building at first-floor level and possibly none at ground-floor level (*vide supra*). The lower room may have been a kitchen, with a fireplace where the later stack was placed in truss E-E; the upper room would then probably be a private chamber. Alternatively, both rooms may have been private chambers. Or, if there really were no communication with the rest of the building, these rooms may have been used only for storage.

An open hall-house is, of course, a medieval concept and in a building of this size, with a large hall measuring 28ft (including the screens passage) by 18ft, would be unexpected much after 1500. The well-curved wind-braces also indicate a date not later than the mid-sixteenth century.⁶ On the other hand, the side-purlin

roof – rather than a crown-purlin roof – indicates, in this area, a relatively late date, as does the close studding in parts of the building.⁷ A date c.1500 or a little later seems most likely, comparable with the hall-houses at 115-117 Great North Road, Eaton Socon (demolished)⁸ and Crowhill Farm, Bolnhurst,⁹ both of open-hall-house type and both similar in size to the Harlington building. The edge-halved scarfs are consistent with, though they do not prove, such a dating, as are the few chamfer-stops which have been recorded.

At some later date the open hall was floored over and, contemporaneously, a stack was inserted in the former screens passage. The large fireplaces with massive timber lintels are consistent with a date in the mid- to late sixteenth century, when one would expect such a development in a building of this size. There is, however, no firm dating evidence.

At a later date still bay E was added at the eastern end. Its framing was consistent throughout, and though of thin timbers and with braces 'breaking' the studs, the carpentry was not unsound. It probably belonged to the early eighteenth century.

THE LATER DIVISION INTO COTTAGES

As indicated in the introduction, the building was later divided into a series of five cottages, probably during the early nineteenth century and certainly before 1867.¹⁰ Extra fenestration was added, and a wall was built south of the central stack, separating bay B from bay C; presumably the doorways between bays C and D and bays D and E were blocked at this time. Each cottage was provided with a sink as shown in fig 1; there was no surviving sink in bay B in 1979 but the remains of plumbing indicated a position probably within the large inglenook of the fireplace. Plumbing was rudimentary and in bay B included a pipe running free across the entrance lobby at less than head height! For heating, smaller fireplaces were built within the large sixteenth-century fireplaces in bays B and C whilst in bay E a fireplace was used which had probably been added in the eighteenth century; backing it, a small fireplace was added in bay D, whilst an additional fireplace was necessitated in bay A, built with a side stack in the centre of the north wall. Separate stairs for each house were required. That in the north-east corner of bay B (against the central stack) probably represents the stair added when the original open hall was floored over, and was

retained in use. In bay A a newel stair was added within a partitioned-off section in the south-east corner, whilst in bay C a newel stair was built backing that in bay B; in bay D the stair was placed in the south-west angle, in bay E in the south-east angle. There is no indication of sanitary arrangements at this period, and presumably there were none inside the building: the usual shared outside boghouse is to be expected.

Probably late in the nineteenth century, and before the cottages were given street numbers, bays A and B were united as a single cottage (no 59). However, there was no communication at first floor level and both stairs remained in use (and usable until 1973). The three other cottages each occupied a bay: no 61 in bay C, no 63 in bay D, no 65 in bay E.

In a subsequent alteration, probably belonging to the early twentieth century, the building was made into three cottages: bays A and B formed one, bay C another, and bays D and E a third. Water closets were added as indicated on fig 1, one to each cottage, and these necessitated some further alterations. A window in the partition of bay A, between living room/kitchen and W.C. was blocked (for obvious reasons!), whilst the lower part of the inserted stair in bay D was cut away to make room for the W.C. This stair was no longer necessary, since that in bay E also served the one cottage. In a final phase bays C, D and E were combined as a single dwelling with bays A and B remaining separate. Both cottages had electricity but only that generally known as no 65 (bays C, D, E) had gas. A gas stove (c. 1930 in date) had replaced a Victorian cast iron range inserted in the fire place of bay E for cooking but not water heating.¹¹

ACKNOWLEDGEMENTS

The writers are grateful to the present owner of the land, Mr and Mrs W.A. MacCartney, and to Messrs Colley Samp-

son Ltd, Estate Agents, for permission to examine the building. Messrs A. Copper, H.F. Smith, and G.J. Walder helped, at different times, with measuring the building.

