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Contents

A Review of Palaeolithic finds from Southern Cambridgeshire Tim Reynolds	5
The Lingwood Wells: Waterlogged remains from a first millennium BC settlement at Cottenham, Cambridgeshire Christopher Evans with contributions by R Darrah, J D Hill, P Murphy and P Wiltshire	11
A Bronze Age Enclosure at Fulbourn Hospital, Fulbourn, Cambridgeshire R Brown and D Score, Contributions by A Barclay, P Blinkhorn, T Durden, M Robinson and B Wilson	31
Roman kilns at Penfold Farm, Milton W H C Frend	45
A Medieval Kiln at Colne, Cambridgeshire Hilary Healey, Tim Malim and Kit Watson	49
Brickmaking Accounts for Wisbech, 1333–1356 David Sherlock	59
A New Building at the Dominican Priory, Emmanuel College, Cambridge, and associated Fourteenth Century Bawsey Floor Tiles Alison Dickens	71
The Bulwark, Earith, Cambridgeshire C C Taylor	81
Fen Draining: detection in the archives N James	87
Archaeological Investigations in Cambridgeshire: A National Overview Nicholas Davis	93
Reviews Sue Oosthuizen, Alison Taylor, John Alexander & Tony Baggs	97
Field-Work in Cambridgeshire Tim Reynolds	101
<i>Index</i>	107
Abbreviations	112

A Review of Palaeolithic finds from Southern Cambridgeshire

Tim Reynolds

The British Isles have been occupied for at least 500,000 years (Roberts 1986), during which time substantial environmental changes have taken place. These environmental changes have been sequenced and plotted, and both compared and correlated with Continental evidence. As a result of the development of research into these environmental changes several different terminologies have been applied to the Pleistocene sequence. In this paper stages will follow the sequence put forward by Mitchell *et al.* (1973) and Sparks & West (1972), which runs as follows:

Name.	Climate.	Date (Years BP)
Flandrian	Warm	12 000–Present
Devensian	Cold	105–12 000
Ipswichian	Warm	130–105 000
Wolstonian Complex	Cold/Warm	360–130 000
Hoxnian	Warm	425–360 000
Anglian	Cold	440–425 000
Cromerian Complex	Warm/Cold	525–440 000

Dating for the sequence remains tentative, as problems with obtaining dates and correlations are many. The above sequence is based upon type sites from terrestrial locations whilst the fullest record is provided by oxygen isotope studies of deep sea core materials (Shackleton and Opdyke 1973). Many difficulties exist in attempting correlations and this issue will be returned to later.

Geology

The geology of the Cambridge area has been studied for a long time (Marr 1919, 1926; Seeley 1866; Worssam and Taylor 1969) and the gravels found along the river valleys are well known. The long history of interest in the Cam gravels means that much of the following account is based on the Cam rather than the Ouse but terrace deposits from one system map into the other (Edmonds and Dinham 1965). The Pleistocene landscape was very different from that of the present day in the form of its drainage systems, valley formations and topography. Areas now drained by the Thames system were once drained around the Chilterns and through the Cam-Ouse area to combine with a greater Rhine river system running across what is now occupied by

the North Sea. The Thames system separated from that of the Ouse as a result of the Anglian ice sheet blocking the Vale of St Albans (Gibbard 1985; Wymer 1991) and through river capture. The basis for the present river system was laid down after at least two cold phases, the Anglian and the Wolstonian, had passed across the region. All the existing Pleistocene terrace deposits of the Ouse in Cambridgeshire are believed to post-date the Wolstonian, but the patchy distribution of boulder clay on uplands derives from both the Lowestoft Till of Anglian age and the Gipping Till of Wolstonian date. The earliest deposit of interest to this paper is that of the Observatory gravels which lie on a ridge between the Observatory and Girton village near Cambridge. These gravels are not, in fact, river gravels of present Cam-Ouse system but result from glacial outwash dating to the end of the Wolstonian. In them, Acheulean tools (handaxes and flake scrapers) have been found at the Travellers Rest pit to the west of Huntingdon Road, Cambridge (Burkitt 1931a and b; Marr 1919). These materials set the scene for the river terrace finds in demonstrating a pre-Ipswichian Acheulean presence in the area.

A total of four terraces have been identified within the Cam-Ouse system (Edmonds & Dinham 1965; Gallois 1988; Worssam & Taylor 1969) between Bedford and Ely, being successively younger as terrace height decreases. The fourth terrace, mapped at Longstanton, is tentatively dated to the Ipswichian but has not produced any floral or faunal remains to support such a date. The third terrace, by way of contrast, has produced a considerable amount of evidence and is much more widely distributed. The terrace is particularly well studied at Histon Road in Cambridge where pollen shows a sequence from interglacial zone *f*, which is mixed oak forest, through *g* (forest dominated by hornbeam) to *h* and *i* (forests with pine and then birch in significant numbers). This sequence shows a move from optimum interglacial conditions such as the mixed oak forest, to a cooler climate dominated by conifers. Freshwater marls at the same site yielded mollusc assemblages which confirmed this pattern of environmental change (Sparks and West 1959).

A gravel deposit at Barrington in Cambridge is recorded as Third Terrace and produced *Hippopotamus* remains along with other species which indicate a warm climate, whilst at Barnwell in Cambridge, Third Terrace gravels produced the mollusc *Corbicula fluminalis* which today lives in Syria and the Nile (this species also occurred at Histon Road). The Third Terrace lies between 64 and 40 feet above ordnance datum in the Huntingdonshire Ouse valley.

The Second Terrace has been studied at a site in Sidgwick Avenue, Cambridge, where well-drained calcareous soils were present in a variety of marsh and shallow water conditions. This terrace surface was built up as a series of constantly shifting braided channels crossed it. It is attributed to early glacial (Devensian) times although the presence of *Corbicula fluminalis* at Milton Road, Cambridge might suggest a late Ipswichian date. The Second Terrace lies between 33 and 16 feet above ordnance datum but grades into the First Terrace at c. 16 feet. In terms of mapping, the Geological Survey often group the First and Second Terraces together. Where the First Terrace can be separated from the Second, it lies between 10 and 16 feet above datum. The terrace has yielded Arctic flora and cold climate mollusc, insect and mammal faunas at a pit near Barnwell, Cambridge. Patterns of earlier drainage channels within the existing Cam-Ouse system can occasionally be plotted and a good example of this may be seen in Worssam and Taylor (1969:90) for the area north of Cambridge.

In summary, four terraces are known, intermittently present, with the highest (fourth) present and mapped only near Longstanton whilst the remaining three are more widespread. Dating evidence for the Fourth Terrace is lacking but the Third Terrace is well placed within the central and later part of an Interglacial. The Second Terrace is sometimes difficult to separate from the First Terrace and dates to either the end of an Interglacial or the start of an early glacial. The First Terrace is the last in the sequence and has biological indicators of glacial conditions

Archaeological Discoveries

The first find from the Ouse was at Biddenham, near Bedford in April 1861, whilst the first find from the Cam came from Barnwell in 1862. The Barnwell find was particularly interesting in introducing a new component, a worked elephant rib-bone, to the cultural assemblage. After these finds, antiquarians were drawn to the Cam-Ouse terraces and a series of isolated finds reported (Browne 1974; Burkitt 1931a & b, 1945; Coote 1948; Garood 1929, 1933; Griffith 1879; Hughes 1884; Marr 1909; Reid Moir 1923; Smith 1915; Wright 1886). All these finds had more or less the same pattern, handaxes (and more rarely, scrapers) from gravel pits, mostly from spoilheaps. Finds *in situ* were then, as now, very rare. The handaxes recovered were a variety of shapes, *bout coupé* and ovates being the most common forms, whilst edge conditions varied from sharp to very abraded and rolled. This pattern of occasional and isolated finds remains to the

present day but there are occasionally larger numbers of pieces found. Of particular note are the collections of materials from Little Paxton, St Neots and St Ives (Broad 1989; Paterson & Tebbutt 1947; Roe 1968a; Tebbutt 1927). Once again these collections are not huge and do not all derive from a single site (for each parish) but there is a clear pattern to the material recovered. The materials so far collected comprise a Levallois-using late Acheulean complex which is dominated by the production of *bout coupé* and ovate handaxes. The frequency of handaxes has been exaggerated by the selective action of collectors, for hundreds of such tools have been recovered. Other handaxe forms present include triangular, amygdaloid and ficron types. Most of the axes seen by the author have been made on large flakes rather than cobbles, and exploitation of the terrace gravels themselves is likely to have provided some of the used raw materials but with use of fresh chalk flint predominating for manufacture of the ovates and *bout coupé* bifaces. Occasionally handaxes occur which retain some cortex, usually on the butt or platform end. Where this occurs the cortex is worn and hard, no soft fresh chalky cortex remains.

Coupled to this biface production is use of Levallois technique. Typical tortoise cores occur at Fenstanton, St Ives and Little Paxton (Roe 1981). The Levallois flakes produced include both oval and elongate (blade-like) forms with platform preparation. A classic Baker's Hole type Levallois flake has been recovered from above a peat at Somersham, albeit with retouch along one edge. Flakes and flake tools are relatively rare, probably as a result of collector bias, but the usual Acheulean tool forms occur: a variety of scrapers on flakes (including transverse forms), notches and denticulates. There are few pointed forms in the flake component, and occasional blades, a low frequency element, are significant.

Edge conditions of the material are very variable, with some very fresh material and even possible refits present in some Paxton collections, whilst from the same pit came rolled and abraded pieces. Patination states vary from the orange-browns of ferruginous gravels to cream and white.

At the time of Roe's Gazetteer (1968a) of Lower and Middle Palaeolithic sites a total of over 100 handaxe yielding sites were known in Cambridgeshire alone. This number has been increased through chance finds during gravel extraction and during archaeological investigations of unrelated sites (Macaulay 1994; Roberts 1995), although excavations of Palaeolithic sites are still lacking. At the time of writing (1998) there are 115 provenanced Palaeolithic finds and 65 unprovenanced finds in Cambridgeshire. An important collection of material, handaxes, cores and flakes was discovered during 1993–4 at Fen Drayton and Bluntisham which has been placed in the Museum of Archaeology and Anthropology, University of Cambridge, whilst an assemblage of faunal remains, including mammoth, bovids, cervids and lion was also recovered during this time from a gravel quarry at St Ives. Other mammoth remains have been found

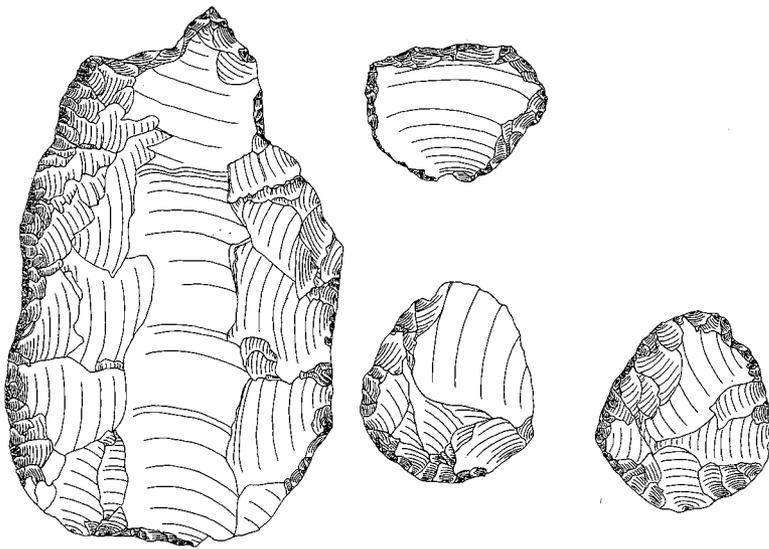


Figure 1.



Figure 2.

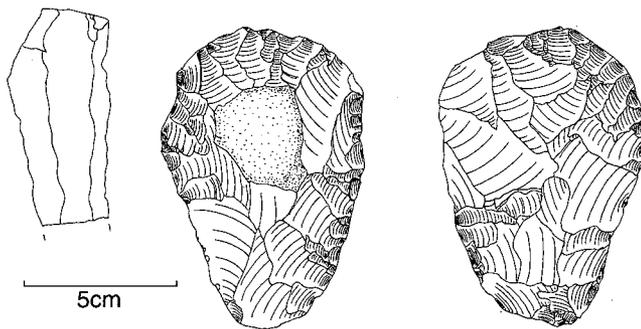


Figure 3.

at Earith and Somersham. Also in Somersham, gravel extraction has revealed a basal peat and worked material included handaxes, flake tools and flakes.

All the Cam-Ouse terraces except the Fourth Terrace have produced archaeological materials, and well-preserved faunal remains also occur. It is clear that archaeologists are currently missing a significant amount of potential information whilst gravel extraction continues unmonitored. It is unfortunate that this material has not been synthesised earlier as a substantial amount of gravel extraction has taken place unmonitored while sharp and fresh conditioned artefacts have been occasionally collected. Studies of associations between artefacts, and between artefacts, fauna and environment, are potentially the most valuable contributions the River Great Ouse can make to archaeology. It would seem that the materials collected so far span the Ipswichian–Devensian periods, on the basis of floral and faunal correlations which would put the material in the date range of 130,000–10,000 BP. Given the typology and technology of the artefacts, dates of between 130,000 and 40,000 BP are acceptable. The First and Second Terrace handaxes are dominated by *bout coupé* forms whilst the Third Terrace has greater variety of handaxe forms. The variety of forms in the Third Terrace is matched by the earliest evidence in the region so far from the Traveller's Rest Pit. This pattern is presently obscure because of collection bias and the difficulty in associating any isolated finds with specific terrace deposits but if it can be demonstrated more effectively, a significant pattern in the typological sequence would be established. Presently, comparable material occurs on the Continent spanning the same period but there the *bout coupé* handaxe has been taken as a type fossil of the Mousterian of Acheulean Tradition, a late form of Mousterian generally dated to between 60,000 and 40,000 BP. If the tentative pattern suggested above can be established for Ouse valley handaxe forms these comparisons may become more effective.

There are, however, problems in correlating artefacts with the deposits in which they are found. This is particularly the case for the collected material which has no clear association with individual deposits within terrace formations. These problems are compounded by the reworking of terrace gravels during their deposition and subsequently by periglacial action, as described by Wymer (1992). It should be noted, however, that fine-grained, high-resolution deposits do occur within the Ouse terrace formations, that fresh edged materials and well preserved fauna also derive from these sediments and so the research potential of these deposits for Palaeolithic archaeology is high. However, based upon observations made over the last three years, it is clear that the bulk of fresh material and fauna derives from the lowest 0.30m of the 1st/2nd Terrace deposits, immediately above the interface with the Jurassic clays. The important issue is to recognise such deposits when they are exposed during the extraction process and to be in a position to mobilise appropriate resources quickly to gain the most information possible.

It is clear that the Cam-Ouse system in Cambridgeshire has yielded substantial numbers of artefacts dating between 130,000 and 40,000 BP. At present no whole, *in situ* assemblages have been recovered and associating cultural material with environmental data remains to be effectively accomplished. There is sufficient evidence, however, to suggest that, subject to monitoring, it is only a matter of time until mineral extraction impacts upon an *in situ* Palaeolithic campsite. This would be highly significant because it would provide a pivotal study around which re-examination of previous finds could be based. It would also enable the associations of lithics and fauna to be examined and thereby inform upon the economy of the hominids. Such a find could additionally provide a means of obtaining firmer dates for the deposits and so enhance our current understanding of the sequence. It would also provide materials which could be compared with the Continental evidence and so identify local, from more general, adaptations. Additionally, it is important to re-examine the dating of the terraces and the materials themselves for the *bout coupé* is a late (60,000–40,000 BP) type fossil on the Continent but appears to be earlier in the Cam-Ouse system. Is this correct?

The question arises here as to how material is dated to the Ipswichian. At the time of the cited studies at Histon Road, Cambridge, and the dating of the Great Ouse/Cam terraces, dates were calculated using terrestrial correlations. This is problematic because the terrestrial sequence is often truncated by erosional events. Since the terraces were dated, deep sea core research has produced a continuous sequence of O16:18 ratios which are a direct reflection of the amount of ice present at any time and thence climatic conditions. This continuous sequence has shown that there is another warm period (oxygen isotope stage 3) between the Flandrian and the Ipswichian (which is stage 5) (Bowen *et al.* 1989). Could it be that the Cam-Ouse terrace system dates, not to stage 5, but to stage 3? If the latter view is correct then the typological pattern of the Cam-Ouse artefacts would be a better fit to those of the Continent. This issue requires further work.

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The Lingwood Wells: Waterlogged remains from a first millennium BC settlement at Cottenham, Cambridgeshire

Christopher Evans

with contributions by R Darrah, J D Hill, P Murphy and P Wiltshire

During the evaluation of a later Bronze Age/Early Iron Age scatter, finds from waterlogged features included what are probably parts of a tripartite disc wheel and bowl/scoop fragment. Lines of postholes suggest rectangular structures, and the existence of hedges can be inferred from the site's environmental remains. More tangible evidence of such organic boundaries have been recovered from other excavations of this date within the area and their ramifications for land allotment patterns are discussed.

The ready provision of on-site water is an obvious prerequisite for permanent settlement, and its introduction (i.e. wells) arguably marks a turning point in later prehistory. This paper reports the excavation of a cluster of Early Iron Age waterlogged wells that was undertaken by the Cambridge Archaeological Unit (CAU) of the University of Cambridge. It occurred as part of an English Heritage Fenland Management Project (FMP) evaluation of a Bronze Age settlement straddling Smithy Fen Engine Drove at Lingwood Farm Cottenham, Cambridgeshire (COT 5; TL 5415/7115; Evans 1993b; Hall & Coles 1994). Although our picture of the site is hampered by its strict sample-grid exposure, these investigations serve as a vehicle to discuss the results of a number of similar terminal Bronze Age/Early Iron Age sites in the region, in which the recovery variously of evidence of long houses (or at least rectangular post settings) and hedged landscapes suggests a major 'horizon'. Their occurrence and further study may eventually inform of insular traditions, continental influence and material culture transition (i.e. metalwork), in contrast to what seems a continuum of the 'domestic'.

Methodology and context

Located near to the peat fen-edge immediately south of the Old West River, a number of Fenland Survey scatters cluster within 0.5km of the Lingwood site (Fig. 1). Associated with dense cropmarks, Sites 2 & 4 to the west are respectively of Late Iron Age/Roman and Roman attribution; to the east, Site 6 is a small Early Iron Age scatter (Hall 1996: 136, Fig. 75). While the latter was originally thought to be

'open' (unenclosed), subsequent reconnaissance has shown that it is also associated with cropmark ditches and a sub-rectangular enclosure (Fig. 2). It was in Wilburton Fen, just north of the Old West, that a renowned later Bronze Age founder's hoard was discovered in 1882 (Evans 1884; Brown & Blin-Stoyle 1959).

In November 1992 the Lingwood site was field-walked and sample investigated; brief return was made in the July of the following year to further excavate features in its southwestern quarter. Only the northern extent (?half) of the site was investigated as the field southwest of the drove lay under set-aside. Its partial investigation was due to the fact that it had apparently been mis-plotted in the course of the Fenland Survey (at TL 45137137; Hall 1996: Fig. 75). When inspected in the winter of 1991/92 no surface material was present at that location and, instead, a scatter of flint-tempered sherds was found 200m to the south. This displacement was confirmed in the next season's ploughing and the decision was then made to proceed with investigation, even though only part of the site was available. Although it is unenclosed and has no definite cropmark register, by this southeastern shift the site's position would correlate with a major cropmark boundary which runs southwest-northeast across the field immediately south of the drove. In all likelihood this relates to Roman field systems (Hall 1996: Fig. 75).

Relatively few sites of later Bronze/earlier Iron Age attribution were recovered during the Fenland Survey, and subsequent developer-funded initiatives within the region confirm the low surface representation of such settlements. 100% fieldwalking collection, by 10m² units, was made across the 0.8ha of the Lingwood site. As defined by pottery densities of two/three sherds or more per unit, the 3450 sq m core of the spread was targeted for in-depth investigation. To evaluate total topsoil artefact densities, metre square test pits (TP1-5) were hand dug at the corners of this central zone (40m²) and, another, in its middle. Thereafter eleven 5m² test stations (TS7-17) were excavated, on an axially staggered 20m grid, to investigate cross-site feature distribution. The 279 sq m area cover

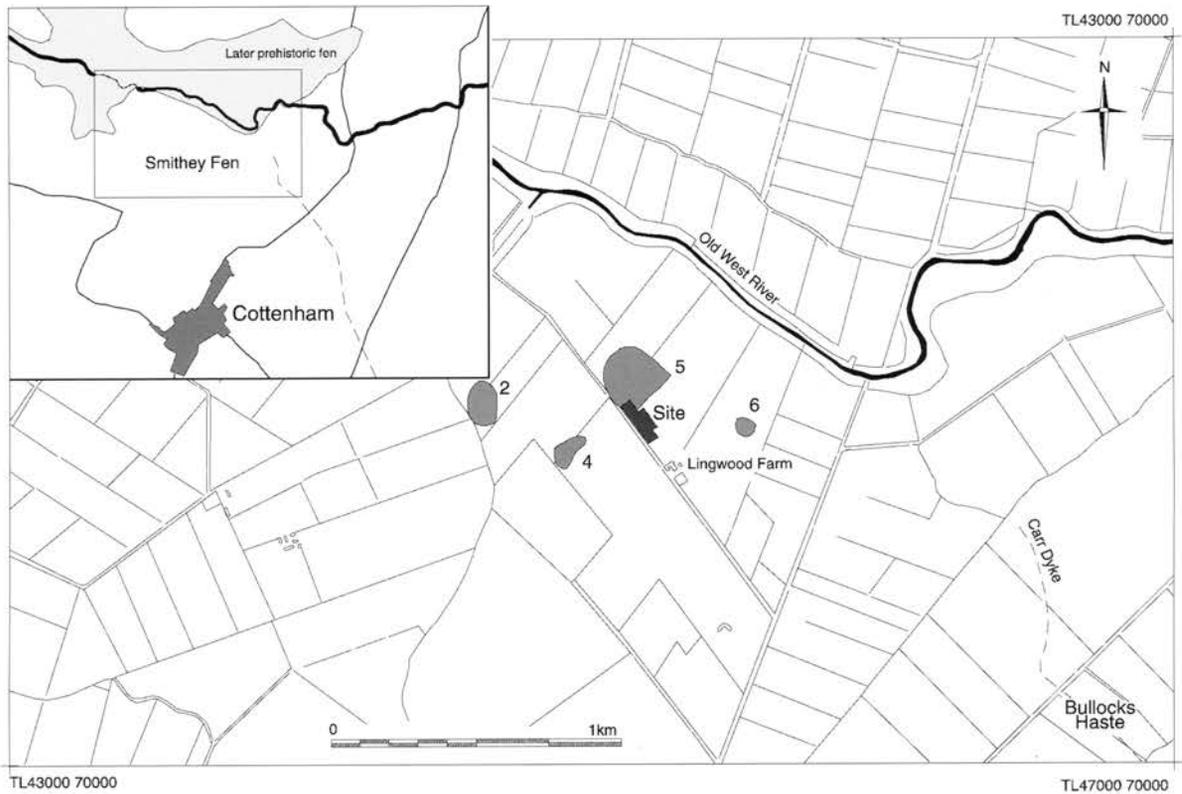


Figure 1. Top - Site location; note that '5' indicates Fenland Survey plotted site location.

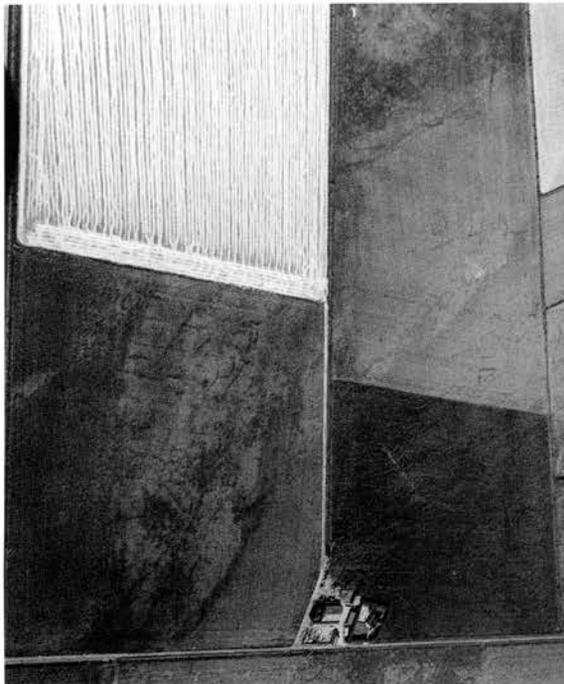


Figure 2. The Lingwood Farm complex – as re-located the Cottenham 5 spread falls amid the 'dark splotch' in the bottom left (west of the farm buildings). Whereas the 'crack-line'/'ice-wedge' patterns there visible all seem of periglacial origin, note the sub-square cropmark north of the farm associated with the Site 6 scatter (upper right; photography by R. Palmer, Aerial Photographic Services)

of the test pits and stations represents a basic 8% in-depth sample of the settlement's core (Fig. 3).

Fifty-four features were recorded (121 contexts). To further trace the extent of some, trenches were also dug along the west and southwestern margin of the site (TS 10 was also laterally extended on two sides to delineate a structure), taking the total excavation sample to 12.6%. Providing only a series of dispersed 'windows' across the site, the inadequacies of this type of formal sampling programme for such archaeology are obvious. The methodologies employed were the standard procedures of the FMP and were designed with the principle of interrelating plough- and sub-soil distributions (see Evans, forthcoming a). They, nevertheless, allowed for the characterisation of sites with only limited area destruction in the event that they warranted scheduling. Certainly such sample-exposure means that it is inappropriate to discuss settlement layout and individual features at length. This was not an open-area excavation and the data should not be stretched beyond its limits. Yet interpretative confidence is gained by the fact that the array of feature types which were found are largely typical of other settlements of the period: field system ditches, wells, four-poster structures and other post-hole configurations. These need not be described in detail. Rather, the focus of this report is with the well complex exposed in its southwestern quarter, both as a context for waterlogged remains and its closed-group finds assemblage.

Two samples were dated from this feature group (from wood in the primary fills of F. 1). While not

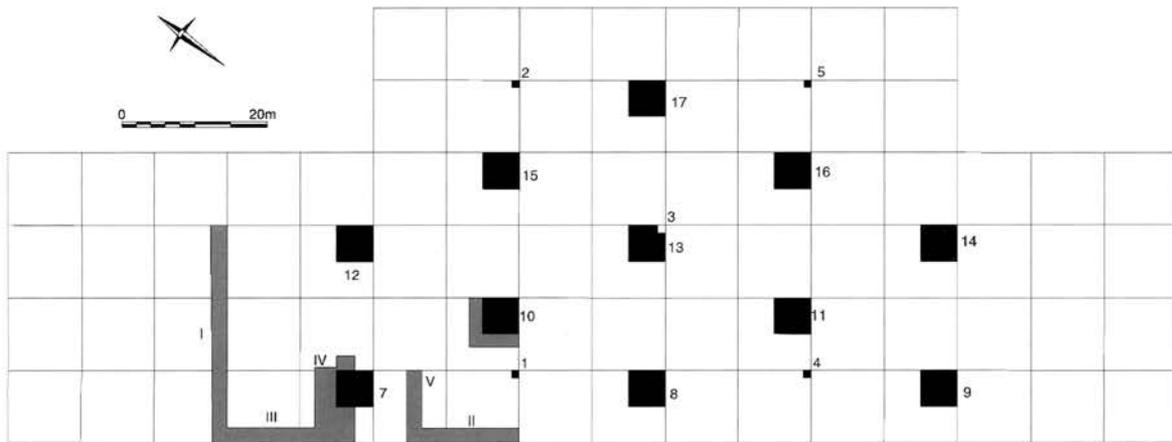


Figure 3. The sample grid: 1-5 indicates test pits; 7-17 five-metre test stations; I-V (grey tone), additional trenching.

statistically significantly different, when calibrated they fall within the mid 1st millennium BC radiocarbon 'plateau':

- 1) 2490 ± 60BP; cal. BC 800–510 (68% confidence); 810–400 (95%; GU-5731)
- 2) 2480 ± 50BP; cal. BC 780–510 (68% confidence); 800–400 (95%; GU-5732).

Topography and soils

Located on fen skirtland, the site lies on a slight rise. The ground surface falls away from 3.70m OD along its southeastern margin to c. 3.30m OD in the west and north. This slope is all but unnoticeable and, on the whole, the immediate topography is unremarkable.

Generally consisting of orange silty clay, only along the southern margin of the site did the subsoil have any substantial sand and/or gravel component. This was overlain by a homogeneous buried soil horizon of mid-dark grey-brown loam (0.10–0.20m thick). No horizontal cultural strata survived (i.e. feature-associated banks or surfaces). When machining the buried soil, ard/plough lines were recognised in the 'B'-horizon. Oriented north/northwest-south/southeast, given that very few (modern) plough scars were visible in the top of the buried soil, these would seem to derive from pre 20th century agriculture and are probably late prehistoric/Roman. It was probably this activity that eradicated any strata and truncated the top of the sub-soil features, resulting in their non-distinction/survival within the upper buried soil level (see French in Evans 1994a, Appendix VI for soil micromorphological studies). The ploughsoil was a heavy clay loam, and the combined depth of the top-soil cover varied from 0.35 to 0.50m (buried & plough-soil).

Surface finds and buried soil densities

508 artefacts were recovered through fieldwalking, including 180 pieces of prehistoric pottery and six Romano-British sherds (Fig. 4).¹ The site could be seen resolving itself by surface densities of three sherds per collection unit. Five sherds or more occurred within a 40m² 'middle zone' and within this core two highs are

apparent: the west-central southern margin (two occurrences of 11 sherds each) and in the centre-north (17/16 sherds).

This definition pattern is matched by the lithic distributions (125 and 141 worked and burnt flints recovered respectively; Fig. 4). Of this material, with the exception of a few Neolithic blades and blade fragments, there are virtually no artefacts which are diagnostic of particular periods. This paucity of tool types and the technological characteristics of the assemblage suggest a Middle Bronze Age attribution (Edmonds in Evans 1994a, Appendix I). The site could be defined by densities of both worked and burnt flint greater than two per unit. However, the lithic distributions extend further west than the pottery and, despite a general fit between the finds categories, rogue values locally occur beyond the site's targeted core. Whilst perhaps just a product of the fact that the settlement is unenclosed, there can be no certainty that the scatter is discrete.

Worked flint was recovered in every test pit with an average density of 4.4 pieces (range 2–10). Pottery was present in all but the north-westernmost with a range of 0–26 pieces (average 10.2 including two nil values). The densities roughly correlate with those from the fieldwalking except in the case of the north-easternmost, which was unaccountably high (16 pieces of pottery and 10 flints). The buried soil lay thick there (0.50m), either suggesting that greater top-soil masking may have locally skewed surface recovery and/or the location of a feature.²

The central test station was selected to specifically investigate the relationship between buried soil densities and sub-soil features. Alternative metres were carefully hand-excavated with the central square dug in 2 cm spits. Quantities of material were recovered. Ranging from 1 to 6 pieces, worked flint occurred on an average of 2.8 per metre, with pottery varying from 3 to 13 pieces (6.75 average). This excludes the central spit-excavated square in which 34 sherds were found; its inclusion takes the average density of pottery up to 8.8 per metre.

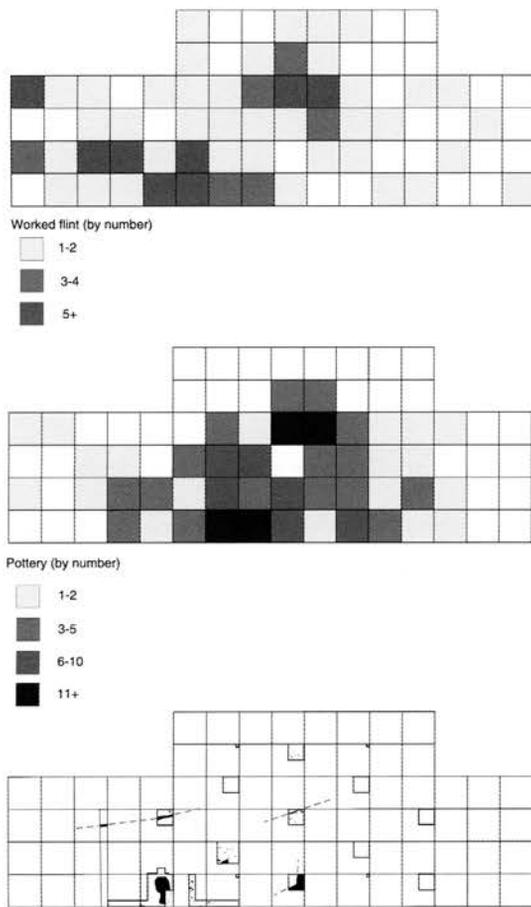


Figure 4. Middle and top – surface densities by 10m²; bottom, features

In-depth Investigations

Features were found in five test stations across the southwestern quarter of the site (7, 8, 10, 12 & 13) and in the northernmost (17; Fig. 4 & 5). A 0.70–90m wide ditch was found to run east-west across Test Station 12 (F. 3), which, as excavated, was 0.15–25m deep. However, the ‘ghosted’ traces of its profile could be made out for a further height of 0.15m within the buried soil. The ditch was observed to continue across Trench I and, to the east, probably equates with F. 8 in Test Station 13. In the latter instance, as excavated it was much reduced, only 0.15–25m wide and c. 50mm deep. While within the buried soil profile the ditch section was more substantial (0.40m wide and 0.20m deep in total), this may have been a minor parallel ‘linear’ (see below). Only one other (definite) feature was excavated in Test Station 12, either a small concave-profiled pit or posthole (F. 7; 0.40 x .45m; 0.15m deep).

Six minor postholes were excavated in Test Station 13 (50mm–15m deep; F. 20–23, 25 & 56). Although alignments can be distinguished, they do not constitute any regular structural pattern; an ard-mark was also recorded (F. 9).

Apart from what seemed an ard-line (F. 14; though in hindsight this may be a cart rut; cf. Welland Bank, see below), the only features found in Test Station 17 were four postholes 0.10–.25m deep (F. 10–13). Set in a regular square (1.75 x 1.45m), this would seem a classic four-poster. Its location, beyond/north of the F. 3/8 ditch-line at the edge of the surface spread, would have parallels with the settlement-marginal distribution of such structures on other later settlements.

Four postholes were also present in Test Station 10 (F. 15–18), all were large and relatively uniform (c. 0.20m in diameter; 0.25–.30m deep). Yet, unlike those in the northernmost square (17), they did not

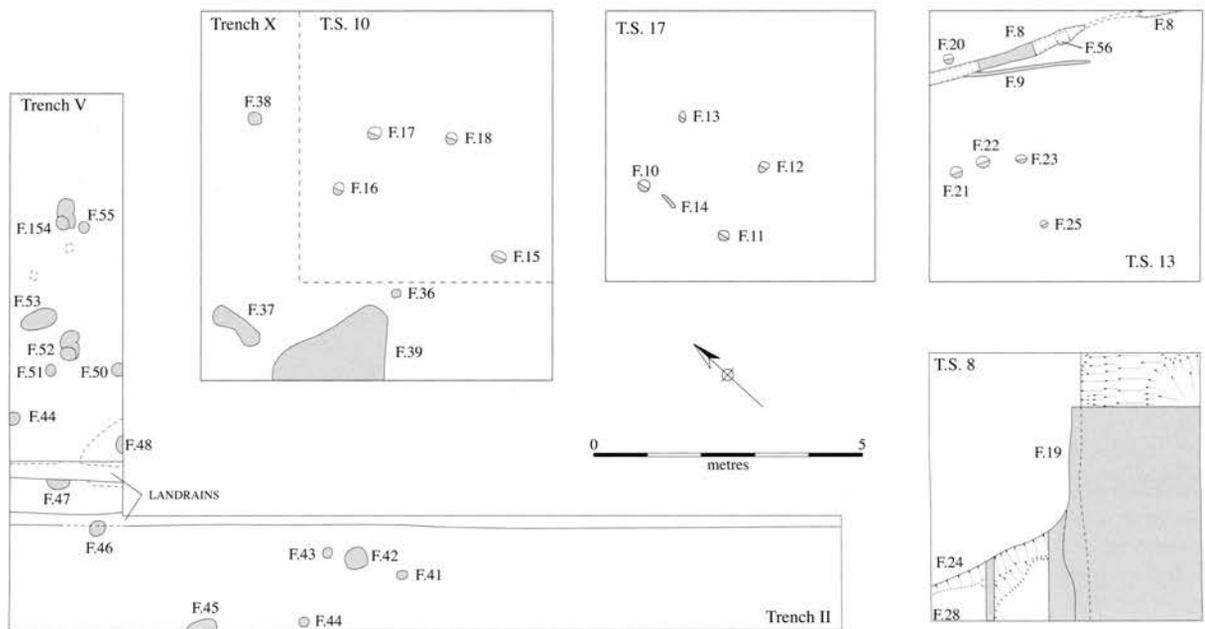


Figure 5. The central Test Station/Trench features

form a regular pattern. In order to understand their distribution, the western and southern sides of the square were extended by 1.75m. Three other post-holes, including one double (F. 36–8), and a large pit (F. 39) were thus found. However, even over this greater area the postholes did not resolve into an obvious structural pattern. While two alignments of three posts each can be distinguished (F. 17, 18 & 38; F. 15, 36 & 37), these are not parallel and, alternatively, they may rather relate to an irregular (sub-) circular setting.

A complex ditch/pit configuration excavated in Test Station 8. F. 19 appeared to be a north-south oriented linear feature some 2.50m+ wide whose western side sloped down broadly to a flattish, if irregular, base 0.6m deep (east side not exposed). Recovered from the upper fill of this feature, which consisted of peat below subsided ploughsoil (in which were scorched lenses probably from burning off vegetation), were 19th and 20th century finds, and its profile had obviously been open until quite recently. Below this was dark grey/brown silty clay (buried soil-derived) with iron panned gravels, from whose basal deposits only two sherds of later prehistoric pottery were found (a few Roman sherds were also present).

Whilst possibly reflecting the re-cut earthwork survival of a Roman ditch-line, in all likelihood the entire feature is of late date and probably relates to quarrying. Its stratified horizons could reflect that the buried soil had been stripped from the immediate area during the course of small-scale gravel extraction and subsequently deposited into the bottom of the quarry trench. This matter was made more complicated due to the fact that its western edge was apparently

continuous with the upper line of an 'early' feature (24) that extended along the southwestern side of the square. In the main, this seemed to be a sub-circular 0.80m+ deep pit/well. Backfilled with deposits of silty sand and gravel, quantities of later prehistoric artefacts were recovered from its upper subsided fill (mid-dark grey sandy clay silt), including much charcoal. Although substantially deeper, its edges would complement a western return of the F. 19 ditch-line. A posthole (F. 27) and gully (F. 28) were thought to be identified below this subsidence horizon. However, that no similar settlement-type features were found to extend exterior to these features (i.e. in the top of adjacent natural) would suggest they were probably the result of tree-rooting.

The recovery of postholes in Test Station 10 continued into the (unexcavated) trenches along the southern side of the site: Trench II, F. 41–46; Trench V, F. 47–55. Some were quite substantial (e.g. F. 42: 0.40m in diameter) and there were a number of double-post settings (F. 52–4). Although given the limited scale of the area investigated interpretative certainty is impossible, these would not seem to resolve into circular patterns but rather have linear distributions. Two, NW-SE oriented parallel lines can be distinguished: F. 45–47, 49 and F. 41–3, 50–53. Lying only 2.00–2.50m north of the F. 45 (*et al.*) line the latter alignment extends for 8.50m+. Given this, and the apparent irregularity of their setting/interval, it is difficult to understand this post pattern and, again, interpretation is not abetted by limited exposure. Certainly they do not appear to relate to a circular building and suggest instead either a major fence/post line or a rectangular structure. Conclusive evidence of both have

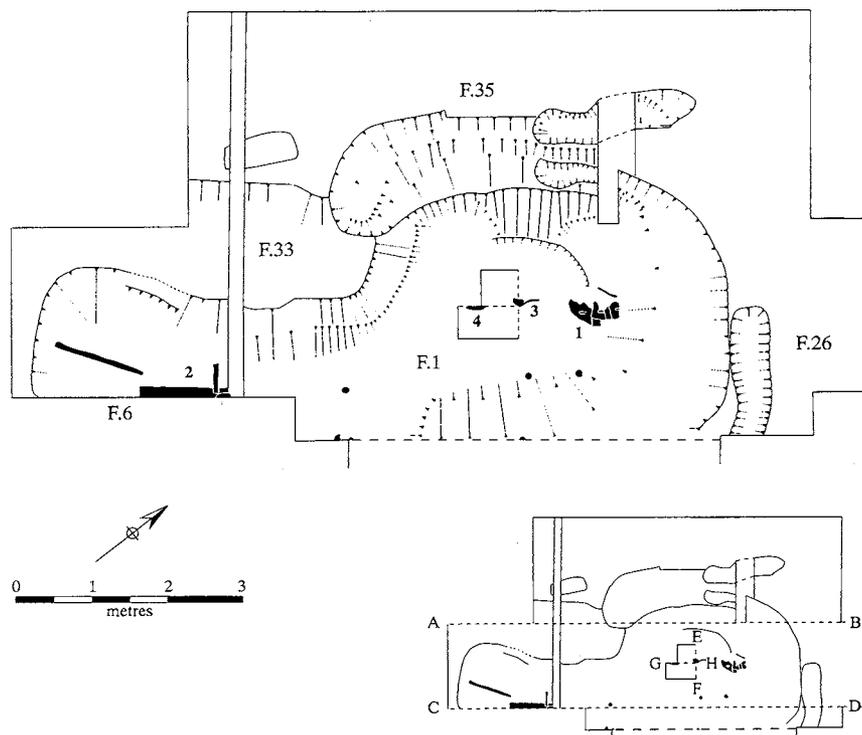


Figure 6. The Test Station 7 wells (with timbers blacked); inset indicates section locations (A-H; see Fig. 7 & 8)

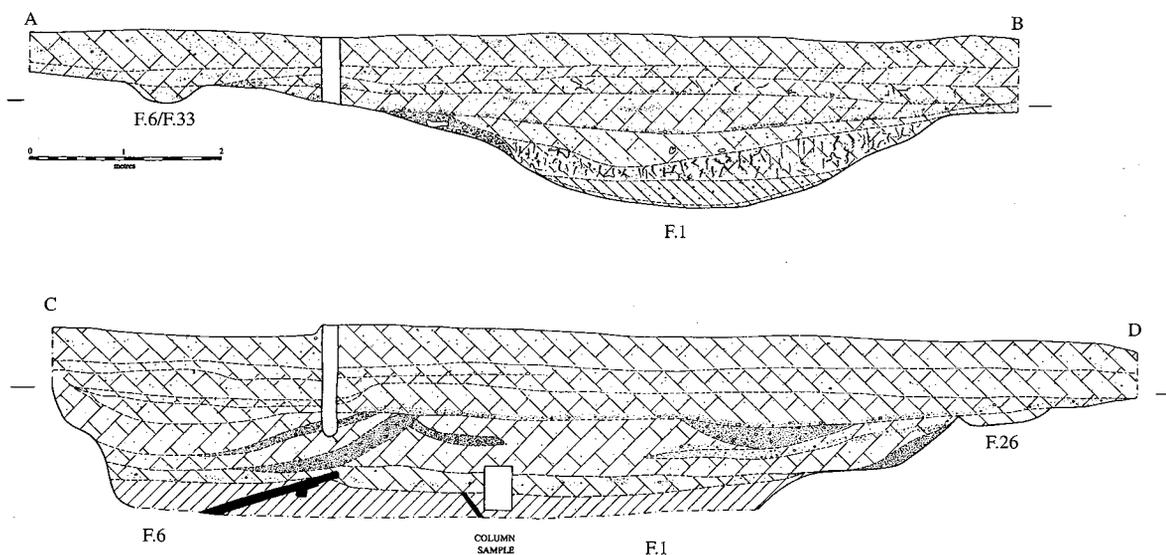


Figure 7. Well sections (with timber elements blackened; see Fig. 6 for location)

been found on later Bronze Age sites within the area, which will be discussed below.

No postholes were present in the trenches west of Test Station 7/8. There, apart from the continuation of the east-west ditch (F. 3/8) into Trench I, the only other feature found was a large pit in Trench III, F. 40.

The Well Complex

Fills extended across the entire area of Test Station 7 and, in order to establish some sense of this feature's extent, a trench was cut along the western edge to expose its north-south limits. An irregular 'T'-shaped

feature-group was revealed (Fig. 6). From its exposure within the test station (F. 1) a rather bulbous, apparently linear, configuration ran along the eastern side of the southern trench extension (F. 6; 1.80m+ wide) that ended in a sub-circular butt 4.50m south of the edge of F. 1. This initially appeared to be the recut corner of a large enclosure ditch with a terminal at its southern end. Mixed with gravel backfills within its upper profile were great quantities of domestic refuse: large pieces of pottery and bone. The southern feature (6) was spit-excavated across its exposed width and a 1.00m wide sondage excavated across F.1.

Digging proved difficult as the water table was high. Persistence in the excavation of these deep features related to the fact that not only were they producing a rich finds assemblage (and providing much needed dating evidence), but also because the lower 0.30–40m of its fills were waterlogged, with quantities of roundwood and worked wood. This included a large split oak plank, sharpened stakes (driven *in situ*) and a fragment of a bowl or scoop/ladle. More important, in the base of F. 1 was found a third of a composite circular wooded piece that was lifted by the Ancient Monuments Laboratory conservators. Detailed cleaning and study revealed this to be a complex jointed piece, with planks pegged by dowels and an inset bar (see Darrah, below).

Upon full excavation F. 6 proved to be c. 1.40m deep; F.1, c. 1.20m (Fig. 7). Two pits were observed to cut through these features (F. 5 & F. 7) and a minor ditch (F. 26) ran parallel along their northern side whose scale and pale leached fills could suggest a relationship to the ditch excavated in TS 12 & 13. Although interpretation had to be qualified by the conditions in which these features were dug, as this phase of fieldwork was completed we still thought that we were dealing with a corner of a ditched enclosure system, albeit one displaying marked irregularities.

Successful application was made to return the following summer to further excavate these features. The

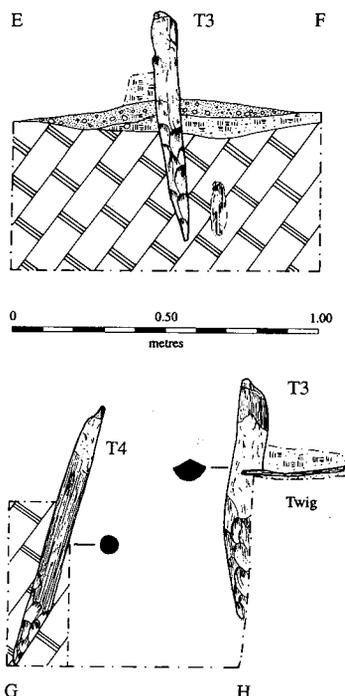


Figure 8. Stake sections in base of Feature 1 (see Fig. 6 for location)

east-west trench was re-opened and extended west (7 x 6.00m). Surprisingly, this feature group butt-ended only 1.50 m beyond the western section of the previous year. Following the removal of the backfill, the western fills (F.1/31) were carefully excavated and the eastern section line cut back by 0.50m. Apart from pottery and bone, further pieces of wood were recovered, including five more driven stakes (*in situ*), one of which had a roundwood rod woven around it, suggesting they perhaps supported a wattle revetment (Fig. 8). Their alignment, the overall form of the feature and its irregular profile (produced through successive collapse and recutting), caused its re-interpretation. Instead of enclosure-related, they were a cluster of intercutting post revetted pit-wells. (This was confirmed by the cutting of Trench VI just east of the side of TS 7, where no linear continuation of these features was found.) The F.1/31 pit group was ringed with irregular linear scoops (F. 35), evidently the result of incidental reduction along its top edges (i.e. a by-product of repeated access).

The Wood Assemblage

P. Murphy

485 pieces of wood were collected during the excavation of the wells. While large items were collected and bagged individually, much of the wood from the site consisted of small roundwood fragments; samples of the latter, comprising up to 125 fragments per context, were amalgamated in single bags. All individually-collected items were recorded and identified, but only sub-samples of the roundwood debris were examined. The wood was generally well-preserved, often with bark, though many stems were indurated due to deposition of iron compounds. This often made it impossible to prepare complete transverse sections, so stem ages could not usually be determined. Identifications were based on Schweingruber (1978).

The overall composition of the wood assemblages from these features is summarised in Figure 9 (excluding the artefacts discussed in the following section). A very high proportion of the material collected was unworked roundwood fragments, mostly short lengths under 100mm. Worked roundwood pieces were uncommon (cut and/or split), making up only 2.4% of the total collection. Other material included chips, shapeless 'chunks' of larger wood with no original surfaces surviving, bark fragments and small abraded fragments.

Identifications are summarised in Figure 10. Overall, the roundwood was mainly of *Corylus* sp.

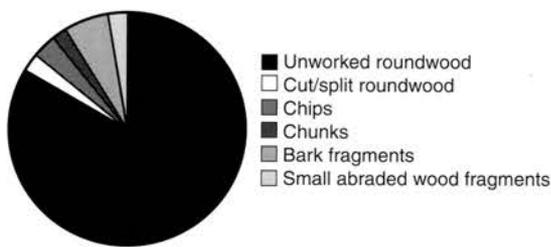


Figure 9. Wood assemblage composition

(hazel), *Fraxinus* sp. (ash) and *Prunus* sp. The *Prunus* wood included some stems with rays >4 cells wide, and in several samples was associated with thorns. It is thought to be predominantly or entirely of *P. spinosa* (blackthorn). Roundwood from trees characteristic of wet soils was also identified, including *Alnus* sp. (alder), *Salix/Populus* sp. (willow/poplar) and *Viburnum* sp. Separation of *V. opulus* (guelder rose) and *V. lantana* (wayfaring tree) is not possible from wood alone, though on ecological grounds *V. opulus* is probably represented, since it is more characteristic of damp soils (Clapham *et al.* 1987). Roundwood stems of *Quercus* sp. (oak) and the *Crataegus* group (Pomoideae: hawthorn, etc.) were also present. Chips of alder, hazel, ash and oak were recorded, and *Acer* sp. (field maple) was represented only by chips.

The distributions of roundwood stem diameters for the three main species are shown in Figure 11. Large stems of ash and hazel (>50mm diameter) had been selected for conversion to stakes which revetted the sides of the features. They were straight stems; no coppiced heels were observed, though a slight widening on one side of an ash stake hinted that the stem was beginning to curve. The roundwood (<50mm) consisted mostly of short fragments, but so far as could be determined straight stems predominated. Some of the *Prunus* stems, however, showed irregular,

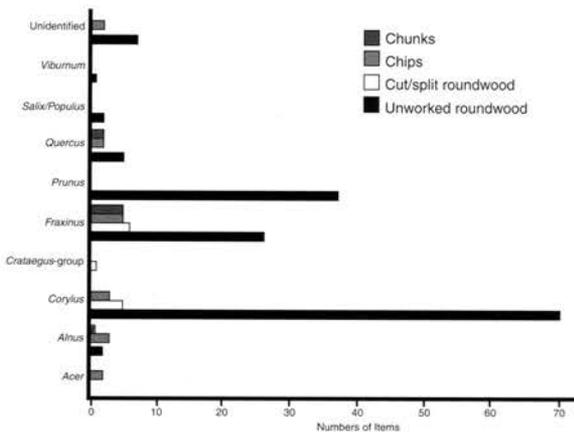


Figure 10. Wood identifications

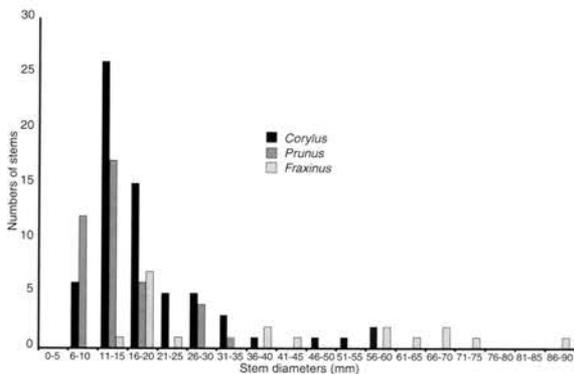


Figure 11. Stem diameters of *Corylus*, *Prunus* and *Fraxinus*

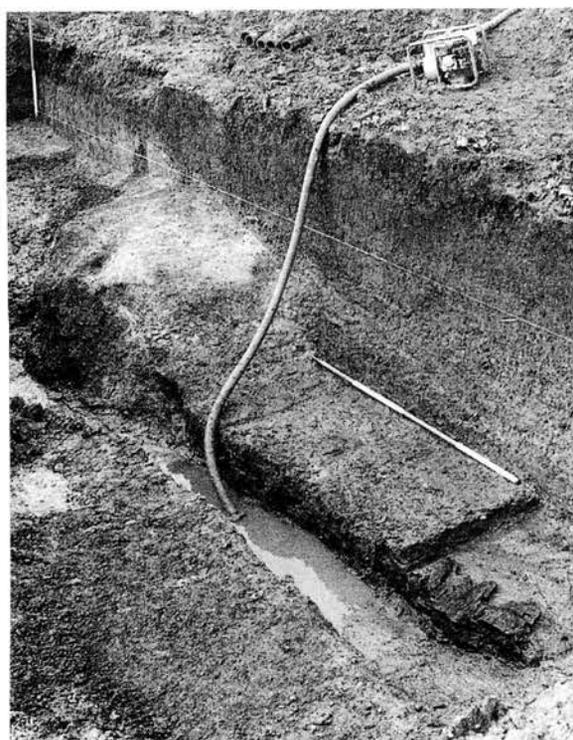


Figure 12. The well complex (F. 1; cf. section A-B, Fig. 7); note the 'fragment' in lower right corner. 1.00 metre scale.

contorted growth. In general, the roundwood stems showed rapid initial growth, with narrow outer rings, suggesting increasing competition for light, water and nutrients. The wood chunks were from larger wood, but apparently not trunk wood.

One piece of split ash roundwood showed surface borings of the ash bark beetle (*Hylesinus fraxini*). The very few wood chips recovered were mostly fragmentary, but at least some had been cut from roundwood.

Apart from the few worked items (see below), there is no reason to think that this wood was intentionally selected for use, and much of it probably represents a 'natural' accumulation of twiggy and thorny debris from adjacent vegetation.³ Almost all is small roundwood and (apart from the oak and ash plank artefacts) there is no distinct evidence for timber trees in the vicinity, but rather shrubs. Nor is there clear evidence for management. No coppiced heels were seen and the variations in growth rates indicated by ring-widths are not specifically diagnostic of intentional coppicing. The wood includes a high proportion of straight stems, but this need not indicate management, particularly in the case of the commonest species – hazel – which is, in effect, 'self-coppicing' and naturally produces long straight stems.

The high proportion of blackthorn stems is unusual, but is paralleled by a collection of wood from Iron Age pit alignments at Meadow Lane, St Ives (Taylor and Pollard 1996). The wood from that site included a blackthorn stem with a right-angled bend, a growth form which may be produced by hedge-laying. Taylor interpreted the St Ives material as debris from a

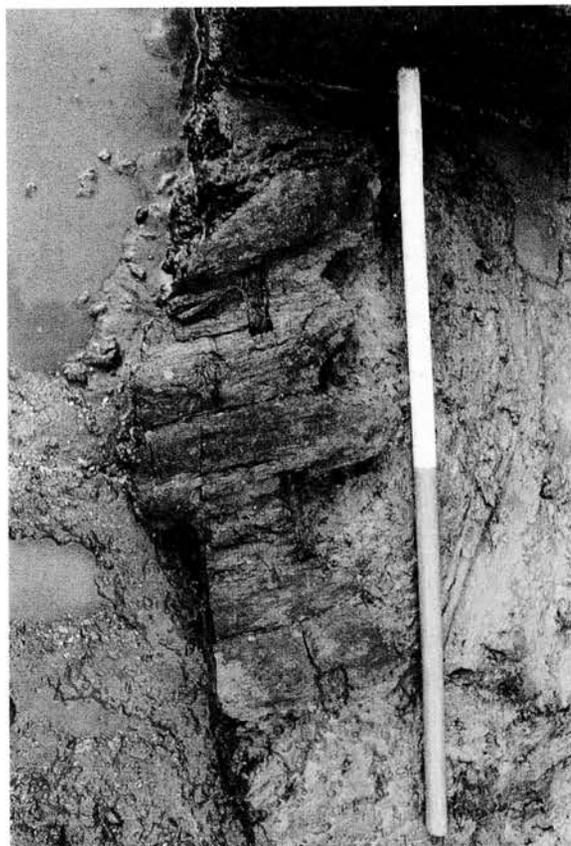


Figure 13. The Lingwood 'fragment' in situ within basal deposits of well F. 1. 1.00 metre scale.

hedge. Although no such bends were noted at Lingwood Farm, contorted and curving stems of blackthorn were present. From the overall species composition and distribution of stem diameters characterising the wood from this site, it seems reasonable to interpret most of the wood as debris from a hedge composed largely of hazel, blackthorn and ash. In practical terms, enclosing the wells within a perimeter hedge would have made sense, for they would have been a potential hazard to stock.⁴

Although pollen preservation was generally poor and only low counts were obtained, the palynological results indicate a generally open landscape of weedy grassland nearby, which is consistent with data obtained from assessment of fruits and seeds (see below). The main trees/shrubs identified from pollen were hazel-type and oak, though at low frequencies. Regular trimming of hedgerow trees and shrubs would have inhibited flowering, so the low pollen percentages of woody taxa are not inconsistent with the presence of hedges at the site. The absence or rarity of pollen of Rosaceae, despite the abundance of *P. spinosa* roundwood, is unsurprising, for sloe is insect-pollinated and therefore produces relatively little pollen.

Wooden artefacts

R. Darrah

A complex piece (T. 1), possibly part of a wheel, was

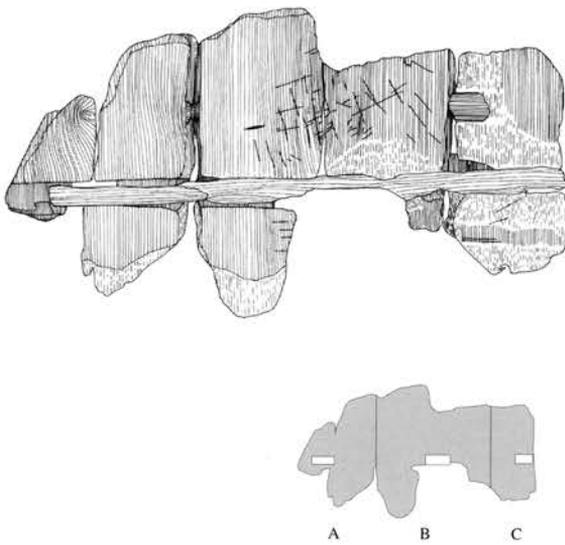


Figure 14. The Lingwood Fragment (lower face; toned inset shows upper face with position of slots cut through to bar channel)

found lying horizontally within F. 1 (Fig. 12 & 13). It consists of three ash planks (A, B & C), joined edge-to-edge by two oak dowels (E & F) and with a channel housing an oak bar (D) lying beneath them. Turned over before being drawn (Fig. 14; Table 1), grain was visible on both faces and appeared well preserved, though there appears to have been considerable loss of structure within the wood. There was no evidence as to the original size of the structure (its edges ‘feather’), nor of its original shape. The three incomplete planks are poorly preserved and each have been fractured; the oak bar is spongy and badly decayed. If all three boards were originally the same width, the piece would have been at least 810mm across.

The grain suggests that plank A was a tangential section across the diameter of the trunk, the pith line from the original centre of the tree can be seen in its surface; the grain is straight and knot free. Plank B is also tangentially cut, but with a slight curve in the grain. ‘C’ is probably radial, although there is insufficient wood remaining to be certain that this not just the radial part of a tangential plank. The oak bar (D) has a radial surface uppermost, and may have been of heart or sapwood; it is straight grained with a growth rate of 2.5mm per year. The dowels were of oak, but have not been removed from their position in the piece or examined so little is known of the section of wood used (E & F).

The upper surface of the piece (on the opposite side

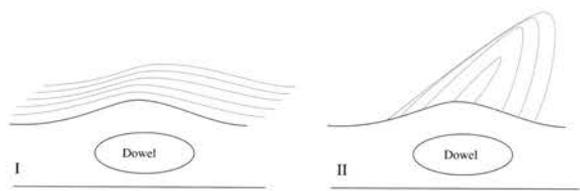


Figure 15. The Lingwood Fragment showing grain direction; I indicates flow of the grain over the dowel suggesting that the wood has been compressed on either side; in II the grain contours the raised area above the dowel and would have been seen if the wood had been carved to this shape



Figure 16. The Lingwood Fragment showing the effect of compression on the cross-section of the channel; the square sectioned channel (I) may become dovetailed when compressed vertically (II)

from the oak bar) has a slot cut through each plank (Fig. 14). Cut into the channel (into which the oak bar fitted from the opposite side), these are the same width as the channel (c. 30mm); the slot in plank A was about 70mm long (the other slots were damaged so that these lengths cannot be determined). Where the ends of the slots survive they have been cut cleanly across the grain with a sharp blade. They are not the result of the channel being cut too deeply, but were intentionally made (Fig. 13). As tool marks are visible on the outer surface this is not a case of the wood decaying down to these holes, but that the holes were originally cut right through. The oak bar was studied *in situ* and there was no evidence of it being shaped to fit into these slots.

That the faces of the planks curve up above dowels, and the wood grain follows this curve, provides the clearest evidence that compression has distorted this find (see Darrah forthcoming concerning compression effects). If the surface had been carved to curve over the dowels then the wood grain would have been cut creating a series of annual ring contour line. (Fig. 15).

The dowel, now oval (28mm x 17mm in cross section), was probably originally circular. This has been compressed and suggests that the compression was about one third of its original depth. Using this measurement the best estimate is that the whole piece has

Table 1. The species dimensions of the ‘wheel’ components.

Part	Description	Species	Section of wood	Tool marks	Dimensions(mm)
A	Outer plank, part missing	Ash	Tangential	present	275 x 190 x 5-40
B	Central plank, part missing	Ash	Tangential	present	320 x 268 x 5-40
C	Outer plank, part missing	Ash	Radial	present	235 x 120 x 5-30
D	Bar	Oak	Radial	none	534 x 30 x 28
E	Dowel	Oak		none seen	diameter 25
F	Dowel	Oak		none seen	diameter 30

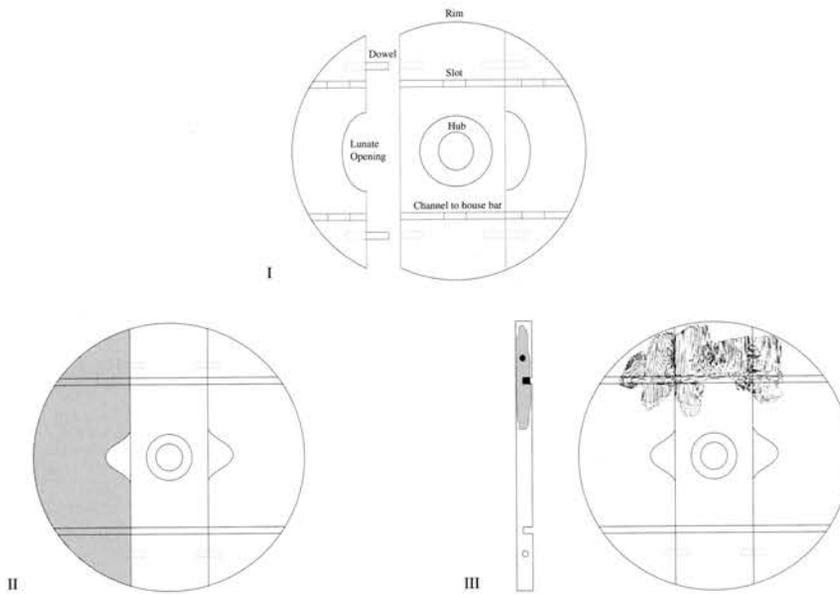


Figure 17. I, tripartite wheel terminology and components; II, the surviving segment of the Flag Fen wheel (not to scale); III, the Lingwood fragment superimposed on a Flag Fen-type wheel outline

been compressed in thickness by approximately this amount. With more detailed measurements this ratio could be refined, but the thickness of the planks varies so widely over their surviving surface area that it is difficult to know which measurements to use. It does strongly suggest, though, that the original thickness of the ash planks was over 60mm, and that the oak bar was probably more than 45mm thick.

The lower face, as found and pictured in Figure 14, had a continuous channel to house the bar cut across all three planks. This was damaged by compression, which makes it impossible to check whether the sides had originally been vertical or a dovetail section (Fig. 16).

The only tool marks seen were those which may have been from an axe on the surface of plank A. These pieces were deliberately worked as the presence of dowel holes, the slots and the channel attest. The jointing of the plank edges suggest careful construction and the cutting of the slots indicates that sharp tools were used to cut across the grain. However, the damage to the object within the ground has masked or destroyed most of the evidence relating to its construction (e.g. whether the channel holding the oak bar originally had dovetailed sides or straight sides). The internal joints (the dowel holes) might not have been so damaged, but these have not been taken apart or examined. Channels and dowel holes are found in earlier, Bronze Age, woodworking, so are not exceptional techniques at this period. If the dowel holes were drilled, rather than gouge-cut then this might be of interest, as would any foxed wedging.

In terms of the diverse wood-types employed in this piece, different species are often used for specific purposes. The planks were of ash, which, while quite light, is tough and resilient but not resilient to rot. It is more difficult to split into planks than oak, and harder work to hew to shape, but its use would render the

finer work in the dowel holes and channel less likely to split. This makes it more surprising that the dowels and bar are not also of ash, but oak. Oak heartwood is more rot resistant, but less able to cope with stress and flexing without splitting.

Ash planks A and B had a growth rate of about 3mm per year near the centre, reducing to about 2mm per year near the outside of the plank. This type of growth could be expected from trees in woodland, where the canopy was not too dense. In smaller pieces there are not enough rings to comment on growth patterns. The width of plank B, the only plank which retains its full width, is 28mm. Unless the wood is being used wastefully this is likely to have come from a tree of diameter 300–350mm (including bark).

This structure may have come from a wheel, or it may relate to a very different object. Wooden wheels are known from the archaeological records as chance finds from peat bogs in Ireland, Scotland and Denmark, and recently, in excavation context, at Flag Fen (Pryor, forthcoming). Although Neolithic wheels were carved from single pieces of wood, the Bronze Age and Iron Age they are made from three planks fixed together with bars of wood and loose tenons or dowels (for terminology see Fig. 17.I). The defining features of wheels from this period include shape (i.e. 'roundness'), a hub, and construction from the joining of three planks using a variety of techniques. The latter include bars set into dovetailed channels across the width of the wheel (e.g. Flag Fen and Ezinge; Weeks 1982), loose tenons (Ezinge) or dowels (Flag Fen) set into the edges of the planks or bars/rods set into bored holes (Duogarymore and Blair Drummond; Sheridan 1996); through slots occur in the Duogarymore example in the National Museum of Ireland.⁵

The Lingwood fragment has been superimposed onto an outline of a Flag Fen-style wheel (Fig. 17. III).

Artefact	Description	Species	Section of wood	Tool marks	Dimensions(mm)	Point type
T. 3/420	Stake point	Crataegus	Split half	Sharp axe	750 x 110 x 55	Multifaceted
T.4/421	Stake point	Fraxinus	Round wood	Blunt axe	710 x 63	Multifaceted
T.5/422	Stake point	Corylus	Round wood	Blunt axe	500 x 55	Multifaceted
T.6/423	Stake point	Fraxinus	Split quarter	Blunt axe	420 x 55	Irregular
T.7/425	Vessel wall, bowl?	Pomoideae	Tangential	None	80 x 60 x 2-4	

Table 2. The form, species, dimensions, and tool marks of the wood artefacts.

The latter has a dovetailed channel, oval dowels, a lunate cut and the circular outline of a wheel segment. While the Lingwood structure could be a wheel (and the presence of the channel, dowels and slots make it likely), no circular outline is present. The three planks also suggest a wheel, however there may have been more than three planks in the original piece. None of the attributes which would unequivocally define this structure as a wheel have survived; the rim, hub, and even secondary features such as the lunate cutaways and the thickening for an integral hub are all missing. It may be a mistake to assume that because one joining technique is used in wheels, that it was exclusively used in their construction. There are certainly features here reminiscent of the Flag Fen and Duogarymore examples, but this may not have been a wheel and it might, for instance, have been part of a door.

Other Pieces

Of the seven uprights within the base of the wells the points of four stakes were recorded (Table 2), all made from wood of less than 120mm diameter. Three have similar tool marks on their points as they had been shaped with a very blunt axe. No tool signatures were seen but the indication is that these three stakes were pointed at the same time. There is no reason to assume that this was a stone axe; tool marks made with a blunt metal axe may be mistaken for those made with a stone axe. Stake T.3/420 was shaped with a much sharper metal blade, which must have been a different axe (Fig. 8).

F.6 produced a tangentially converted large oak plank. 1.53m long, it had a cross-section of 197 x 70mm; the surface was abraded, and showed no tool marks (T. 2; Fig. 7).

A thin piece of pear or hawthorn (Pomoideae) was also recovered (T.7/425; Fig. 18.12). Cut across the grain, its shape was consistent with it being a wood chip (as the waste from an axe cut). However wood chips tend to have both blade marks and splits running across them, even when preservation is poor, but this has neither. This suggests that it is a fragment of a hollowed object, such as a bowl or scoop. There are no striations left by lathe turning, nor any other tool marks on either face.

Plant Macrofossils

P. Murphy

Waterlogged material

Bulk samples and a column sample were collected

from the lower fills of the well F. 1 (Fig. 7):

0–75cm: Brown sandy clay loam; moist, firm; grey clay inclusions; large reddish-brown mottles at base; moderately stony, with flint and quartzite clasts up to 15mm; bone fragments; charcoal; merging contact

75–100cm: Grey sandy clay loam; moist, firm; large reddish-brown mottles; some sand lenses; slightly stony; merging contact

100–117cm: Grey slightly sandy clay loam; waterlogged, soft; large black mottles; rare flints; roundwood fragments; pale grey sand layer at 112cm; sharp contact

117cm+: Coarse grey stony sand (underwater); assumed to be natural gravel.

0.2–.3kg sub-samples from three bulk samples of the basal fills, and another from the column at 100–117cm, were disaggregated. Their organic fractions were separated by manual wash-over (0.5mm and 0.25mm meshes) and scanned at low power for assessment. They included plant macrofossils, roundwood fragments, roots, some monocotyledonous stem and leaf fragments, and charcoal, as well as ostracods, cladoceran ephippia, beetles and fly puparia. Nomenclature follows Stace (1991).

The taxa noted from the basal fill of the well included: Alismataceae indet (water plantain, etc.), *Atriplex patula/nastata* (orache), *Carex* spp. (sedges), *Cerastium* sp. (mouse-ear), *Chenopodium album* (fat-hen), *Eleocharis palustris/uniglumis* (spike-rush), *Lemna* sp. (duckweed: very common), *Polygonum aviculare* (knot grass), *Ranunculus acris/repens/bulbosus* (buttercups), *Rorippa* sp. (water cress), *Rumex* sp. (dock), *Sonchus oleraceus* (sow thistle), *Stellaria media* (chickweed), *Urtica dioica* (nettle). Assemblages of this general type, dominated by weeds and grassland species, with variable amounts of aquatics, have commonly been reported from later prehistoric wells/watering holes in Eastern England (e.g. Murphy 1988, 1997; Wiltshire & Murphy 1998). Whilst full analysis would have enlarged the species list, it was not considered that analysis would alter the conclusion that this basal well fill was deposited under standing water, with damp weedy grassland in the vicinity.

There are, however, grounds for thinking that the well complex dried-out periodically or seasonally as cladoceran ephippia, resistant structures produced in response to environmental stress, particularly desiccation (Schmitt 1973), were observed. The palynological data suggest that there had been differential

decomposition of pollen grains, whilst the absence of iron pyrites framboids (which form and survive only in waterlogged anoxic sediments, in reducing conditions) indicated a relatively high redox potential, pointing to intermittent desiccation (see Wiltshire, below).

Given the abundance of woody plant detritus (principally twigs and thorns), the apparent absence of fruits and seeds of woody taxa is at first sight surprising (e.g. hazel nutshells, sloe fruit stones). Middle/Late Bronze Age and Iron Age wells at Slough House and Chigborough Farms, Essex consistently included macrofossils of trees and shrubs, and in some features they were abundant, reflecting either nearby hedges or patches of scrub (Wiltshire & Murphy 1998). It may be that the samples assessed at Lingwood Farm were too small to detect large macrofossils of this type. However, if (as is argued above) the wood came mainly from hedges, repeated trimming may have inhibited flowering and/or fruiting. Alternatively, almost all fruits or nuts could have been collected by the occupants of the site.

Charred material

Thirty-five bulk samples were processed from the buried soil and tested features (c. 7 litres sub-samples with 0.5mm meshes were used throughout; see Murphy in Evans 1994a, Appendix V). Charcoal densities were low and indeterminate poorly-preserved charred cereal grains were noted in only ten samples in very small numbers: *Triticum* (wheat) grains in three, *Hordeum* (barley) grains in one, *Triticum dicocum* (emmer) glume bases and spikelet bases in two, and *Corylus* (hazel) nutshell in one. Fruits and seeds of *Bromus mollis/secalinus* (brome grass), *Chenopodium album* (fat-hen), *Eleocharis* sp. (spike-rush), *Galium aparine* (goosegrass), *Persicaria* sp, indeterminate Poaceae (grasses) and rhizome fragments occurred, but were generally represented by only single specimens in 1–2 samples.

The fills of posthole F. 27 and pit F. 24 included the highest densities of material (3.6 and 1.7 items per litre of soil respectively). These maximum densities are nevertheless very low, compared to several other Early Iron Age settlement sites in Eastern England (Murphy, in preparation). Although some sort of process involving the use of emmer and barley is indicated, there is no evidence for large-scale cereal processing on site.

Pollen

P. Wiltshire

This section must be prefaced by the fact that the interpretation presented below is based on a qualitative assessment of the material and not a quantified analysis. Samples were examined from depths of 71, 79, 85, 94, 107, 112, 115 and 119cm from a monolith obtained from F.1, with care being taken to sample each distinct horizon in the lithology. Pollen frequency was low; the greatest abundance was found at 85cm and lowest at 112cm, and the paucity of palynomorphs might indicate a rapid accumulation of sediments.

There appeared to be no clear relationship between pollen frequency and lithology, and the limited taxa recorded suggests that differential decomposition had operated within the sediment. This might indicate that, during its history, the feature dried out periodically and became aerated to some extent. There was certainly no evidence of redox potential having been low enough for iron pyrite framboid formation (Wiltshire *et al.*, 1994), as might occur under conditions of persistent standing water. Evidence for slightly wetter conditions were recorded between 85 and 112cm, with *Ranunculus flammula* type (e.g. lesser spearwort) and *Typha angustifolia* (lesser bulrush) being found. However, although Murphy (see above) recorded aquatic plant macrofossils from the feature, lesser spearwort might have been growing around its muddy edges and emergent plants like bur-reed could have been growing in the fen some distance away.

Pollen of Poaceae (grasses) were the most frequently encountered palynomorphs and together with herbs such as *Plantago lanceolata* (ribwort plantain), *Trifolium* type (e.g. clover), *Centaurea nigra* type (e.g. knapweed), and *Ranunculus* type (e.g. buttercup) the data suggests expanses of weedy, grazed grassland in the immediate locality. The presence of cereal-type pollen points to arable as well as pastoral farming being practised in the environs of the site. Areas of open, disturbed and/or trampled ground are indicated by ruderals such as *Rumex undiff.* (docks), *Artemisia* (mugwort), *Plantago major/media* (e.g. greater plantain) and *Chenopodiaceae* (e.g. orache). Damp soils might be indicated by the presence of *Cyperaceae* (sedges), while *Pteridium* (bracken) and *Rumex acetosella* (sheep's sorrel) suggest drier, acid, oligotrophic areas in the locality. The landscape supported trees and shrubs with *Quercus* (oak) and *Coryloid* (cf. *Corylus* hazel) appearing to be the most frequent, especially in the later history of the feature, but *Pinus* (pine) and *Alnus* (alder) were also recorded from the catchment. There is no direct palynological evidence for hedges as suggested by Murphy (see above), but invariably many of the woody plants selected for hedging are thorny, insect pollinated shrubs that rarely feature in the palynological record. Ferns (monolet *Pteropsida*, *Polypodium* and *Pteridium*) might have been growing under trees since all are commonly found as understorey plants today, particularly where the canopy is relatively open. Equally however, many ferns grow in hedge banks and along with sheep's sorrel, bracken might have been infesting the acid grassland.

The palynological assemblage suggests that environs offered a mosaic of soils and habitats. Dominated by weedy grassland (probably pasture), the catchment also had either stands of trees and/or hedges, in which oak and hazel were major components. There were also wet soils and patches of stagnant water supporting emergent vegetation.

The Faunal Assemblage

Producing 323 fragments of bone (434 site total; identified by R. Luff), the faunal assemblage recovered

from the wells is of interest in terms of the development of a sheep-based economy. Not including 110 fragments unassignable to taxa but only size (large/small mammal), by NISP sheep/goat represent 41%; cattle, 36%; pig, 19%; and red deer, 4%. Most later Bronze Age assemblages in the region are dominated by cattle and are more akin to the percentages as represented by the earlier phase features (34 identifiable pieces from F. 24 & 28: 68% cattle; 18.7% sheep/goat; 12.5% pig). Whereas by the later Iron Age sheep/goat generally occur at a level of 50–70%; with 40% in this category, the Early Iron Age assemblage from the Lingwood Wells may have an interim status in relationship to this economic transition.⁶

This change could tell of attitudes towards stock. Over the course of the 1st millennium BC the fen margins were getting markedly wetter and increased sheep/goat specialisation may imply tolerance of such diseases as hoof rot (i.e. what disease factor was considered acceptable loss vs. any sense of economic optimism). Equally noteworthy in the light of these environmental factors and, typical of 1st millennium assemblages from the region, is the absence of marshland species. A dated pollen core from nearby in Willingham Mere indicates the development of marsh conditions from the 8–7th century BC (Waller 1994: 163; Q-2583, 2595±50BP, cal. BC 840–600) and on the neighbouring Upper Delphs terraces its later Iron Age inhabitants were taking considerable numbers of beaver and large fowl (e.g. pelican, swan and crane; Evans & Serjeantson 1988). These, and almost any direct evidence of the ‘marsh’ whatsoever, are missing from the Lingwood assemblages and perhaps suggest that such exploitation as at the Delphs was specialised.

Later Prehistoric Pottery

JD Hill

A single feature, F. 24, produced a small quantity of Middle Bronze Age Deverel-Rimbury style pottery. In addition to two small fragments of flat-topped vertical rims, it contained a complete base from a vessel 170mm in diameter made in a heavily burnt flint tempered fabric with common angular burnt flint inclusions 3–12mm across. The base was complete and appears to have been trimmed, its walls roughly broken to the same height around the circuit. Ethnographic studies provide parallels for the use of bases (e.g. Skibo 1992), and this piece could have been in circulation long after the original vessel had broken. No other distinctly Middle Bronze Age pottery was recovered during the excavations.

The well complex produced a small assemblage of Early Iron Age pottery which, comprising only 177 sherds (1.6kg), is unremarkable in terms of quantity and preservation. No complete vessels, or even profiles, are represented. Rather, the upper fills of the well contained small to medium size sherds (c. 5–25gms in weight) from a number of different vessels. Rarely is the same vessel represented by more than a single sherd. The majority of the assemblage appears to represent ‘rubbish’, dumped into the upper profile of the

well with other material (bone). In other circumstances this collection would probably not warrant detailed discussion, but in the context of the first half the 1st millennium BC within East Anglia any material with a closely associated absolute date is of importance.

In common with the majority of ultimate Late Bronze Age and Early Iron Age pottery assemblages across southern England, the material consists of two main groups: fine and coarse wares. The former are typified by geometric decoration and smoothed or burnished exterior surfaces. The coarse wares are distinguished by fingertip or nail decoration with unsmoothed or unburnished surfaces (Barrett 1980). All but four sherds are made from fossil shell fabrics of different degrees of coarseness; the remainder are tempered with crushed burnt flint.

A range of different fine ware vessels is represented. Two rim sherds come from different simple rounded, slight ‘S’-profiled vessels with out-turned rims (Fig. 18.3 & 4). Both were black to dark grey in colour with smoothed, rather than burnished surfaces. This probably reflects the difficulty of obtaining a true glossy burnished finish of the fossil shell fabrics found in the region. These fine ware bowls would have looked strikingly different to the other fine ware vessels in the assemblage. Of the latter, one was a sharply angled, probably tripartite, bowl as represented by an angular shoulder sherd with three horizontally incised lines (Fig. 18.1) that are reminiscent of the horizontal grooves found on ‘Darmsden-Linton’ style Early Iron Age fine ware bowls from Essex, Suffolk and south Cambridgeshire (Cunliffe 1974, Brown 1996). The fourth vessel is of less certain form. The one sherd present is part of the wall of a wide curved bodied vessel with a very slight, unpronounced shoulder break (Fig. 18.2). Above the shoulder is a zone of incised lines forming a panel of diagonal lines and triangles. This could be from a jar, a vessel much taller than it was wide. Alternately, it can be argued this sherd came from a deep and wide, decorated round bodied bowl typical of the ‘Fengate-Cromer’ style of Early Iron Age pottery (Cunliffe 1974; cf. Pryor 1984).

While the fine wares appear to derive from different forms of bowls, all of the diagnostic coarse wares represented in the well are jars forms. Shapes vary from a rounded high shouldered type with an upright tapered rim (Fig. 18.7) to a sharply shouldered tripartite jar (e.g. Fig. 18.9 and possibly .5) – one with a decorated cordon around the neck (Fig. 18.5) – and a rounded tripartite jar (Fig. 18.0). The few rims are usually flat topped, slightly lipped (Fig. 18.8 & .10). These vessels were only decorated with lines of fingernail impressions; finger-tipping or other round impressions are absent. Fingernail impressions occur on the tops of rims, around the outside of the rim, around the shoulder, neck or lower wall of the vessel.

Overall, the pottery offers a ‘snapshot’ of a 6th century BC assemblage characterised by a marked visual and tactile distinction between fine ware bowls and coarse ware jars. However, even within this small assemblage there is considerable diversity of vessels

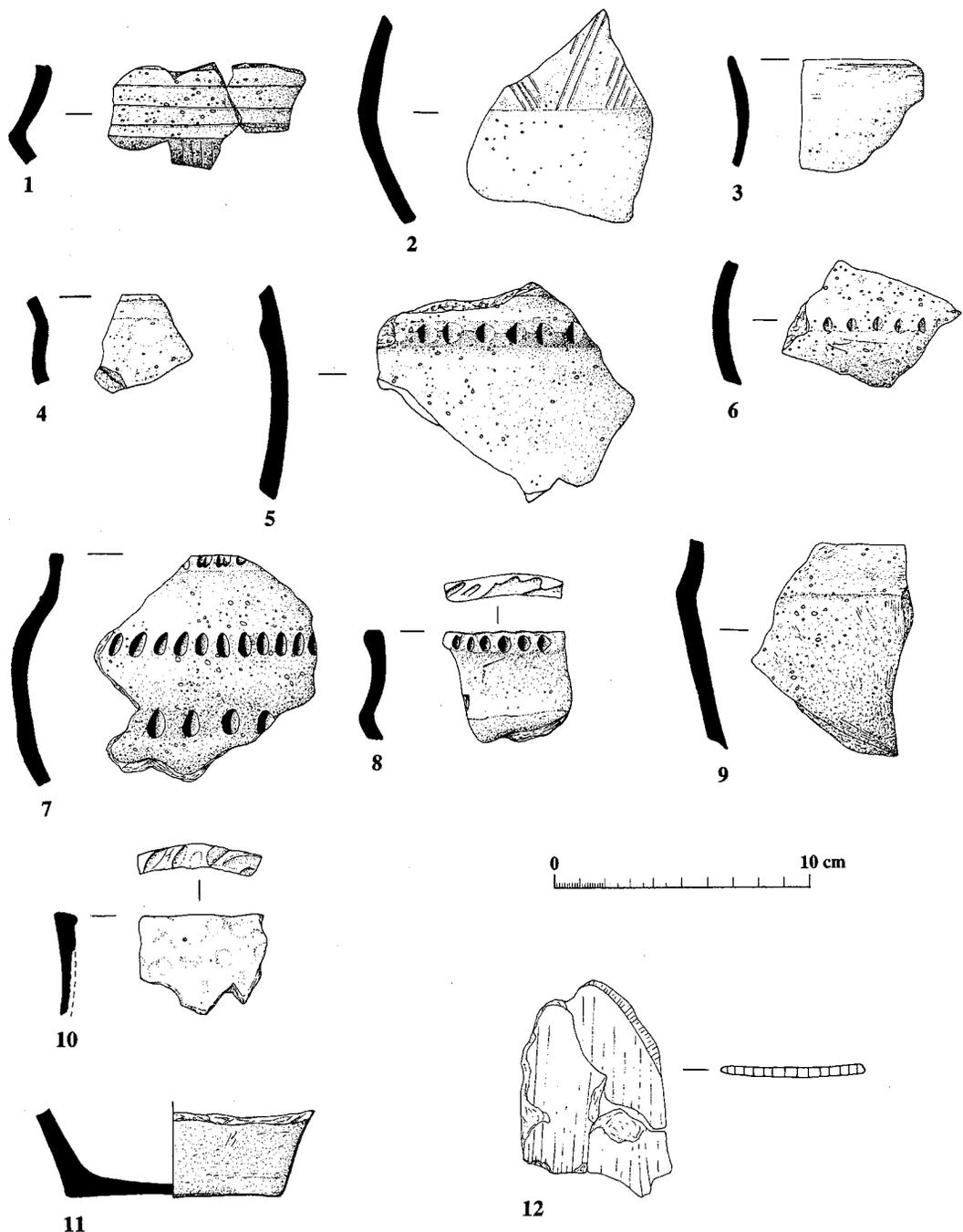


Figure 18. The pottery assemblage (1-11); 12, fragment of wooden bowl/scoop (T. 7/425)

within each category. This variability is also seen in the range of fabrics present. Every sherd is made from a slightly different fabric, with varying densities and sizes of fossil shell inclusions.

Fine Ware Communities?

The lack of a reliable chronology for the late Bronze Age and Early Iron Age lies at the heart of problems which surround our understanding of this period in northern East Anglia. As a result of the paucity of major Iron Age excavations in the region since the 1950s, the dating and distribution of its Late Bronze Age and Early Iron Age pottery has undergone little

revision since Cunliffe's seminal work of the late 1960s (1968; 1974). His identification of broad stylistic zones, based largely on diagnostic fine wares, remains the main chronological pegs to hang the region's pottery sequence upon – the West Harling-Staple Howe, Fengate-Cromer, Darmsden-Linton and Chinnor-Wandlebury styles (Cunliffe 1974). As such, the Late Bronze Age and Early Iron Age ceramic series is still essentially rooted in only a few key sites such as Fengate (Hawkes & Fell 1945), West Harling (Clark & Fell 1953), Linton (Fell 1953) and Wandlebury (Hartley 1956). Dug to varying degrees of stratigraphic and contextual reliability, few have definite metalwork

associations and most are without absolute dates. Establishing detailed and reliable pottery chronologies are key priorities for future work on the Late Bronze Age/Early Iron Age in the region (Bryant 1997); absolute dating of new material and earlier collections is imperative.

This is not the place for a detailed discussion of the chronology and distribution of East Anglian Late Bronze Age and Early Iron Age pottery (see M. Brown 1996, Knight 1984, Hill 1996 and Needham 1996). Although the broad trends identified by Barrett (1980) for southern English Late Bronze Age pottery hold true for the region, local styles, possible conservatism and simply a lack of evidence make close dating a problem. Clear Late Bronze Age traditions are emerging around Peterborough, the central fens and in southern Cambridgeshire (Barrett's 1980 'plain phase' Post Deverel-Rimbury), although details of change in this period, now known to extend from 1200/1100 to 800 BC, are unclear. There are similar problems with the exact details of change within the Early Iron Age (which should now include Barrett's 1980 'decorated phase'). In this period developments within the 'Darmsden-Linton' pottery of south Cambridgeshire, Suffolk and Essex are becoming clearer from recent excavation, but the Fengate-Cromer style still remains elusive. It is probably to this broad tradition and not 'Darmsden-Linton' that the Lingwood assemblage belongs.