NOTES

- 1 There is a good general discussion of late framing techniques in E. Mercer, *English Vernacular Houses*, 1975, 125-6. The best comparable material from a neighbouring county is in Royal Commission on Historical Monuments (England), *An Inventory of . . . West Cambridgeshire*, 1968, *passim*, and *An Inventory of . . . North-East Cambridgeshire*, 1972, xlix and *passim*. Local material will be considered briefly in T.P. Smith, 'Bedfordshire Timber-Framing: Part Five, The Framing of the Walls', *Beds. Magazine*, forthcoming.
- 2 Those in bay A had carpenter's assembly marks.
- 3 There are good examples in N.W. Alcock, 'Timber-Framed Buildings in North Bedfordshire', *Beds. Arch. J.*, 4, 1969, 43-6.
- 4 Locally observed scarf-joints are now easily available in J.M. Bailey, *Timber-Framed Buildings . . . in Bedfordshire and Adjoining Counties*, 1979, 5.
- 5 S.R. Jones and J.T. Smith, 'Chamfer-Stops: a Provisional Mode of Reference', *Vernacular Architecture*, 2, 1971, 12-15.
- 6 Later wind-braces tend to become straight: for closely dated examples: T.P. Smith, 'A Sixteenth-Century Schoolhouse at Alleyne's Grammar School, Stevenage', *Herts. Arch.*, 3, 1973, 110-119.
- 7 For a brief note on the side-purlin roof in Bedfordshire: T.P. Smith, 'A Demolished Timber-Framed Building at Luton', *Beds. Arch. J.*, 7, 73-7; also, T.P. Smith, 'Bedfordshire Timber-Framing: Part Six, Roofs', *Beds. Magazine*, forthcoming. For close-studding: J.T. Smith, 'Timber-Framed Building in England', *Arch. J.*, 122, 1965, 133-58, reprinted in M.J. Swanton (ed.), *Studies in Medieval Domestic Architecture*, Royal Archaeological Institute monograph, 1975, 1-26; also: Smith as in n.1.
- 8 Alcock, 1969, 44-6.
- 9 D.H. Kennett and T.P. Smith, 'Crowhill Farm, Bolnhurst, Bedfordshire: A Timber-Framed Building and its History', *Beds. Arch. J.*, 12, 1977, 57-84.
- 10 Sale catalogue of Harlington, 13 September 1867. Lot 5. Bedfordshire County Record Office, Bedford, Document X95/87.
- 11 Paper completed 25 January 1980.

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Windmill Graffiti at Saint Giles' Church, Totternhoe

TERENCE PAUL SMITH

In 1931, in its *Survey of Ancient Buildings I*, the Bedfordshire Historical Record Society published a photograph of some windmill graffiti on the exterior of the nave of St Giles' Church, Totternhoe, and referred to 'Crudely incised drawings of Post-Mills on the exterior of the nave'.¹ In the same year J. Steele Elliott, in his discussion of Bedfordshire windmills, recorded that 'Engraved in the soft church wall of the nave of the church are sketches of a group [*sic*] of windmills, undoubtedly of early date; together with numerous initials, the dates 1748 and 1753, and sketches of horse-shoes'.² These observations are clearly based entirely on the published photograph; there are, in fact, numerous windmill graffiti, certainly not forming a 'group' and occurring not only on the north, south, and west walls of the nave but also on the north and south walls of the west tower. As well as windmill and horseshoe graffiti there are others of bells, a crown, and 5- and 7-bar gates. The initials and dates (e.g. 'ICMDCCXLVIII' — sc. 'JC, 1748' — and '1753') are intimately associated with the graffiti, and in one case (south wall of nave, towards eastern end; fig 2) a windmill graffiti appears to be signed 'W.F. 1797'. A number of the windmills were left incomplete (fig 2). Many are now in poor condition, especially on the north walls of nave and tower, but also elsewhere (Pl. I, south wall of nave), because of the friable nature of the Totternhoe stone of which the church is built.³