A criticism of Cunliffe's approach (and that of his successors) is that it is based only on the current known distribution of a few particular types of fine ware vessel: the clear vessel-types he could use to construct his style zones in the late 1960s (Cunliffe 1968; 1974). This approach was completely justifiable at that time and the search for parallels for a few key diagnostic vessels in an assemblage remains the common approach to dating pottery. It is one that does not involve the whole assemblages of pottery found in the region. 'Complete' assemblages, even this small collection, often contain considerable diversity in vessel form and treatment within the basic categorisation of fine and coarse wares. Whilst it would be useful if angular tripartite, angular bipartite, rounded bipartite coarse ware jars, etc. each individually had a distinct currencies for a short period in the Early Iron Age, this does not appear to be the case. Although broad trends are discernible, a repertoire of basic vessel forms and decorative motifs seems to have been drawn over large areas for several centuries. Without unequivocal dating, it seems more reasonable to suppose that specific features of one assemblage – for example, a preference for a certain jar form or the use of two rows of impressed dots on a shoulder – are not general features of pottery across the region of a particular date. Rather, they are probably local manifestations of this broader tradition and similar features may occur on other sites at different dates. Coarse ware forms may share geographically wide-spread forms and motifs. As Cunliffe's ability to deploy fine ware forms shows, these may have been more geographical restricted in distribution, although still to regions the

size of several counties (e.g. 'Darmsden-Linton' bowls). Specific ceramic features may, but not necessarily always, change more rapidly across a region at the same time (e.g. the adoption of the foot ring). But even with fine ware bowls, it is clear that many north East Anglian assemblages were not restricted to a single type of fine ware bowl. The identification of an assemblage as being 'Darmsden-Linton' or 'Fengate-Cromer' may overlook this pluralism of fine wares. The rounded, 'S'-profile bowl represented here, may be the common component of many Early Iron Age assemblages in the region, but these have been overlooked because they are not particularly diagnostic. As such they have not been held to be a peg for its own style-zone. If this was the case then this type of bowl may have had a very long currency as basically similar vessels are common in the Plain Ware Late Bronze Age assemblage from Stonea Grange (Needham 1996).

The range of both coarse and fine ware forms in these assemblages demands explanation. As this small collection shows, at least three different shapes of fine ware bowl were used at the same time. Such diversity could indicate that the same community did not make different types of vessel; the various forms suggesting exchange of pottery between groups. Examples of clearly anomalous and non-local fine wares are present in several Early Iron Age assemblages. There is a single sherd possible from a 'Fengate-Cromer' style vessel from a Darmsden-Linton assemblage at Lofts Farm, southern Essex (Brown 1988), considerably further south than the assumed currency of this type of vessel. The type bowl for the 'Chinnor-Wandlebury' style (Cunliffe 1974) from Wandlebury itself is totally unlike the other fine wares in the assemblage and may have been marked out for special treatment in how it was deposited between three pits on the site (Hill 1996). The closest parallels for it are in southern Hertfordshire, not Cambridgeshire. Equally, at the Langwood Ridge, Chatteris complex, there is a single flared bowl, unlike all others in the assemblage, made from a fabric with limestone inclusions and originating from at least 20km distance (Hill 1995; Evans 1994b). These examples hint at possible wide-scale 'movement' of fine ware bowls and social links between distant communities.

'Exchange' and social networking only partially explains the diversity of forms in these assemblages. The different shapes of coarse wares present at Cottenham and other sites may also reflect such links, although there are so far no clear examples known in non-local fabrics. Another explanation for the range of forms present is that individual potters did not feel constrained by tradition to produce a limited range of forms. A situation might be envisaged where relatively few pots were in use at any one time and few were required annually to replace broken vessels. In such situations, the differences in vessel shape and decoration would be relatively easy to tie to specific people and events: who made or gave a specific pot, and when and why. The lack of standardisation, as compared

with Middle/Later Iron Age pottery in the area, might be caused by a desire or need on the part of potters to produce vessels which were clearly distinguishable as made at a particular time and as relating to a distinct person or community. The diversity within the broad categories of fine and coarse ware, far from being an accidental product (or 'noise'), was possibly rooted in the particular organisation and immediate requirements of these communities.

Discussion: Dispersed Settlement Archaeology

Given the occurrence of sherds from Deverel-Rimbury vessels, and the characteristics of the flintwork, the site probably did see both Middle/late Bronze Age and Early Iron Age occupation. The discrete character of these phases is demonstrated by the localised distribution of the early wares within one feature (F. 24 in TS 8) and the fact that struck flint was not a component of the wells' assemblage. This may well be a case of settlement shift inasmuch as defined by inclusion within only one feature (and their status may there be residual), the focus of Bronze Age activity probably lies outside of the immediate site. Equally, that the well complex was backfilled presupposes some degree of continuity of usage/settlement within the vicinity. Given the density of this area's Roman occupation, the occurrence of sherds of this date can be considered 'incidental'. Otherwise, it seems reasonable to assign the remainder of the features to the same Early Iron Age horizon as the Test Station 7 wells (the east-west ditch F. 3 also conceivably relates to the site's Bronze Age usage)

With little cropmark register, it is only in recent years through developer funding that relatively low density, open settlements such as at Lingwood have been regularly found. This kind of dispersed archaeology would have largely been missed by earlier researchers as the recovery of sites of this type requires substantial landscape sampling (and subsequently area-stripping). Given the nature of the site's archaeology, the question arises whether what was investigated is, in fact, a discrete settlement. Obviously its southern half went untested, but does it extend to, and is it continuous with, the eastern Early Iron Age scatter, Site 6? As opposed to the sense of the site as a 'constant' (and the frequent house rebuilding and generally higher finds densities of the Middle/late Iron Age), these later Bronze Age/earlier Iron Age settlements are generally quite sparse. That their houses were rarely rebuilt and settlements themselves not ditch-enclosed, suggests that there was not the same investment in the 'plot' as during ensuing periods.

Like those at Lingwood, large pit-wells are a common feature on later Bronze Age/earlier Iron Age settlements in the region (e.g. Evans 1997a; Evans & Knight 1997 and forthcoming; Pryor 1998). Often waterlogged and holding substantial finds assemblages through backfilling and/or the catchment of occupation refuse, they are, effectively, a 'type fossil' of settlement of the period. In contrast to the more slight

settlement architecture of the Neolithic and earlier Bronze Age (e.g. Bruck, forthcoming), they tell of permanent occupation and the guarantee of water resources (Edmonds, *et al*, 1999). The Lingwood well cluster is comparable to those excavated at Storey's Bar Road, Fengate (B3 & W17; Pryor 1978: 26–30, 39–44) and Well 840 at Lofts Farm, Essex (Brown 1988: Fig. 13). Four large stakes were recovered from the latter, one of which had a distinct notch (*ibid.* 293, Fig. 26 & 27). Evidently serving as 'step-ladders', notched logs were also recovered from the larger of the Fengate features (W17; the other had a wattle lining) and recently from a later Bronze Age pit well at Deeping St James, Lincolnshire (Hall & Coles 1994: 94–6; T. Lane pers. comm.). From this it can be inferred that access had evidently to be made down into the pit and that, at least at certain times of the year, the water level lay low within the features (cf. single 'step' stakes to the four-notched ladder from Sutton Common; Parker Pearson & Sydes 1997: 233–4). Yet, it cannot be said that the 'operation' of such wells is understood. In the case of the Lingwood series no obvious/regular structural pattern is evidenced by the surviving stakes. Given their size, it seems unlikely that they supported any above-ground superstructure, and all that can be supposed is that they represent an *ad hoc* attempt to keep organic waste at bay (i.e. trying to achieve 'cleanish' water from basal deposits). If for human consumption, one can only suspect a filthy source with high levels of parasite inclusions (see Note 4).

If the worked Pomoidae fragment was from a ladle or handled scoop, then wooden artefacts recovered from the site fulfil predictions concerning waterlogged goods in later prehistoric contexts (Evans 1989a).⁷ A ladle/scoop and wheel are items whose tensile capabilities cannot be rendered in non-organic materials, and it is the same type of objects that have been found on the Flag Fen platform (Taylor in Pryor, forthcoming). In contrast to the expectations of earlier researchers (e.g. Clark & Godwin 1940: 57), organics do not seem to have widely duplicated non-organic objects (e.g. pottery). This is not to say that skin bags and wooden bowls did not occur, but that the results of wetland excavation continue to demonstrate that their frequency may have been over-estimated in relationship to mass-produced ceramics. Any such arguments are biased, of course, by recovery. Nevertheless, presuming 'wet' contexts are representative of the total range of material culture assemblages, then 'organics/non-organics' seem to have been largely mutually exclusive categories.

With a piece of a similar wheel found at Flag Fen and cart ruts at Welland Bank (Pryor 1998), the recovery of the possible wheel fragment from the Lingwood wells (apart from a minor contribution to the prehistory of wheeled transport; Piggott 1983), speaks of movement. This evidence helps to balance an increasing immediate site (-only) emphasis in recent settlement studies; the sense of site as 'universe', an isolated or closed totality without trade and kinship affiliations. Attesting to the fact that people

move (with 'things'), the 'little' carts which these wheels transported would have facilitated off-site procurement and inter-settlement exchange.⁸

As discussed above, the inferred evidence of hedges from the Lingwood site corresponds with the results from Meadow Lane, St Ives where a waterlogged riverside Early/Middle Iron Age pit alignment produced much hedge-trimming debris (Pollard 1996). Recent excavation on the later Bronze Age field system at Barleycroft Farm on the Ouse just above its junction with the fen shows that, at least locally, amongst its axial components were double-ditch lines only 1.50m across (Evans & Knight forthcoming). Too narrow to have functioned as droveways and of minor proportions (main ditch, 0.50m wide and 0.30m deep; minor, 0.15 x 0.08m), rather these must relate to hedge-line embankment (Fig. 19). Some of the Fengate axes show a similar configuration of close-paired ditches and minor troughs, and probably also involved hedging (Pryor 1980 & 1996). Collectively the evidence is beginning to suggest the existence of hedged landscapes, possibly by the later Bronze Age and certainly during the earlier Iron Age. The inferred recovery of hedges at such settlements as Lingwood potentially undermines any easy distinction between enclosed and open settlements, and addresses the prominence of 2nd millennium BC land allotment in the region *vis-à-vis* a paucity of 1st millennium systems (i.e. which could have been hedged rather than ditched). Moreover, as a long-term organic 'artefact' hedging could provide a mechanism for the possible fossilised survival of such pre-Roman co-axial field systems as advocated by Williamson (1987) and others (e.g. Oosthuizen 1997).

Apart from the four-poster in Test Station 17, the recovered posthole patterns at Lingwood do not form obviously regular structural patterns. Interpretative recourse could be taken in ubiquitous Flag Fen-like post-alignments (similar dryland alignments have recently been found at Barleycroft Farm on the lower Ouse; Evans & Knight, forthcoming). Yet here this seems more an issue of 'building cognition' rather than non-settlement (-building) modes of site usage. Given the evidence as a whole, the density of finds and range of features, there is every reason to think that this complex was settlement-related: houses must be there, the problem is their recognition.

Usually lacking eaves gullies (Evans 1997a), it is difficult to definitely distinguish regular round building post-patterns in settlements of the period.⁹ Whereas the Test Station 10 configuration might well relate to a circular structure, this would not explain the alignments in Trenches II and V. Whilst it is conceivable that they relate to a complicated overlap of four/six-post granaries (or re-set fence-lines), a 'long' rectangular building is a plausible alternative. The basis for this interpretation relates to the recent recovery of long house plans at both Barleycroft Farm (Evans & Knight, forthcoming) and the Welland Bank excavations in south Lincolnshire (Pryor & Lane, forthcoming). Awaiting final radio-carbon results detailed attribution is impossible. The former aided

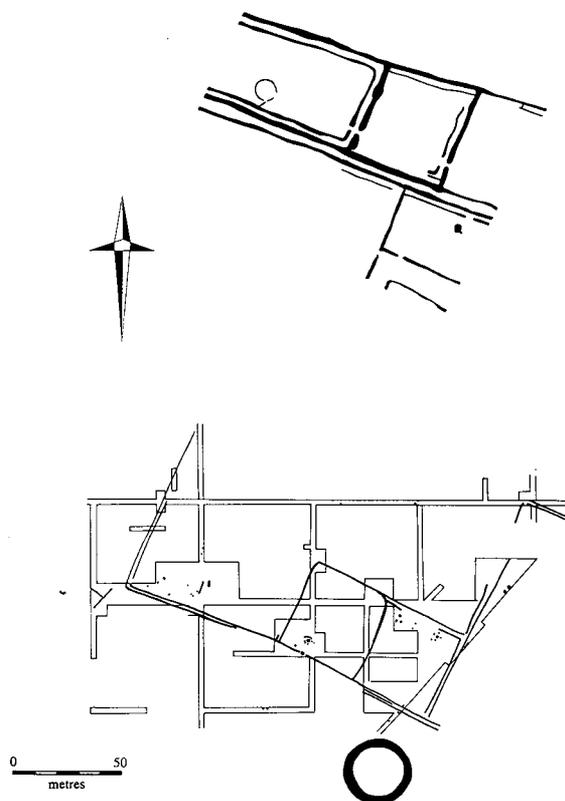


Figure 19. 2nd millennium BC hedged field systems: top, Fengate (after Pryor 1980); below, Barleycroft Farm (see Evans & Knight, forthcoming).

example relates to a re-cutting of the extensive mid 2nd millennium BC field system, though its surrounding enclosure produced Post-Deverel Rimbury wares; the Welland Bank buildings would also seem to be of terminal Bronze/Early Iron Age date. Linear post-settings recently discovered through evaluation fieldwork at the Tower Works, Fengate (3.30/4.00 x 12.00m+) would also seem to be of Late Bronze Age/Post-Deverel Rimbury attribution (Lucas 1997; producing considerable finds assemblages, this complex is the first substantive evidence of field system-contemporary settlement that has been recovered from within the Fengate environs). To this list could be added the later Bronze Age rectangular post structure at Lofts Farm, Essex. 15.50m long, its parallel post lines were only 2.00m across, leading the excavator to speculate whether only the aisle-lines were post-set, the outer wall being screen-like (Brown 1988: 260, Fig. 2). Irregular quasi-rectangular structures were also identified at the later Bronze Age midden site at Runnymede Bridge (e.g. Needham & Spence 1997).

It would be rash to collectively identify these post buildings as some kind of 'longhouse horizon' and only seek continental sources. Although the Barleycroft Farm and Welland Bank examples are long houses and do seem to fit this categorisation, the remainder are probably more appropriately considered rectangular structures, not necessarily houses (i.e. possibly of ancillary function). In reaction to the

dominance of the round house tradition in later British prehistory, the existence of rectangular structures has long been postulated based on a few, and often tenuous, examples (see Evans 1989b). Now that such buildings are being found with some frequency we should be wary of the other extreme of considering these settlements only in the light of continental-inspired long house models. Nevertheless, the recovery of Late Bronze/Early Iron Age sites of this type must be counted amongst the major achievements in later British prehistory over the last decade. Bridging the 'grand' field systems of the 2nd millennium and the 'obvious' domestic-scale enclosure of the later Iron Age, and providing an occupation basis to a major material culture transition (bronze to iron), they clearly have considerable research potential.

Endnotes

- 1 41 sherds of Late pre-Roman Iron Age/Roman date were recovered, nearly all very abraded. The fabrics are almost exclusively reduced wares and only two fine ware sherds were found, likely Nene Valley kiln products. The date range was restricted, and is largely, if not wholly, to the 1st–2nd centuries AD (the only later sherd being a grey ware dish rim of probable 3rd century or later date). Given the range of fabrics, and the size and condition of the sherds, the material is probably manuring-derived (see Going in Evans 1994a, Appendix III).
Otherwise relevant finds categories are discussed within the text (only six pieces of undiagnostic/unimpressed daub were found and no metal was recovered in stratified context).
- 2 Averaging only 2.5 pieces of struck flint per 10m², reflective of its limited plough-damage the site's surface representation is low when compared to the test pit densities. As indicated by the test pit-to-topsoil ratios, only 0.57% of its total population lay on the surface; substantially less than the 2–7% usually accredited to fieldwalking representation (Edmonds, *et al.* 1999; A. Brown 1996: 204). These low surface densities raise questions concerning the site's definition. If plough-damage was not uniform then the topsoil densities probably differ according to 'natural'/buried soil topography (i.e. off-'core' slope).
- 3 See Evans 1997b: 128 and Porter 1969: 61 concerning regional wood folklore associations; see also Garthoff-Zwaan 1987 and Therkorn *et al.* 1984 for ethno-historical wood studies in the Netherlands.
- 4 In terms of health of the site's inhabitants, although it makes functional sense to have employed hedges to restrict access to the wells, hygiene may not have been an abiding concern. On the one hand, there is the evidence of the Lingwood wells' insects. Whilst their preservation was found to be good in a 400gm sample assessed from the organic basal fill from F.1, the concentration of remains was low. About half the beetles are aquatic species such as *Helophorus brevipalpis* sp. and *Octhebius* sp. which can tolerate stagnant conditions. The terrestrial beetles include *Aphodius* which are likely to have feed on the dung of domestic animals (see Robinson in Evans 1994a, Appendix V). Admittedly much more inferential, a 'logic' of such activity can be established from other sites. In the early 'open' phases of the Haddenham V later Iron Age enclosure pit wells occur in association with the houses. When the site was enclosed by a massive rectangular ditch no wells occurred within its interior (though one in an adjacent yard may have served stock). From this it can only be presumed that the inhabitants took their water from the open ditch, the profile of which was locally 'pooled' (i.e. deeper). Of similar date, the Wardy Hill ringwork also lacked distinct wells (Evans 1992) and it is presumed that the deep ditches of its defensive circuit provided water. It could, of course, be argued that human drinking water was collected from roof run-off, but there has never been any direct evidence of such nor would this account for why in the unenclosed phases of such sites wells occur in association with houses (see Evans 1997a concerning the 'hydraulic logic' of these sites).
- 5 As a design-type the tripartite disc wheel is long-lived (Piggott 1983: 26). Whereas the Dolonog wheel is dated to 1000–1245 cal. AD (920 + 60 BP; OxA-1975), the Blair Drummond example has been dated to cal. BC 1260–815 (2810 + 85 BP, OxA-3538; Sheridan in Hedges *et al.* 1993: 156).
- 6 At the 2nd millennium BC sites at Newark Road, Fengate and Barleycroft Farm sheep/goat respectively occur at levels of 11 and 14%, with there being 86% cattle at both (Evans & Knight 1997: 80–2; cf. Pryor 1996). Whereas in a number of recently excavated later Iron Age sites in the region the frequency of sheep/goat is generally much greater: Haddenham V (61%; Evans & Serjeantson 1988); Watson's Lane, Little Thetford (65%), Fen Drayton (71%); West Fen Road, Ely (57%) and Owl End Road, Bury (49%; see Yannouli in Evans, forthcoming b for overview).
- 7 Relatively few major organic assemblages have been published since the 1989 appraisal (Evans 1989a). Amongst these is that from the Early Iron Age enclosure complex at Sutton Common, where, apart from structural timbers, the only artefact recovered was a notched ladder (Parker Pearson & Sydes 1997). It is not without a degree of self-critique that, in contrast, at the later Iron Age Wardy Hill ringwork on the Isle of Ely (Evans 1992) the only wooden artefact recovered from its desiccated ditch deposits was a metal-decorated wooden stave from what was probably a tankard – arguably a high status 'good'.
- 8 The apparent frequency of such vehicular transport may also have implications concerning the processes of site abandonment. By such means much more of a settlement's still 'usable' material culture repertoire (e.g. pots and other non-fixtures) may have been removed to new locales; carts may, effectively, have promoted artefact curation (*vs.* what could be carried by hand).
- 9 The results of recent fieldwork emphasises what an extraordinary building configuration Site II at West Harling, Norfolk was (Clark & Fell 1953). Whilst its interpretation showed the influence of Bersu's excavation of 'great' round houses at both Woodbury and later throughout the Celtic fringe (see Evans 1998 for summary), its double-entrance ditch-surround is without immediate parallel. It is a site which obviously warrants re-appraisal.

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A Bronze Age Enclosure at Fulbourn Hospital, Fulbourn, Cambridgeshire

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Contributions by A Barclay, P Blinkhorn, T Durden,
M Robinson and B Wilson

Summary

Excavations were carried out prior to development of a retail superstore and car park. This work revealed a middle to late Bronze Age ditched enclosure and a series of posthole fence-lines and possible structures that may have been livestock management features, set within a dry, open grassland environment. No positive indications of settlement were identified and relatively few artefacts were recovered. Most of the datable finds were contemporary with the use of the enclosure, and together with the faunal remains suggest some domestic activity in the vicinity, though this was not located archaeologically.

Introduction

Location, geology and previous landuse (Fig. 1)

The site, TL 498 566, lay approximately 1km west of the village of Fulbourn and 5km to the southeast of Cambridge city centre at around 15m OD, below the gently sloping northwestern side of Limepit Hill. Modern development of Cherry Hinton lay west of the site and the Cambridge-Newmarket railway bordered the site to the north. Fulbourn Hospital structures formed the eastern and southern limits of the site. This almost flat area drains to the northeast through Caudle Ditch and Quy Water into the River Cam. Underlying geology is Cretaceous Lower Chalk containing an horizon of Totternhoe Stone. The site investigation revealed that the excavation area had at some point after the construction of the hospital been cultivated and was later used as a dumping ground.

Background to the excavations

East Anglia Regional Health Authority commissioned an archaeological evaluation in 1993 in anticipation of development. The evaluation, carried out by Cambridge Archaeological Unit (CAU), identified elements of a prehistoric settlement previously seen as undated cropmarks on aerial photographs. Two substantial ditches of Bronze Age date were identified, one of which was interpreted as a potential enclosure for a domestic settlement (Gdaniec 1993). Planning permission was granted in 1996 for the development of a retail superstore with car park, access road and

additional landscaping, subject to a programme of archaeological work which was carried out by the Oxford Archaeological Unit.

Methodology

Approximately 0.36 hectares was stripped in the location of the possible enclosure and a long ditch aligned northwest by southeast, identified by the CAU evaluation. In addition, five trenches measuring 10m by 2.5m were excavated along the length of the long ditch (Figs 1 and 2). All soil above the archaeological horizon was removed with a mechanical excavator under archaeological supervision. All archaeological features were hand-excavated and the recording system was in accordance with OAU standard practice as laid out in the Field Manual (Wilkinson 1992). Each feature or deposit was planned and individually recorded.

Archaeological background

A summary of the archaeological and historical background, compiled for the CAU evaluation report in consultation with the Cambridgeshire Sites and Monument Record (SMR), is presented in Appendix 1. It can be seen that the majority of the known archaeology in the immediate vicinity is of prehistoric date. This period is the focus of the current summary, which includes reference to some of the most recent discoveries. There is evidence of some Romano-British and medieval activity north of the railway line, but this is not particularly relevant here.

The earliest known activity is a group of prehistoric ring ditches on the higher ground to the north, west and south of Fulbourn Hospital. A ring ditch (SMR: 02692) was located approximately 200m to the west of the excavation area, under the recent housing development at Teasal Way. Two parallel ditches aligned northwest by southeast were associated with the barrow, as was a third curving feature of unknown function. The most northeasterly of the cropmarks, associated with the parallel ditches and the curving ditch, extended into the excavation area.

The numerous ring ditches are part of a group that skirts the fen edge from Mildenhall to Cambridge. They are located in a broad corridor on the chalk ridge

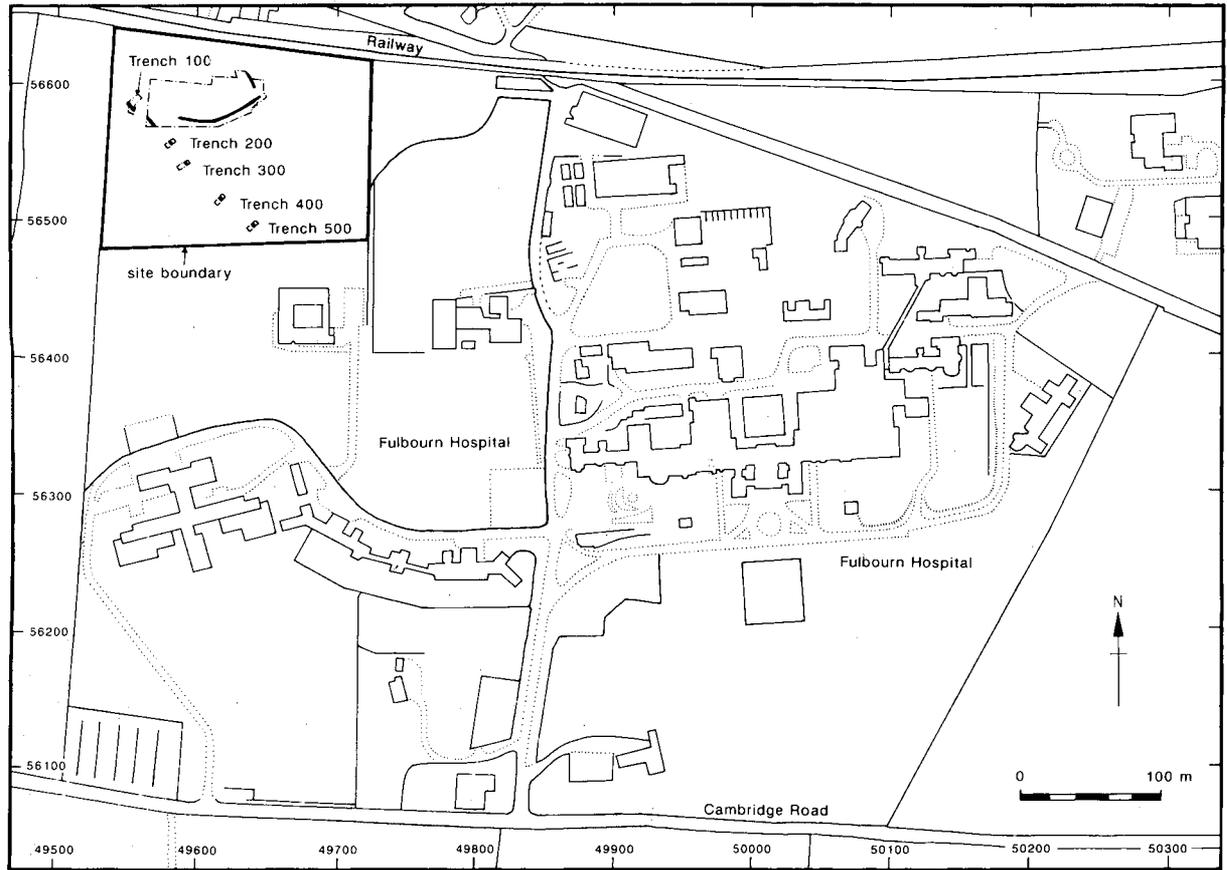


Figure 1.

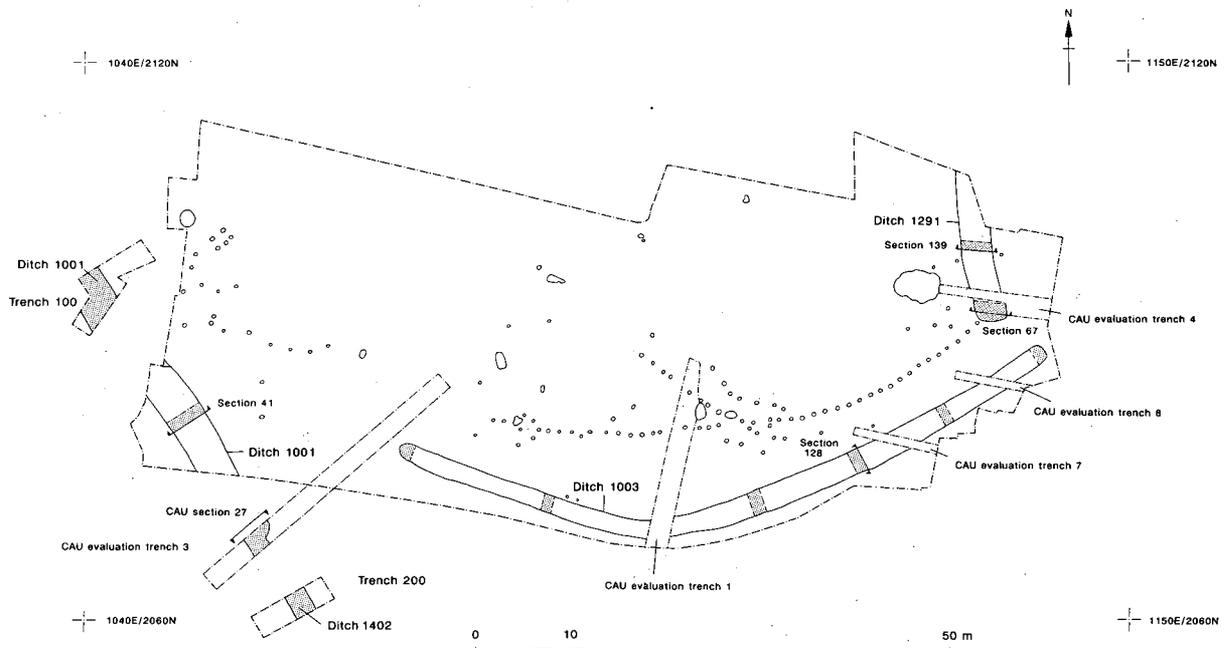


Figure 2.

that is bounded by the fen to the northwest and by the Icknield Way, a prehistoric trackway, to the southeast. Dense clusters of barrows and ring ditches occur at Little Wilbraham and around the Fleam Dyke to the northeast and southeast of Fulbourn respectively and these highlight substantial late Neolithic and Bronze Age ritual activity of this region. The test pit survey which was carried out as part of the evaluation provided sufficient quantities of flint, scattered in the adjacent fields, to support the claim for nearby Bronze Age occupation (Gdaniec 1993).

In summer 1998 the Cambridgeshire Archaeological Field Unit (AFU) identified an important new Bronze Age site at Babraham Road, approximately 3km southwest of the Fulbourn site (Hinman and Malim 1999). This included evidence for activities spanning 2000 years beginning in the late Neolithic/early Bronze Age, which include placed deposits in pits and segmented ditches, palisades/fence lines, feasting and human burial. The Bronze Age activity does not appear to fit into any established monument type. Post-excavation analysis continues, but it is already clear that the site had special significance. The character of the recovered assemblage was incompatible with domestic activity, but rather appears to represent some sort of ritual activity. The site was situated in a prominent position at the focus of several ancient routeways. It was surrounded by other prehistoric monuments, including the two forts of Wandlebury and War Ditches. Both are thought to be of Iron Age date, but there are parallels for some aspects of these sites at Babraham Road, possibly indicating earlier activity.

Further afield, evidence for Neolithic occupation and part of a Bronze Age field system has recently been recovered at Low Fen, Fen Drayton, Cambridgeshire (TL 3375 6903) (Mortimer 1995). No evidence for structural remains was found despite the scattered groupings of pits that dated to the late Bronze Age. Two circular cropmarks at Little Abington were evaluated and proved to be ploughed out Bronze Age barrows (Barclay 1994). Late Bronze Age occupation consisting of pits and an unusual form of round barrow were recently excavated at Bourn Bridge, Pampisford (Pollard 1995). A large enclosed Iron Age settlement (SAM 95) is situated approximately 600m northeast of the Fulbourn development area. Its position is significant when considered with the Iron Age hillfort at Wandlebury, and it may be one of a numerous group of undiscovered Iron Age settlements southeast of Cambridge.

Recent excavations at Wandlebury by the CAU (French and Gdaniac in preparation) have revealed extensive use of the hilltop and its southern slopes prior to the construction of the first hillfort in the 5th century BC. This work was carried out over several seasons but the presence of this very extensive unenclosed earlier Iron Age settlement became apparent in the early stages of the work. A reassessment of the pottery recovered from the site during the earlier excavations by Hartley (1957) revealed that most of the assemblage was late Bronze Age/early Iron Age date.

Description

Excavations revealed part of a possible enclosure consisting of three substantial, apparently contemporary, ditches. The westernmost part of the enclosure (ditch 1001) was created by the partial re-cutting and enlarging of an earlier earthwork (ditch 1402). The ditch that constituted the southern boundary (1003) showed evidence for re-cutting of its upper fills. Ditch 1291, oriented north-south, formed the eastern side of the enclosure with its southern terminus positioned just north of the eastern end of ditch 1003 (Fig. 2).

Two possible pits and a series of postholes, forming fence-lines and possible structures, were revealed within the enclosure. Two ditches and two gullies were also identified which related to a post-medieval phase of activity.

The linear features

Ditch 1402 (Cuts 209, 303, 402 and 503) (Figs 1 and 2)

Ditch 1402 was visible as a cropmark and had been excavated during the CAU evaluation. It ran for approximately 100m in a northwest by southeast alignment at the western end of the excavation area and it was examined in segments in trenches 100, 200, 300, 400 and 500 as shown on Figure 1. The ditch varied in width from 2.15m to 2.80m and in depth from 1.25m to 1.50m. It had steeply-sloping sides and a flat base (Fig. 3, sections 1, 16 and 27). The ditch sustained a generally uniform sequence of fills along its length and these are grouped together for descriptive purposes. The individual context numbers for each trench may be found in the archive. The primary fills (208, 304, 403, 522) consisted of very compact light grey/white silty chalk deposits resulting from weathering and the initial slumping of the ditch edges. These were overlain by chalk-rich sandy silts that appeared to enter the ditch from its western edge and, especially in sections 1 and 5, they appeared to be the result of slumping. These deposits were interspersed with a series of silt chalk deposits that entered the ditch from its eastern edge and suggested that a bank had existed on the eastern side of the ditch. The final fills of the ditch consisted of a gradual accumulation of sandy silts. Flint flakes and occasional bone fragments were recovered throughout the fills of the ditch but no pottery was retrieved.

Ditch 1001 (Cuts 100 and 1073)

Ditch 1001 was originally considered, on the basis of cropmark evidence, to be a northern extension of ditch 1402. The CAU evaluated the ditch at the point of an anomaly in the cropmark (CAU trench 3) and this revealed that ditch 1402 had been re-cut and enlarged to such an extent that only the primary fill of the earlier ditch survived (Fig. 3, sections 27 and 41). Ditch 1001 (CAU, F11, 47) was also roughly aligned northwest by southeast and continued for approximately 30m within the excavation area. It was further investigated in trench 100 where it was 3.6m wide by 1.5m deep and had steeply sloping sides and a flat base. The observed anomaly or kink in the cropmark marked the point of the ditch's southern terminus. The primary fill (101, 1086, CAU 46) consisted of a compact silty chalk deposit (up to 0.6m thick), derived from weathering and slumping. This was overlain by a sequence of fairly thick compact sandy silts, the uppermost of which contained bone, flint and late Bronze Age pottery.

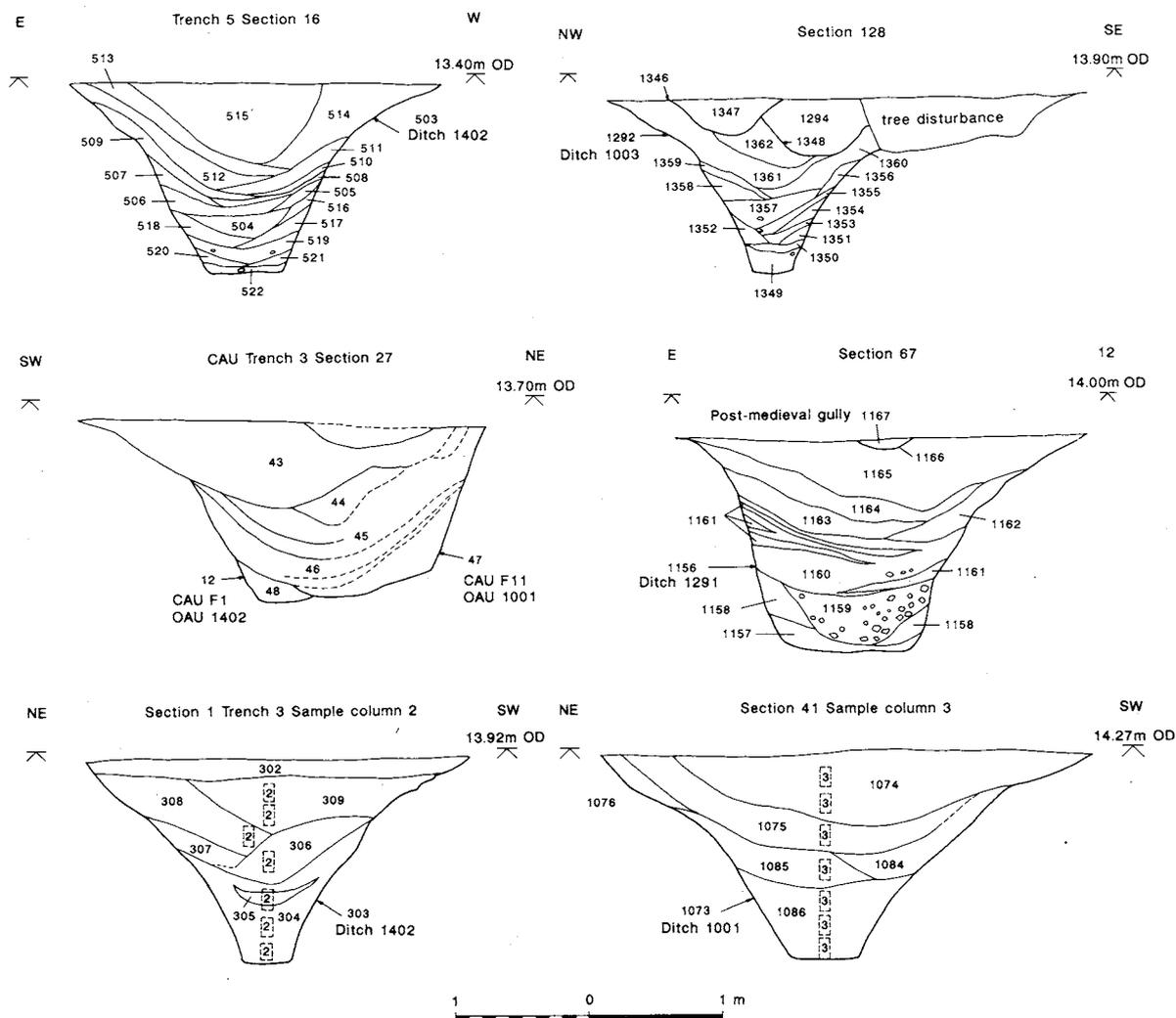


Figure 3.

Ditch 1003 (Cuts 1021, 1029, 1087, 1101, 1292 and 1314, Re-cuts 1036, 1096, 1098, 1333, 1336, 1346 and 1348) (Fig. 2)

The entire length of ditch 1003 was contained within the main excavation area where it defined the southern limit of the possible enclosure. The ditch ran west-northwest by east-southeast from its western terminus and then curved to a west-southwest by east-northeast alignment, toward its eastern terminus that was rounded with a flattened base. It was 75m long, 1.12m to 1.28m deep and its width increased from 1.8m in the west to 2.4m in the east. The ditch had steeply sloping sides and a flat slot-like base (Fig. 3, section 128). The primary fills consisted of sterile, compact silty chalk deposits up to 0.45m thick. These were overlaid by a gradual accumulation of compact sandy silts, the uppermost of which contained varying amounts of pottery, bone and flint.

Two later ditches cut the upper fills of the eastern half of ditch 1003 (Fig. 3, section 128). The first (cuts 1036, 1098, 1348 and 1333) was approximately 40m long, 0.8m wide and 0.4m deep with gently sloping sides and a rounded base. This removed the upper fills at the southern edge of ditch 1003. The later ditch was approximately 40m long, 0.8m wide and 0.4m deep with gently sloping sides and a rounded base. It was filled with sandy silt deposits (1035, 1099, 1294 and 1334) that contained small amounts of pottery, bone and flint. This

ditch was in turn cut by another ditch (1336, 1346 and 1096) that ran for 20m along the eastern half of ditch 1003. It was 0.8m wide and 0.3m deep, with concave sides and a rounded base and was filled mainly by sandy silt deposits. The ditch removed the central upper fills of ditch 1003 and, in two sections (115 and 128), also removed the northern edge and fills of the first re-cut. No finds were retrieved from the second re-cut.

Ditch 1291 (Cuts 1156 and 1363) (Fig. 2)

Ditch 1291 was recorded as the returning arm of ditch 1003 in CAU evaluation trench 4. Therefore, ditches 1003 and 1291 are both referred to as F3 in the CAU report. The larger area of the excavation revealed ditch 1291 to be a more substantial separate feature that formed the eastern limit of the enclosure. The southern terminus lay within the excavation area and was approximately 4 m to the northwest of the eastern terminus of ditch 1003. It was excavated in two slots but cut 1363 in section 139 (not illustrated) was not fully bottomed. Ditch 1291, oriented north-northwest by south-southeast, was 3m wide, 1.57m deep and ran for an observed length of 15m. In profile the feature had steep, almost vertical sides and a flat base (Fig. 3, section 67).

Almost the entire lower half (0.8m) of this ditch was filled

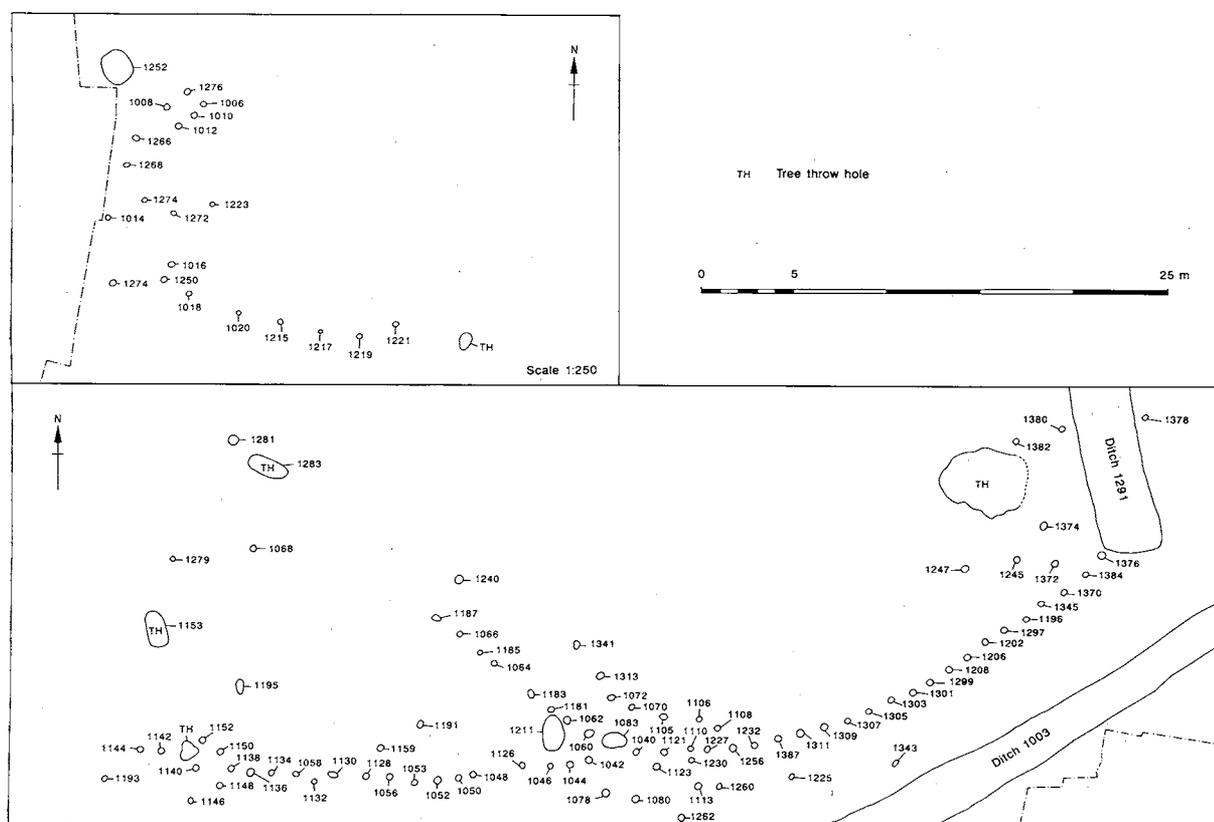


Figure 4.

with alternating interleaved layers of compact silt chalks and sandy silt deposits with chalk inclusions. This appeared to be the result of initial weathering and gradual silting, with occasional slumping from the edges. No finds were retrieved from the primary fills of the ditch. The upper half of the ditch was filled with sandy silts with chalk inclusions (1162-5, 1394 and 1397-1401), most of which contained finds. The increased quantities of finds retrieved from the uppermost fills (1163-5, 1398 and 1400-1) indicated that these deposits might represent domestic dumping from the interior of the enclosure.

The posthole structures (Fig. 4)

Ninety definite postholes and thirty possible postholes were revealed during the excavation. The nature of the chalk made interpretation of isolated features such as postholes difficult. It was noted that solution holes and tree-throw holes, within a posthole structure, could appear very similar in appearance to definite postholes.

Postholes varied in diameter from 0.18m to 0.45m and in depth from 0.05m to 0.3m. Many appeared almost square with rounded edges in plan and a small percentage exhibited post-packing in the form of large cobbles. Pottery was recovered from only one posthole (1223, fill 1224). This was middle Bronze Age in date but the posthole had been extensively disturbed by root action.

The largest posthole structure consisted of 30 postholes that formed a fence-line to the north of, and parallel to, ditch 1003. The postholes ran from the southwestern edge of the terminus of ditch 1291 and broadly respected the line of ditch 1003, at a distance of 5 to 8m and ended 3m short of the

western terminus of ditch 1003. The postholes were fairly evenly spaced at between 0.8m and 1m apart.

A second posthole fence-line, consisting of eight postholes, converged on the centre of the first fence-line from the northwest. This effectively created a funnel-like structure with its opening to the west. Several postholes were discovered around the area where the two fence-lines converged although these did not form a coherent structure.

Twenty postholes were excavated in the western part of the excavation area but, although some of them seemed to form a fence-line, their function cannot be determined.

The pits (Fig. 4)

Two possible pits were excavated. Pit 1211, located between the two converging posthole fence-lines (at the entrance of the 'funnel'), had been largely removed during the excavation of a test pit that was part of the CAU evaluation. This sub-ovoid pit, 1.9m long by 1m wide, had a near vertical western edge and a concave eastern edge that sloped to an irregular base. The pit, filled with two sterile and compact sandy silts, was unconvincing as an archaeological feature and was regarded as a possible tree-throw hole or natural feature.

Pit 1252, to the west of the site was sub-ovoid, 2m long, 1.6m wide and 0.9m deep, with slightly concave sides falling to a rounded base. It was filled with three thick, compact sandy silts that were sterile except for a small amount of charcoal in the primary fill.

Table 1. Quantification of pottery from the excavation (sherd number, weight) by context and date.

Context	MBA	LBA	Prehistoric	Roman	Medieval	P-med.	Total
105		38, 96g					38, 96g
408					1, 7g		1, 7g
1063				1, 3g			1, 3g
1067				1, 3g			1, 3g
1074		6, 18g					6, 18g
1095		1, 4g					1, 4g
1099		4, 15g					4, 15g
1164		1, 11g					1, 11g
1165		3, 18g					3, 18g
1224	9, 54g						9, 54g
1265	1, 4g						1, 4g
1280	3, 8g						3, 8g
1282	1, 4g						1, 4g
1291		2, 3g					2, 3g
1293						1, 9g	1, 9g
1329			1, 1g				1, 1g
1334			1, 1g				1, 1g
1339		1, 5g					1, 5g
1395		1, 3g					1, 3g
1397			1, 3g				1, 3g
1400		8, 19g					8, 19g
1401		9, 36g					9, 36g
Total	14, 70g	74, 233g	3, 5g	2, 6g	1, 7g	1, 9g	95, 425g

Post-medieval ditches 1404 and 1405, gullies 1166 and 1403 (Not illustrated)

Four shallow linear features were identified in the main excavation area, aligned north-northwest by south-southeast. A limited inspection was sufficient to characterise them and the finds showed them to represent the last phase of activity at the site.

Ditch 1404 ran for 40m in the eastern half of the site. It was 0.6–0.75m wide and only 0.05m deep. Ditch 1405 was visible for a length of 18m in the southwest area of the site and was 0.6–0.75m wide and 0.1m deep. Both ditches were filled with a dark brown grey silty loam (1290 and 1295) that contained post-medieval and possibly 20th century brick and tile.

Gullies 1166 and 1403 ran parallel to each other at the eastern end of the site and were 0.5m wide and 0.1m deep. Gully 1403 was observed for a length of 24m while 1166 could be traced for 14m and had a gently rounded symmetrical profile where it cut the upper fill of ditch 1291 (Fig. 4, section 128). Both features were filled with a dark brown silty loam (1167 and 1289 of gullies 1166 and 1403 respectively) which contained post-medieval building material.

The Finds

Prehistoric Pottery

Alistair Barclay

Introduction

The evaluation and excavation produced a total of 114 sherds (945g) of handmade prehistoric pottery. The assemblage comprises both middle and late Bronze Age pottery and includes a miniature vessel, possible Deverel-Rimbury material and a small number of late Bronze Age featured sherds. In addition two early prehistoric sherds were found. One is from a rusticated Beaker and the other is a plain body sherd. Both

sherds contain moderate amounts of medium sized grog (<3mm) and the Beaker fabric also contains quartz sand and voids from either leached shell or burnt out organics. The rusticated sherd (Fig. 5.1) has plastic finger-tip decoration and has been fired to a reddish-brown. It is from a relatively small Beaker Domestic pot (Gibson 1982).

The Beaker and early Bronze Age sherds found respectively in contexts 19 and 20 from the evaluation (CAU, Tr.4, F3) are in a worn condition and can be considered as redeposited residual material within the fills of the later Bronze Age ditch 1291. Similar Beaker Domestic pottery with pinched and plastic decoration has been found at Chippenham, Fengate and Shippea Hill, and is relatively common around the Fen Edge and from East Anglia (Bamford 1982; Gibson 1982).

Methodology

The assemblage has been quantified by weight and sherd number (Table 1). Refitting fresh breaks are excluded from the sherd count. The pottery is characterised by fabric, form, surface treatment, decoration and colour. Only the more diagnostic featured sherds are listed in the catalogue. A record was made of burnt residues. The sherds were analysed using a binocular microscope (x 20) and were divided into fabric groups by principal inclusion type. OAU standard codes are used to denote inclusion types:

A: sand (quartz and other mineral matter); F: flint, G: grog; S: shell.

Size range for inclusions: 1: <1mm fine; 2: 1–3mm fine-medium and 3: >3mm medium-coarse.

Table 1 presents a breakdown of the total assemblage by period and context. Only four contexts produced more than 50g of pottery, from which only one contained more than 100g and most produced no

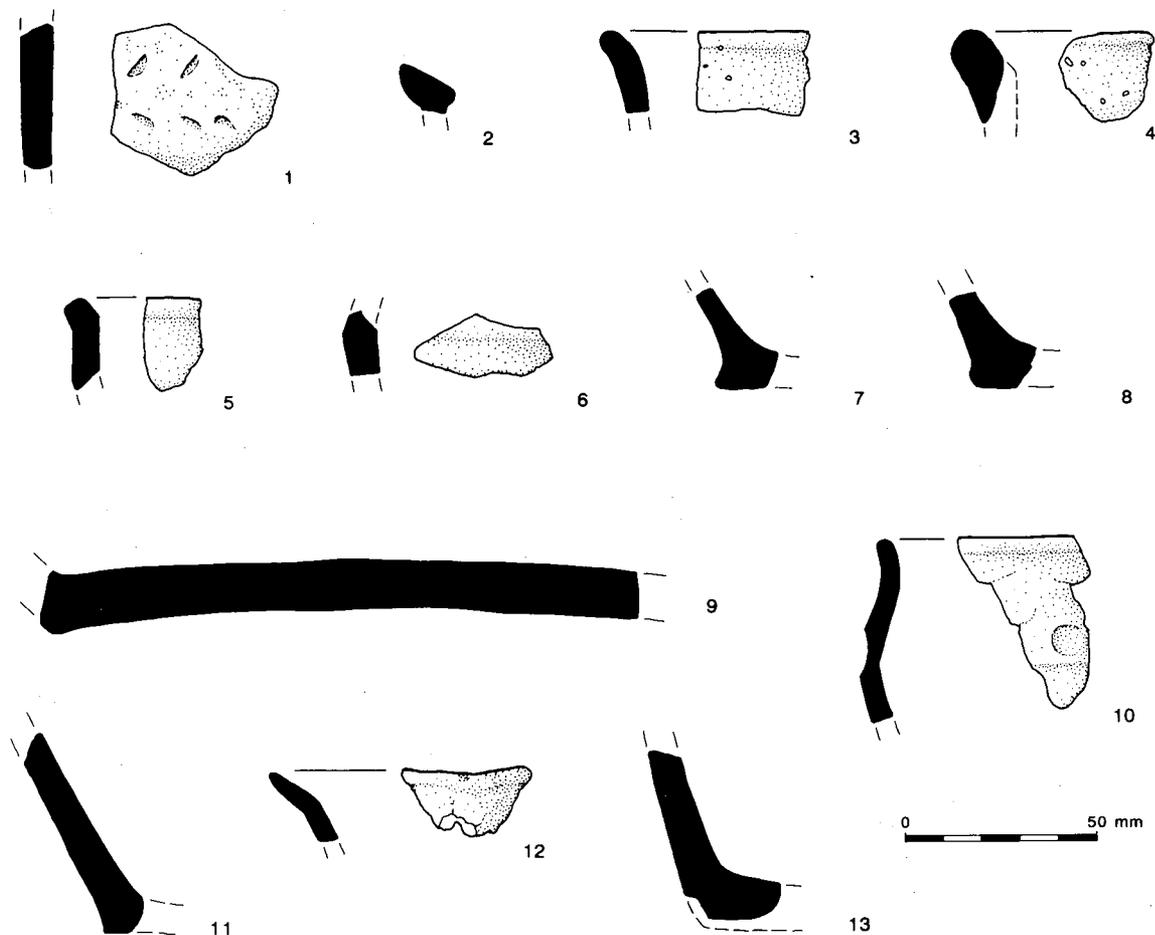


Figure 5.

1. Beaker. Pinched and finger-tip decoration (13g). Fabric GAV2. Condition worn. Ctx. 19.
2. LBA. Simple rim (3g). Fabric FA2. Condition average-worn. Ctx. 13.
3. LBA. Everted pointed rim (7g). Fabric FS3. Condition average. Ctx. 14.
4. LBA. Expanded rim (6g). Fabric SA2. Condition worn. Ctx. 14.
5. LBA. Everted squared rim (5g). Fabric SA2. Condition worn. Ctx. 14.
6. LBA. Angular shoulder (5g). Fabric SA2. Condition average-worn. Ctx. 14.
7. LBA. Simple base angle (17g). Fabric SA3. Condition average. Ctx. 14.
8. LBA. Simple base angle (17g). Fabric FS1. Condition average. Ctx. 14.
9. LBA. Sherd from the base of a large vessel (271g), approx. dia. 160 mm. Fabric FA2. Condition average. Ctx. 14.
10. LBA. Shoulder sherd with impressed finger-dimple (3g). Fabric FA1. Condition average. Ctx. 105.
11. ?MBA. Large sherd broken at the base angle (48g). Fabric SA3. Condition average-worn. Ctx. 1224.
12. ?MBA. Decorated rim fragments from a miniature vessel (7g). Fabric SA2. Condition average. Ctx. 1224.
13. LBA. Simple base angle (16g). Fabric FA2. Condition average-worn. Ctx. 1401.

more than 20g of pottery. Most of the sherds were small and abraded, with the general exception of one or two sherds.

Fabrics

Eleven fabrics have been identified through the analysis of the principal inclusion types and the assemblage has been divided into three fabric groups: sand-tempered (A1), flint-tempered (F2, FA1-3) and shell-tempered (SA1-3, SF1). Approximately 39% of the sherds by weight belong to the flint-tempered group, while 61% belong to the shell-tempered group. The average sherd weight for the flint-tempered fabric group is 12.3g, which is approximately double that

of the shell-tempered group which has a mean weight of 5.8g. This figure may reflect the fact that the shell-tempered fabrics are more prone to breakage, although it could also be an indicator of greater redeposition of this material. It is tentatively suggested that some of the sherds in shell-tempered fabrics (SA1-3) are middle Bronze Age in date, while the remaining fabrics are thought to be late Bronze Age in date.

The fabrics contain no unusual, non-local or exotic inclusions and it is probable that the sand, flint and shell were all procured locally either as naturally occurring inclusions within the clay or as deliberate tempering agents. Both shell and flint are common

temper or opening material in later Bronze Age pottery, and shell is also found in Iron Age fabrics. The sandy fabric (A1) could be of this date, but is perhaps more likely to be Iron Age.

Sand: A1 Hard fabric with moderate coarse quartz sand.

Flint: F2 Hard fabric with common medium angular flint.

FA1 Hard fabric with common fine angular flint and sparse quartz sand.

FA2 Hard fabric with common medium angular flint and sparse quartz sand.

FA3 Hard fabric with common coarse angular flint and sparse quartz sand.

FS1 Hard fabric with moderate fine angular flint and sparse fine shell platelets.

FS3 Hard fabric with moderate coarse angular flint and sparse medium shell platelets.

Shell: SA1 Hard fabric with moderate fine shell and sparse quartz sand inclusions.

SA2 Hard fabric with moderate medium shell and sparse quartz sand inclusions. Some fabrics also contain rare medium-coarse angular grog.

SA3 Hard fabric with moderate coarse shell and sparse quartz sand inclusions. Some fabrics also contain rare medium-coarse angular grog.

SF1 Hard fabric with moderate fine shell and sparse angular flint inclusions.

Forms

The assemblage includes no complete vessel profiles and is generally fragmentary, with an average sherd weight of 8.2g. Of the six rims that are present one is expanded, one is of simple form, three are everted and one is flaring (Fig. 5.2–5, 10 and 12). With the exception of the latter, all of the rim forms are compatible with a later Bronze Age date. The simple rim and the expanded rim are likely to be from coarser jars or bucket-shaped vessels, while the everted rims are from finer biconical vessels. The flaring rim is part of an unusual miniature vessel that can best be described as an accessory vessel or pygmy cup (cf. Abercromby 1912, Pl. 78–84). This vessel has an impressed finger-nail decorated flaring rim with a maximum diameter of 60mm. Such vessels tend to be either early or middle Bronze Age in date and while many are found in funerary contexts some are found on domestic sites.

Three shoulder sherds are present. One is angular and appears to come from a fine bipartite jar or bowl. Another is from a slack-shouldered vessel and is decorated with an impressed finger-dimple. The remaining shoulder sherd is represented by a tiny fragment and is of indeterminate form. Eight base sherds are present. These occur in both shell and flint tempered fabrics and all are of relatively simple form (Fig. 5.7–8, 11 and 13).

The largest group of pottery (48 sherds, 552g) and featured material is from context 14 (CAU, Tr4, F3), an upper fill of the ditch recorded in the excavation as 1291, and includes everted rims, an expanded rim, an angular shoulder and a small number of base sherds (Fig. 5.3–9). Parallels for this material can be found amongst the vessels of late Bronze Age assemblages. There is an absence of decorated material from this

group, although given the small number of sherds from this context this need not be significant. The only decorated sherd, the shoulder with the finger dimple, is from context 105, which is the upper fill of ditch 1001 recorded in trench 100, and was found with a simple everted rim. The most complete vessel is the miniature cup fragment from 1224, the fill of posthole 1223. This was found with a large base sherd manufactured from the coarse shell-tempered fabric SA3 and both could be of middle Bronze Age date.

Decoration and surface treatment

Both decoration and surface treatment were noticeably rare. The only record of decoration were the finger-nail marks on the rim of the miniature vessel and an impressed finger dimple on a shoulder sherd. There was relatively little evidence for surface treatment with no evidence for careful finishing or burnishing.

Residues

A few sherds carried burnt residues on their interior surfaces indicating use as cooking pots. This included a body sherd and a base sherd from CAU context 14 and a number of refitting body sherds from context 105.

Discussion

The middle Bronze Age pottery may be broadly contemporary with the construction and primary use of the enclosure, while the late Bronze Age pottery appears to be associated with its later and final use. The rather low quantities of pottery, often small and abraded, from the ditches and internal features perhaps indicate that the enclosure was not used primarily for domestic occupation.

Some possible middle Bronze Age pottery, represented by relatively small body sherds, was recovered from excavated tree-throw holes 1264, 1281 and 1283 (contexts 1265, 1280 and 1282 respectively), that could represent pre-enclosure clearance. The only significant group of middle Bronze Age sherds was recovered from posthole fill 1224 within the enclosure interior and close to ditch 1001. The early Bronze Age sherds recovered during the evaluation from the bottom of the enclosure ditch are considered to be re-deposited residual material (see above).

The late Bronze Age material was invariably recovered from the upper fills of ditches 1001 (105, 1074), 1003 (1095, 1097, CAU 30) and 1291 (1164–5, 1400–1, CAU 13, 14). No pottery was recovered from primary ditch fills although two small pieces came from the middle fills of ditch 1291 (1395 and 1397).

It is suggested that the assemblage broadly belongs to the later Bronze Age. It is argued above that the group of material from context 14 has its closest affinities with late Bronze Age pottery found in lowland Britain (Barrett 1980), while some sherds, including a fragmentary miniature vessel may hint at an earlier middle Bronze Age component. Given the small size of the assemblage, it cannot be stated with certainty that the lack of decoration is of significance. Late

Bronze Age Plain Ware assemblages, as defined by Barrett (1980), are rare in this region. There is some similarity in vessel forms between the Fulbourn material and Cunliffe's Ivinghoe-Sandy group which includes part of an unpublished assemblage from Green End Road, Cambridge and other material from Chippenham and Grantchester (Cunliffe 1991, 558, fig A:5 9–10; Barrett 1980, fig 5:13–6). The as yet largely unpublished Plain Ware assemblage from Flag Fen may also be of relevance (Barrett 1986, 12). The Fulbourn assemblage has few parallels with the so-called Decorated Ware assemblages recorded from Fengate or West (Hawkes and Fell 1943) or with the early Iron Age pottery recorded from Linton (Fell 1953).

Roman, medieval and post-medieval pottery

(identifications by Paul Booth)

Four small sherds of non-prehistoric pottery were recovered (Table 1). The two Roman sherds were from plough disturbed postholes (1063 and 1067), while both the medieval (408) and post-medieval sherds (1293) were from the upper fills of ditches 1402 and 1291 respectively.

The Flint

Theresa Durden

Introduction

A total of 89 pieces of flint were recovered from the excavation. This included two natural unstruck pieces and one piece of burnt unworked flint. Flint recovered from the previous evaluation by CAU was attributed to the middle/late Bronze Age with a small quantity of residual Neolithic material (Edmonds 1993); this was also re-examined briefly with the aim of increasing the sample of flints from features that were re-excavated.

Raw material

The flint used appears to be exclusively chalk flint which outcrops in the immediate area. Almost all is corticated white or speckly grey. Some pieces have a light calcium carbonate encrustation and a few are iron-stained. The material is all in reasonably fresh condition.

The excavated struck flint assemblage

Flakes are generally broad with a thick platform, irregular in shape and struck with a hard hammer. Completely and partly cortical trimming flakes are well represented with 56 examples plus seven chips. However, almost a quarter of all the flake material consists of six blades and 12 blade-like flakes. These flakes are thinner, narrower, have a more regular outline and are struck with soft or hard hammers. No cores or irregular waste pieces were collected, although these were recovered by the CAU evaluation. The retouched material consisted of two end scrapers, a side/end scraper, a serrated blade and a simple edge-retouched flake. The two end scrapers were quite finely flaked and made on thin blanks,

though the other scraper was made on a very thick piece and was partly step-flaked.

Dating

The flakes which make up the bulk of the assemblage would be typical of a middle/late Bronze Age industry. The thinner and narrower flakes, however, would be more typical of Neolithic industries. The serrated piece is a typical find in assemblages up to the early Bronze Age. The scrapers are not particularly diagnostic, though the end scrapers may be associated with the earlier material and the side/end scraper may be Bronze Age on the basis of the thick blank and crudeness of flaking.

Discussion

The bulk of flint from the excavation was recovered from four features; ditches 1001, 1402, 1003 and 1291. The nature of the material and its probable date did not appear to vary between the ditches or within the ditches in different fills. The ditches are of probable Bronze Age date (supported by pottery evidence) and the uniformity of the lithics suggests flintworking activity in the vicinity did not change while the ditches were open. It is likely that the possible Neolithic element is surface residual material that had become incorporated into the ditch fills.

The material recovered from the excavation would appear similar in nature and date to that recovered in the evaluation. Material from the CAU test pits, which covered a wider area, would support the middle/late Bronze Age date, with only a few possible Neolithic flakes. Test-pitting results showed that the density of material appeared to be highest close to the ditches, and 93 pieces of worked flint and 18 pieces of burnt unworked flint were recovered from sections of the above four features during the evaluation (CAU F1, F3 and F11).

This material also appeared to be mostly of middle/late Bronze Age date. The only difference between the excavated and evaluation assemblages from these ditches was the quantity of earlier Neolithic material contained within them. Edmonds identified a very small amount of residual Neolithic material, and this was confirmed by re-examination. Of the 93 pieces of worked flint from the four ditches, only about half-a-dozen flakes had obvious technological characteristics which would be more typical of an earlier industry, although there is always a certain amount of overlap between different technologies and also between different stages of the knapping process. The excavated assemblage, however, contained a larger proportion of potentially earlier material, as shown above. This can be attributed purely to sample bias as the earlier and later material is evenly mixed throughout fills and between features.

The lack of chips collected, even in sieved samples, suggest that flint was not worked here, but may have been dumped in or close to the ditches from elsewhere. The presence of four refitting flakes found in the evaluation in a middle fill of F3 (CAU 1003) suggests the flint would have been worked close by. The

large number of cortical and trimming flakes in the assemblage, and general lack of retouched implements, confirms Edmonds' suggestion that this is not a domestic assemblage but more likely represents the residue of a more 'industrial' activity, the procurement of flint and production of crude flakes.

Environmental Remains

The animal bone

Bob Wilson

A total of 447 bones from ditches 1402, 1001, 1003 and 1291 have been examined and recorded to species frequency and other levels of information. Nineteen percent of the bones were identified. Overall results of recording the bone fragment frequencies are given in Table 2.

Table 2. Fragment frequency of bone by species

Ditch context	MBA		Late Bronze Age			%
	1402	1001	1003	1291	Total	
Cattle	-	5	23	26	54	66
Aurochs	-	-	1?	-	1?	1
Sheep/goat	-	1	12	9	22	27
Pig	-	-	2	2	4	5
Horse	-	1	-	-	1	1
Identified total	-	7	38	39	84	-
Unidentified	3	50	181	129	363	-
Total	3	57	219	168	447	-
Burnt bones	-	-	8	-	9	-

No bones of goat were identified among the sheep/goat category. Three fragments of a large horn core may be of aurochs but it is difficult to be certain. A femur and a tibia are of badger and they are leached enough to have been deposited in antiquity. However, they may be intrusive bones from burrowing animals rather than part of the human occupation debris.

Bones of cattle are much more numerous than sheep, pig and horse bones but bones of the medium sized mammals may be under represented. Firstly, most of the bones have been considerably eroded and

smaller bones may not have survived the process of bone degradation as well as the larger bones. Secondly, ditches (compared to other types of feature like pits and postholes) often yield a higher proportion of the bones of larger species like cattle and horse.

All major parts of the carcasses of cattle and sheep are represented. Mandible Wear Stages at death (Grant 1982) recorded are: sheep 28 and 34e and cattle 28, too few to indicate the Bronze Age kill-off patterns. A cattle metacarpal measured 171mm (G1) and the badger femur measured 112mm (G1).

In general the bones appear to be typical food detritus and indicative of domestic or ritual activity at the site even if it is concluded not to be a settlement and may be an animal management system.

Land snails

Mark Robinson

Introduction

The site was situated on chalk, resulting in all the archaeological features being filled with calcareous sediments suitable for the survival of mollusc shells. Two column sequences of samples were analysed from the enclosure ditches for molluscs (Fig. 3. Sections 1 and 41, Table 3). At least the early fills of ditch 1402 (Column 2) pre-dated the digging of ditch 1001 (Column 3) but both ditches were completely filled by the late Bronze Age.

Methods and results

Samples of 0.5kg were sieved down to 0.5mm and the molluscs extracted as described by Evans (1972, 44). Shells were absent from Samples 1.35m and 1.15m of column 2 and Samples 1.35m and 1.20m of Column 3. Otherwise the samples contained well preserved shells, mostly in quite high concentrations. The results have been listed in Table 4, excluding *Ceciliodes acicula* because it is a burrowing species. The nomenclature follows Kerney and Cameron (1979, 39-47).

Interpretation

Although ditch 1402 pre-dated ditch 1001, both

Table 3. The column samples

	Depth below surface (m)	Context	Description
Column 2			
DITCH 1402	0.15	309	Brown silt
	0.35	309	Brown silt
	0.50	308	Buff silt
	0.70	306	Pale brown silt
	0.95	305	Buff silt with chalk flakes
	1.15	304	Pale grey chalky silt with chalk rubble
	1.35	304	Pale grey chalky silt with chalk rubble
Column 3			
DITCH 1001	0.10	1074	Brown silt
	0.30	1074	Brown silt
	0.54	1075	Pale brown silt with a few chalk fragments
	0.78	1085	Pale brown silt with chalk fragments
	1.02	1086	Buff sandy silt
	1.20	1086	Pale grey chalky silt with chalk rubble
	1.35	1086	Pale grey chalky silt with rubble

columns gave broadly similar results so have been considered together. Shells were absent from the lowest sediments, which comprise almost entirely chalk and presumably accumulated rapidly. The earliest samples from which shells were recovered, Sample 0.95m of Column 2 and Sample 1.02m of Column 3, both contained rather sparse assemblages mostly of open country species. As the rate of sedimentation slowed, so the concentration of shells increased. Samples 0.70m of Column 2 and 0.78m of Column 3 both contained open country faunas which included *Pupilla muscorum*, *Vallonia costata*, *V. excentrica* and *Helicella itala*. *V. costata* was the most abundant species, which would be consistent with dry grassy conditions. Although a few shade-loving species such as *Aegopinella pura* were present in Sample 0.70m of Column 2, the numbers of *Carychium tridentatum* were not so great as to suggest tall grass. Sample 0.85m of Column 2 and Sample 0.78m of Column 3 both contained shells of *Truncatellina cylindrica*. This is now a very rare species of short-turfed grassland, although it does still occur in Cambridgeshire, but it seems to have been more widespread in the Bronze Age (Evans 1972, 140-1; Kerney and Cameron 1979, 68, 263).

Further up the sequence in both ditches, conditions became more stable and shaded, with the result that Sample 0.50m of Column 2 and Sample 0.54m of Column 3 both contain high concentrations of shade-loving species especially *Carychium tridentatum* but also *Acanthinula aculeata*, *Punctum pygmaeum* and

Aegopinella nitidula. Another species, *Pomatias elegans*, is favoured by loose soil or a layer of leaf litter. Open country species, however, retained a presence. There were significant numbers of *Vallonia costata*, an open country species which also lives in longer grass and can tolerate some scrub. *Helicella itala*, which is less tolerant of shading, was also present and there were several individuals of *Truncatellina cylindrica* in Sample 0.54m of Column 3. Although the almost complete absence of *Discus rotundatus* was probably a reflection of the dry conditions of the site (Evans 1972, 185), these assemblages did not have the character of full woodland faunas. Indeed, the most numerous species, *Carychium tridentatum*, readily flourishes amongst tall grass. While it is possible that the faunal changes were the result of general but incomplete scrub development, they could also have been caused by hedges growing alongside the ditches becoming overgrown and tall vegetation growing in the ditches against the background of an open landscape.

The upper two samples from each of Columns 2 and 3 showed an increase in the proportion of an open species and a decline in the proportion of shade-loving species. This would suggest a return to more open conditions.

Table 4. Mollusca: Minimum number of individuals per sample

Context	Ditch 1402, Column 2					Ditch 1001, Column 3				
	305	306	308	309	309	1086	1085	1075	1074	1074
<i>Pomatias elegans</i> (Müll.)	1	6	18	25	17	-	1	24	7	1
<i>Carychium tridentatum</i> (Ris.)	2	5	198	36	18	-	2	95	12	3
<i>Cochlicopa</i> sp.	-	2	48	12	3	-	3	13	5	1
<i>Truncatellina cylindrica</i> (Fér.)	2	-	-	-	3	-	2	3	2	2
<i>Vertigo pygmaea</i> (Drap.)	-	-	-	1	-	-	-	-	-	-
<i>Pupilla muscorum</i> (L.)	1	6	3	2	3	1	17	7	5	2
<i>Vallonia costata</i> (Müll.)	3	11	14	16	20	1	13	46	36	9
<i>V. excentrica</i> Sterki	5	4	4	8	9	1	3	4	9	4
<i>Vallonia</i> sp.	8	27	10	21	34	2	41	33	59	36
<i>Acanthinula aculeata</i> (Müll.)	-	1	36	10	3	1	-	18	3	1
<i>Ena obscura</i> (Müll.)	-	-	3	4	-	-	-	2	-	-
<i>Punctum pygmaeum</i> (Drap.)	-	5	33	8	6	-	2	20	2	3
<i>Discus rotundatus</i> (Müll.)	-	-	-	-	-	-	1	-	1	-
<i>Vitrina pellucida</i> (Müll.)	-	-	5	-	-	-	-	-	-	-
<i>Vitrina cf. contracta</i> (West.)	-	3	74	13	1	-	1	12	7	1
<i>Nesovitreia hammonis</i> (Ström)	-	-	2	-	-	-	-	-	-	-
<i>Aegopinella pura</i> (Ald.)	2	4	31	6	2	-	-	7	-	1
<i>A. nitidula</i> (Drap.)	2	3	35	12	1	-	-	22	1	-
<i>Oxychilus cellarius</i> (Müll.)	1	1	11	8	1	-	-	5	1	-
<i>Limax</i> or <i>Deroceras</i> sp.	-	1	5	4	-	1	1	1	3	3
<i>Cochlodina laminata</i> Mont.)	-	-	-	2	-	-	-	4	-	-
<i>Clausilia bidentata</i> (Ström)	1	2	3	2	3	-	-	7	2	-
<i>Helicella itala</i> (L.)	4	11	7	11	8	-	7	11	10	9
<i>Trichia hispida</i> gp.	1	1	8	21	9	-	1	12	11	4
<i>Helicigona lapicida</i> (L.)	-	-	2	-	-	-	-	1	-	-
<i>Cepaea</i> sp.	-	1	1	-	-	-	-	-	-	-
<i>Arianta</i> or <i>Cepaea</i> sp.	-	-	1	-	1	-	-	2	1	-
Total	33	94	552	222	142	7	95	349	177	80

Discussion

The evaluation found no positive indications of settlement and similarly the excavation was inconclusive. However, the larger area of the excavation helped to clarify the character of the enclosure. It was established that ditches 1003 and 1291 were separate features that formed the southern and eastern limits of an enclosed area rather than a single boundary. It was also observed that ditch 1291 curved towards the east, which would be unlikely if a site was being enclosed. Such ditches are more consistent with boundaries or field divisions. Ditch 1402, linear for at least 100m, was clearly a land boundary which continued in use as ditch 1001. The chalk fills of ditch 1402 indicate the presence of a bank along its eastern side.

The relationship between ditches 1291 and 1003 cannot be proven in the absence of any physical relationship but the proximity of their terminals, which clearly appear to respect one another, strongly suggests that they are contemporary. This is supported by the fairly uniform finds that were recovered from both ditches. In addition, the posthole line ran from the terminus of ditch 1291 and parallel to ditch 1003. These posts and the two recuts of ditch 1003 reinforce the continued use of the southern boundary.

The flint and pottery assemblages indicate a middle Bronze Age date for the initial excavation and use of the ditches that continued into the late Bronze Age. The Neolithic flint and Beaker and early Bronze Age sherds are interpreted as redeposited residual material. It is, therefore, probable that this area was the subject of significant land partition in the mid-late Bronze Age. The size of the ditches and the extensive recuts of ditches 1402 and 1003 indicate that, as well as a reorganisation of the landscape, there was also a degree of continuity in the utilisation of boundaries which lasted some considerable time. The boundaries seem to have lost their significance in the later Bronze Age when the ditches were infilled. Two probable drainage ditches and a pair of gullies which may have flanked a trackway are certainly post-medieval or later in date and relate to more recent farming activity in the area.

It is difficult to speculate on changes over a wider area beyond Fulbourn, but the creation of these ditches may be part of the general move towards large-scale reorganisation of the landscape during the middle Bronze Age (Bradley 1994, 96; Darvill 1987, 108). During this period large areas of land were divided with a much higher degree of uniformity and order than had previously existed. In many areas, such as Fengate, this appears to have been accomplished over a fairly short period of time and with a high level of cohesion, with major boundaries being laid out together and smaller divisions added according to requirements (Pryor 1980, 179).

The specialist reports confirm that the enclosure does not contain evidence for domestic use. The quantity of pottery is limited (Barclay) and the flint collected is indicative of raw material procurement and

initial production of crude flakes rather than a domestic assemblage. No features were found which would contradict this. The bone analysis demonstrates the presence of cattle, sheep, pig and horse remains but the assemblage is small and little can be gleaned from it except that the animals were available and probably formed the basis for a pastoral economy in the area. This interpretation is strengthened by the analysis of the snails collected from the site which indicate a dry, open grassland environment. The substantial nature of the ditches would also argue for stock-management rather than arable farming, as would the use of fences and other possible stock-management features evidenced by the postholes.

Although no settlement was found associated with the ditches the quantity of flintwork produced by the test pitting of adjacent fields carried out in the evaluation argues for a possible habitation site nearby (Gdaniec 1993). The ring ditches and barrows outlined in the archaeological background to this excavation indicate substantial activity in the area although much of this is only provisionally dated to the later Bronze Age. The excavation at Low Fen, Fen Drayton (Mortimer 1995) did uncover part of a Bronze Age field system similar in character to that excavated at Fulbourn although in both cases the limited nature of the area examined makes it difficult to place the features in their wider context.

Acknowledgements

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Location of the archive

The finds and paper archive for project FUHO 96 will be deposited with the Archaeology Section of the Cambridgeshire County Council.

Appendix 1

The Cambridgeshire Sites and Monuments Record (SMR) was consulted by CAU for the location of archaeological sites and find spots within the vicinity of the Hospital grounds. These sites and find spots are listed in Table A1.

Table A1. Known archaeology within the vicinity of the site from the Cambridgeshire SMR

SMR/AP REF	Grid ref.	Date	Description
02692	494/565	Prehistoric	Ring ditch, linear and curving features
09593	491/568	Prehistoric	Ring ditch
BFC 62-4	491/560	Prehistoric	Group of three ring ditches
09305	518/574	Prehistoric	Group of three ring ditches, 1 concentric, 1 incomplete, 1 D-shaped
09036	510/561	Prehistoric	Enclosures and ring ditch
06315 SAM 95	503/567	Iron Age	Incomplete rectangular ditched settlement enclosure with trackway, internal linear features and pits
05099	499/570	Romano-British	Excavation, finds scatter, cropmarks relating to a ditched settlement with buildings and field systems
05100	498/575	Romano-British	Excavations, finds scatter, earthworks and soilmarks
GW 8-10	496/567	Romano-British?	Sub-square enclosure (AP)
08896	501/576	Medieval	Moat and Manor

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Roman Kilns at Penfold Farm, Milton

W H C Frend

The Excavation

A small trench (Fig. 1), 9 x 5m, was excavated with the help of the Cambridge Archaeology Field Group after field walking had revealed dense scatters of pottery, querns and millstones over an area where permission was being sought to construct an Olympic standard rowing lake. The site (TL 4909 6345), which lies 200m west of the Cam on the opposite side of the river to the well-known Horningsea kilns, formed part of a larger programme of excavation undertaken by the County Council's Archaeological Field Unit (Robinson and Guttman 1996).

The excavation revealed intense Roman occupation, including a ditch (10) whose east edge was consolidated with broken tiles, cobbled surfaces and a gravel floor. At the east end of the trench there was a floor of clay and gravel. These features appear to

belong to the 2nd century AD. The most interesting feature of the site was the next phase, when a two-chambered pottery kiln was built of reused building materials and large round stones (probably from the river). Contemporary with this were two shallow depressions (7 and 8) crammed with thickly packed waster material, mainly from the sides of two large Horningsea storage jars but also including fragments of grey ware and parts of querns. Contemporary with the kiln was a small area of cobbles, amongst which there were small compact patches of stone and broken tiles, possibly evidence for post-bases belonging to a structure covering the kiln and depressions at a late stage in the use of the site.

Finds included four worn coins on the field surface, two of the Gallic emperors (259-274) and one of the Falling Horseman type issued by Constantius II (345-361), and a minim. In addition, a pair of small

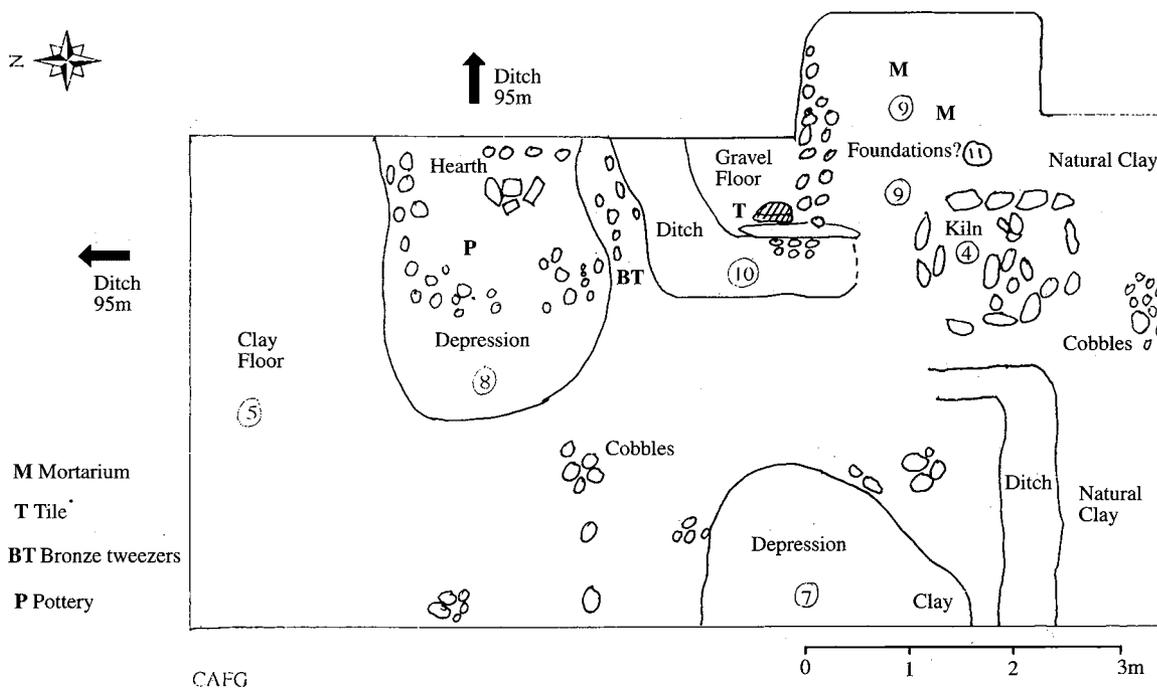
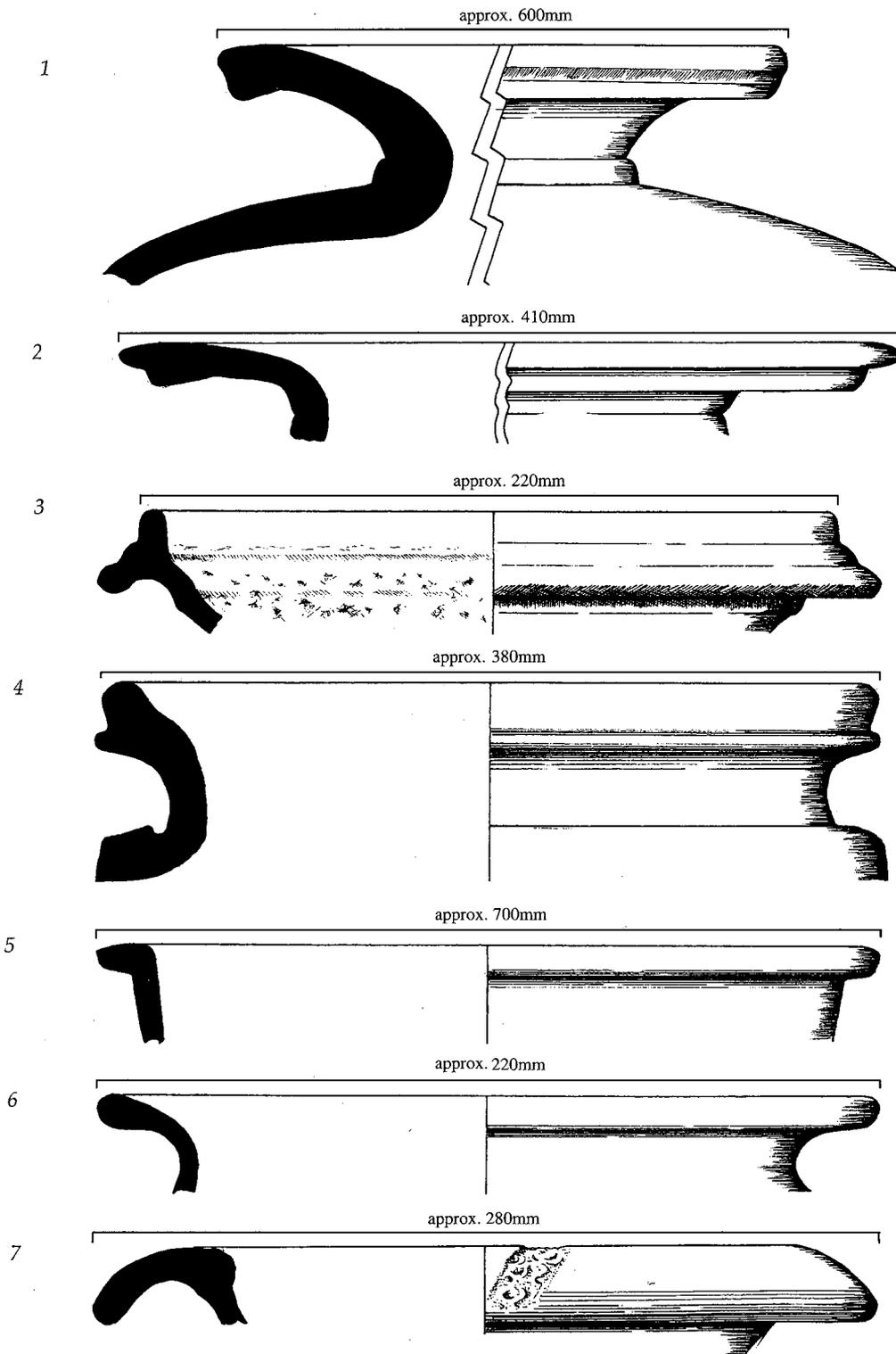


Figure 1.

bronze tweezers and a samian base sherd stampedURTUN and part of the inscribed rim of a mortarium were found in the clay floor. There was also a great quantity of coarseware sherds, weighing nearly a hundredweight. Prominent among the pottery were very large vessels, mainly Horningsea storage pots, and also mortaria and grey ware bowls and dishes.

The site was clearly an important industrial area bordering the Cam, showing 2nd century occupation but with maximum use in the mid and late 4th century. The presence of large numbers of querns and millstones suggests milling of grain on a considerable scale, presumably for export via the Car Dyke.

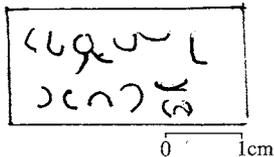


Illustrations by P. Sadler

The Pottery

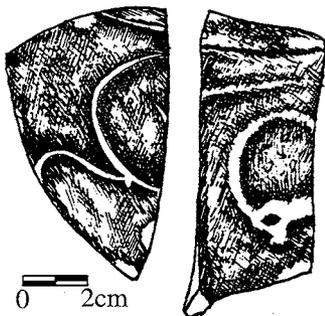
The most important aspect of this small survey was the pottery. A representative selection is illustrated here.