Of particular interest is the early form of all the windmills depicted, despite the relatively late associated dates. Specifically, the short, square sails are of a distinctly medieval type, well seen in the bench-end carving at Bishop's Lydeard church, Somerset, of late fifteenth- or early sixteenth century date.⁴ Such sails were clearly out-of-date by 1559, when a map of Moorfields, London depicted two windmills in 'Fynnesbvrie Field', each with the sails stretching practically the full length of the stocks.⁵ The longer sails are also shown in an illustration from Toddington, dated 1581,⁶ and in the graffiti at Dalham church, Suffolk, included in *English Medieval Graffiti*⁷ though not

certainly of medieval date. A further early feature is that the sails are set symmetrically about the stocks, without the 'leading edge' of later practice.⁸ This in itself, however, is not a specifically medieval feature, since it occurs (with the longer sails) in the Moorfield map of 1559. The idea of designing the sails with a leading edge probably dates from early in the seventeenth century. In general appearance the Totternhoe windmills are similar to the surviving windmill, probably of early seventeenth-century date, at Bourn, Cambs.⁹ To sum up the evidence for dating: the general form of the mills at Totternhoe allows a date either in the medieval or in the early post-medieval period, whilst the form of the sails strongly suggests a date in the Middle Ages. The execution of the graffiti, however, almost certainly dates from the eighteenth century. Presumably this indicates the survival of medieval-type windmills into the eighteenth century somewhere in the vicinity of Totternhoe. There is nothing implausible in this: some of the earliest references to windmills come from this area (Leighton Buzzard, 1212; Dunstable, 1221, Studham, 1230), and the Bourn, Cambs. and Pitstone, Bucks.¹⁰ windmills indicate the possibility of survival (with repairs) through more than three centuries: a windmill erected in the late fifteenth or the early sixteenth century, that is to say, could survive until the eighteenth century.

Windmills appeared late in the history of technology — much later than water-mills and animal- (usually horse-) mills — and were probably a mid- or late twelfth-century English invention.¹¹ Throughout the Middle Ages the vast majority of windmills were of wooden post-mill type. There is some evidence for occasional tower-mills, for example a reference of 1294-5 to *uno molendino ventrico de petra* newly constructed at Dover Castle;¹² a stone windmill can hardly be a post-mill, although it is less certain that what is meant is a tower-mill proper — that is, a tower with a separately turning cap.¹³

However that may be, the Totternhoe windmills are certainly typically medieval in being of

post-mill type. Each mill (fig 1 and fig 2) has a simple box-like body with no windows shown in the front face (the only face drawn in every illustration). The Bourn and Pitstone mills have walls of clapboarding, which is excellently rendered in the Bishop's Lydeard bench-end carving and is shown also in the Moorfields map illustrations. An alternative form of walling apparently consisted of vertical planking, as seems to be shown on the Walsoken brass (of continental manufacture, of 1349) at St Margaret's church, King's Lynn,¹⁴ and in a seventeenth-century manuscript illustration of a mill at Milton Bryan, Beds.¹⁵ At Totternhoe neither of these methods is shown; the body of each mill is covered with a series of criss-crossing diagonal lines: possibly this is an attempt to represent shingles covering the walls.