1. Everted rim of Horningsea storage jar of hard grey ware, wide sloping body indicating large capacity. (Larger than examples in Frend and Cameron 1992, p 10). (Level 10)
2. Horningsea storage jar. Hard grey ware with broad protruding rim and shallow groove round the underside. (*op cit.*) (Level 4)
3. Rim of large hammer-headed Nene Valley type mortarium. 4th century. Hard grey-white fabric, brown grit. Heavily burnt. Waster? (cf. Miller 1995, p 42, no 65). (Level 9).
4. Horningsea storage jar. Same type as 2, but deeper groove and orange fabric. (Level 8).
5. Rim of large straight-sided bowl; hard grey fabric with traces of burnish on interior and exterior. (Level 4).
6. Rim of large wide-mouthed cooking pot; everted rim; hard grey fabric with slight traces of burnish. (Level 1).
7. Mortarium with broad over-hanging rim. Light buff fabric. Inscription on rim in rectangular box. Early 2nd century. (cf. Neal 1974 p 224, no 140, and Hartley 1973)



8. Two fragments from side of Castor ware beaker of white pipe clay with black metallic slip. Barbotine curvilinear decoration in creamy white, featuring vine tendrils. From robber trench north of kiln. (cf. Miller 1995 p 39, no, 39) (Level 10)

8



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A Medieval Kiln at Colne, Cambridgeshire

Hilary Healey, Tim Malim and Kit Watson

Summary

Trial excavations on the outskirts of the medieval village of Colne identified the disturbed remains of pottery kilns that had functioned between the 12th and 16th centuries. Kiln debris, wasters and dense quantities of sherds were recovered. Trenching identified the eastern edge of the kiln area, but to the west it extended into gardens. No traces of medieval building were noted, though pottery of Saxo-Norman and early medieval date indicated earlier settlement. Within the area examined the site was well preserved, the pottery dump surviving as a low mound beneath shallow topsoil. At least one more kiln and pottery dump is known to have existed near to the site discussed here.

Introduction

The excavation (TL 3705 7603) was undertaken as a result of a planning application affecting the farmyard of Moat House Farm, Old Church Lane, Colne, immediately south of Drury's Manor moat. Old Church Lane lies at the east end of a ridge, overlooking low-lying areas of both the Ouse and the Fens (Fig. 1). The ridge is capped by Boulder Clay immediately west of Colne, and lies on a narrow band of 1st Terrace River Gravels, surrounded by exposures of Ampthill Clay. The medieval village of Colne lay north and west of the present village, presumably centred on the now ruined St Helen's Church, between and to the south of two moated sites.

Although Colne lacks a waterway for transport of bulky material such as pottery, the neighbouring village of Earith is well placed on the Ouse. Original village roads would have included the present footpath which runs from the site of the medieval settlement to Somersham Bishop's Palace, and also to the bend in the present Earith to Somersham road at Deadman's Hill. The medieval village was probably on the crossroads of the Bluntisham/Somersham and Earith/Somersham roads, and the pottery industry would have had a direct relationship with the Bishop's Palace at Somersham, under whose control this area lay.

In 1921 a kiln and pottery dump was identified by

C.F. Tebbutt prior to construction of houses west of the present site (OS 6" 1958). Unfortunately, neither the records nor the finds from the excavation seem to survive, relevant OS records being destroyed during bombing of Southampton during World War II.

The trenches of the excavation described in this report were constrained by the standing buildings, access routes and services of a working farmyard. Their depth and extent were kept to a minimum as it was agreed, following the discovery of the remains, that development would avoid further damage to the archaeology. Therefore initial topsoil clearance was followed by only minimal excavation at selected points, referred to as test pits, and a transect across the kiln along the southern part of Trench B.

The Excavation

Description

Of the five trenches placed around the farm yard only Trench B produced extensive archaeological deposits, although Trench D contained redeposited sherds of Saxo-Norman pottery, probably from a single vessel. After removal of the topsoil from Trench B a sequence of deposits (including a compact area of layered pottery (Fig. 2)) was exposed and a rapid programme of sampling was devised in order to recover stratigraphical information and a better understanding of the deposits. Unfortunately the emphasis on minimal disturbance and the subsequent decision to undertake no further excavation as the area could be preserved under gardens, has resulted in limited archaeological knowledge, and the following brief account gives little detail to back up the general conclusion that the site represents the remains of a medieval kiln.

The earliest activity appears to have been a hollow (context 72) (Fig. 3, sections 4 and 5) at least 0.6m deep, perhaps a borrow pit for clay extraction, which extended across the north and centre of Trench B. Its eastern edges were picked up in Test Pits C and D and it was found to be filled by rubbish-free silty-clay layers (37, 53, 58–62, 64, 68 and 69) amongst which there was at least one sherd of 13th/14th century Grimston pottery. A similar depression (context 73) was found in

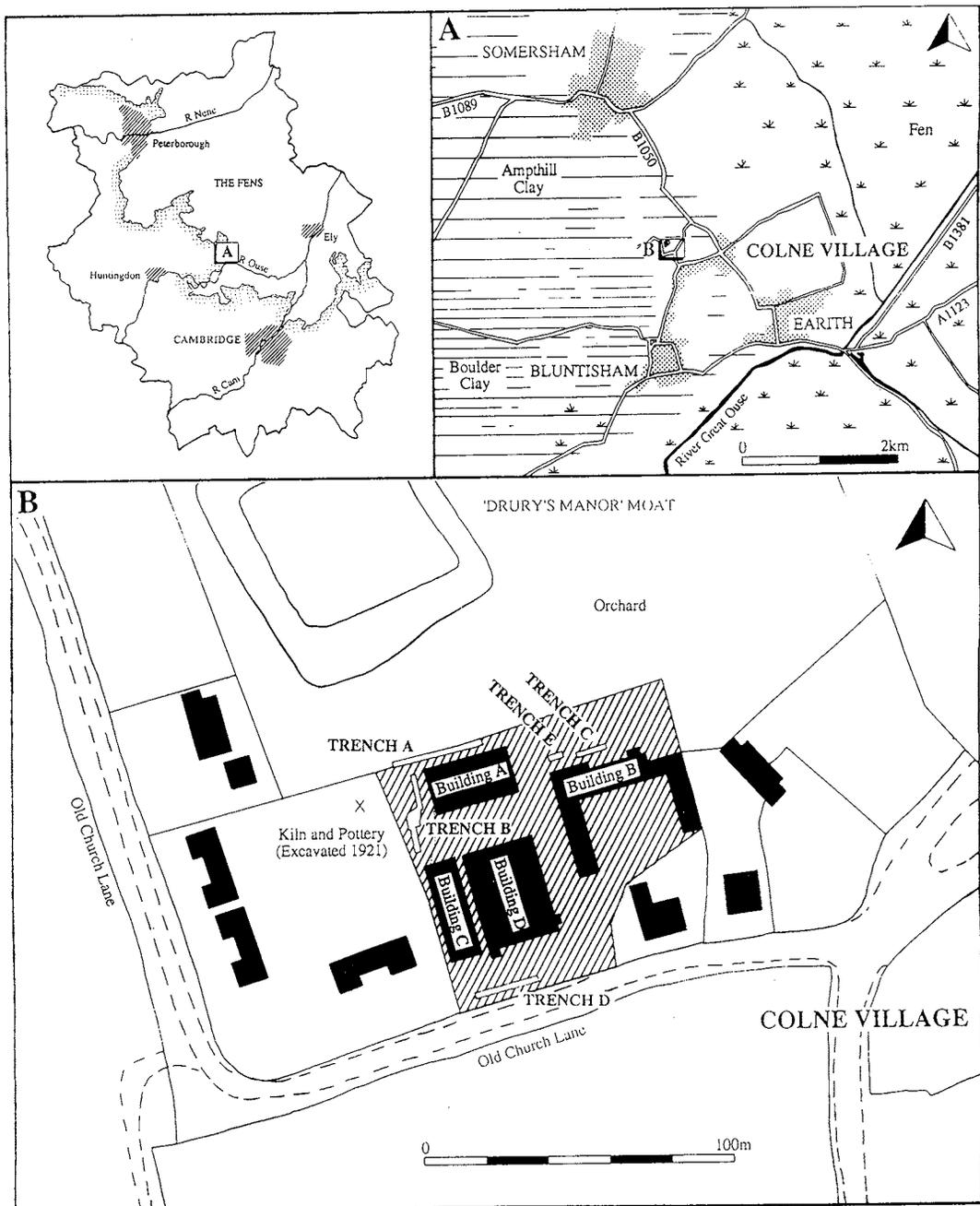


Figure 1. Location and site plan.

Test pit E (section 1), and at its southern end a sondage was excavated which revealed a pottery-rich fill of silty-clay (context 38) underlying a series of layers interpreted as "B" horizons.

Test pits C and D (Fig 3, sections 4 and 5) were located against the eastern side of Trench B to sample an area beyond the limits of a spread of pottery (context 31) in the centre-west of the trench. Both these Test Pits showed evidence of a ditch (contexts 34 and 66) which had been cut into the top fills of the hollow (72), and which might have been a boundary for the kiln itself or a foundation trench for a structure to house the kiln. They also revealed a clay surface (context 35) which sealed the infilled hollow and this infilled ditch, which post-dated demolition of the kiln.

Test pit A, along the western edge of the trench, was positioned to section the spread of pottery (context 31) and related deposits. This test pit proved to be a transect across a kiln (section 1). The silty-clay layers that infilled the hollow were cut by a feature over 3m wide and an unknown depth, in order to accommodate construction of a kiln. Remains of a 0.2m wide semi-circular lime-mortar wall (context 63: a curved band of dense but unconsolidated mortar containing fragments of brick) with an internal diameter of 1.7m was found, packed externally by silty-clays (context 49). The structure had been substantially robbed-out at a later date to judge by the occurrence of mortar fragments with brick and tile (context 57). The resulting depression had then been infilled with a gravel

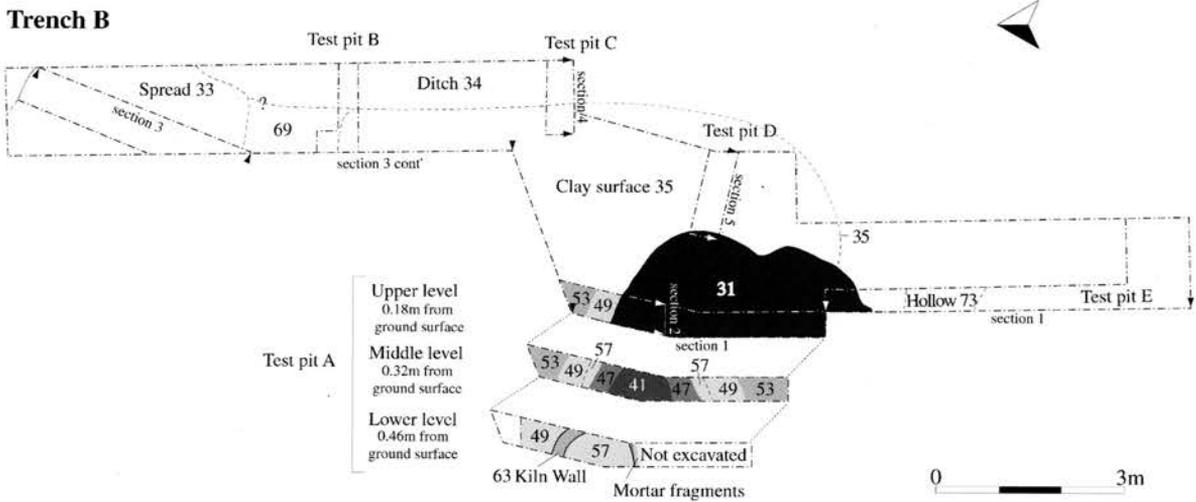


Figure 2. Plan of Trench B

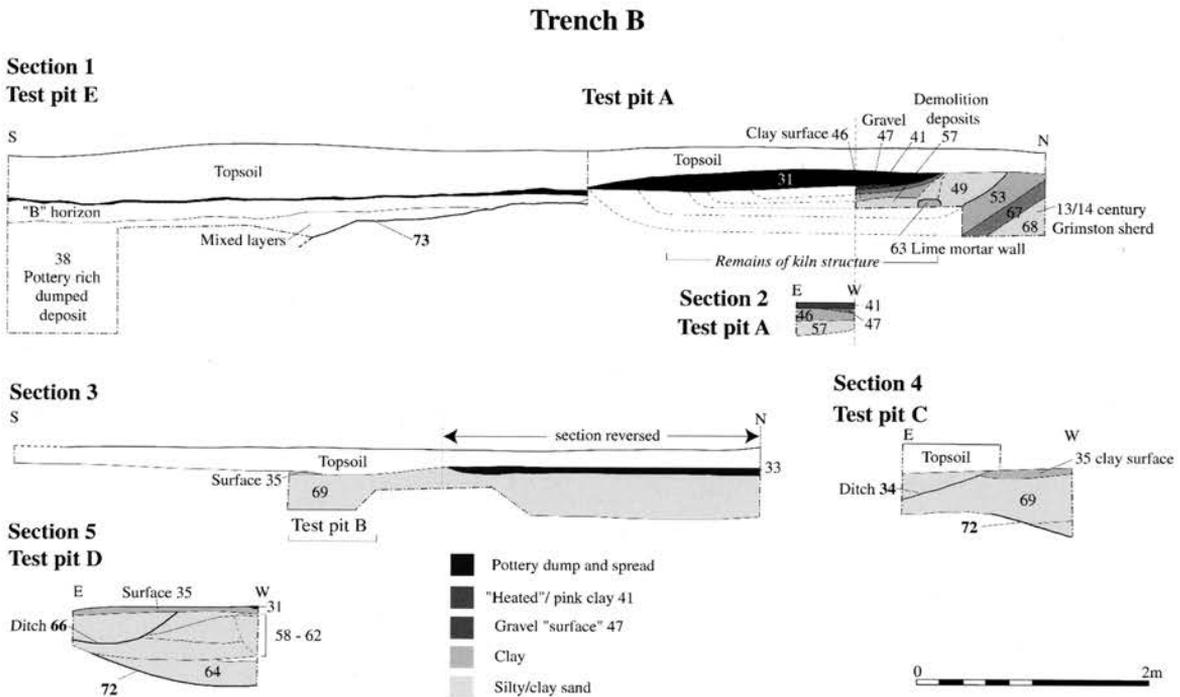


Figure 3. Trench B sections

capped clay layer (context 47 overlying 46, corresponding to context 35), possibly a surface caused by trampling, above which a pink clay deposit (contexts 39 and 41) contained sherds of pottery (sections 1 and 2). This latter layer had apparently been subjected to heat but not to a temperature high enough to fully bake the clay. Sealing the kiln and spreading out over a 4m wide area was a 0.2m high mound of horizontally layered pot sherds (context 31), continuing beyond the western limits of the trench but finishing at the edge of Test Pit D to the east. Beneath the southern part of this pottery dump in Test pit E, a humic soil with concentrations of burnt pottery and darker

soil was found infilling a lower-lying area adjacent to the kiln. A similar spread is apparent in the north of the trench (layer 33, section 3).

Conclusion

In summary, therefore, investigations around the dump of pottery indicated an initial episode of quarrying, followed by infill with largely sterile deposits, into which the curved brick and mortar wall of a probable kiln was constructed. A ditch representing a boundary or foundation trench for a structure was found to the east of the kiln. An episode of demolition and robbing of the structure together with trampled

surfaces was followed by levelling and the dumping of industrial waste in the form of hundreds of pot sherds. Evidence for interpretation of the site as a kiln comes from the amount of discarded and broken pottery indicating manufacturing, the circular wall suggestive of a kiln, a layer of pink clay above it and humic and dark deposits to the south of the kiln which probably all derived from burning; in short the kind of deposits that one would expect to find in association with a kiln.

The Ceramic Material (Figs. 4–6)

Hilary Healey

There seems no doubt that the Colne pottery is kiln waste, with the exception of a small number of sherds representing probable Late Saxon and medieval domestic activity on the site. By analogy with pottery from other kiln sites, chiefly at Bourne, Lincolnshire, a date range between the 12th and 16th century is suggested. Constraints of time and finance permitted only a general examination of the great number of sherds. The contents of four boxes were examined in detail, three of them from trench B context 31 (the pottery dump) and the fourth from three other contexts including 38 (a sondage at the south end of the trench) and 68 (the fill of a large hollow beneath the kiln). The fabric classification was made on a visual basis and sherds diagnostic of the vessels and forms seen were selected for illustration. Only one complete vessel profile was recorded. The numbers refer to the illustration catalogue. Three fabrics were identified.

Fabric A

Reduced dark grey-brown to black surface, red and grey core. Inclusions of sand and oolitic limestone grit. The latter have sometimes leached out, leaving small holes on the surface. No glazed sherds were recorded.

Forms

Four vessel types: bowls, large jars (including some cisterns with bung-holes), jugs and pipkins. The most common rims in the collection belong to bowls and jars. Bowls, or pancheons, have an average rim diameter of c. 350mm (1–5). The one complete profile (2) shows a bowl only 54mm deep, but this has a smaller diameter than some of the sherds. Large jar rims are generally round-edged and everted, with a diameter of 180–200mm (6–10). An unusual variation has a 'ginger jar' appearance, with the rim inturned, and no neck (11), but with similar dimensions to the ordinary jars. Jug rims are also of similar profile to jar rims, but with a smaller diameter of c. 100mm; some of these sherds have a plain or grooved handle (12–17). The sherd of a large jar rim with handle (18) is probably from a two-handled jar, although not illustrated as such. Amongst basal angle sherds are pronounced sagging bases with external knife trimming, and since no flat bases occur it is assumed that these bases (not illustrated) may belong to both jars and jugs. Jug or jar

handles are oval or grooved strap types, and are attached directly to the vessel rim rather than to the neck of the pot. Body sherds appear to come from thick-walled vessels. Pipkin handles (19–20) represent a further class of vessel of which no other parts have been identified.

Fabric B

A hard fired, light grey to buff, sand-tempered ware containing sparse oolitic inclusions. It is not dissimilar to fabric A as it might be affected by more oxidising conditions in the kiln, but the vessel rim forms are slightly different.

Forms

Fewer diagnostic sherds are present than in fabric A, but they include most of the same vessel types: bowls/pancheons and jars. The jar rims are more upright than in fabric A and average c. 140mm diameter (23–5). Handled rims (26–7) are likely to belong to two-handled cisterns, although few bung-holes (29) appear in the assemblages. Bowl/pancheon rims occur in sizes ranging widely around 400mm (30–32). One or two fragments of a flat-based vessel type, possibly a jug, are present (not illustrated) but sagging bases are more in evidence. Pipkin handles (not illustrated) complete the evidence for vessel types. Some sherds bear slight traces of glaze.

Fabric C

Oxidised red sand-tempered fabric. The proportion of sand varies a great deal and there are even a few examples of sherds entirely free of inclusions, but they are the exception. Most sherds examined are neither slipped nor glazed, but a white slip is frequently used, externally on jars and jugs, internally on bowls and pipkins. Beneath a clear lead glaze the slip produces a mottled effect with a range of colours, from brown and green to off-white and yellow. There is no evidence of sgraffito through the slip. In appearance this fabric has close parallels with the description of Coppack's red fabric from Denny Abbey (Coppack 1980). From the writer's knowledge it has close parallels with pottery from a kiln site at Glapthorn, Northamptonshire (Johnston & Foster n.d.; see Fig. 7) and with Bourne D ware (Healey 1968).

Forms

Vessel types cover the same range as those identified in the previous two fabrics. Handles with rims (33–35) may belong to jugs or cisterns, with smaller rims of up to 130mm for jugs (36). The handles seen suggest a wider range of jug sizes than is illustrated. A great variety of jar rims is evident (37–43, 47). Bowl/pancheon rims are small everted types (44) or flat ones lying almost horizontal (46). A small number of waster sherds have been noted throughout the collection, some in each fabric. They include examples of blistering, blowing, distortion, surface cracks, overfiring, and glaze overrunning a fractured edge.

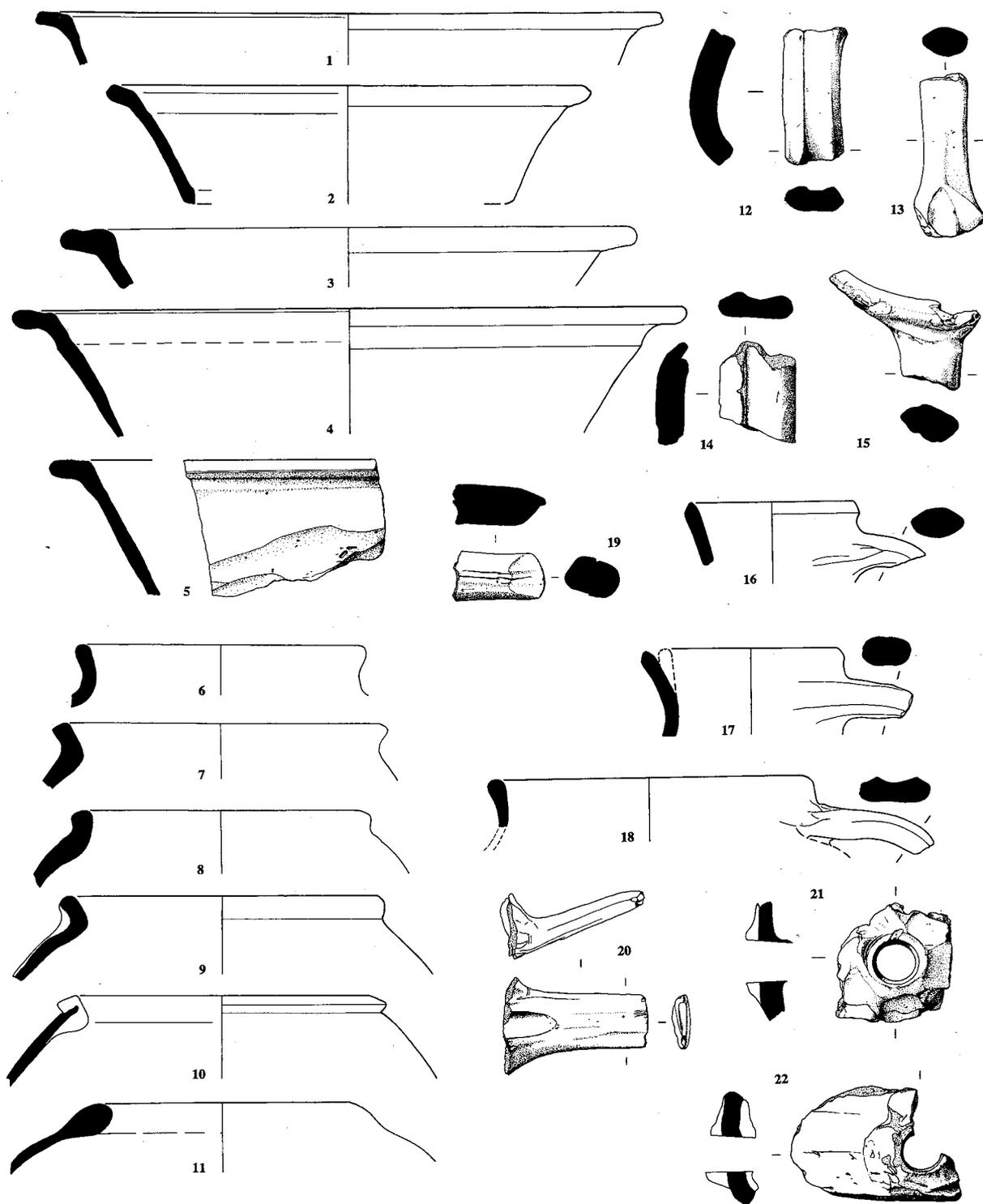


Figure 4. Pottery of Fabric A

Other Ceramic Material

Fragments of flat roof tile (58-9), among them one piece with a peg-hole in the corner, are also present, together with several lumps of fired clay. The fired clay is comparable to kiln structural material known from kiln sites in other counties, including Lincolnshire.

Technology

One peculiar advantage of kiln waste, which is what this collection appears to be, is the opportunity to study manufacturing techniques visible in numerous fractures. All the material seen had been wheel-made, with the additions which might be expected: handles, bung-holes and decorative features. Techniques do not vary much between the three fabrics.

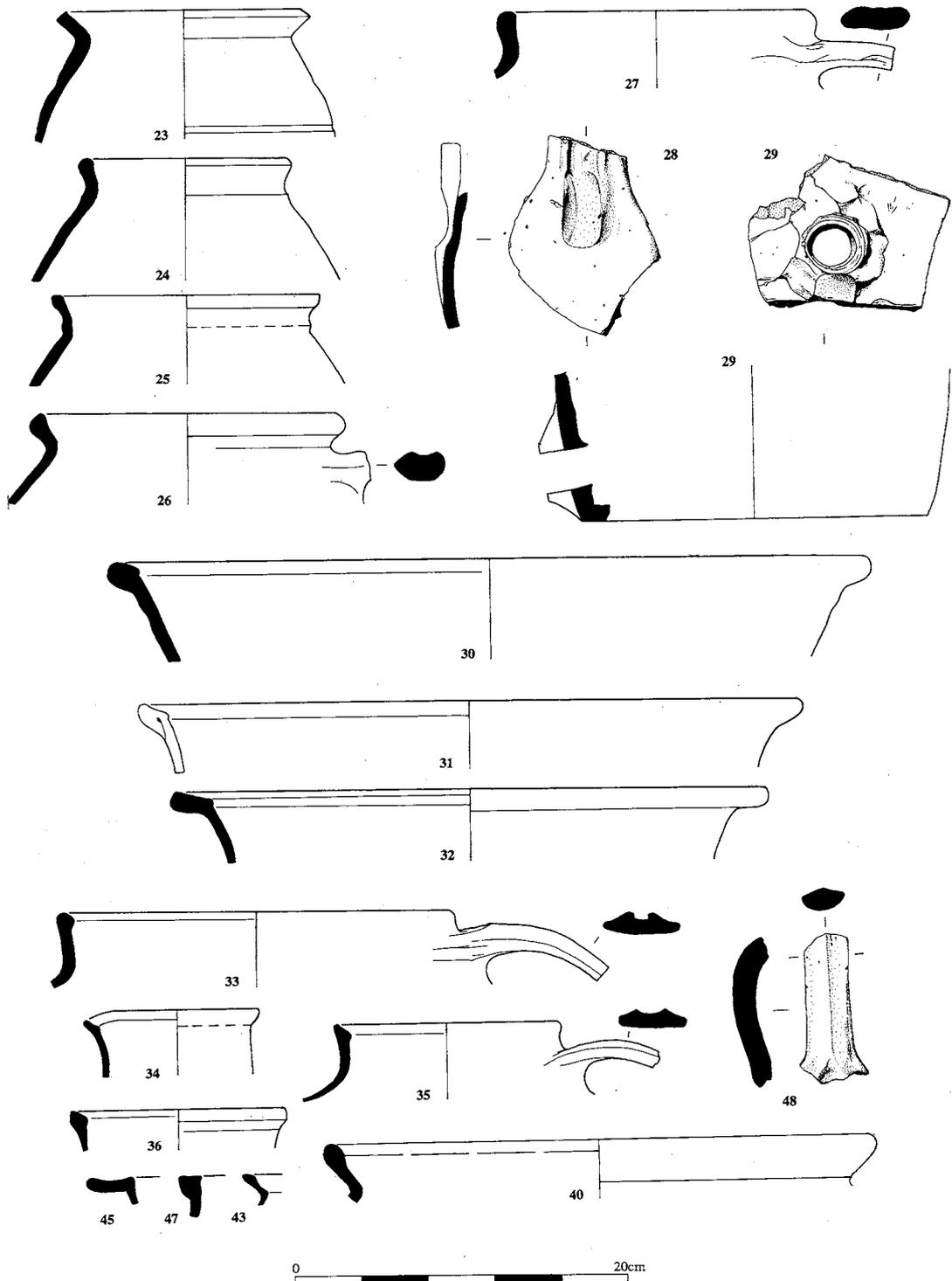


Figure 5. Pottery of Fabric B and C.

Handles

Three principal types of handle are recorded, all of the 'pulled' type, i.e. drawn out gradually with the fingers from a sausage of clay. The A ware handles are rounded in section, as are those of some of the smaller jugs in the C ware. However most of the C ware handles are pulled into a strap formation with a central groove

(33). The groove may be a deep one with its sides pinched or almost folded over, as Healey type 12 (Healey 1976a, 11). The pipkin handles are pulled into required short lengths of c. 50mm and then pinched off (19, 20 and 50). The method of fastening handle to vessel usually involves forming the centre of the upper end of the handle into a small plug of c. 5mm

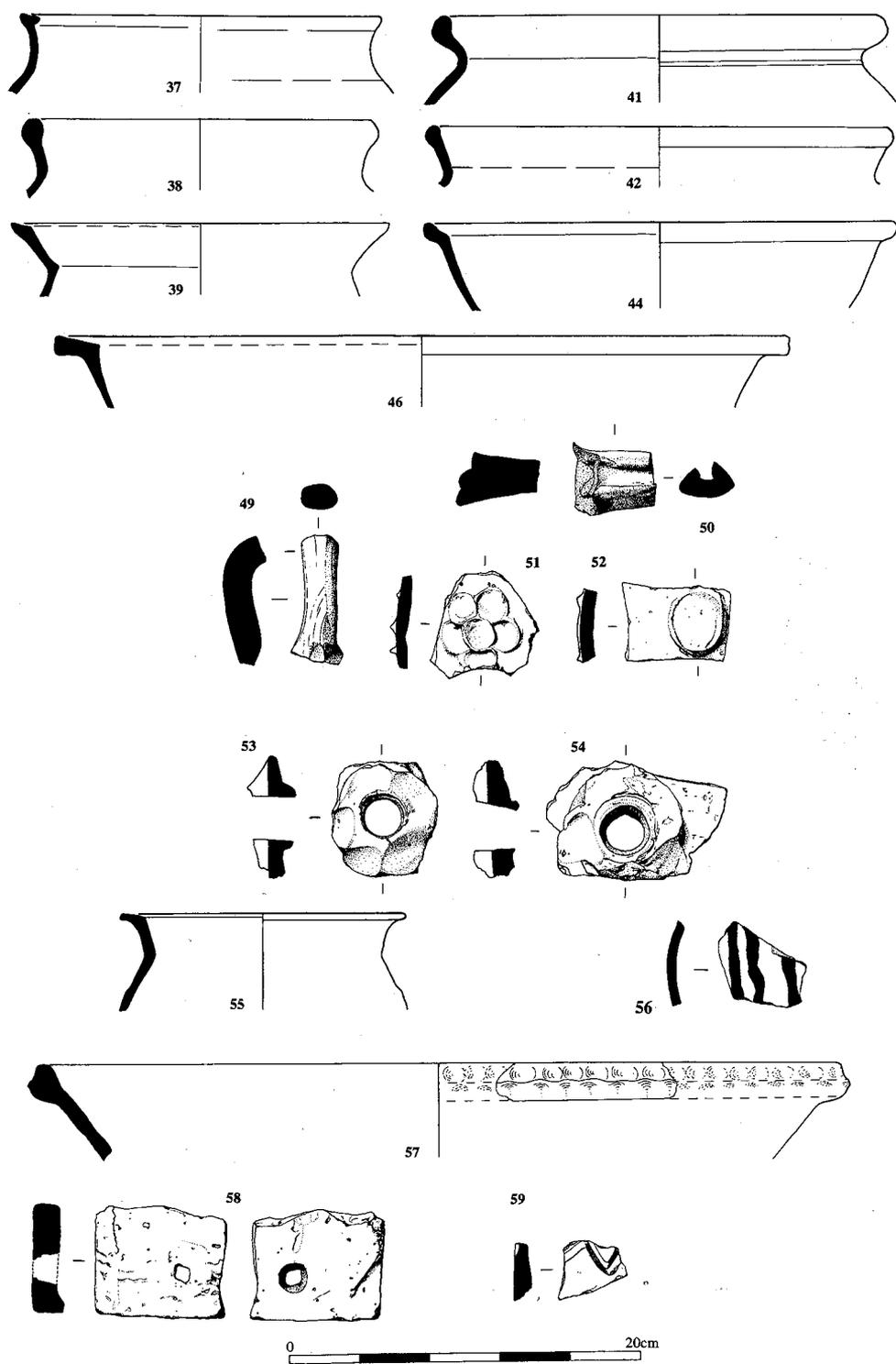


Figure 6. Pottery of Fabric C.

diameter and pushing it into a corresponding hole in the side of the vessel neck. The sub-circular shape of the hole suggests that it is made with a stick or with fingers (bearing in mind that there will have been some shrinkage of the clay since it was first shaped). The clay at the upper end of the handle is then smoothed over the external join. The part of the plug that protrudes internally is also flattened and blended

into the jug wall. At the lower end of the handle junction additional clay may be used to assist in luting the clay onto the wall. In the A ware, handles are fastened directly onto the rim with no plug. The lower handle end is flattened and spread in the process of being smoothed down to seal the join. Handles for pipkins are usually pulled in a straight length rather than curved as for jugs (19, 20), although the C ware pipkin

handle may have been more curved. As with jugs, the other end of the handle is plugged into the vessel wall in the manner already described.

Bung-holes and Decorative Features

For the reinforcement of bung-holes a pad of clay is applied and secured by finger pressure, often resulting in a rosette of finger impressions (21, 53). The central hole is set at a slight angle to the horizontal, with the higher part on the exterior, apparently being formed by use of a large stick, as it invariably tapers with the wider diameter on the outside hole. Evidence for the added clay being in position before the stick is passed through shows in the fact that clay has been pushed slightly to one side on the interior of the vessel. A rosette (51) is made in the same way by pressure of fingers or thumbs (generally termed 'thumbing' even where fingers have apparently been used) on a clay pad or a series of overlapping pads; the rosette has no obvious function although it may serve to assist the grip in lifting and holding the vessel.

Discussion

Detailed examination of material from other sites in the county and region has not been carried out, and further work is required to find parallels for wares A and B. However, the fabric and forms of ware C invite comparison with other wares in eastern England. The most northerly production of similar wares is at Bourne, Lincolnshire (Fig. 7). Here, on present evidence, the comparable D ware represents the latest phase of an industry (Healey 1968).

Amongst the later pottery from Peterborough, Bridge Street West site (Nene Valley Research Committee, unpublished) there is not only Bourne D ware, but a 'Bourne D type' ware which was assumed to have a Cambridge source. It may be that this originates from Colne. Another kiln site producing material of similar appearance is Glapthorn, Northamptonshire (Johnston & Foster n.d.).

There is at present no firm dating for the Colne pottery, other than by analogy, since it is yet to be identified in stratified deposits. It is probable that the different fabrics belong to different phases of production, and analogy of Colne A, B and C wares with A, B and D wares from kilns at Bourne, Lincolnshire is suggested. At Bourne the fabrics appear to represent three phases of production, although with possible overlap between A and B (14th century), where some stylistic features occur in both wares. The same problem of a lack of stratified material applies equally to this Lincolnshire material, although the Bourne D kiln has been dated to the 1500s (Healey 1969). Kilns of a similar date at Toynton All Saints and Old Bolingbroke, Lincolnshire, were of brick construction (Healey 1968; Whitwell 1968). The existence of kilns of this type and date at Colne would fit well with the production of fabric C type pottery.

Colne fabric A has some similarities with early medieval pottery from Norwich; the 'ginger jar' form (11) appears to be paralleled by vessels from Norwich, which would place it in the 11th to 12th century

(Jennings 1981, 22–25). There are, however, inturned rims in Bourne D material, which is from the latest date range. Therefore this early dating is a tentative suggestion on evidence presently available.

Dating the Colne C ware appears to be less problematical. Wares in similar fabrics and forms for which dates have been suggested include Cambridge Sgraffito (14th to 15th century), Glapthorn (second half of 15th century) and Bourne D ware, (15th to 16th century). The dating information on Bourne D ware places it in the 16th century, continuing into the 17th century, but Bourne D type sherds from Kings Lynn were recovered in a 15th to 16th century context (Clarke & Carter 1977). At Bourne there was a strong medieval industry until the 14th century, and since it is unlikely that production ceased for a period of a hundred or so years it is reasonable to assume that Bourne D ware was first manufactured in at least the 15th century. The use of slip on late medieval wares in Essex ceased about the mid 16th century but seems to have continued later than this in Lincolnshire. The presence of thumbing bung-holes on the jars known as cisterns is a characteristic that had virtually died out by c. 1500 in Colchester and North Essex, whereas in Bourne D ware it continued until at least the 16th century. Other thumbing features such as the rosette (51) and large 'teardrop' (52) are typical of Bourne D ware, and the rosette has been seen on Cambridge Sgraffito types, including sherds in the University Museum of Archaeology and Anthropology, Cambridge.

On comparison therefore with similar material from the region, it is suggested that the Colne C ware may have a date range from the late 15th into the 16th century. The other wares are not easy to date at present, but on analogy with the situation at Bourne, Lincolnshire, may be postulated as earlier phases of the industry. More excavation is needed at Colne to investigate this further, although the existence of a long-lived pottery production site has been demonstrated. Evidence points to kiln structures which imply a phased sequence of construction, suggesting a well preserved assemblage of products and kiln types. In addition, the lack of plough damage indicates there may be surviving associated structures. As a medieval kiln site, this is of both local and regional importance. Cambridgeshire is unusual in that, apart from recent work at Ely¹ no medieval kiln sites have been excavated in the county, and this absence causes severe limitations in the study of regional pottery types, which in its turn affects national studies. The origins of the related fabric type known as Cambridge Sgraffito, for example, remain obscure.

Catalogue

Diameters given are from rims unless otherwise stated.

Fabric A (Fig. 4)

- 1 Pancheon. Diam. 290mm.
- 2 Bowl, complete profile. Diam. 300mm.
- 3 Pancheon. Diam. 360mm.
- 4 Pancheon. Diam. 420mm.
- 5 Bowl/pancheon, knife-trimmed exterior.
- 6 Jar. Diam. 180mm.

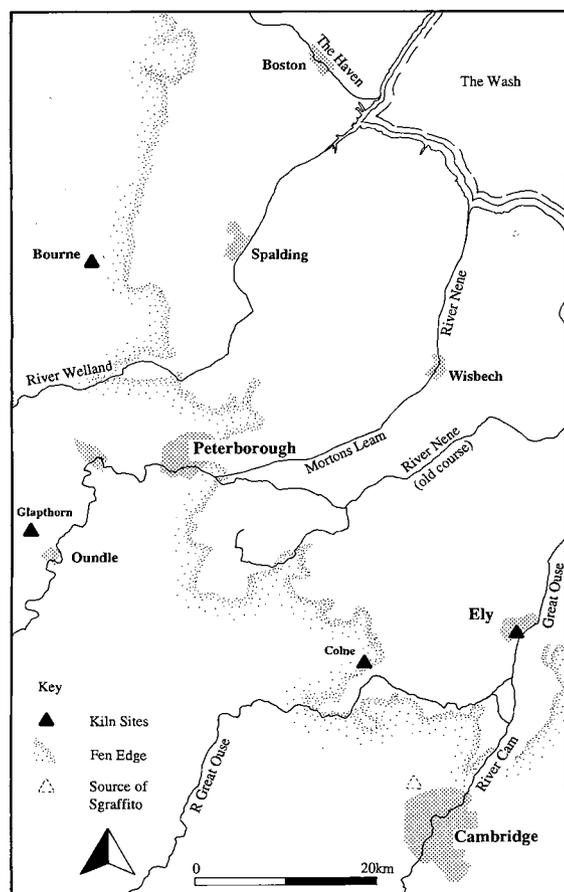


Figure 7. Kiln sites in the region.

- 7 Jar. Diam. 210mm.
- 8 Jar. Diam. 190mm.
- 9 Jar. Diam. 200mm.
- 10 Jar. Inturning rim. Diam. 205mm.
- 11 Jar. Inward turning rim. Diam. 170mm.
- 12 Jug handle, oval section. Width 20mm.
- 13 Jug handle, grooved strap. Width 30mm.
- 14 Jug handle, grooved strap. Width 35mm.
- 15 Jug rim and handle. Diam. not known.
- 16 Jug. Diam. 105mm.
- 17 Jug rim and handle. Diam. 100mm.
- 18 Jar rim and handle. Diam. 200mm.
- 19 Pipkin handle. Width 27.5mm.
- 20 Pipkin handle. Width 22.5mm.
- 21 Bung-hole of cistern
- 22 Bung-hole of cistern

Fabric B (Fig. 5)

- 23 Jar. Diam. 150mm.
- 24 Jar. Diam. 130mm.
- 25 Jar. Diam. 160mm.
- 26 Jar. Diam. 190mm.
- 27 Jar with two handles. Diam. 190mm.
- 28 Base of handle, thumb-impressed.
- 29 Bung-hole and jar base. Base Diam. 210mm.
- 30 Pancheon. Diam. 460mm.
- 31 Pancheon. Diam. 400mm.
- 32 Pancheon. Diam. 360mm.

Fabric C (Figs. 5 and 6)

- 33 Jug or Jar with handle. Diam. 180mm. (possibly distorted).
- 34 Jug. Diam. 105mm.
- 35 Jug. Diam. 100mm.
- 36 Jug rim. Diam. 130mm.
- 37 Jar rim. Diam. 210mm.
- 38 Jar or Jug rim. Diam. 200mm.
- 39 Jar. Diam. 210mm.
- 40 Jar. Diam. c.330mm.
- 41 Jar. Diam. 260mm.
- 42 Jar. Diam. 265mm.
- 43 Jar. Diam. not known.
- 44 Bowl. Diam. 270mm.
- 45 Bowl. Diam. not known.
- 46 Pancheon. Diam. 300mm.
- 47 Jar rim. Diam. not known.
- 48 Jug handle, oval section. with slight ridge. Width 20mm.
- 49 Jug handle, oval section. Width 14mm.
- 50 Pipkin handle. Width at centre 25mm.
- 51 Applied thumb-impressed rosette from jug or cistern.
- 52 Applied thumb-impressed pad, probably from cistern.
- 53 Bung-hole with applied thumbed surround.
- 54 Bung-hole with applied surround, thumbing not decorative.

Other wares and fired clay artefacts (Fig. 6)

- 55 Jar, shelly. Diam. 162mm.
- 56 Grimston (Norfolk) ware. Jug body sherd with applied trailed dark brown slip.
- 57 Bowl, Pancheon or (if turned upside down) Curfew. Coarse shell-filled fabric. Diam. 460mm.
- 58 Tile fragment with peg hole. Tile thickness 11mm.
- 59 Tile fragment with grooved wavy line.

Conclusions

The area of Colne represents a junction of several geological formations which can be used to suggest types of exploitation particularly relevant to medieval settlement and pottery production. The afforested Boulder Clay was a fuel resource during medieval times, and Amphthill Clay may have been a possible clay source. Fen peat could well have been used for fuel, whilst the gravel terrace would have been well drained for settlement and agriculture. If these interpretations are correct, these considerations could have outweighed the inconvenience of having to use road transport to reach the Fenland waterways or large markets such as St Ives. It is also interesting to note that the location of the Bishop's Palace at Somersham is closer than market towns such as St Ives, and the principle periods of occupation at the Palace (Taylor 1989) would correspond with the vague general dates we have for the fabrics found at Colne, with a termination of pot production that appears to coincide with disuse of the Palace. Therefore this kiln may not only have benefited from a specialist market, but may also have been established to supply the needs of this large household.

Endnote

1 Since the work on Colne was completed large-scale excavations in central Peterborough have been undertaken, and published together with an in-depth study of the medieval pottery in the context of its regional production and distribution; this work sheds much light on the Colne kiln(s). (Spoerry and Hinman 1998). In addition another kiln with wasters in fabrics similar to those from Colne has been found at Potters Lane, Ely in 1995, and the following brief account is taken from a preliminary report by Ben Robinson and Paul Spoerry.

"Pits and a gully were found packed with late medieval and early post-medieval pottery. A beam-slot, post hole and a ditch were found to incorporate similar ceramic waste, and a rectangular pit with clay lining was also found. The assemblage showed that large unabraded sherds of sandy, hard-fired, buff fabric dating to the 15th/16th centuries and found with lumps of kiln lining and unfired clay must represent waste from pottery production. This assemblage was dominated by pitchers with thumb-applied strips and combed bands. Another assemblage in softer, shell-tempered fabrics, was found in stratigraphically earlier features, perhaps representing waste from an earlier kiln, whilst a few abraded sherds of 13th/14th century date found in the stratigraphically earliest features represent domestic rubbish. A 15th century historical record notes the existence of a pottery on the site (Calendar of Patent Rolls, Henry V, Mem 5-1) and this date seems to accord well with the archaeological evidence found at Potters Lane".

Acknowledgements

We would like to thank the landowners T. H. N. and B. Bluff for their support of the excavation, Nadia Knudsen for the pottery illustrations; Alison Taylor for suggestions regarding the kiln site in relation to the Bishop's Palace at Somersham and its strategic position for exploiting natural resources; Helen Bailey and Caroline Malim for illustration work. Further information is contained within the excavation archives of Cambridgeshire County Council's Archaeological Field Unit. Pottery and other finds are retained in the County Council's archaeology store.

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Brickmaking Accounts for Wisbech, 1333–1356

David Sherlock

In a footnote in his chapter on brick in *English Medieval Industries* (1991, p. 223, n. 31) Nicholas Moore has quoted from a document in the Ely diocesan archives, now in Cambridge University Library, which shows that peat turves (*turbae*) were used as a fuel for firing bricks for Wisbech in 1333. What is noteworthy however is not only this use of peat as a fuel but the reference to the actual methods of making bricks which, as far as I am aware, is the earliest account in England, well over half a century before the brickworks discussed in T.P. Smith's *Medieval Brickmaking in England, 1400–1450* (1985) and in particular, the Hull brickworks whose first detailed accounts date from 1423 (Brooks 1939). There is in fact a considerable amount in these Ely archives about early brick-making which is worth publishing, as I hope the following transcriptions, translations and commentaries will show. The references are to be found amongst three of the earliest of a long run of manorial account rolls ranging from c. 1332 to 1522 and relating to Wisbech Castle, a property of the bishops of Ely and the administrative and fiscal centre of their valuable Fenland estates.

The three documents, rolls 7/1/3, 6 and 10, date from 1333–4, 1347–8 and 1355–6 respectively, during the bishoprics of John Hotham (1316–1337) and Thomas L'Isle (1345–1362). The earliest of them has a paragraph headed *custus tegularum*, and the latest, *custus tillere et tegularum*, "cost of the brickworks and bricks". All three rolls also record bricks sold and in store, some of which are left over from 1332, and all three have references to the uses to which the bricks were put under various other headings, namely *emanatio domorum*, *custus claustrorum* and *minutes expenses*. There are also accounts of turves bought for firing the brick kilns. The box EDR 364 contains 21 such rolls but there are no brickworks accounts after 1355–6. There may well be references to the use of bricks in various other cost accounts for other years, but these I have not researched. The only other reference to brickmaking in Cambridgeshire as early as these accounts is in the Ely sacrist's roll for the work on the *nova camera* for the year 1334–5, where William the brickmaker is paid 18s for making 18,060 bricks using 48,800 marsh turves in the firing at a total cost of £2. 14s. 4d.

Research into further references to bricks in the Ely archives, and indeed the building and maintenance of Wisbech Castle, using the whole long series of account rolls would be well worthwhile because little is known about the castle in the middle ages and almost nothing of it actually survives (see Dawbarn 1879 and Anniss 1977, 28), but this is beyond the scope of the present article, the aim of which is to publish in full these, the earliest accounts for brick-making in England.

The accounts are in Latin, on rolls of parchment and not easy to read, partly because they are somewhat damaged and faded, and partly because they contain many unfamiliar words relating to the manufacture of bricks. The third roll is the longest, measuring 8 ft. 6 ins. In it several lines of words relating to brickmaking have been crossed out (here indicated by italics). There are superscript insertions and numerous abbreviations throughout the three rolls as in all such medieval accounts. Some of the vocabulary is evidently Latinised English but none the easier to read for that; and unfortunately only a few of the words are also to be found in the Hull accounts, which were transcribed, but not translated, by Brooks (1939). I have attempted to make a combined glossary of words from both Wisbech and Hull in Appendix II at the end. Extracted and transcribed here below are all the instances in the three Wisbech Castle rolls which specifically refer to brickworks, bricks and bricklayers, and the uses to which the bricks were put.



An extract from D7/1/10

TEXTS

Note: words crossed out in the manuscript are here in *italics*.

Cambridge University Library, Ely Diocesan Records Box 364, Manorial Accounts of Wisbech Castle.

D7/1/3, 6-7 Edward III (1333-4).

TEXT:

Tegule Vendite.

Item de lij s vj d receptis de xvij mille et dimidium tegularum vendita precie mille iij s. Et de vij s vj d receptis de mille mille dimidium tegularum venditis.

Summa 1x s.

Expensis.

Emendatio Domorum. [extract]

(14)... Et in cariagio vj mille tegularum de torrallo usque in castrum pro le boteracys parietis dicte pistrine faciendum de novo iijs, pro mille vj d. Et in cementario conducto per j diem ad emendationem parietis pistrini iiii d.

Custus Tegularum.

In j cyvera cum rota empta pro torrallo viij d. Et in emendacione iij veteras cyveras iij d. Et in xxx garbis arund[iniis] emptis pro vathira logiorum torralli vj d. Et in cooperacione dictorum logiorum iij d. Et in xij (xviiij) lignos emptos ad

eme[ndationem dic]

torum logiorum xiiij d. (xviiij). Et in j cleye empte ad ponendum in Stowa ante torrallum iiii d. Et in ij mille cla [... et]

lx garbis de Lescha empta pro tegulis cooperiendis propter pluuiam xiiij s iij d, precie centum vj d. Et in [j homine]

(5) conducto ad emendationem per iij dies parietes tylerye xij d. Et in j hominem auxiliantem ipsum per idem tempus vj d. Et in [...]

j cunne ad torrallum vjd. Et in centum mille veterarum turbarum empta pro tegulis comburendis precie mille ix d. lx[xv s].

Et in lx mille turbarum novarum empta pro eodem xl s precie mille viij d. Et in cxx mille tegularum formandum et c[om]

burendum precie mille xiiij d. vij li.

Summa totalis xiiij li xiiij s ii[...d.]

ON THE BACK

Tegule. Item redditum cxxij mille et dimidium (*lx mille*) recepta de praeposito anno predicto. Et de exitus toralli cxx mille hoc anno.

Summa ij centum xlij mille v centum (*ciij xx mille*)

Et in venditione xvij mille dimidium. In venditione mille mille dimidium tegularum. Et remanent ciij mille cclx tegularum.

Turbe

... Et de emptione ccc mille turbarum unde pro torallo clx mille. ... Et in tegulis comburendis clx mille.

TRANSLATION:

Bricks Sold.

52s 6d received for 17,500 bricks sold at 3s a thousand. And 7s 6d received for sale of 2,500 bricks.

Total 60s.

Expenses.

Repairs of Buildings. [extract]

...And for the carriage of 6,000 bricks from the kiln up to the castle for making the buttresses of the wall of the said bakery from new 3s., 6d a thousand. And for 1 builder hired for 1 day for mending the wall of the bakery 4d.

Cost of Bricks.

For 1 barrow with wheel bought for the kiln 8d. And for the repair of 3 old barrows 3d. And for 30 sheaves of reeds bought for the wattling of the sheds of the kiln 6d. And for the thatching of the said sheds 3d. And for 12 timbers bought for the repair of the said sheds 13d. And for 1 hurdle(?) bought for placing in the passageway in front of the kiln 4d. And for 2,000 nails [...and...] 60 sheaves of sedge bought for covering the bricks because of the rain 13s 3d, at the price of 6d a hundred. And for 1 man hired for the repair of the walls of the brickworks for 3 days 12d. And for 1

man helping him for the same period 6d. And for [...] 1 wedge(?) for the kiln 6d. And for 100,000 old peat turves bought for firing bricks, at the price of 9d a thousand, 75s. And for 60,000 new peat turves bought for the same, 40s, at the price of 8d a thousand. And for 120,000 bricks formed and fired for the price of 14d a thousand, £7.

Total £13 13s 2(d).

ON THE BACK

Bricks.

Return of 122,500 bricks received from the reeve in the previous year. And for the issue from the kiln of 120,000 this year.

Total 242,500

And for the sale of 17,500 bricks. For the sale of 2,500 bricks. And there remain 104,260 bricks.

Turves.

...And for the purchase of 300,000 turves, of which 160,000 for the kiln firing. And for firing bricks 160,000.

D7/1/6, 20-21 Edward III (1347–8).

TEXT:

Emendatio Domorum. [extracts]

...Et in j cementario conducto ad faciendum j parietem infra aulam (5) constabularis ex conventu in grosso, faciente xv d. Et in cariagio centum tegularum de torallo usque castrum pro eodem pariete faciendum vj d. Et in j cementario conducto pro tribus pecis parietis super le mothalle et bancum in eadem aula faciendum et emendandum ex conventu in grosso, faciente xvj d. Et in cariagio cc tegularum de torallo usque castrum pro premissis faciendum ij d...

(10) Et in j cementario conducto ad faciendum j parietem de novo super dictam schoppam ex conventu in grosso faciente x d. Et in cariagio iij centum tegularum de torallo usque dictam schoppam iij d...

(13) Et in emendationem j parietem in le mothalle ij d. Et in cariagio cc tegularum de torallo ad eandem aulam ij d. Et in iij busellos sabularum emptos ad eandem ij d.

Tegulis Emptis.

In mmcc tegularum empta apud Walsea vj s vij d. Et in j cartario conducto per j diem ad carandum tegulas predictas praeter auxilium

ij cartares dimidium de manerio de Hotonis (?) iij d. Et in cariagium cc tegulas de Walsea usque Wisbech ij d.

Summa vij s j d.

ON THE BACK

Tegule.

De remansione xij mille tegularum et de emptione mille mille cc tegularum.

Summa xiiij mille cc tegularum.

TRANSLATION:

Repair of Buildings. [extracts]

...And for 1 builder hired for making 1 wall beneath the hall of the constable, taking as agreed in total 15d.

And for carriage of 100 bricks from the kiln up to the castle for making the same wall 6d. And for 1 mason hired for making and repairing 3 parts of the wall above the moot hall and the bench in the same hall, taking as agreed in total 16d. And for carriage of 200 bricks from the kiln up to the castle, taking as agreed 2d ...And for 1 builder hired for making 1 wall from new above the said shop, taking as agreed in total 10d.

And for carriage of 300 bricks from the kiln up to the said shop 3d ...And for repairing 1 wall in the moot hall 2d. And for carriage of 200 bricks from the kiln to

the same hall 2d. And for 4 bushels of sand bought for the same 2d.

Bricks Bought.

2,200 bricks bought at Waldersea 6s 7d. And for 1 carter hired for 1 day for transporting the said bricks without help in 2½ cart-loads from the manor of Houghton 4d. And for carriage of 200 bricks from Waldersea to Wisbech 2d.

Total 7s 1d.

ON THE BACK

Bricks.

For stock of 12,000 bricks and for purchase of 2,200 bricks.

Total 14,200 bricks.

D7/1/10, 28-29 Edward III (1355–6).

TEXT:

Expensis

Turbae Emptae.

Et in xx mille turbarum empta per supervisum Willelmi de Pechamo xxij s iij d, precie mille xiiij d. Et in 1 homine conducto mense Januario

pro 1 pak' turbarum faciendum xv d, per diem ij d ob. Et in xl mille turbarum empta per expenses constabularis castri xl s. Et in xl mille

novarum turbarum empta pro tillere xl s. Et in ix xx mille turbarum empta lxxv s iij d, precie mille v d.

Summa viij li xix s xj d.

Custus Tillere et Tegularum.

In ij treyes emptos viij d. Et in ij formes emptos ad formandum tegulas vj d. Et in ij carinas emptas iij d. Et in ij

claud' [?]

scopes emptos vj d. Et in j rake empta j d. Et in ij qu [...] emptos iij d. Et in ij roddes emptos j [?] d. Et in ij roddes emptos ex utraque parte

ad movendum ignem in fornac j d. Et in fossures [circa] porte tillere in grossis iij d. Et in meremium emptum ad faciedum

j portam j palys ibidem de novo xix d. Et in clavos emptos ad idem j d. Et in j carpentarium conductum per iij dies mensis

(5) Junii ad faciendum dictam portam et palys xij d. Et in j peciatum ferris emptum ad ij goionnes et ij hokes ad cuneum (?) tillere vi d. quia potest fieri per bedellum

vij d. Et in fabris eiusdem viij d. Et in j hominem conductum ad eundem xij vicibus ad le L() one (?...) pro carectario

quia per Johanne le Nene firmarius predictus

continued on next page

<i>de tillere ad batellum vj d. Et in meremium emptum ad faciendum j logge cum reparatione antique logge xij d. Et in ij homines conductos</i>		
eadem tam		
<i>ad faciedum parietes dicte logge per j diem vij d. Et in j carpentarium conductum mensis Iulij per ij dies ad faciendum dicta logge emendacione</i>		
tam supra	tam supra	tam supra
<i>antiquam logge de meremio predicto viij d. Et in clavos emptos ad idem j d. Et in restes emptas pro peykes ad dictas loggas (...) j d.</i>		
tam supra		
<i>(10) Et in cc virgas emptas ad idem iiij d. Et in j coopererium conductum per iij dies mensis Maij ad cooperandum dicte logge</i>		
tam supra		tam supra
<i>cum antiqua cooperaturie de antiquas loggas xij d. Et in j hominem servientem sui per idem tempus ix d. per diem iij d. (...) Et in ij tegulatores conductos ad reficiendum parietem tillere per iiij dies cum mille tegularum ij s. viij d. quorum unus cepit per diem iiij d. Et in j hominem conductum ad serviendum sui per idem tempus xij d. Et in mundacionem tillere iij d. Et in j hominem conductum ad removendum vj mille tegularum per ij dies vj d. Et in j hominem conductum cum equo et caracto per iij dies ad cariendum sabulam ad ponendum sub</i>		
<i>(15) tegulis xvij d. Et pro remotu tegularum ab j loco in alium locum vj d. Et in meremium emptum pro j novam logge combusta faciendum xliij d</i>		
tam supra		tam supra
<i>Et in j carpentarium conductum ad premissis fac' (?) per ij dies iiij d. Et in arundines emptas pro fleikes ad eundem fac' (?) ... iiij d (...) tam supra</i>		
tam supra		tam supra
<i>cum virgis emptis iiij d. Et in j cooperitario cooperintinend' per ij dies in (?) dicte logge cum j hominem servientem sui x d. Et in opera (acione) et combustione cvij mille tegularum per mille xx d, ix li.</i>		
		Summa ix li xiiij s j d.
ON THE BACK:		
Turbe.		
De remanisione cxxxij mille turbarum, unde de longis turbis v mille. Et de emptione ut infra c iiij xx x mille turbarum.		
		Summa iij centum xxij mille.
In expensis constabularii castri et familie sue per totum annum xl mille turbarum. Et in cxij mille tegularum unde de Welletile iiij m de exitus vj toralli hoc anno ad combustionem pro quolibet torallo xx mille c xvj mille (c xx mille) turburum unde pro iiij m de Waltile viij mille. Et in expensis per hominem predicti domini apud castrum iiij xx vj mille. c xx mille turbarum. Et conburo per combustionem 1 logge apud tillere in magnum ventum mensis		
<i>(5) Septembris iiij mille turbarum. Et in venditione super computum xij mille turbarum et non plus quia re [words illegible].</i>		
		Summa cc iiij xx viij mille. Et remanent lxxvij mille turbarum.
Tegule.		
Item remanent cxxij mille cc tegularum. Et de exitus vj torallorum cxij mille tegularum unde Welletile iiij mille. Et rec' (?) per quarter torallos xvij mille, precie iiij mille de Welletile.		
		Summa cxxxv mille cc tegularum.
De quibus liberata apud Dodington per supervisum Willelmi de Pecham x mille tegularum . Et liberata Cantabrigia xxxv mille. Et liberate praeterea(?) de (...?) in Wysbech pro pariete grangie ibidem v mille. Et expendum super claustum in castello mille. Et super parietem carcaris (words above: allocatio per testem Johannis Eliensis castris)		
		per testem eiusdem
et le botras parietis castri DC. Et super parietem intra portas et domum molendini D. Et super domum molendini cc. Et in venditione ut infra mille mille tegularum		
		Summa totalis liiij mille cc. Et remanent c iiij x x m tegularum.

TRANSLATION:

Expenses.

Turves bought.

And for 20,000 peat turves bought under the supervision of William of Peckham 23s 4d, at 14d a thousand.

And for 1 man hired in the month of January for making 1 load of turves 15d, at 2½d a day. And for 40,000 turves bought on the account of the constable of the castle 40s. And for 40,000 new turves bought for the

brickworks 40s. And for nine score thousand turves bought, 75s 4d, at 5d a thousand.

Total £8 19s 11d.

Cost of the Brickworks and the Bricks.

For 2 trays bought 8d. And for 2 forms bought for forming the bricks 6d. And for 2 baskets bought 3d. And for 2 scoops bought 6d. And for 1 rake bought 1d. And for 2 [?] bought 3d. And for 2 rods bought 1d(?). And for 2 rods bought for moving the fire in the furnace 1d. And for (digging) pits on either side of the door of the kiln in total 4d. And for timber bought for making 1 door and 1 paling there from new 19d. And for nails bought for the same 1d. And for 1 carpenter hired for 4 days in the month of June for making the said door and paling 12d. And for 1 peck of iron bought for 2 hinges and 2 hooks on the wedge (door?) of the brickworks (kiln?) 8d. And for its smithing 6d, because it was possible to be done through the bailiff. 8d And for 1 man hired 12 times (?) for the carting (of the bricks) from the brickworks to the boat 6d because through John le Nene the aforesaid bailiff. And for timber bought for making 1 shed with the repair of the old shed 12d. And for 2 men hired for making walls of the said shed for 1 day 7d. And for 1 carpenter hired in the month of July for 2 days for making a repair to the said shed and the old shed (?) out of the timber aforesaid 8d. And for nails bought for the same 1d. And for rests (?) bought for posts for the said shed (...) 1 d. And for 200 boards bought for the same 4d. And for 1 roofer hired for 3 days in the month of May for roofing the said sheds with the old roofing materials from the old sheds 12d. And for 1 man assisting him for the same period 9d, at 3d a day. And for two bricklayers hired for repairing the walls of the brickworks for 4 days with 1,000 bricks 2s 8d of whom 1 received 4d a day. And for 1 man hired to assist them for the same period 12d. And for cleaning out the brickworks 3d. And for 1 man hired for removing 6,000 bricks for 2 days 6d. And for 1 man hired with horse and cart for 3 days for bringing sand to put under the bricks 18d. And for the removal of the bricks from one place to another place 6d. And for timber bought for one new shed for drying (?) 43d. And for 1 carpenter hired for doing the aforesaid for 2 days, 4d. And for sheaves bought for making hurdles for them (...) 4d (...) with boards bought 4d. And for 1 roofer roofing(?) for 2 days on (?) the said shed with 1 man assisting him 10d. And for making and firing 108,000 bricks at 20d a thousand, £9.

Total £9 13s 1d.

ON THE BACK:

Turves.

From the stock of 132,000 turves, of which 5,000 are long turves. And from the purchase, as below, 190,000 turves.

Total 322,000 turves.

For the expenses of the constable of the castle and his household for the whole year 40,000 turves. And for the firing of 112,000 bricks, of which 4,000 were wall bricks, out of six kiln firings this year for whichever kiln, 20,116 [120,000] turves, of which for 4,000 wall tiles 8,000 (turves). And for the expenses through(?) the man of the said lord at the castle 4 score 6,000. 120,000 turves. And for firing of 4,000 turves because of the fire of one shed at the brickworks in the great wind in the month of September. And for the sale, in addition to the account, of 12,000 turves and not more, because ... [words illegible].

Total 288,000. And there remain 68,000 turves.

Bricks.

There remain 123,200 bricks. And from the product of 6 kiln firings 112,000 bricks of which 4,000 (are) wall bricks. And received from 4 kiln firings 18,000 bricks, of which 4,000 (are) wall bricks.

Total 235,200 bricks (should be : 253,200)

Delivered at Doddington under the supervision of William of Peckham 10,000 bricks. And delivered at Cambridge 35,000. And delivered in addition from (...) in Wisbech for the wall of the barn there 5,000. And spent on the yard in the castle 1000. And on the wall of the prison and the buttress of the wall of the castle 600. (Written above: allowance on oath of John of Ely Castle). And on the wall between the gates and the mill house 500. (Written above: on oath of the same). And above the mill house 200. And in sale as below 2,000 (should be 10,000)

Total 54,200. There remain 180,000.

TEXT:

Minutes Expenses. [extract]

(11)...Et in j tegulatore conducto per ij dies mensis Aprilis ad faciendum j murum de tegulis cum viij busselis calcis adversus portas usque domos servorum (vj d) vij d. Et in ij hominibus conductis per iij dies ad faciendum j murum de argilla conducente a portis usque fossatam turre (ij s iij d) ij s.

TRANSLATION:

Small Expenses

...And for 1 bricklayer hired for 2 days in the month of April for making 1 wall of bricks, with 8 bushels of lime [from] opposite the gates up to the houses of the servants, 7d. And for 2 men hired for 3 days for making 1 wall of clay leading from the gates up to the ditch of the tower 2s.

TEXT:

Custus Domorum. [extracts]

(10) ...Et in ij cementariis conductis per j diem eodem mense ad faciendum stalles de tegulis in coquina vj d. Et in serviente eorum idem tempus ijd. ob ... (21) Et in ij tegulatoribus conductis mensis Aprile ad reperandum parietes auli placitorum, carcere, stabuli, fornacis in pistrinum, fumerelli in camere et aliis necessariis in castro faciendum per iij dies xvij d, per diem uterius iij d. Et in [ij] servientis eorum per idem tempus xv d, quorum utrius cepit per diem ijd. ob... (36) Et in j tegulatore conducto per j diem pro defectione camere super portas et foraminibus eiusdem plastrandum iijjd... (40) Et in j cementario conducto per iij dies mensis Iunii ad reparandum parietem carcare et le arche muris castri in stabulo cum D tegularum de tyllere adductis xij d. ... (49) Et in j cementerio conducto per j diem pro parietis domorum malorum cum tegulis reparandis iij d.

TRANSLATION:

Cost of the Buildings

...And for two builders hired for 1 day in the same month for making stalls of bricks in the kitchen 6d. And for their servant the same period 2½d. ...And for 2 bricklayers hired in the month of April for repairing the walls of the guildhall, prison, stable, oven in the bakery, louvre in the chamber and other necessaries in the castle, taking 18d for 3 days, each one 3d a day. And for their 2 servants for the same period 15d, of whom each takes 2½d a day... And for one bricklayer hired for one day for repairing the defects of the room above the gates and for plastering its openings, 3d... And for one builder hired for 3 days in the month of June for repairing the walls of the prison and the arch of the castle in the stable with 500 bricks brought from the brickworks 12d. ...And for 1 builder hired for 1 day for repairing the walls of the defective houses with bricks, 3d.

TEXT:

Custus Clausti. [extracts]

(10) ...Et in j homine conducto per ij dies cum equo et carie mensis Novembris ad cariendum mille tegularum de tillere usque castrum pro eodem xj d. Et in j cementario conducto per vj dies et dimidium mensis Decembris ad fundamentum predicti clausti faciendum cum pariete eiusdem xix d. ob., per diem iij d. Et in serviente eiusdem per v dies xij d. ob., per diem ij d. ob. Et in iij mille de slattile emptis apud Lennum ad predictum cooperendum per visum Edwardi Boteler xvj s. Et in carie eiusdem de Lenno usque Wysbech per aquam iijj s. Et in portagio ad aquam ibidem iij d. Et in carie eiusdem de ripa de Wysbech usque castrum vij d ... (15) Et in ij tegulatoris conductis mensis Decembris per x dies et dimidium pro dictis claustris cooperendis cum dictis slattis viij s ix d., quorum utrius per diem v d. Et in servientis eorundem per idem tempus v s. iij d., utrius per diem iij d.

TRANSLATION:

Cost of the Close. [extracts]

And for 1 man hired for 2 days with horse and cart in the month of November for carting 1000 bricks from

the brickworks up to the castle for the same (constable) 11d. And for 1 builder hired for 6½ days in the month of December for making the foundation of the said court with its wall 19½d, 3d. a day. And for his assistant for 5 days 12½d., 2½d. per day. And for 3,000 slate tiles bought at Lynn for roofing the aforesaid, under the supervision of Edward Butler 16s. And for their carriage from Lynn up to Wisbech by water 4s. And for portorage to the water there 3d. And for their carriage from Wisbech riverside up to the castle 7d. ...And for 2 tilers hired in the month of December for 10½days for roofing the said closes with the said slates 8s. 9d., each of whom received 5d. a day. And for their (2) assistants for the same period 5s. 3d., of whom each received 3d. a day.

Discussion

Much is now understood about the manufacture and use of bricks in medieval England thanks firstly to modern archaeological excavation, secondly to documentary research and thirdly to study of the bricks



Figure 1. A brickmaker at his bench forming a brick in a wooden mould. From Panoplia by Hartmann Schopper (Frankfurt 1568). The Latin caption translates as:

Laterarius The Brickmaker

Roofs on houses when firmly made nowhere totter; they will stand safe from raining showers, whether these should be a common party wall in a house or you wish to erect strong outside walls.

I the brickmaker put everything in my kiln, with ease wisely and with skill I cook my bricks. Let him seek me he who has too hastily bought his stones, whose high house lies open to the winds. The ancient legend proves that Cinyram son of Agriops was the discoverer of this most noble art.

themselves and their buildings, knowledge which can be found summarised in works by Moore (1991), Smith (1985) and Drury (1981), all following the detailed commentary on the subject by Brooks (1939) in his publication of the Hull brick accounts in which he paints a verbal picture of the Hull *laterarius* at work. Bricks were made of clay, which had to be dug the previous year, not later than 1st November according to a London statute, and left to stand protected from the rain in the brickyard over the winter. In the following spring the commonest method was to form the bricks in wooden moulds, using sand to stop the clay sticking to the wood, and to allow them to dry further stacked in sheds, before they were loaded into a kiln and fired over several days (Fig 1). After the bricks were removed the kiln was cleaned out and the firing repeated about four times in a season. During the season the kiln would probably have to be repaired as indeed was much else within the brickyard, the sheds, tools and brick moulds. Straw needed to be brought in to lay the bricks on before firing and fuel bought to fire the kiln. To this very brief summary of the process the Wisbech accounts furnish many interesting details, adding to our knowledge of medieval brick yards. We learn, for example, that the timber sheds were thatched with reed; that various tools were used, including trays, wooden brick moulds, baskets, wheelbarrows, rakes and rods for clearing out the kiln fire (Fig 2). Old turves were slightly more expensive than new ones. Not all the bricks were sold and some were stored at the end of the year. As at Hull the kiln produced only bricks; no roof, ridge or floor tiles are mentioned, although in roll 10 two lots of bricks are specifically called 'wall bricks'. In roll 3 20,000 bricks were sold at 3s a thousand, which was more than twice the cost of making them. 120,000 bricks were made and as only 6,000 appear to have been used at

the castle a large surplus remained when added to bricks made in the previous year. According to roll 10 six kiln firings produced 112,000 bricks or approximately 18,670 per firing and another four firings produced 18,000 bricks or 4,500 per firing. At Hull brick production between 1393 and 1433 ranged from 46,000 to 140,000 and averaged over 94,000 *per annum* (Smith 1985, 83). Further analysis of numbers and costs will be found here below in Appendix I.

The bricks in these accounts could have been made at a number of places on the bishop of Ely's fenland estates where clay and peat were plentiful and transport by boat was easy, for use in the various parts of Wisbech castle and town which are mentioned in the accounts. But only at Waldersea, immediately southwest of Wisbech, is a brickworks specifically mentioned in 1347–8, in account no. 6. The only other brickworks at about this time would appear to have been at Ely where, in 1334–5, just one year later than the earliest Wisbech account (no. 3), bricks were being fired in a *tegularia* for the building of the *nova camera* of the priory (Chapman 1907, ii, 67–8). This firing was apparently a one-off job, judging from the absence of reference to any further firings in subsequent sacrist's rolls; moreover in 1339–40 bricks for the new bridge by Ely Castle came ready made from two sources (in addition to building stone from Sextforth): 4,000 'Waltyl' were bought at Wisbech for 16s. 2d. and 2,000 at Lynn for 7s. 4d. including carriage (*ibid.* 91). The former were presumably bought from the bishop's Waldersea brickworks while the latter would have been Flemish imports. The imports were considerably cheaper at that time and also in 1354–5, when the sacrist records buying 10,000 bricks from Lynn for building a new priory wall for only £2 (*ibid.* 169). Furthermore, just as the Ely sacrist later preferred to buy in bricks than to have the priory make them, so



Figure 2. Flemish brick works near Hemiksen, a painting by David Teniers the Younger, c. 1660, showing the brick-maker at his bench, the open drying shed and the kiln with a fuel store beside it. (By permission of the Trustees, Dulwich Picture Gallery)

the bishop's Wisbech brickworks may have been closed down or sold off, which would explain why there are no further references to such costs in later Wisbech Castle accounts. Brick building, in the area, whether with English or imported bricks continued to be dominated by foreign workmanship for another century. Flemish 'brekemasons' for example were employed on Buckden Palace for the bishop of Lincoln in 1472–80. At Ely it was not until its use on the palaces of Bishop Alcock (1486–1500) at Ely and at Little Downham that 'brick emerged as a high-quality and decorative building material, confidently handled by English designers and bricklayers' (Moore 1991, 216).

There is no way of knowing whether these accounts for Wisbech Castle brickworks relate in fact

to the earliest brickworks or are simply an accident of survival; or when indeed clay first came to be fired into bricks in medieval Cambridgeshire. No earlier brick kilns have actually been found here, although Thornholm Priory, Lincs, has produced an early 14th-century kiln (Moore 1991, 221) and one of c. 1300, mainly for roof tile, has recently been excavated at Quarr Abbey, Isle of Wight (*Med. Arch.* 39, 1995, 222). Nor do we know why the Ely builders, under both bishop and prior, decided to introduce the use of bricks from the 1330s onwards, when stone from Barnack and elsewhere was still available to them and when plastered walls with timber framing were a cheaper alternative.

Appendix I: Analysis of costs and prices in the accounts

Price of bricks

1333/4	120,000 bricks formed and fired @ 1s. 2d. a thousand	£7
1333/4	17,500 bricks sold @ 3s. a thousand	52s. 6d.
1333/4	2,500 bricks sold @ 3s. a thousand	7s. 6d.
1347/8	2,200 bricks bought at Waldersea @ 3s. a thousand	6s. 7d.
1355/6	108,000 bricks made and fired @ 1s. 8d. a thousand	£9

Price of turves

1333/4	100,000 old turves @ 9d. a thousand	75s.
1333/4	60,000 new turves @ 8d. a thousand	40s.
1355/6	20,000 turves bought @ 14d. a thousand	23s. 4d.
1355/6	40,000 turves bought	40s.
1355/6	40,000 new turves bought for the brickworks	40s.
1355/6	180,000 turves bought @ 5d. a thousand	75s. 4d.

Price of materials

1333/4	30 sheaves of reeds	6d.
1333/4	12 timbers for kiln shed repairs	13d.
1333/4	1 hurdle (<i>cleye</i>) for kiln	4d.
1333/4	60 sheaves of sedge @ 6d. a hundred for covering bricks	13s. 4d.
1333/4	1 wedge for the kiln	6d.
1347/8	4 bushels of sand for making a wall of 200 bricks	2d.
1355/6	bars either side of the kiln door	4d.
1355/6	timber for the door etc.	19d.
1355/6	1 peck [$\frac{1}{4}$ bushel] of iron for hinges and hooks	8d.
1355/6	timber for making 1 shed and repairing 1 old shed	12d.
1355/6	200 boards for the shed	4d.
1355/6	13 quarters [$3\frac{1}{4}$ cwt] of lime	13s.
1355/6	8 sheaves of reeds for thatching	2d.
1355/6	3,000 slate tiles bought at Lynn for roofing	16s.

Price of tools etc

1333/4	1 wheelbarrow	8d.
1333/4	repair of 3 old barrows	3d.
1355/6	2 trays	8d.
1355/6	2 brick moulds	6d.
1355/6	2 baskets (?)	3d.
1355/6	2 scoops (?)	6d.
1355/6	1 rake	1d.
1355/6	2 (buckets ?)	3d.
1355/6	2 rods	1d.(?)
1355/6	2 rods for moving fire in furnace	1d.

Cost of transport

1333/4	carriage of 6,000 bricks from kiln to castle @ 6d. a 1,000	3s.
1347/8	carriage of 2,200 bricks from Houghton in 2 cart-loads by 1 carter in 1 day	4d.
1347/8	200 bricks from Waldersea to Wisbech (presumably) by barge	2d.
1347/8	carriage of 100 bricks from kiln to castle for making a wall	6d.
1347/8	carriage of 200 bricks from kiln to castle for making and repairing a wall	2d.
1347/8	carriage of 300 bricks from kiln to a shop in Wisbech for making a new wall	3d.
1347/8	carriage of 200 bricks from Waldersea to Wisbech	2d.
1355/6	carriage of 13qr lime from river to castle	6d.
1355/6	carriage of 1,000 bricks from brickworks to castle, 1 man with horse and cart for 2 days	11d.
1355/6	carriage of 3,000 slate tiles from Lynn to Wisbech by water	4s.
1355/6	carriage of same from river bank to castle	7d.
1355/6	1 man hired on 12 occasions for carting bricks from kiln to boat	6d.
1355/6	1 man with horse and cart hired for 3 days, for fetching sand	18d.

Cost of labour

1333/4	1 builder for repairing a brick wall	4d.
1333/4	1 man repairing wall of brickworks for 1 day	12d.
1333/4	1 man helping them for the same period	6d.
1347/8	1 builder for making a wall	15d.
1347/8	1 builder for making and repairing a wall	16d.
1347/8	1 builder for making 1 new wall	10d.
1355/6	1 man for making 1 load of turves @ 2½d. a day	15d.
1355/6	1 carpenter for 4 days	12d.
1355/6	2 men for 1 day, making the shed walls	7d.
1355/6	1 carpenter for 2 days, altering the sheds	8d.
1355/6	1 roofer for 3 days, roofing the sheds	12d.
1355/6	1 man assisting him in the same @ 3d. a day	9d.
1355/6	2 bricklayers for 4 days, repairing walls of the kiln @ 4d. a day	2s. 8d.
1355/6	1 bricklayer's assistant for the same	12d.
1355/6	[1 man] cleaning out the brickworks	3d.
1355/6	1 man for 2 days, removing 6,000 bricks from the kiln	6d.
1355/6	[1 man] for moving bricks from one place to another	6d.
1355/6	1 bricklayer for 2 days making 1 brick wall	7d.
1355/6	2 men for 3 days, making 1 clay wall	2s.
1355/6	2 builders for 1 day, making brick stalls in the kitchen	6d.
1355/6	1 builder's assistant for the same	2½d.
1355/6	2 bricklayers for 3 days, repairing walls @ 3d. a day	18d.
1355/6	2 bricklayers' assistants for the same, @ 2½d. a day	15d.
1355/6	1 bricklayer for 1 day for repairs and plastering	3d.
1355/6	1 builder for 3 days, repairing various walls with 500 bricks from the brickworks	12d.
1355/6	1 builder for half a day, repairing the wall of the moot hall	2d.
1355/6	1 man assisting him in the same	1d.
1355/6	1 bricklayer for 1 day repairing a room and plastering	3d.
1355/6	1 builder for 1 day, repairing walls with bricks	3d.
1355/6	1 builder for 6½ days for building foundations @ 3d. a day	19s. 6d.
1355/6	1 builder's assistant for 5 days @ 2½d. a day	12½d.
1355/6	2 tilers for 10½ days, roofing with slates @ 5d. a day	8s. 9d.
1355/6	2 roofer's assistants for the same @ 3d. a day	5s. 3d.

Appendix II: Glossary

This medieval glossary relating to bricks and brick-making is compiled primarily from words found in the Wisbech and Hull brickworks accounts. Perhaps surprisingly, few of the words occur in both. The following abbreviations give the sources for the list of the words selected and their probable meanings:

- W Wisbech (references here to rolls 3, 6 or 10 above)
 H Hull (Brooks 1939, references here to printed pages)
 ESR Ely Sacrist Rolls (Chapman 1907 with glossary)
 GBT Glossary of Building Terms (Gee 1984)
 MED Middle English Dictionary
 MFG Medieval Farming Glossary (British Association for Local History, 1968)
 MLD Medieval Latin Dictionary
 MLW Revised Medieval Latin Word-List (R.E. Latham, 1965)
 OED Oxford English Dictionary

- Almolum* cupboard (*ad tegulariam*, H 171; MFG; ESR: *almarium*)
Barowe wheelbarrow (H 167). See also *cyvera* (W)
Barra bar or rod (W 10; ESR)
Bastum rope made of bast, a lime tree fibre (H 167; MED; MFG)
Biga two-wheeled cart (H 171; GBT)
Bulk load (*turbarum*, H 168)
Calcis viliter quicklime (H 169)
Carcasio, *discarcasio* loading, unloading (*ustrina*, H 168)
Carina basket (W 10); literally, the keel of a boat (MLD); cf. *kele* and see also *trog*
Catcheful ketch or barge loads; see *kele* (H 166 *et passim*; Smith 45)
Cementarius builder or mason (W 3, 6, 10)
Cementum mortar (*ad plaustrandum cum cemento camere domini*, W 10)
Cera lock (for the gate of the brickworks, H 170)
Ciroteca gloves (H 173)
Cizsecae scissors or cutters; gloves? (*una duodena cizsecarum pro manibus*, H 172)
Claud' ? (W 10)
Claves nails (H 165, 168; W 10)
Cleye hurdle (?) (W 3; OED; ESR)
Colerake coal-rake (with) shaft and head (H 170) *shaftes et hedes*
Comburendum firing (of bricks, W 3)
Combustio firing (of bricks, H 167; W 10)
Cooperatorius roofer (of thatch or tile; W 10)
Cuneus(?) wedge(?) (W 3, 10), or chisel (MLD)
Cyvera cum rota wheelbarrow (W 3). See also *barowe* (H)
Deliberacio cleaning out (of kiln, H 167)
Deplecio unloading (*tegularie*, H 171)
Discarcio unloading (*ustrime*, H 168)
Dobyngstrowres straw for daubing (H 166, 169)
Domus tegularie tile or brick house (H *passim*; Smith 47)
Drapere covering, i.e. covering the shed with cloth (H 171)
Fenum hay (H *passim*)
Fermynng stokkes forming boards on which brick moulds were placed (H 169; Smith 44–5)
Flekes, *fleikes* hurdles (GBT) or racks for drying bricks (H 169, 170), or possibly for making a light wooden roof to cover a kiln (Smith 52)
Focales lighters (H 173; MLW)
Formula, *forma* rectangular bottomless mould for forming clay into bricks (H 164, 167, 169; W 10) with an iron band (*ferracione*, H 173; Smith 44)
Forming stokkes forming stocks, on which brick moulds were placed (H; Smith 44–5)
Fornac, *furna* furnace (W 10; H 171; ESR)
Fossura pit (in front of kiln, W 10)
Fundamentum, *fundum* foundation, base (*clausi cum pariete*, W 10; *tegularie*, H 171)
Gloy straw (OED; here possibly reed, *pro nattes faciendis*, H 168; MLW = *gludum*)
Gray plate iron (for mending a mould, H 167)
Ignitio firing (kiln, H 173)
Implicio loading (ustrine, H 166, 168; kilnful 173)
Kela (barge) -load (of sand, H 164)
Keleful (barge) -load (of turves, H 166; Smith 54)
Kilnmouthe kiln mouth (H 168, 171). See also *ora*
Lamkyn lime (for repair of kiln mouth, H 171)
Lar' clay(?) (H 172)
Last load of 10,000 bricks (Smith 25, 51)
Lattes laths (H 169)
Latuales small laths (H 169; MLD)
Ledge shelf (of *waynscote*, H 169)
Lescha sedge for thatching (W 3; Coleman 20). In EDR 7/1/7 sheaves of *lescha* are used for thatching a dovecote; in ESR for 1323–4 they are used *pro calceto straminando*.
Leter rubbish(?) (*x carteful leter*, H 167), laths (?) (MLD)
Liberacio removal (of bricks, H 168)
Ligacio binding(?) (*quattuor furniarum*, H 171; ESR)
Logga, *Logius* shed (W 3; GBT)
Luteum mud for daubing (*infra tegularia* H 174; GBT)
Maund basket (for carrying turves, H 166, 169; OED)
Mundacio cleaning out (*tegularie*, H 168, *rowmes*, H 169; *tillere*, W 10; ESR)
Nattes mats for covering bricks (H 166, 170; Smith 41, 50; ESR)
Ocreae thigh-boots (H 171, 173; MLW)
Ora et latera mouth and side (of kiln, H 171)
Ostrium door(?) (H 172); hearth (MLW)
Pak' load (of turves, W 10)
Palys paling (W 10; ESR)
Paries wall (*parietes tylerye*, W 3; ESR)
Peylies (*peykes*?) posts (for sheds, W 10)
Plank (*cum waynscot*, H 166); plank for covering a kiln (Smith 52)
Placeae places (H 165, 171). See *Rowmes*
Postus post (*cum diversis wyvers*, H 169)
Pottes pots (H 172)
Rake rake (H 172; W 10)

Removendum removal (of bricks from a kiln, W 10)
Restes rests or supports (*pro peyllies*, W 10)
Rodde rod or rake (W 10)
Rowmes hacksteads for laying out bricks (H 160, 166; Smith 48). *cf. placeae*
Sabulum sand (*ad ponendum sub tegulis*, W 10)
Saille threde sail thread (*pour les nattes*, H 168)
Scope scoop (H 172; W 10). Possibly to be read *Stope* (see below)
Sharplynges kind of nail (*et aliis clavibus*, H 169; MED; see Salzman 316)
Showell shovel (H 172; Smith 45). *Irneshowell*
Slattile roofing tiles (bought at Lynn, W10)
Solet et dernethes sole plates? (H 169)
Sparres rafters (*pro domus tegularie*, H 166, 169)
Stalles de tegulis brick table or bench for goods (*in coquina* W 10; a stand for a cask, OED stall, sb. 6)
Stope stop or bung (?) (H 166; W 10). See also *Scope*, above.
Stree nattes straw. See *nattes*.
Stowe furnace antechamber (W 3; OED)
Sty of xv steles ladder of 15 rungs (H 169)
Tegula brick (H 165 *et passim*; W *passim*), *tegula muralis* (ESR 67, 1334–5)
Tegularia brickworks (H 164; ESR 67, 1334–5)
Tegulator bricklayer (W 10; ESR)
Taracidii, *Terisidia* turves of peat (H 171, 173)
Temperacione, *Temperyng del clay* preparation of clay for firing (H 167, 168; Smith 40). See also *terra*
Terra temperata clay prepared for bricks (H 171)
Thaktile roofing tiles (H 169; Smith 48, 56)
Tila tile or brick (H 171)
Tilery, *tillere*, *tylerye* brickworks (H 172; W 3, 10)
Torallum furnace or kiln or the act of firing a kiln (H 164; W 3, 10)
Traba turf (H 164). See also *turba*
Traba sheaf (*de gloy*, H 167)
Treyes trays (on which bricks were stacked before firing, W 10); also hurdles (GBT)
Trogh trug or wooden basket (H 169, 172)
Tubbes tubs (for sand, H 169; Smith 45)
Turbae turves or squares of peat cut for fuel (H 164); *novae* (W 3, 10); *longae* (W 10); *veterae* (W 10); *mariscaae* (ESR 67, 1334–5). See also *taracidii*.
Ustrina kiln (H 167)
Vathira thatching (*logiorum*, W 3)
Virgus pole (for supporting the covering placed above the bricks before firing, W 10; Smith 50)
Wadmale course cloth (for covering bricks, H 168; MFG)
Waltile, *Walltyles*, *Welletile* bricks (H 168, 172, 173; W 10; Smith 32; *tegulis vocatis Waltil emptis apud Lenne*, ESR 169, 1354–5)
Wandes coverings (*pour le nattes*, H 168). See *wadmale*.
Waterpottes water pots (H 166, 168)
Waynscotes oaken boards (*pro ostis* and *pro ledges* H169; MFG)
Wyvers See *postus*

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A New Building at the Dominican Priory, Emmanuel College, Cambridge, and associated Fourteenth Century Bawsey Floor Tiles

Alison Dickens

Summary

Excavations at Emmanuel College indicated the presence of a previously unknown building, part of the Dominican Priory complex. The building, probably 14th century in date, was decorated with embossed floor tiles from the Bawsey kiln near Kings Lynn, and with painted glass windows. The role suggested is that of a guest house, perhaps associated with the only Parliament ever to sit at Cambridge, held at the priory in 1388.

Introduction

This paper is concerned with later 14th century aspects of an excavation conducted on the site of the new Queen's Building at Emmanuel College by the Cambridge Archaeological Unit of the University of Cambridge in 1993. Results are briefly summarised below and are full details are contained in the archive report (Dickens 1993b). The arguments form part of a larger examination of the shift from monastic to collegiate Cambridge and the survival of monastic structure (both fabric and form) within colleges, most recently discussed in relation to Jesus College (Evans *et al.* 1998).

Little is known of the history of the site occupied by Emmanuel College before the arrival of the Dominican Black Friars some time between 1221 and 1238. The Hundred Rolls (ii: 360) records the results of the Great Inquisition taken in 1278/9. This reports that the friars received:

eight acres of land and more in length and breadth, in which place were accustomed to be divers mansions in which many inhabited who were wont to be geldable and aiding to the town.

Stokes notes, however, that this is a customary phrase which should not be taken literally (1915: 11). Identical wording is used about the Franciscan site at Sidney Sussex College. Elsewhere, the Hundred Rolls record that there were only a few messuages along the road and "not a dozen house owners", which certainly suggests that "divers mansions" is something of an exaggeration (*ibid.*: 13).