The roofs of the Totternhoe mills are of simple gable type, familiar from the Luttrell Psalter illustration (fourteenth-century)¹⁶ and from other illustrations as well as from the surviving mill at Bourn. Atop the gable is a small flag (shown also in the Moorfields map and the Dalham graffiti), the purpose of which was to enable the miller to judge at a glance the direction of the wind, so that he could turn the mill *into* the wind.¹⁷

This latter task was performed by pushing on the long tail-pole projecting from the rear of the mill (or alternatively by hitching a horse to the pole so that it could pull the mill round); the fan-tail, a device enabling the mill to turn itself into the right direction, was not patented until 1745,¹⁸ and even after that some windmills (e.g. Stevington, Beds.¹⁹) continued to be turned by using a tail-pole. A very long, slightly curved tail-pole is shown attached to most of the Totternhoe mills (though strictly this would not be visible from the front face, which is invariably shown in the Totternhoe graffiti).

Access to a post-mill was through a doorway in the rear face (therefore not visible in the Totternhoe graffiti); this was reached by a ladder. The Luttrell Psalter illustration shows a short ladder which possibly was not a permanent fixture; in most cases, however, the ladder was fixed to the mill and therefore had to stop a few inches short of the ground, to enable the mill to revolve freely.²⁰ As with the tail-poles, the ladder should not be fully visible from the front face, although in a number of the Totternhoe graffiti, by the same device of 'twisted perspective', the ladder is in fact shown, sometimes represented just by two parallel lines but in other cases with the rungs

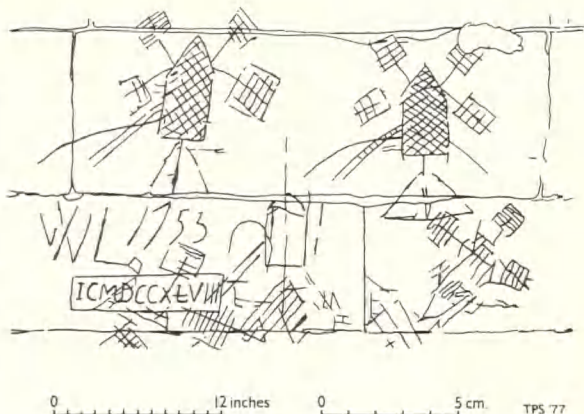


Fig. 1 Graffiti on the south wall of the nave (western end) of Totternhoe Church.

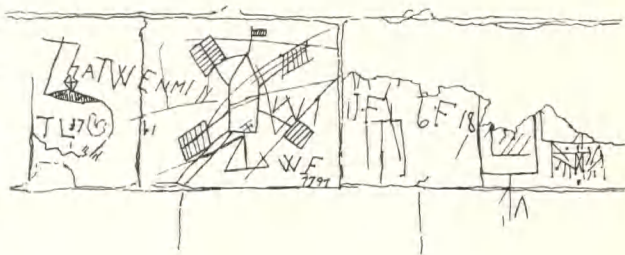


Fig. 2 Graffiti on the south wall of the nave (eastern end) of Totternhoe Church.

depicted as well. The ladders are long, comparable with the one shown in the Moorfields map and with that on the Walsoken brass at King's Lynn.

In each of the complete graffiti at Totternhoe the supporting structure consists of the post (represented by a single vertical line) resting on an horizontal line (representing the cross-trees) and supported by two (visible) braces (doubtless representing four braces, one of which would be invisible from the front and one of which would be impossible to show in the conventions used by the Totternhoe illustrator). The method of support by cross-trees and four braces was fully developed by the later Middle Ages.²¹ In connexion with the development of this method of support, the excavation,

by D.N. Hall and others, at Strixton, Northants., is of considerable importance.²² Pottery and other finds dated the first windmill on the site to the early thirteenth century – not much after the first documentary references of the late twelfth century. This early mill, so it would appear, possessed a post standing in its own post-hole and supported by four inclined struts, each standing in its own independent post-hole with no horizontal linkage. Such a system, of course, failed to provide a properly triangulated frame, and could hardly have withstood for any length of time the vibrations set up in working the mill. It is not surprising that the mill had only a short life. A development is found at Bridlington, Yorks., where cross-trees of a sort – four independent, not two crossed, timbers – were revealed in excavation; presumably the inner end of each timber was tenoned into the central post.²³ Back at Strixton, probably in the later thirteenth century, a substructure of cross-trees set in shallow trenches was already achieved. By the time of the Totternhoe graffiti, this method of supporting a post-mill was probably the only one in use.