The site lay in the parish of St. Andrew, just outside the Barnwell Gate, through which the *via Devana*

entered the town. From its early years the priory was second only to the Oxford house in the system of Dominican education, being recognised as a *Studium Generale* in 1309. The records show gifts from successive monarchs of materials and money, allowing the priory at its height to house up to 70 brothers. In 1240 the priory was granted permission to enlarge its cemetery by closing a lane south of the church. As recompense to the people of Cambridge an equivalent amount of land was given over to a new lane along the northern boundary of the priory, on the line of modern Emmanuel Street. The site was enlarged around 1285, coinciding with a large grant of money from Alice, widow of Robert de Vere, Earl of Oxford. This grant and the subsequent enlargement lead Alice de Vere's descendants to claim, erroneously, that she had founded the priory (Palmer 1885: 139). A further two acres were acquired in 1293. The priory appears little affected by the Black Death, indeed the 14th century was a period of activity for the Cambridge Dominicans, one important event being that from 9th September to 7th October 1388 the only Parliament ever held in Cambridge sat at the priory.

Between the end of the 15th century and the 1530s changes took place at the Dominican house that reflected the political and religious situation in the country. In 1491 the Dominicans were granted a forty day indulgence to penitents visiting "the celebrated image of Our Lady" in the church (Palmer *op. cit.*: 142). On 30th August 1538, however, the then prior, Gregory Dodds, requested of Thomas Cromwell that the image of Our Lady of Grace be removed from the church as he could not bear "syche ydolatrie" (VCH 1948: 275). By the time of the surrender in 1538 it seems the site was already run down to a certain extent, and perhaps even partially dismantled (*ibid.* and below). Dodds asked that the house be taken into the King's hands and though the surrender document was neither sealed nor dated, the priory was put into the hands of William Standysh, Principal of the St. Nicholas Hostel to hold "to the King's Use" (*ibid.*). When the Commissioners arrived they found the site abandoned and all portable goods had been removed though "the iron, glass and stone remained and the house undamaged until the King's pleasure be further known"

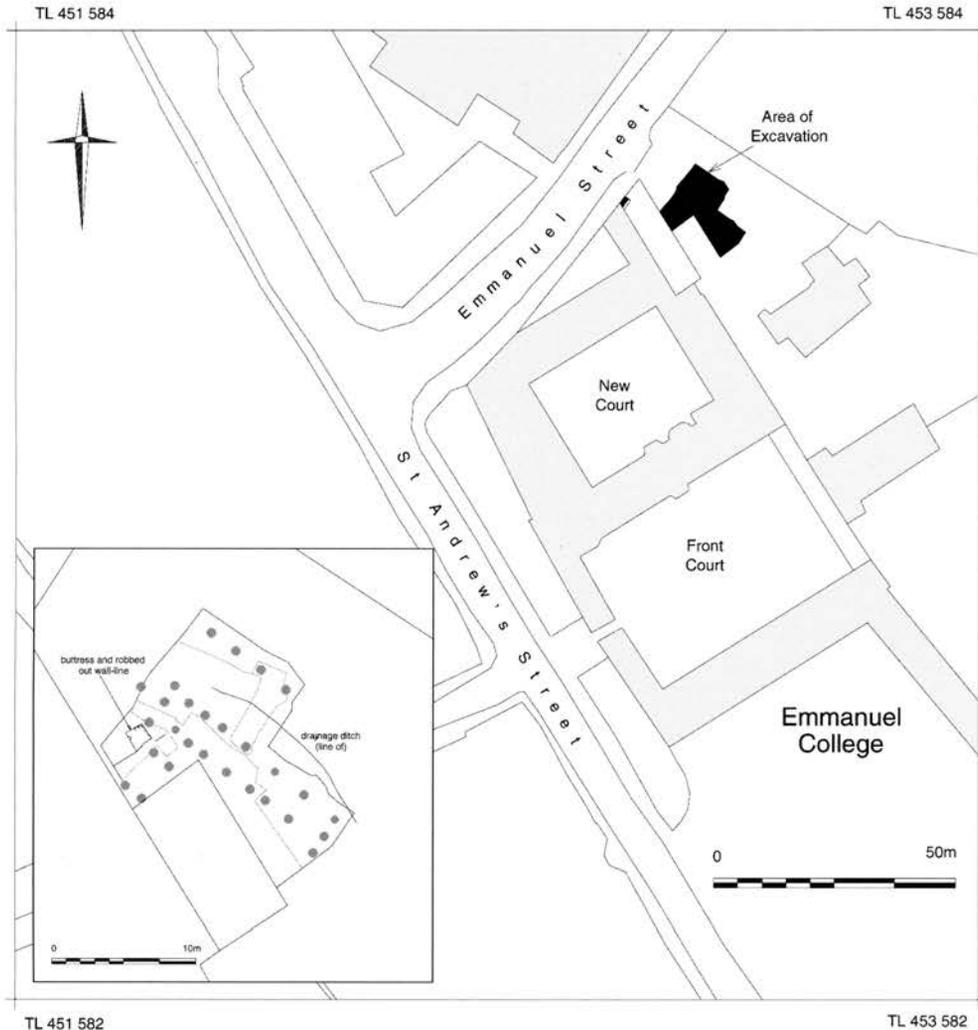


Figure 1. Location of site and feature details

(*ibid.*). In 1539 the site was leased by the Crown for 21 years to William Sherwood, who seems to have lived there for a while (Stokes 1915, 25). In 1544 residency passed to Edward Elrington who started at once to pull down the buildings. The accounts of St. Mary's for 1545 show 40s paid for the stone from the Black Friars and 4d to view the timber (VCH 1948: 275). This demolition may have been completed by Walter Mildmay who came by the land in 1583, and founded Emmanuel College upon it in 1584.

Priory to College

Tradition has it that the main buildings of the newly created college were built largely on the location, if not the actual foundations, of those of the Dominican priory. Dyer reports:

Yon hall on north, altered indeed and much decorated – the library on the east – and kitchens, raised of clunch stone. Where that hall now stands, the chapel of the Black Friars once stood; and the high alter was towards the screens. (1814: 373)

There is substantial evidence to support this, summarised by Stubblings in 1969, when decoration and

restoration work in the Buttery, Hall and Parlour revealed medieval features surviving in those more recent buildings. Observations by Stubblings in 1959 and the author in 1992 may suggest some early structural remains in the area of the modern kitchens (see below). The earliest known map of Cambridge (Richard Lyne, 1574) shows only a small part of the site some 36 years after its surrender, unfortunately not extending far enough south to show what might have remained of the priory proper. It is not clear whether the few buildings that are shown represent a final stage of the priory or later structures erected before the construction of the college. By the time of John Hamond's 1592 map the college buildings were in place and the area of the 1993 excavation was the Master's Orchard. Walls separated the orchard from the Fellows Garden to the northeast, and both from "Emmanuel College Walks" to the southeast. From this time until its conversion to a car-park in the 20th century, the area remained in use as gardens, encroached upon from the south by expansion of the Master's Lodge, but otherwise largely unchanged for more than 300 years.

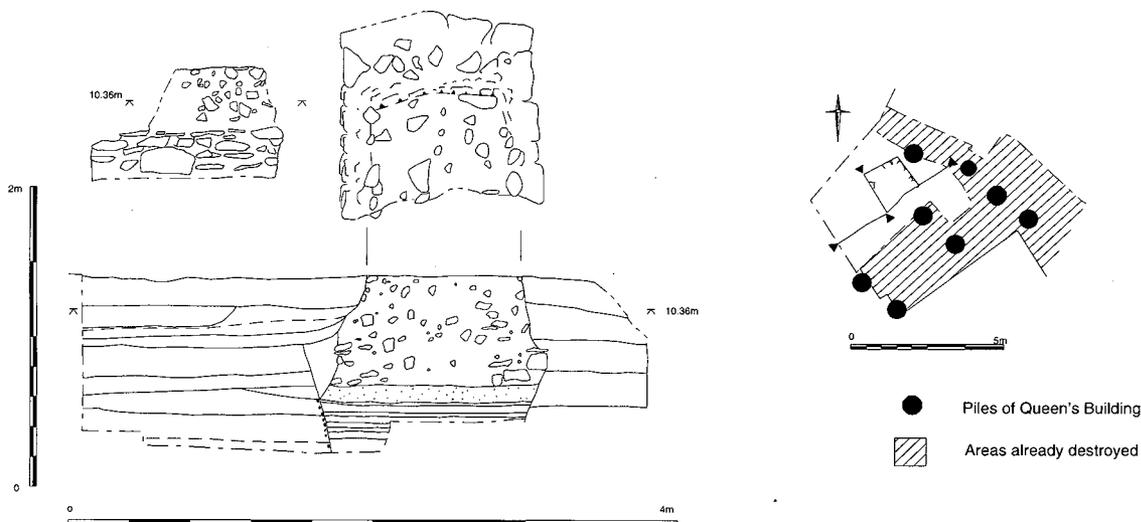


Figure 2. Plan and section of surviving North Building Buttress

The Excavations

The 1993 excavations were within the new Queen's Building basement, an area of about 90m², much disturbed by later services, in which archaeology survived on three unconnected 'islands'. Despite being in a part of the site presumed to be set back from the main monastic and college precincts, there was evidence of activity relating to both main phases of use. No pre-priory features were observed, although a possible early horticultural horizon was identified. Two main groups of features related to monastic occupation of the site. The earlier was a large tank, at least 2.30m deep, with a possible second similar feature (observed only in the evaluation) immediately to the south. This seemed to be the central feature of a water management system incorporating tank(s) and ditches designed to control the flow of water across the site and out to the north.¹ The tank and ditch sequence was backfilled and covered by a substantial stone structure, the main theme of this paper, which is examined in detail below. This seems to have stood until the mid 16th century when it was at least partially demolished, elements of it being re-used as footings for a short lived timber framed structure. Following the foundation of Emmanuel College in 1584 the whole site area became gardens and orchards, one striking early feature of this phase being a series of square tree pits dug through the demolition debris. The area remained a garden until the mid 20th century.

As indicated above, it is commonly believed that the early college was built substantially upon the surviving masonry of the priory, and nothing was revealed in the excavations to suggest otherwise. The investigation did, however, uncover evidence of a substantial and hitherto undocumented structure to the north and east of the presumed main part of the priory, referred to henceforth as the North Building. Extensive robbing prior to the construction of the early college and subsequent service installation in

more recent times meant that little of the structure survived *in situ*. The main evidence was a substantial stone buttress constructed within a square cut with near vertical sides, breaking sharply to a flat base (Fig 2). The buttress measured 1.40m wide (west-east) by 0.75m deep to the packed foundation, 1.20m to the base, and survived 1.40m long (north-south). At the base of the masonry was a series of very hard compacted layers of flint gravel with interleaving layers of sand and clay. The buttress itself had a fine clunch and stone facing around a core of flint pebbles and sub-angular clunch pieces in a loose mortar matrix. The backfill of the construction trench contained two pieces of a 14th century Heddingham jug. Immediately south of the buttress was a substantial robber trench indicating the removal of a significant wall. At its base was a very hard compact sandy gravel, possibly a remnant of its foundation packing which, to the west, overlay blocks of clunch pressed into the upper backfill of an earlier ditch. The former ground surface around the buttress was sealed by a compact crushed clunch layer which sloped to the north and may either indicate a yard area outside the building or a spread of debris associated with its construction. A pit in this and a later tile surface suggest an extended life for the yard, the tile surface itself being cut by a later pit which contained 14th and 15th sgraffito ware and signs of burning. To the east of the building was a roughly north-south ditch cut into the backfill of an earlier water tank. Only the west side of the ditch survived as the east was truncated by the cut of a later feature. The side sloped at c. 45° towards the top, becoming steeper in the lower part, breaking abruptly to a flat base. The primary fill was a dark grey to black sticky silt clay with a high organic content, occasional chalk flecks and fragments of roof tile. Overlying this was a brown sticky silt clay. The organic material in the primary silts suggests that the ditch was permanently waterlogged and it probably served to carry excess water away from the site.

Although the surviving physical evidence for the

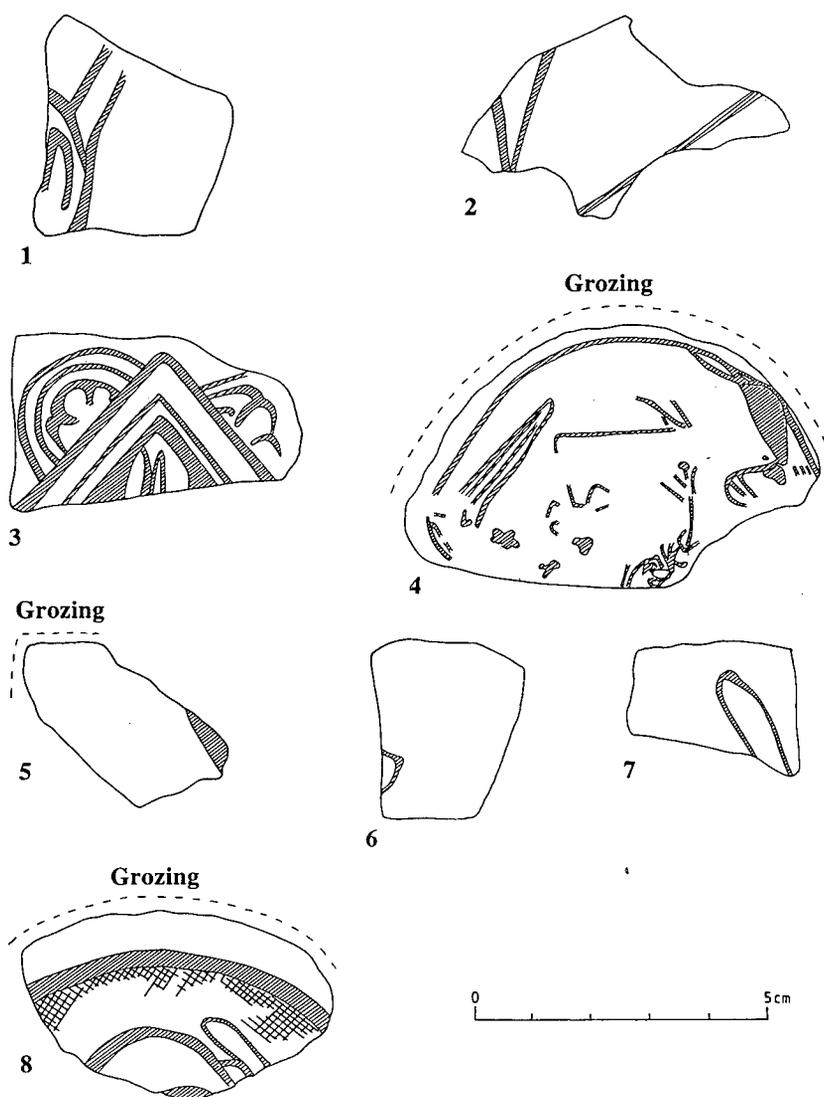


Figure 3. Fourteenth century painted window glass (shading denotes extent of red paint)

North Building is slight, the remains impart considerable information about the form of the structure. This was a substantial stone building, probably rising to two stories, with a finely finished exterior. The proximity of a contemporary drainage ditch argues against the northern wall continuing to the east (see below and Fig 2) making it most probable that the buttress was located on the northeastern corner of the building, matched by its pair on the eastern side of the corner. This would correspond with the pattern observed in the church (see below) and in other Dominican buildings of the period. Modern disturbances had, unfortunately, obliterated any further evidence of the North Building which might have survived post medieval stone quarrying. Further to the south, robbed out remains roughly at right angles to the first buttress were initially thought to represent a second, however it is unlikely that these are contemporary given both the apparent length of the feature and what would be an awkward position along a presumed eastern wall line.

Floor Tiles and Window Glass

No *in situ* evidence of the interior of the North Building survived, however there was ample evidence of its character in the rubble remains of its demolition. Contexts immediately post dating the building were characterised by an extensive spread of small scale demolition debris including large quantities of roof and glazed floor tile, mortar, lumps of clunch and fragments of painted window glass. The floor tiles are discussed below (Appendix I)

Twenty five pieces of 14th century window glass were recovered from the same deposits, eight of which had traces of red paint decoration (Fig 3). Unfortunately the glass had survived in a very poor condition, most pieces were small (average thickness 3mm), and were recovered with difficulty. The decoration consists of patterns painted in red onto the surface of the glass. Two of the decorated fragments have identifiable patterns, the others either have lines or, in the case of one, a confused swirl. Two or possibly three pieces have grozed (clipped and shaped) edges.

It must be stressed that none of the 14th century building material was recovered *in situ*. All the decorated tile and window glass came from contexts dated by pottery to the 16th century and later. The material does, however, provide an insight into the stature of the building from which it came. Judging from the historical accounts the structural fabric of the priory had three main phases of expansion: at the founding around 1238; at the time of Alice de Vere's grant around 1285; and during the 14th century, to which no specific date is attached but which was probably associated with the 1388 Parliament. The excavation revealed clear evidence of only the latest of these. The secure dating of the Bawsey kiln tiles to the latter part of the 14th century dates at least the decoration of the North Building to that time.

The North Building in Context

In c. 1250 a Dominican Master-General, Humbert of Romans commented "we have nearly as many different plans and arrangements of our buildings and churches as there are priories" (Butler 1984: 131). Whilst this certainly seems to be the case there was at least a broad pattern to the layout of mendicant houses, though it was far from a blueprint: without exception all had a church with at least one attached claustral range. Hinnebusch notes of the Cambridge house that the church was orientated east-west but it is not known which side of the cloister it flanked (1951: 133). If sufficient space was available, Hinnebusch suggests, the friars were likely to choose to position the church on the northern side of the cloister thus creating a degree of shelter (1951: 133). Of fifteen English examples he notes, however, eight had the church to the north of the cloister, six to the south and at Carlisle it was probably the eastern wing of the claustral range. At Cambridge the evidence remains inconclusive. There is traditional and some archaeological support for a northern cloister, whereas architectural observations have led to the tentative suggestion of a southern range (Stubblings 1969: 99).

Without further firm structural or archaeological evidence to draw upon, resolution of this question cannot be conclusive. The identification of the new North Building does not, unfortunately, cast much light on the problem. If the priory had a northern cloister the North Building could have protruded from its eastern range (a not uncommon situation for the Chapter house e.g. Oxford) or, more probably, sat a little to the east. If the cloister were to the south then the new building would stand in isolation to the northeast of the church (Fig 4). Detached buildings are not unknown in urban and semi-rural mendicant houses. At Guildford, Poulton & Wood suggest that the documented, but undiscovered, King's Lodgings was a detached building (1984: 40). At Brecon and Canterbury detached buildings are thought to be most probably guest houses (Clapham 1930: 94, Poulton & Wood 1984: 40). It is this context that is proposed for the North Building at Emmanuel. Northern cloister or no, the building remains set back from the central complex and so from the day-to-day life of the

priory. It lies close to the 13th century foundation of Preacher's Lane (now Emmanuel Street) and overlay water management features associated with the early priory, confirming that it is a later addition (Dickens 1993b). The demolition material suggests a fine building, one which the priors were quite willing to aggrandise despite the poverty in which they were supposed to live. That poverty, however, was always a means to an end in the Dominican order. As Hinnebusch comments "it could always be sacrificed and modified if it proved an obstacle to a wider apostolate" (1951: 129). Perhaps in the words of an eyewitness literary description of an English friary from the later middle ages:

halles full hygh and houses full noble
chambers with chimneys and chapells gaie;
and kychens for an hyghe kinge in castells to holden,
And her dortour y-dight with doores full stronge
(Dobson 1984: 112)

There are sufficient examples, certainly by the 14th century, to testify to the existence and frequent use of guest houses within the precincts of Dominican houses. The guest house at Oxford was undoubtedly occupied by some of the delegates to the 'Mad Parliament' which met there in 1258 (Hinnebusch 1951: 195). It is not recorded where in the Cambridge priory the parliament of 1388 sat or the domestic arrangements of its delegates. Perhaps it is stretching the evidence too far to propose this building as the venue, however, this 'guest house' was lavishly decorated then, as perhaps was the church itself (Stubblings 1969: 101) and the arrival of Parliament was an event that may well warrant such an outlay.

The North Building stood through to the end of the priory's working life, when at least one buttress was incorporated into the foundations of a later timber framed structure (Dickens 1993b). Opinion on what happened to the fabric of the main priory buildings after the Dissolution differs. Haigh suggests that by the time the College was founded the buildings had already been disposed of and demolished (1988: 14), however it seems clear that the main complex was at least partially standing and was incorporated to some degree into the new college (see above). Loggan's 1688 engraving clearly shows the west wall of the church with its large window filled but still recognisable, before its demolition in 1769 (Stubblings 1969: 97). The more likely scenario is that demolition was partial, beginning around 1544/5 when Edward Elrington took up residence. The demolition of the North Building and subsequent removal from the site of much of the larger debris, however, appears to have been rather more thorough. In both assessment and excavation it was noted that almost no large pieces of building material were evident (Dickens 1993a: 8). Of the smaller debris only a handful of tiles, for example, were found intact, the rest seemingly broken at the time of demolition. This thoroughness suggests deliberate clearance of at least this part of the site, and it could well have been the stones of this building that were those sold to St Mary's in 1545 for 40s (VCH 1948: 275).

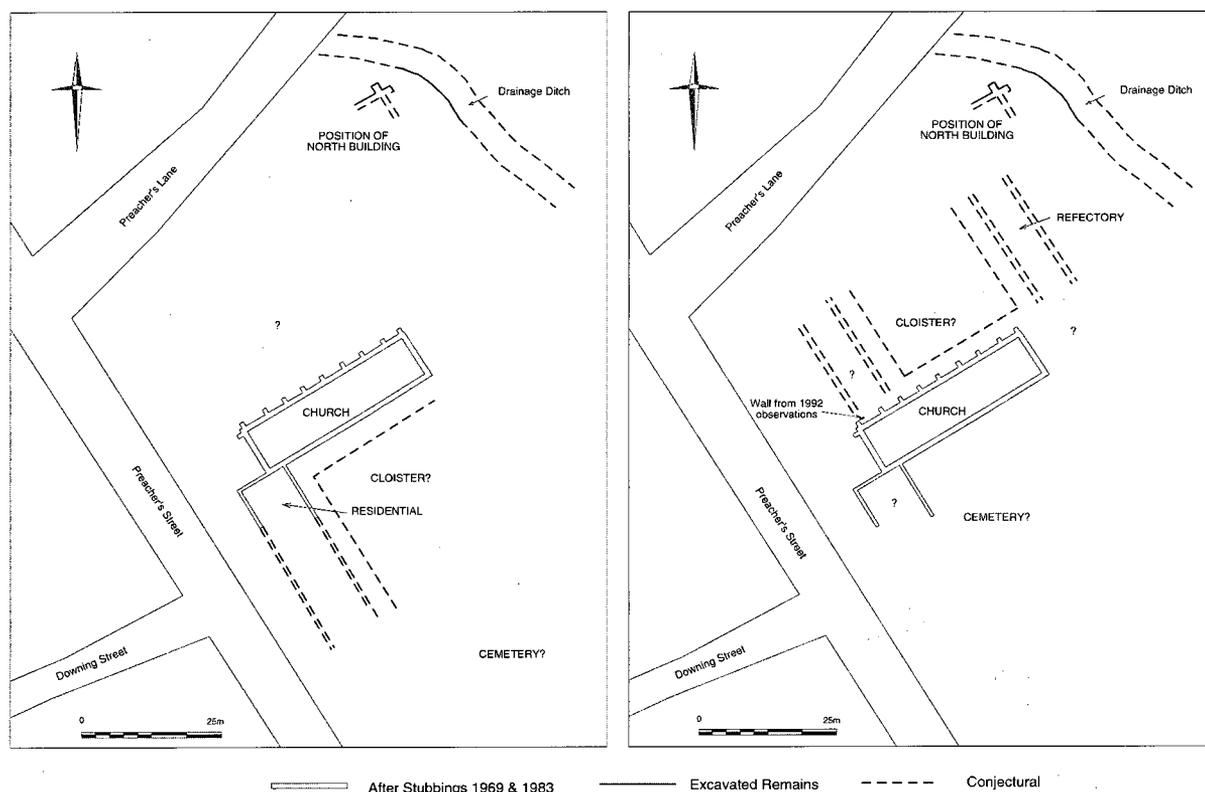


Figure 4. Possible reconstructions of North and South Cloister Ranges based on available evidence

Acknowledgements

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Endnotes

- 1 Flooding and the control of excess water appears to have been a problem on the site at several times in its history, indeed the car park immediately preceding the construction of the Queen's Building used to flood regularly.

Appendix I

The Bawsey Floor Tiles

Elizabeth Eames has published widely on the subject of medieval tiles, but her main work relating to the Bawsey kiln is the 1955 paper in the *Antiquaries Journal*. In this she identifies 57 tile designs, and one other fragment. Of these eleven are represented at Emmanuel among the 36 pieces of complete and broken impressed and glazed floor tiles (and 65 plain) recovered from demolition contexts.

Eames' figures (plates XXIV–XXVIII), show examples of all the known designs, and serve to demonstrate the work of the three principal blockmakers she identifies, mostly producing their own versions of a fairly limited set of designs, plus a fourth – 'the curvilinear artist'. The kiln produced both plain and decorated tiles, the plain in various sizes, the decorated generally about 4" (100mm) square and from 0.7" (18mm) to 0.9" (23mm) thick. The patterns, formed in relief or counter relief were stamped with wooden blocks and covered in lead glaze, a technique apparently derived from Rhenish examples, the firing producing a wide range of colours both of tile and glaze. Relief tiles are comparatively rare in England, although examples from Bawsey are widely distributed in the hinterland of the Wash, with other examples from sites in East Anglia, and some from London (Eames 1955: 175, 1985: 25). Eames demonstrates quite conclusively that the Bawsey tiles have a 14th century date, with a mid-point for the kiln around

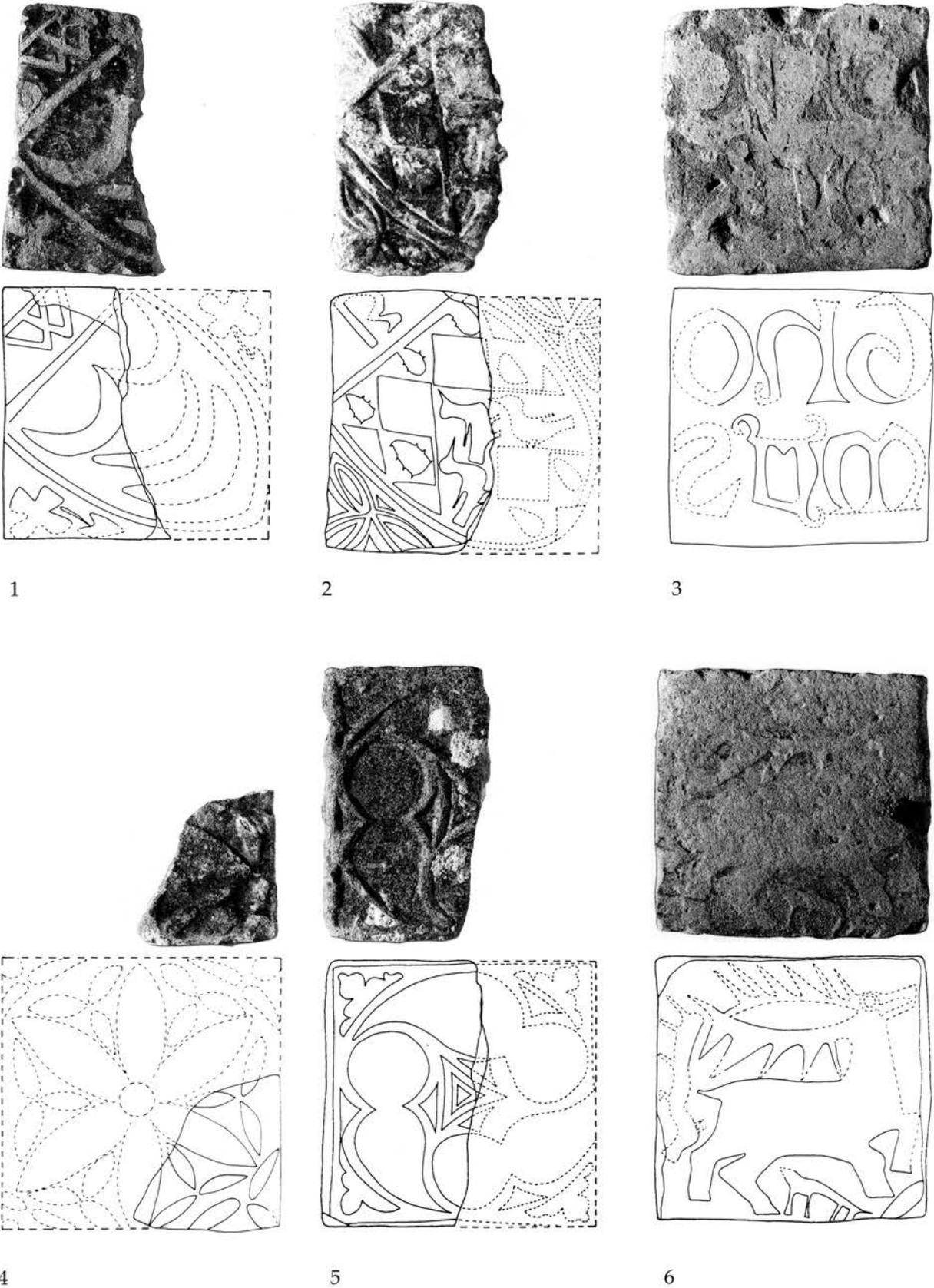


Figure 5. Floor tiles from demolition layers over the North Building. Manufactured in the Bawsey kiln near King's Lynn. Shown at c. 45% actual size.

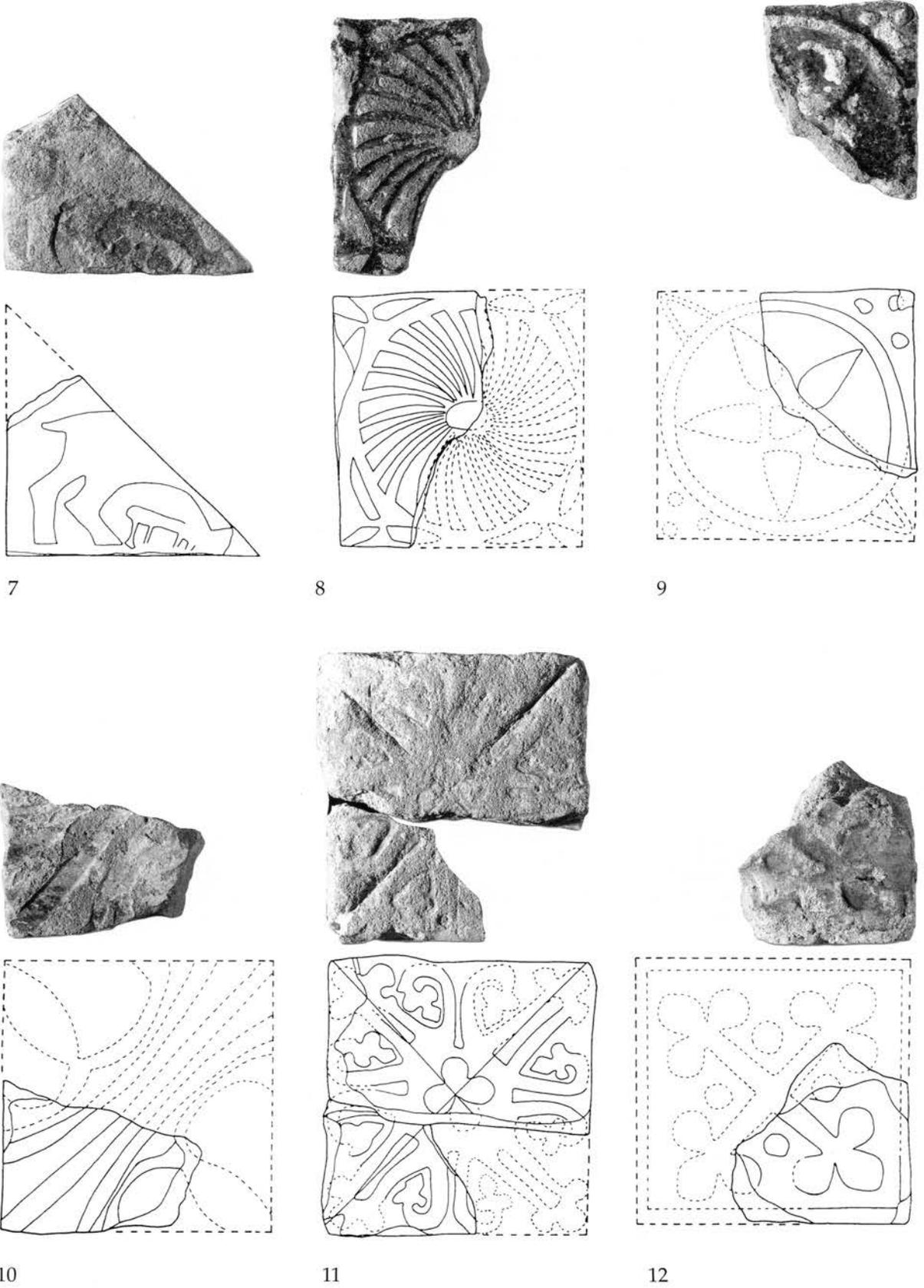


Figure 5. continued

1376. Wasters excavated from the kiln site in 1843 and 1928 together with the *in situ* pavement at Castle Acre Priory Chapter House, suggest that the working life of all the four blockmakers that Eames identified overlapped and that the kiln may have had only a relatively short existence. It also confirms that the Bawsey tilemakers were following the general medieval practice of using the designs made for a specific site to decorate tiles intended for sites where the design was meaningless. Some of these as well as "off the peg designs" are apparent at Emmanuel. Other Cambridge examples have been recorded from St Michael's (style xxxviii, Eames 1955: 179) and from the front Court Lawn at Emmanuel College itself, in 1949 (styles lviii and lvii, Stubbs 1969: 101).

Bloom's 1843 description of the Castle Acre Priory Chapter House floor (as reported by Eames) gives an impression of how the Emmanuel Dominicans' floor may have appeared:

The pavement was very compactly and neatly laid in cement presenting at brief and regular intervals groups of embossed and intaglio tiles, and the intervening spaces being filled with plain tiles, and all highly glazed... The tiles were arranged in distinct groups of four of the same pattern placed in immediate contact with each other, and, after an interval, another group of four of another pattern, the several patches consisting of an even number of tile, bearing precisely the same device, each pattern differing from its neighbour. (Eames 1955: 174)

The Tiles

Style vii, Figure 5.1 1

This design is interpreted by Eames as Blockmaker Three's version of style vi, three crescents in a shield topped by a W. Style vii, however, has "a shield bearing four crescents arranged in a manner unknown to heraldry" (*ibid.*: 166). It is possible that style vi represents the arms of William Bateman, Bishop of Norwich 1344–45.

Style xii, Figure 5.1 2

Xii is the second version (the first being xi) of "a representation of lozengy gutte or lozengy ermine ... charged with a chevron bearing three martlets, two sinister and one dexter" (Eames: 171). Whilst it is unlikely that the Kings Lynn Museum attribution of the style vi arms to William Waynflete, Bishop of Winchester who died in 1468, is correct, it is possible that it represents an earlier version of the arms borne with a canton by Patten of Warrington, bishop Waynflete being a later Patten. As Eames notes, however, this can only be conjecture (*ibid.*: 171).

Style xviii, Figure 5.1 3

Xviii is one of only two Bawsey tiles with inscriptions. This one has the name Thomas in two rows of three letters. As with some of the other patterns, the block for this tile was not cut in reverse, thereby reversing the design on the tile. As this design was found *in situ* in the Chapter House floor at Castle Acre Priory in 1840,

Eames suggests that 'Thomas' may have been an officer or benefactor of the Priory. The most likely candidate is Thomas de Wigginhall, Prior in the 1370s.

Style xxxvii, Figure 5.1 4

Xxxvii has a central 6 foil with trefoils between each arm.

Style xxxviii, Figure 5.1 5

This design Eames attributes to 'the curvilinear artist': "a very delicate triskele pattern based on one of the motifs employed in decorated window tracery. The corners outside the circle are filled by a beautifully curved trefoil motif" (Eames: 169).

Style xl, Figure 5.1 6 & 7

Xl is again the second blockmaker's version of a design by Blockmaker One. The main feature of the design is a stag which Eames describes as "being more angular than the first but [retaining] a certain solidity and spirited bearing". Unlike the original design, xl has the addition of two rather odd looking hounds, one below the stag's belly, the other running head first down the left hand edge of the tile.

Style xlv, Figure 5.1 8

Xlv is a rosette assigned to Blockmaker One

Style lii, Figure 5.1 9

A five pointed star by Blockmaker One or Two.

Style liii, Figure 5.1 10

One of a series of "dull geometric designs" assigned to Blockmaker One.

Style lvi, Figure 5.1 11

Eames describes lvi as a "somewhat unsatisfactory design based on intersecting arcs with foliate terminals" (*ibid.*: 170). She also reports, however, that it was a popular design, found on a number of sites.

Style lvii, Figure 5.1 12

"A good counter-relief foliated cross" (Eames: 170).

Heraldic Glossary

ermine white marked with black spots

gutte pl. *guttae*; drops in a row as ornament

martlet footless bird

canton square division, less than a quarter, in the upper corner of a shield

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The Bulwark, Earith, Cambridgeshire

C C Taylor

Introduction

In 1998, while clearing out the accumulated rubbish of a lifetime, the writer unearthed a detailed plan of the remarkable 17th-century Civil War fort at Earith (Fig. 2). The survey on which the plan was based was carried out in the late 1960s by the writer, with students attending a course on archaeological field survey run jointly by the then Cambridge University Board of Extra Mural Studies and London University Extra Mural Department.

The fort at Earith, traditionally known as The Bulwark, is one of the largest and best preserved of all the surviving 17th-century Civil War fortifications in Britain. Further, its position on a flat site, apparently unencumbered by any other works and devoid of any topographical or physical constraints, makes it an almost perfect and certainly rare example of the art of the 17th-century military engineer. The plan made of it by the Royal Commission in the 1920s and its depiction on large-scale Ordnance Survey plans are incomplete, and do not do justice to the site (RCHME 1926, *Bluntisham cum Earith* (3); VCH 1926, 310–12; OS), and, despite the long interest both in field survey in Cambridgeshire and in Civil War fortifications in general, there has never been an attempt to fully examine this important site (Brown and Taylor 1980, 113–15; Harrington 1992, 42–3; O'Neil 1960, 108; RCHME 1964; Saunders 1967, 22–3; Osborne 1990). It thus seemed to the writer that, instead of consigning the newly discovered plan to the dustbin, together with the rest of his life's work, or depositing it in local or national Sites and Monuments Records with much the same result, it was perhaps worth publishing in these *Proceedings*. The publication of the plan also required a description of the more notable features of the site, as well as an attempt to place it in its historical context.

Setting (Fig. 1)

The Bulwark is situated at the east end of Earith village, immediately north of the Huntingdon to Ely road (A 1123), at the extreme south-western end of the Bedford Washes, on gravel at 2.5m above OD. It is set

between the artificial channels of the Old Bedford River to the north-west and the New Bedford River to the south-east. Its position within the regularly and deliberately flooded Washes has led to its preservation when others of its period and type have succumbed to agricultural and urban pressures. However, although now technically within the fens, its actual siting is more subtle. It is set on the edge of a low promontory of gravel which projects south-eastwards from the similar deposits to the west on which Earith village lies. The boundary of this promontory extends eastwards, just to the south of the fort, from the junction of the Old Bedford River with the River Ouse, along the line of the low scarp there, and then curves north and north-east along the south-eastern edge of the fort. It then swings back north-west towards the Old Bedford River. This promontory shows well on an aerial photograph taken in April 1978 when it stood clear above the surrounding flooded land (CUCAP CFT 37). It is also indicated by the arrangement of field boundaries depicted on the Enclosure Map of 1814 (HRO P17). The flooded land is largely made up of alluvial deposits and marks the start of the prehistoric fenland course of the Ouse which, probably until the 12th century, flowed north from here to the Nene (Hall and Coles 1994, 136 and fig. 52). The promontory was cut through when the Old Bedford River was constructed. The fact that it once lay on the edge of the fens rather than within them is borne out by the existence of very slight medieval ridge and furrow, aligned north-west to south-east and cut by the New Bedford River, visible on aerial photographs in the area to the north-west of the fort and overlain by its north-western hornwork (CUCAP CCH 9). Presumably the main part of the fort itself overlies this ridge and furrow although it must have been abandoned by the time the fort was constructed.

The Huntingdon to Ely road crosses both of the Bedford Rivers on modern bridges and between them runs on a low causeway. The existence of this causeway, the alignment of the main street of Earith, as well as the position of the roads east of the New Bedford River, indicate that the main east to west route has been in its present position for many centuries and was probably there in the 17th century when the fort



Figure 1. The Bulwark, Earith, viewed from the north-west on 30 December 1966. The Ouse, and its original continuation, now the Old West River, lies on the right of the picture. In the foreground is the Old Bedford River cut in 1637. In the background is the New Bedford River of 1651. The main road between Huntingdon and Ely runs parallel to and left of the Ouse, crossing both the Bedford Rivers on bridges. The position of the fort on slightly higher and drier ground is clearly visible. (Copyright Cambridge University Collection of Aerial Photographs)

was constructed. Just to the south of this road is the broad channel of the Great Ouse. Before the 1630s the Ouse flowed eastwards along what is now the Old West River towards Ely. But in 1637, as part of Vermuyden's first period of work on the draining of the southern fens, the [Old] Bedford River was constructed. The waters of the Ouse were then diverted north along this new cut, rejoining the Ouse at Denver in Norfolk. The old course of the Ouse to the east was blocked by a sluice (Darby 1940, 41–3). This was the situation during the Civil War when the fort was constructed. After the war, in 1651, as part of Vermuyden's second period of drainage work, the New Bedford River was cut, roughly parallel to the older one (Darby 1940, 69–73) isolating the fort and ensuring its preservation. Thus the fort was constructed to control the main route into the fens from Huntingdon and the south-west, as well as the Ouse navigation. As such it mirrors the other surviving Civil War fort in the county, that at Horsey Hill on the Peterborough to Whittlesea road (A 605) which was built to control the principal north-western route into the fens as well as the navigation on the Old Nene channel and the King's Dike. The Horsey Hill fort, although also of considerable interest, is not so well preserved as The Bulwark, its interior being occupied by a farmstead (RCHME 1926, Stanground (3)). Both forts must have been erected by the Parliamentary side during the Civil War to protect the margins of and access to their East Anglian power-base.

Description (Fig. 2)

(Terms in *italics* are those normally used in 17th-century military manuals)

Earith *fort*, or detached stronghold, is a square earthwork enclosing an area of about 0.73ha (1.7 acres), with a surrounding ditch and complex outworks. On each corner is an arrow-shaped *bastion* designed to provide cover along the adjacent sides. Beyond, on two sides and linked to the main fort, are further outworks, perhaps both originally *hornworks*. The fact that the *flanks* of the bastions, that is the short sides linking them to the *curtain* or main sides of the fort, are at right angles to the curtain and that the salient angles of the bastions appear to be just over 60 degrees, indicate that the fort is based on 'old Dutch' models (Ross 1887, 10–13). This Dutch method of military engineering was almost always used by the Royalist engineers during the Civil War, and the Parliamentary forces appear to have adopted it only towards the latter stages of the conflict (RCHME 1964, 47; O'Neil 1960, 111).