The Totternhoe graffiti are an important piece of visual evidence – along with the various manuscript and other illustrations – for the history of the windmill. But they are in a poor state of preservation – many of them beyond saving. This is due to the nature of Totternhoe stone, not to any neglect.²⁴

NOTES

- 1 Beds. Hist. Rec. Soc., *Survey of Ancient Buildings*, 1, 1931, Fig 36 and p.6.
- 2 J. Steele Elliott, 'The Windmills of Bedfordshire: Past and Present', *Beds. Hist. Rec. Soc.*, 14, 1931, 46.
- 3 For this stone see E. Roberts, 'Totternhoe Stone and Flint in Hertfordshire Churches', *Med. Arch.*, 18, 1974, 66-89.
- 4 J. Salmon, 'The Windmill in English Medieval Art', *JBAA*, 3rd series, 6, 1941, 96 and pl. ix; T.P. Smith, 'The English Medieval Windmill', *History Today*, 28, 1978, 257.
- 5 M. R. Holmes, *Moorfields in 1559*, 1963, pull-out plate at end and passim.
- 6 A.F. Cirket, *Stevington Mill*, 1966, first unnumbered plate.
- 7 V. Pritchard, *English Medieval Graffiti*, 1967, 136-7.
- 8 Smith, 1978, 262; N. Cossons, *The BP Book of Industrial Archaeology*, 1975, 60: 'By the eighteenth century the symmetrical sail had given way to the "common sail" . . . in which the whole surface area was on the trailing side of the stock'. Royal Commission on Historical Monuments, *An Inventory of . . . West Cambridgeshire*, 1968, 25-6.
- 9 Bedfordshire mills: Elliott, 1931, 4; Pitstone: Cossons, 1975, 56.
- 10 L. White jr, *Medieval Technology and Social Change*, 1962, 85sq. and idem, 'Medieval Engineering and the Sociology of Knowledge', *Pacific Historical Review*, 44, 1975, 11 and n.31. White concludes that 'toward 1185 someone, almost certainly in northeastern England, invented the horizontal axle windmill . . .'; the evidence is that four of the first six instances of windmills 'occur in northeastern England'. But Oseney Abbey, which is one of the four, is in Oxfordshire. The wider distribution of earliest examples thus involved perhaps implies a somewhat earlier date of invention – say, around the middle of the twelfth century.
- 11 J. Salmon, personal communication, 11 April 1978.
- 12 Cf. Smith, 1978, 263.
- 13 Illustrated in Smith, 1978, 262.
- 14 Cirket, 1966, first unnumbered plate.
- 15 Illustrated in Smith, 1978, 258.
- 16 Smith, 1978, 262.
- 17 Cossons, 1975, 62-3.
- 18 Cirket, 1966, 9.
- 19 Smith, 1978, 260.
- 20 A suggested typology, with a diagram, is given in Smith, 1978, 258-60, diagram at 261.
- 21 D.N. Hall, 'A Thirteenth-Century Windmill Site at Strixton, Northamptonshire', *Beds. Arch. J.*, 8, 1973, 109-18.
- 22 J.R. Earnshaw, 'The Site of a Medieval Post Mill at Bridlington', *Yorks. Arch. J.*, 45, 1973, 19-40.
- 23 A word of warning: the condition of these graffiti is so bad that on no account should any attempt be carried out to make rubbed impressions of them; nor indeed should they be touched. (Paper completed May 1978).

The Bedfordshire Archaeological Council is indebted to the Bedfordshire County Council for a grant towards the costs of this paper.

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