The main *enceinte* or enclosure is square and the corner bastions are linked by a continuous rampart or curtain, now between 0.5m and 1.0m high. All the bastions are hollow. Beyond is a broad ditch up to 3.0m deep which entirely surrounds the main enclosure. Outside this ditch, mirroring the form of the main fort, is a continuous flat narrow walk, protected by an outer rampart which is now nowhere more than 1.0m high. This walkway and rampart is a *covered-way* or

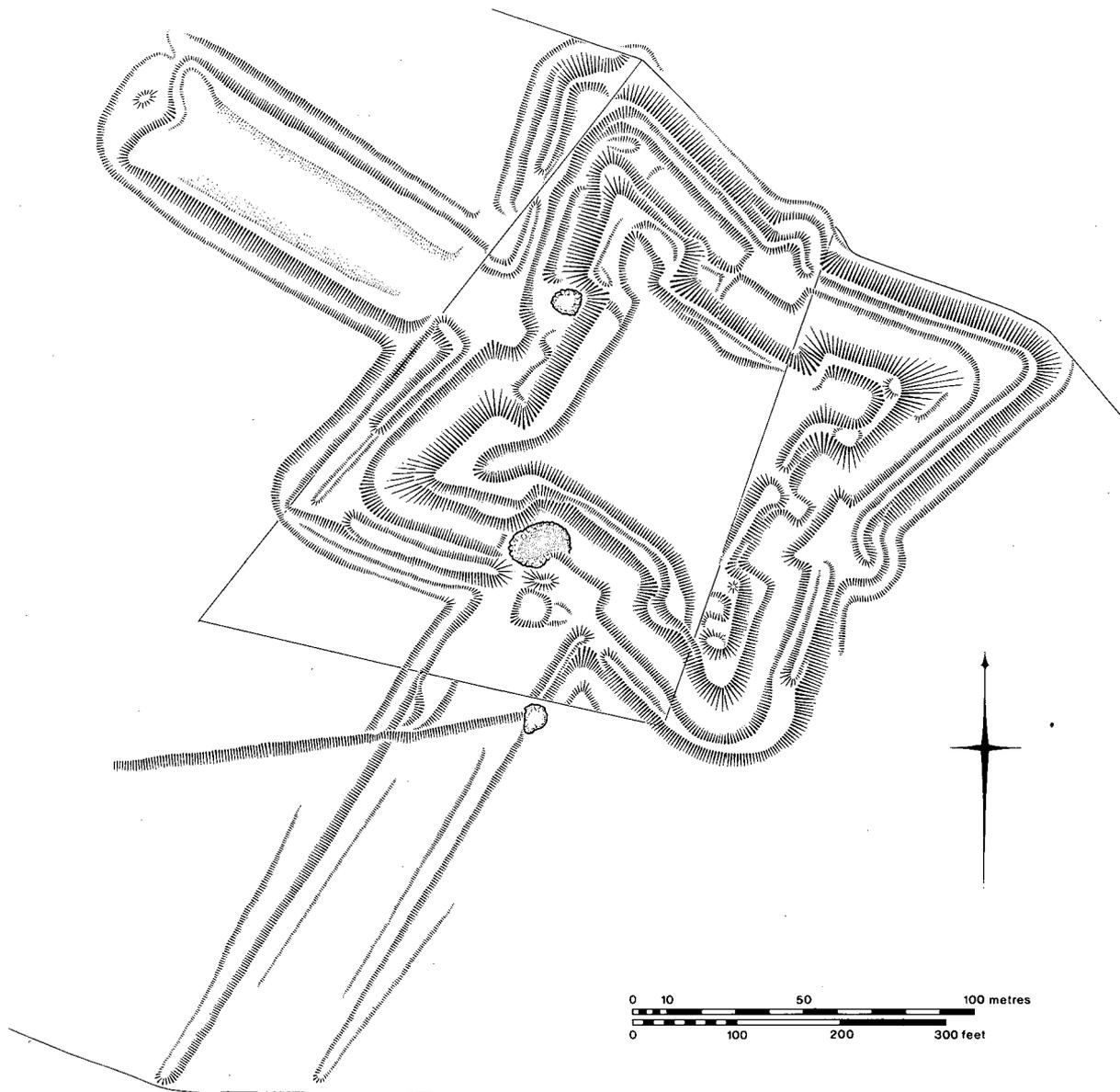


Figure 2. The Bulwark, Earith.

communication route, although it probably also functioned as a firing platform for musketeers. The outer scarps of both the rampart of the covered way and of the curtain could have been revetted in timber, in a similar way to that at Colonel Gray's Sconce at Newark on Trent, Nottinghamshire (Manning 1958, 36–42, 62; RCHME 1964, 37–9). This is, however, unlikely as revetting was never used on contemporary Dutch works. The outer side of the covered way here was part of a *glacis* or a slope on which attackers were exposed to the fire of the defenders. Thus it could not have been revetted. There would probably have been much use of wooden palisades on the rampart. In the centre of each side the covered way opens out to form rectangular platforms which project into the ditch. These are *places-of-arms* or assembly points for troops on the outer defences. On the north and east sides these places are protected by small *redans*, or angular

projections, now eroded to arcs. The ramparts or parapets of these *redans* are continuous with those of the covered way. However, on the south and west sides the covered way parapets turn outwards and become the long sides of the extended hornworks. These sides are now low banks less than 1.0m high with shallow outer ditches.

The north-western hornwork terminates some 35m short of the Old Bedford River in the form of two projecting rounded and much eroded features linked by a short length of rampart. These features may have been, were perhaps intended to be, or should have been, small *demi-bastions* or half bastions with one forward face and one flank covering the adjacent curtain (RCHME 1964, fig. 18a). Their original form is no longer clear. The hornwork on the south-west side was presumably identical, but it is now cut obliquely by the scarp of a later field boundary and the

demi-bastions, if they ever existed, have been destroyed, perhaps as a consequence of their proximity to the main road.

The interior of the fort is featureless. Unlike the Horsey Hill fort, which has a well marked entrance gap on its south side, the Earith fort, at first sight, has no obvious way in. However, in the centre of the south-east side, just beyond a diagonal cut through the curtain, is a small rectangular platform projecting into the ditch directly opposite the re-entrant platform of the place of arms there. On the outer side of the latter there is a gap in the parapet from whence a narrow ramp leads down to the ground outside. It is possible that there was an original entrance here via this ramp and the place of arms, with a timber (draw)bridge across the ditch to the projecting platform. If this interpretation is correct it is an interesting addition to the overall plan of the fort.

There is considerable, if relatively minor, later damage to the fort and its outworks. These include the erosion and mutilation in places of the parapets of the covered way and the redans, as well as of the outer edges of three of the corners. There is also much damage to both of the hornworks. In addition there are pits in the centre of the southern place of arms and two ponds in the main ditch. There are also some slight parallel drainage ditches visible in the field north-west of the fort. These cut through the medieval ridge and furrow and one of them also cuts the hornwork of the fort (CUCAP CCH 9).

A curious feature, which may well be either contemporary with or later than the use of the fort, is the existence of two narrow flat-topped banks or walkways across the main ditch which appear to link the north-eastern place of arms to the main curtain and to the corner of the northern bastion. It is possible that these walkways are original, or at least a mid 17th-century addition, to give access to the outer defences from the centre. Otherwise they have no function, and they are not explicable in terms of later alterations. One small archaeological excavation has been carried out on the site (Keynes and Evelyn White 1908, 257–61). This included a section cut through the northern bastion. Little of note was found, although the fact that no masonry or brickwork were discovered confirms the supposition that the whole fort was of earthen construction. Given the date of the excavation it is not surprising that no details of timber palisades were noted.

The Earith fort is thus a remarkably well preserved example of a mid 17th-century temporary fortification, constructed to the most advanced designs by an accomplished military engineer. But it also illustrates other aspects of the 17th-century Civil War. First, the basic design of a detached fort has been adapted to take account of the needs of the site and, in particular, to improve its tactical strength by the addition of the two hornworks. These features enhance the value of the site. Second, it has also been changed to meet perhaps purely local military needs by the construction of an unusual entrance way and possibly by the addition of the linking walkways on the north-east.

Thirdly, despite the high quality of the overall design, there is evidence of hurried or incomplete construction work which may be the result of the way in which and by whom it was actually built, perhaps in the face of rapidly developing military threats. One example of this is the apparently ill-matched nature of the curtain and the main ditch below it in the centre of the south-west side which has produced a ledge or berm. This is possibly for an unfinished *fausse-braye*, a secondary enceinte outside, parallel to and below the main rampart. This is another feature which is typical of Dutch fortifications. A second possible example of hurried construction is the excessively wide curtain or rampart on the north-western side of the enceinte. There are also indications that the main ditch is incomplete with what appear to be undug sections within it, again in the centre of the north-western side and at the base of the eastern bastion. This feature is similar in form to the equally unfinished ditch at the mid 12th-century castle at Burwell, Cambridgeshire (RCHME 1972, Burwell (132)). The parapet of the place-of-arms in the extreme western corner also appears to be incomplete. The fort also contains a relic of another much later conflict. Set in the southern bastion is an Allan Williams steel turret of 1940 which does not appear to have been recorded before (Wills 1985, 22).

History

There is no direct evidence for the date of the construction of the fort at Earith. As already noted, its location, and that of the Horsey Hill fort, shows beyond doubt that both were built by Parliamentary forces. One possible reason for the almost complete lack of documentation is that during the Civil War most of the eastern counties, despite or perhaps because of their strong Parliamentary leanings, lay beyond the main events and crucial engagements. Other contemporary fortifications such as the fort at Cambridge, the gun battery at Sawtry, the sconce at March and even the various works at Huntingdon, are also ill documented for the same reason (RCHME 1959, (77); Brown and Taylor 1980, 113–15; Taylor 1974, 47; Long 1859, 230–1). Further, given the haphazard and often amateur lines along which the Civil War was conducted, especially during its first two years, the construction of many minor and temporary defence works would not have been recorded. Another difficulty, and one which is relevant to defence sites of all periods, is that fortifications are often not built in response to real threats let alone being employed in action. They are more usually erected after the threat has passed on the assumption that they will be able to contain a later one which might materialise. Thus the Earith fort could well have been constructed after the danger which seemed to require its construction had passed. One final difficulty in establishing the date of The Bulwark is that, because of its strategically important position, what remains on the ground may not have been the only defence work at Earith, but merely the last of a number of fortifications on the

site. Thus, even when documentary evidence suggests the existence of fortifications there, they may not have been the surviving fort.

Nevertheless, despite all of these problems and difficulties, it is possible to suggest a number of occasions during the war when the Earith fort could have been built. Some of these occasions, although possible, are inherently unlikely for various reasons. For example, at the very beginning of the war, in August 1642, the strongly Parliamentary eastern counties set armed watches on all of the major bridges and river crossings in Cambridgeshire and elsewhere, and began work on the defences of Cambridge (Cooper 1845, 331–2). By September the Parliamentary forces had overall control of the eastern counties and by the end of the year the Isle of Ely had a permanent garrison. But it is doubtful that a major fort of sophisticated design would have been constructed then.

The first major threat to the eastern counties was in the first half of 1643. These months were a difficult time for Parliament and the Royalists perhaps came closer to winning the war than they ever did again. By April Lincolnshire was effectively lost and Cromwell, who was in charge of the eastern counties forces, seems to have decided to hold the line of the Ouse as the natural defensive frontier in the west (Holmes 1974, 54–5). All the bridges in Huntingdonshire and Cambridgeshire were put into a state of defence, other places were fortified and troops were assembled at Huntingdon and Wisbech (Tebbutt 1941, 36–8; Cooper 1845, 351–3; Osborne 1990, 15–16; VCH 1932, 18; VCH 1948, 406–8).

It was during this crisis and its aftermath that the only references to possible fortifications at Earith were made. In May 1643 permanent garrisons were established at Wisbech, Ely and Earith (PRO SP28/222). The possibility that the garrison at Earith may have had defensive works is supported by a second mention of Earith in July 1643 when one Jocelyn Tyrell reported that he hoped to be able to hold Hermitage Pass at Earith for a week (Kingston 1897, 115; VCH 1926, 310–12). The name Hermitage was, and indeed still is, used for the Earith crossing and commemorates the existence in medieval times of a bridge hermit there (Tebbutt 1941, 143–4). In the event this threat did not materialise and the overall military position in East Anglia improved. Again though, whether a fort such as that which now exists at Earith could have been constructed at this time may be doubted. The armies of both sides, but particularly that of Parliament, were still run on a very amateur basis at that stage of the war. Indeed it was partly his experiences of ill-disciplined and ill-trained troops with poor officers and negligible organisation in the early summer of 1643 that led Cromwell to recognise the need for the massive improvements that were to lead eventually to the New Model Army (Holmes 1974, 71–3).

A minor local scare occurred in October 1643 when a detachment of Royalists captured Bedford and plundered the surrounding area. But again it is doubtful whether a massive fort, such as that at Earith,

would have been constructed. Indeed, in the last months of 1643 the Parliamentary armies were still in a poor state militarily and thus the building of the fort at this time seems unlikely. In early and mid 1644 the eastern counties were again on the defensive and both men and money are recorded as being used to improve the defences of Cambridge and the Isle of Ely. However, neither Earith, nor indeed any other place, is specifically mentioned (VCH 1932, 19; VCH 1948, 407).

In October 1644 there was yet another threat to the eastern counties with further Royalist advances in Lincolnshire as well as a more general danger of an attack on London from the west. Neither threat materialised, but Horsey Hill is specifically mentioned at this time as one of a number of otherwise unnamed places to which troops were sent in the autumn of 1644 (VCH 1932, 19; Kingston 1897, 177). This might indicate that there were some defence works at Horsey Hill by then, perhaps the existing fort there. If so it is hardly likely that the south-western approaches to the fens at Earith were not also fortified. Thus there appears to be circumstantial evidence of some form of defence work at Earith by late 1644.

In June 1645 further fortifications around and on the Isle of Ely were authorised. In addition a serious danger to the southern fens occurred in August when a strong force headed by the king advanced south from Stamford and, after a skirmish at Stilton, captured Huntingdon on 24 August. Once again Cambridgeshire was put into a state of defence and the crucial position of Earith in relation to Huntingdon makes it likely that it was at least garrisoned. It is however doubtful that there would have been time to construct a major fort. In any case the king left Huntingdon on 25 August moving south, and the danger passed (VCH 1932, 19; VCH 1948, 408–9).

There were two other occasions when the Earith fort might have been constructed or at least garrisoned by Parliamentary troops. One was in the autumn of 1646 when rumours of the approach of a Royalist army on its way north resulted in orders for new defence works in Cambridgeshire and Huntingdonshire. These included making all the fords on the Ouse from Eynesbury to Earith impassable and the breaking of the bridges at St Ives, Huntingdon and St Neots. The last occasion was in June 1648 when, after a Royalist rising, troops were sent from Norfolk to Cambridgeshire and the Isle of Ely and 'all passes and avenues' through Huntingdonshire were ordered to be secured (VCH 1932, 20–2). As with so many earlier threats this last passed without incident and, with the defeat of the king at Preston on 17 August, the war came to an end and the fort at Earith passed into history. Only two of the military events between 1642 and 1646, those in the summers of 1643 and 1644, might have led to the construction of the Earith fort. It is impossible to go further than this.

Two other factors need to be taken into account however. The first is that, as has already been noted,

the use of Dutch models for fortifications by Parliamentary forces is usually said to have occurred only in the later stages of the war. This would make the 1644 date more likely than that of 1643. The second factor is the matter of the designer of the Earith fort. Whoever was responsible was an accomplished military engineer and one who was familiar with the design and construction of up-to-date fortifications in both Britain and Europe. Three people have been suggested as possible designers. The first is Richard Clampe who certainly made a plan of the defences of Newark on Trent. He may have been responsible for the laying out of the fortifications there and was a local, King's Lynn, man. He was probably in the army of the Eastern Association and later joined the New Model Army. The Newark plan describes him as 'chief Enginier' (RCHME 1964, 66–7). The other suggested names are Captain John Hopes and a 'Mr Christian'. On precisely what evidence the involvement of any of these people is based is not clear. Neither of the authorities that have put forward these names give any source for their assertions (Harrington 1992, 43; Osborne 1990, 25). Four other Parliamentary engineers who might have been responsible for the Earith Bulwark are known. One is Cornelius van den Boom who signed a plan of the defences of Newport Pagnell laid out in late 1643. Another is Peter Manteau van Dalem, described as 'Engineer-General', while an Eval Tercene – 'Chief Engineer' – and a Dutchman called Dalbiei are also recorded (inf. A. D. Saunders).

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Fen draining: detection in the archives

N James

The great engineering works of the mid 17th century did not complete the draining of the Black Fens. By the end of the following century chronic floods seemed to be claiming much of the landscape back (Darby 1956). A recent matching of documents has produced telling evidence of responses to this agricultural emergency in the Haddenham Level.

The Haddenham Level comprises about 7750 acres (3135 ha.) around the southwestern corner of the Isle of Ely, lying between the Hundred Foot (New Bedford) River and the Old West River (Ely Ouse). Conditions here were already difficult for farming by 1720, and land owners obtained an Act of Parliament in 1727 (13 Geo. I c. 18) which allowed them to form a commission for managing drainage more or less independently of the regional authority, the Bedford Level Corporation. This Act was then widely emulated elsewhere in the Fens. Unfortunately, practically all of the Haddenham Level Commission's archive has been lost (Finney *et al.* 1997). Of great interest, then, is the 'Map of Haddenham Level in the Isle of Ely', at the Cambridge Record Office (CRO; ref. 515/P); but neither its purpose nor its date are known for sure (Fig. 1).

The map was deposited at the CRO by Bidwells, the surveyors, on closing their office in Ely in 1969–70; but it does not seem to relate to the other documents deposited with it. Made of two sheets of parchment of unequal size glued together, it measures about 1230 x 950mm (slightly more than 4' x 3'). The scale is about 6.½ inches (160mm) to the mile (1:1000). It bears a scale in furlongs, an arrow for north, and a vignette of an early 17th century map maker with a rustic muse in a 'landskip'. It is painted in colour. It is unsigned. The map is rolled and, to judge by damage to the border, it had been stored with the bottom protruding. The parchment had become brittle, creased and somewhat grimy but the border has now been treated and the whole map cleaned (the right sheet more successfully than the left).

On accession, the Record Office suggested that the map was of the late 18th century. That is plausible on grounds of the painting and lettering if not the quaint vignette (Fig. 2). As such, it the only map with details of the Level known from that century. It records the

Hundred Foot River and the Hermitage bridge and sluice at the western margin of the Level, several features along the Old West River at the south, and the foot of Aldreth High Street. Within the Level, details are shown of the fields, replete with parcel or lot numbers and acreages; it marks droves; and it picks out the Haddenham Leam, the Adventurers' Drain and the Division Drain. It gives the names of several fens, fields and drains. It also shows windmills and their drains around the edges of the Level (Finney *et al.* 1997). There is a hint of negative evidence for suggesting that the map related to the Haddenham Level Commission, for it provides no details of the Upper Delphs, along the river between the Hermitage and Ewell Fen, which were excluded from the Commission's jurisdiction by its founding statute (penultimate paragraph). Whatever its original purpose, the map is systematically annotated in pencil in a hand of the 19th or earlier 20th century. Some of the names marked correspond to families and individuals recorded in the census of 1851 and in the Hardwicke estate records (CRO. R92/41) of the same decade.

In 1978–80, Rae & Saunders (n.d.) found mention of a "Ref. book to the map of Haddenham level" at Peterborough Museum. The book was traced in the library there in 1997 and, when the Museum courteously lent it to the CRO, many correspondences were found with details on the map. The book is a ruled octavo note book, with a dark leather cover and paper in good condition. The cover is embossed 'Haddenham Level 1798' and the fly leaf states that it is "A Reference Book to the Map ... by Will^m Custance of Cambridge". Bound in at the front, on stamped paper, is his oath, that, "having been employed by the Commissioners of Haddenham Level ... to make a Survey and a Map", he did the work accurately. This book must be the definitive or perhaps only copy of his calculations. Written in a simple, clear hand, it comprises lists of the parcels of land, grouped fen by fen and parish by parish (Stretham and [Little] Thetford, Wilburton, Haddenham, Sutton, and Wentworth), and identified by number, proprietor and acreage (not covering the Upper Delphs, of course).

Custance was becoming a leading surveyor (Bendall 1992). His well known map of Cambridge



Figure 1. The 'Map of Haddenham Level in the Isle of Ely' after cleaning

was published in the same year (RCHME 1959). We know about his survey in Haddenham from advertisements in the *Cambridge Chronicle* (1798 a, b), explaining that it was commissioned in connection with the Haddenham Level Act, which had been passed a year earlier (37 Geo. III c. xcvi, 1797), and that the map would be published in order to cover expenses. For Section 18 of the Act authorised a survey and map "in order to ascertain the Quantity of Land ... and how much belongs to ... particular Persons"; and Section 38 obliged the Commissioners to make a priority of repaying costs with moneys raised under the provisions of the statute. They announced that the Earl of Hardwicke was to be patron of the publication; and that it was to serve as a specimen for an atlas of the whole of the Fens. "The ... amiable and venerable Earl[s] ... alacrity and anxiety in the service of the Fens" sprang from his interest in agricultural 'improvement' in general (Wells 1830; Darby 1956: 133; Murphy 1977); and he was regarded as the principal proponent of the new Act (*Cambridge Chronicle* 1796).

The Commissioners declared that Custance was expected to finish in the August, but the oath in the lot book states that he only delivered his results in October. The Commission (in turn) was slow to pay,

Custance grumbled in a letter to Lord Hardwicke seven months later (CRO. R92/41). The latter's general correspondence on Cambridgeshire confirms that Custance had dealings in Haddenham, and it traces some of the negotiations leading to the Act, but it does not mention the survey (Hardwicke 1797–1807). There is no documentation on these matters in the archives at Parliament.

How, then, does the book correspond to the map? The entries in the one and the labels on the other are



Figure 2. The vignette

in different hands; and there are some slight variances in the spelling of place names. However, comparison of about 10% of the acreages entered for the lots numbered in the respective documents showed almost exact correspondence. There are a couple of anomalies at the eastern border of the Level; but, on the other hand, the documents share certain peculiarities in the numbering of the lots. Again, certain lots are distinguished on the map with a green wash, and the book shows that (with one exception – or error of transposition) these were each Hardwicke's.

Such correspondences could be explained were there a common list of references in the Commission's lost archive; so – although the Act's clause about ascertaining the quantities of property suggests that there was no such list – the internal evidence for identifying the documents as a pair remains inconclusive. On the other hand, both documents correspond to details in the advertisements: the map's emphasis of Hardwicke's lots may have been intended as acknowledgment of his patronage – no doubt, connoting progressive farming, by implication; and the Arcadian vignette may be a reference to the 'Golden Age' scheme of draining the whole of the Fens, in anticipation of the atlas.

It is not known whether the map was published, and nor was anything more heard of the atlas. Comparison with manuscript maps of Custance's in the collection at the Cambridge University Library did not help to identify the map at the CRO. A couple of the maps in the Library share stylistic conventions not found on the Record Office's map; but the maps in the library are not uniform and they reveal several different hands at work. However, there is some more external evidence for associating the map at the CRO with the lot book.

First, other newspaper advertisements imply that while, up to 1797, the Commission ran five wind pumps, by 1798 it had decommissioned the one by Stretham Ferry; and that then, in 1801, it probably had five again. The map shows four, marking them at pump sites of the Commission's known from another record of the 18th century; and it marks no pump by the Ferry. It follows that the map was made between 1797 and 1801 (Finney *et al.* 1997). Second, a pair of places labelled on the map near Sutton – Holts and Holbrooks (Fig. 3) – are specified in the new Act (s. 31). No other such peripheral places are distinguished but the statute did specify that the Level was to be extended here. Perhaps in the same connection, the Act authorised construction of a new drain for the fields between Sutton and Mepal (s. 9); and this proposal may also be the context for another map, 'A Plan of Sutton and Mepal Fields. 1795', now at the Cambridge University Library (Ms.Plans.156). It covers the land between the two villages and the Hundred Foot River, which was not part of the Sutton & Mepal Level but does include Holts and Holbrooks. The map was collected by Marshall Fisher (Cambridge University Library n.d.; cf. Holman 1992). It is anonymous but, from the same collection, there is a map of the Littleport fens, also dated 1795,

which shares several features of style and is marked as the work of John Turpin (Cambridge University Library Ms.Plans.149).

Even if the 'Map of Haddenham Level' is Custance's, it is not the version that was advertised for sale, for the first notice offered a map of 24" by 18" (60 x 45cm), showing the Level at 3½ inches to the mile – half the size of the map in the CRO. Moreover, publication would have been on paper, of course, not parchment, and surely not painted. In ink on the back of the map in the CRO is written "Haddenham Level 10", in a hand of the later 18th or earlier 19th century. Perhaps this document is one of a set of fair copies for the Commissioners – among which one or some may have been intended as a specimen or specimens for prospective purchasers of the proposed publication.

In sum, there are substantial but not quite conclusive grounds for associating the map at the CRO with Custance's lot book. The historical implications are significant. The new Act expresses determination to overcome the problems that farmers in the Haddenham Level had in common with so much of the Fens at the time. The most remarkable proposal was for constructing the catchwater around the Level that we now call the New Cut. Details on the map help to show both how the scheme must have been conceived at the outset and how, afterward, the Commissioners recognised the scope for altering the original design by draining parts of the New Cut alongside the Aldreth Causeway, through the great earthwork that we now know as the Catchwater Drain (Fig. 4). The Act belies the stolid caution sometimes attributed to the Fen farmers of that time (Summers 1976). If the map is, indeed, connected with the statute, it helps to confirm a sanguine outlook on the opportunities of the day (Chambers & Mingay 1966).

Of course, there was another side to it all. Among labourers, old hostility to draining was re-emerging (Ravensdale 1974); and the Act (s. 25) increased the penalties for interference set out in the first statute. Although neither the map nor Custance's book betray any sign of the problems, they do show that no open fen remained and scarcely any common fen – and even that was consigned for inclusion in the Level by the Act (s. 31).

Together, then, the map in the Record Office and Custance's book provide comprehensive details of private, common and charitable ownership. They also yield some information on land uses. The map, moreover, documents several chapters of development, from medieval fields in Wentworth and Sutton (Fig. 3) to the many enclosures made around the Adventurers' allotments soon after they were set out in the 17th century (explained in a forthcoming paper elsewhere). By recording efforts at the end of the following century, the map and the book together help to show how critical was that time for the development of the southern Fens.

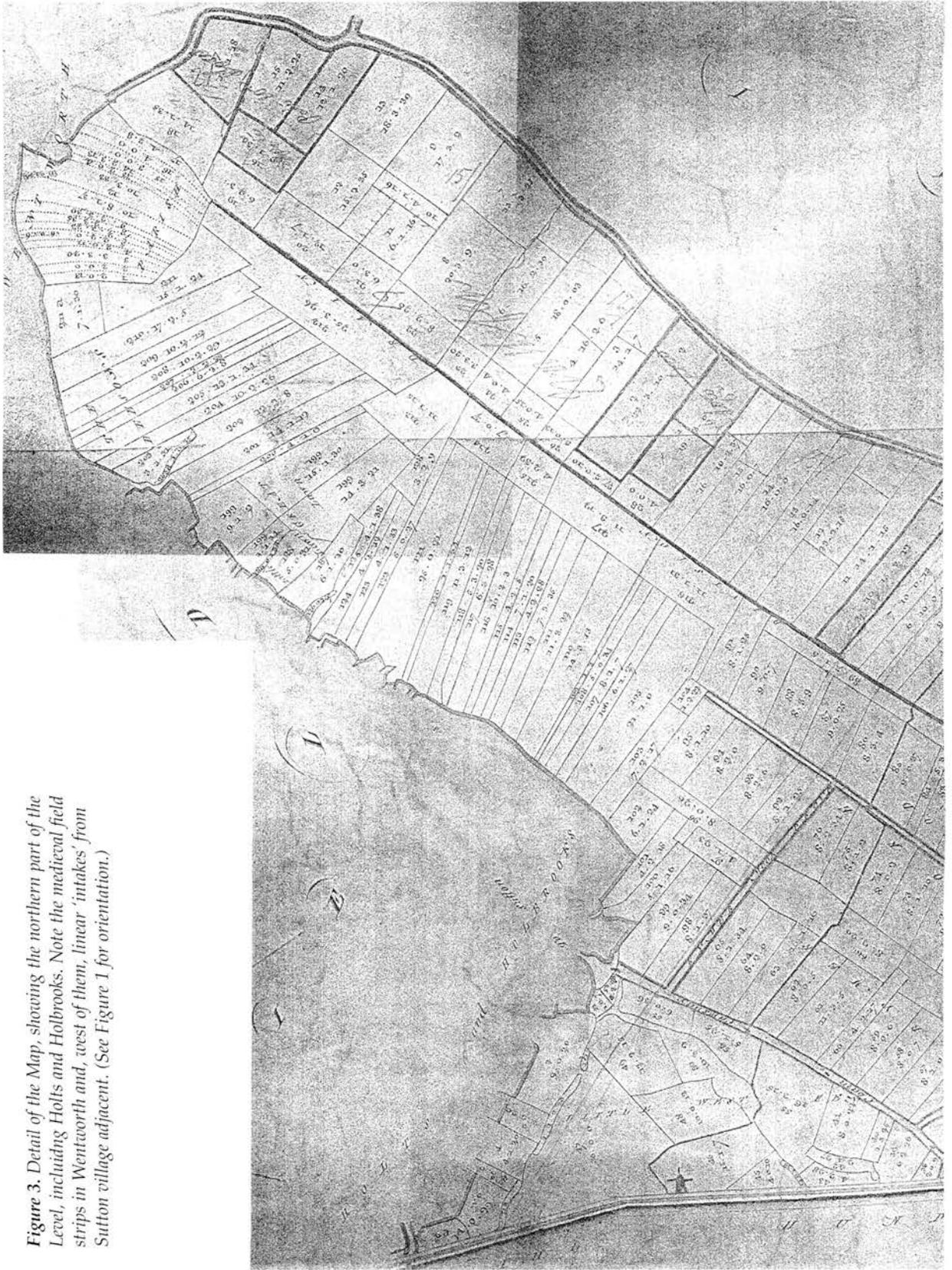


Figure 3. Detail of the Map, showing the northern part of the Level, including Holts and Holbrooks. Note the medieval field strips in Wentworth and, west of them, linear 'intakes' from Sutton village adjacent. (See Figure 1 for orientation.)



Figure 4. Detail of the Map, showing Ewell Fen, the foot of Aldreth High Street, Aldreth Causeway and Dam Bank

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Archaeological Investigations in Cambridgeshire: A National Overview

Nicholas Davis

Introduction

The following study results from work recently undertaken by English Heritage's National Monuments Record (NMR) Excavation Index. This forms only a small part of the NMR's efforts to compile and access, curate and make available the national record of England's ancient monuments and buildings.¹

The Excavation Index is responsible for maintaining a comprehensive inventory of archaeological interventions conducted in England. This includes all excavations and geophysical surveys; evaluations and watching briefs since 1960 and surveys funded by English Heritage and its predecessors. The recovery of artefacts, randomly or otherwise, from surface collection or non-archaeological excavations has not been included in past recording programmes and is thus omitted from the following synthesis.

'Survey', in this context, is used to describe the detailed, measured survey of individual sites rather than the identification and mapping of monuments over more extensive areas. 'Evaluation', meanwhile, is used to describe a particular category of prospective excavation which has gained its meaning largely through archaeology's application in the setting of post-1990 planning and development. In earlier times such investigations might have been described as 'trial excavation'.

Background

During 1997 and 1998 the Excavation Index, then part of the Royal Commission on the Historical Monuments of England (RCHME) which merged with English Heritage on April 1st 1999, undertook the updating of its database for Cambridgeshire. (This, insofar as the Index as a whole is concerned, forms part of a regular and continuing process).

The updating of the Excavation Index for Cambridgeshire has required processing a wide range of bibliographic material and an extensive correspondence with organisations at both the local and national level (a statistical digest of this process is provided below). The present state of the record now allows the nature and period-dating of those sites and structures

investigated to be reviewed within both the context of county and country. It also facilitates the study of the investigations themselves, their siting and distribution, the organisations and individuals responsible for undertaking them and the location of the resulting finds and paper archive.

The Updating Process

As part of the updating of the Excavation Index 174 bibliographic references were consulted and 27 archaeological contractors and organisations contacted. Information from the RCHME Microfilm Archive was also assimilated into the database. As a result the number of Excavation Index records for Cambridgeshire was increased as shown in Table 1.

Event type	Number added	Present total	Increase (%)
Excavation	153	677	29%
Evaluation	178	280	175%
Watching brief	103	170	154%
Geophysical Survey	39	86	83%
Survey	0	61	0%
Overall total	473	1274	59%

Table 1. Increase in Excavation Index Event Records

The figures presented in the percentage increase column are, in one respect, misleading in that the previous totals, on which they are based, were heavily biased towards excavation. Whilst bearing this in mind, however, these statistics still show the marked trend towards the exploratory evaluation excavation, watching brief and non-intrusive geophysical survey that would be expected in the development-led milieu of recent years.

The National Overview: Some Examples

The database thus enhanced, it is possible to present a broad overview of archaeological activity within the county as it appears from the national level. Since this can be undertaken according to a wide range of permutations, what follows constitutes a completely selective exercise intended to provide some indication

Table 2. Events in Cambridgeshire: Period Analysis

Event Type	PR	PA	ME	NE	BA	IA	RO	EM	MD	PM	MO	UN
Excavation	17	1	13	62	109	131	314	131	210	117	4	47
Evaluation	19	1	7	24	28	28	80	43	101	87	8	81
Watching Brief	6	1	7	10	6	13	33	14	48	39	3	59

Period abbreviations:

PR = Prehistoric; PA = Palaeolithic; ME = Mesolithic; NE = Neolithic; BA = Bronze Age; IA = Iron Age; RO = Roman; EM = Early Medieval; MD = Medieval; PM = Post Medieval; MO = Modern; UN = Uncertain.

as to the potential of the system.

Firstly then attention can be turned to a breakdown of the date-range of the discoveries produced by investigations within the county (Table 2). Surveys and geophysical surveys have been excluded from this analysis due to their non-intrusive nature. It should also be remembered that events may produce finds of more than one period.

One notable feature of Table 2, probably also a manifestation of archaeology's new role within the development planning process, is revealed by closer scrutiny of the final column of these statistics. Expressing the figures relating to discoveries of uncertain date (including, according to the definitions employed by the EI, sites yielding no archaeological evidence), as a percentage of the total number of each event type it can be seen that these comprise 29% of all evaluations and 35% of watching briefs as compared to only 7% of excavations.

In many respects this may perhaps be seen as a statement of the obvious. Excavations are, in the main, specifically targeted operations when compared with the more prospective work represented by the other categories. It remains, however, a matter of significance insofar as the publication and dissemination of information is concerned, in that these 'negative' investigations would seem likely to be those which receive publication at only the most basic level. This is a subject that will be further explored below.

Following this scrutiny by period we may now move on to a breakdown of the information on spatial lines. To give additional immediacy to this material this exposition is limited to investigations (in this case including English Heritage funded surveys and geophysical surveys) undertaken between 1990 and 1996. (Fig 1). The framework of this plan is based upon the Ordnance Survey grid, the number of investigations given representing those activities that have taken place within each quarter-sheet of the OS. 1:10000 scale map.

Whilst searching for meaning in these patterns of distribution it is necessary, once again, to recall that this time-span represents (with the exception of a few months early in 1990) the period immediately following the publication of Planning Policy Guidance 16. (Department of the Environment 1990). The implication here is that the density of archaeological investigation will largely mirror the intensity of development during the years in question. This, in

turn, seems to correspond to existing patterns of settlement. Thus some predictable 'hot-spots' are visible in Cambridge, Ely, Huntingdon and, possibly to a lesser extent than might be imagined, Peterborough. (In the latter case, however, activity can be seen to have extended westwards between the city and the A1). At the southern edge of the county, meanwhile, the area around Sawston, Whittlesford and Pampisford seems to have been particularly intensively investigated, whilst the corridor of the A604 through settlements such as Linton and the Abingtons immediately to the east seems to have been the subject of only slightly less interest.

In contrast, but once again perhaps predictably, investigation has been strikingly sparse on the comparatively lightly populated Fenlands. Here though, the distribution map does provide an interesting illustration of the way in which, as a result of following settlement, investigation tends also to follow the underlying geology that has played a great part in shaping settlement patterns. A narrow but perceptible band of increased activity runs northwards from the Willingham area, extending into the otherwise apparently barren Fenland to end at a point slightly north of March. Here the nuclei of activity are formed by towns and villages such as Chatteris and Wimblington. The overall distribution, however, seems to reflect with some precision the Jurassic Corallian formations which pierce the fen deposits along this same line. (Chatwin, C. 1961 map plate 1).

Conclusion: What of the Future?

The aim of the Excavation Index has, since its inception in 1978, been to act as a signpost to the archival material and artefacts produced by each investigation. In the past the link between the investigation and the evidence that it has generated has proved a fragile one, with notes and collections being all too frequently dispersed and destroyed. The creation and maintaining of a publicly accessible index to this material was seen as a means of reinforcing this connection.

Since the advent of PPG 16 and developer funding in 1990 a subsequent progress review in 1995 has noted that the policy document was insufficiently explicit as to who carries responsibility for the long-term storage of finds. As a result a survey was conducted by English Heritage and the Museums and Galleries Commission in 1997. This bore out these

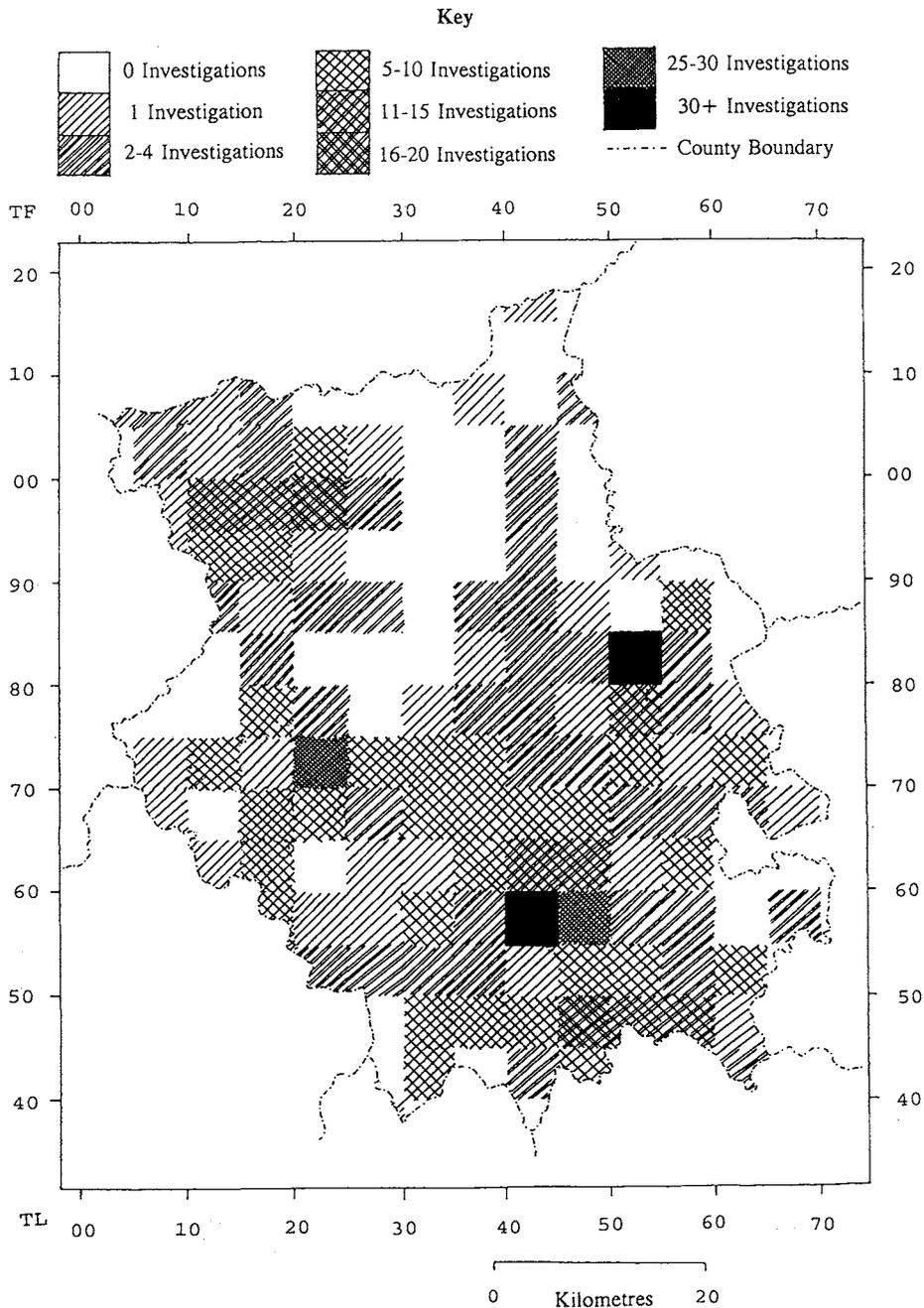


Figure 1. Archaeological Activity in Cambridgeshire 1990-96

concerns, highlighting shortcomings in the provision of repositories for finds and paper archive in many parts of England (H. Swain, 1998 p15).

In addition to this another area of vulnerability has begun to be noticed. Disquiet has been expressed in recent years about the inaccessibility of reports generated by some interventions conducted within the constraints of the planning process (H. Cooper-Read, 1996). This problem is that of the so-called 'grey literature': where work undertaken for developers receives only very limited publication. (Anon, 1998 p71).

Though it cannot be seen as providing a complete solution to either of these situations, the Excavation

Index can, once again, be seen as having an ameliorating role: English Heritage and the Museums and Galleries Commission are currently striving to implement the recommendations made in the 1997 report (H Swain, 1998 pp 10-11). Whatever the nature of the resulting framework, however, the Excavation Index would seek to act as a national agent serving to safeguard the survival of cohesive bodies of site data. Its function in broadening use and knowledge of the resources derived from interventions meanwhile, (N Beagrie, 1996 p84) must now also be held to encompass the 'sign-posting' of the 'grey' reports and their repositories.

To fulfil its sign-posting function the EI has, in the

past, been dependent upon those working on the ground making information available through publication. Trawling of these published sources (to as near comprehensive a level as possible) will continue. A recent analysis of the EI record, however, (comprising a comparison of our own data with that provided within the recently published *Gazetteer of Archaeological Investigations*, produced as a supplement to the British and Irish Archaeological Bibliography) (S Walls and K Walford eds, 1998) has demonstrated that neither source is immune to the 'grey phenomenon'.

Contrasting the methodologies of these two bodies of information has drawn the inevitable (and perhaps obvious), conclusion that a comprehensive record can only be achieved through those undertaking local investigations taking an active part in the wider dissemination of their findings. Since no outsider can be as knowledgeable regarding the work done by a unit or society than those within the organisation itself, any externally produced account is likely to suffer by comparison.

Translating information from the local onto the national level is an undertaking that requires effort and co-operation on both tiers. The local practitioner has a responsibility to make information as widely accessible as possible and those working at the national level must provide mechanisms to facilitate this. To this end the Excavation Index has instigated a range of procedures to enable practitioners to establish an index record for each investigation in the national tier with minimum delay and difficulty.

A standard *pro forma* is available through which information can be submitted for direct entry onto the Excavation Index. It is also possible to deposit micro-filmed copies of site archives for storage within the National Monuments Record's archive store. Both *pro forma* and microfilming information packs are available, free of charge, on request from the National Monuments Record Centre. Also a paper containing more detailed information regarding microfilming standards has recently been published in collaboration with the Institute of Field Archaeologists (M Handley, 1999).

It is envisaged that the completion of a *pro forma* will soon become a standard part of archaeology undertaken within the planning process, and an occasional paper on the subject has been circulated to members of the Standing Conference of Archaeological Unit Managers. On line data-submission and data-dissemination is also being investigated in co-operation with the Archaeological Data Service, whilst recording programmes are being expanded to co-ordinate our efforts with those of the Bournemouth University Archaeological Information Project, (the latter expanding our scope to incorporate desk-based assessments and a wider interpretation of 'evaluation' investigations). In this way it is hoped to provide a framework within which co-operation and partnership between the national and the local levels can continue to build an information resource which is of value to all sections of the archaeological community.

Endnote

- 1 The product of this research can be consulted through the NMR's public record at the National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ. (Tel: 01793 414600, fax: 01793 414606, e-mail info@rchme.co.uk).

Details regarding the National Monuments Record are also available on the Internet on english-heritage.org.uk, whilst key data from the Excavation Index can be consulted on the Archaeology Data Service site <http://ads.ahds.ac.uk/catalogue/>.

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Reviews

John Alexander, Sue Oosthuizen, Alison Taylor & Tony Baggs

The Archaeology of Landscape

Paul Everson and Tom Williamson (eds), 1998. 198pp, Manchester University Press. £45

This marvellous collection of essays has been put together in honour of Christopher Taylor, a past President of this Society. Christopher Taylor has, over a long career with the Royal Commission for Historic Monuments, completely revolutionised our understanding of the history of settlement and of gardens. The outpouring of work on each of these topics – each a discrete field of landscape research in its own right – is the result of this work. The list of authors to this volume is a roll-call of the eminent: Michael Aston, Joe Bettey, Tony Brown, Andrew Fleming, Glen Foard, Peter Fowler, Brian Roberts, Sarah Pearson, Stuart Wrathmell and the editors themselves; and nothing could underline Taylor's importance to our understanding of the history of landscape more than this. This implicit testimony to his profound effect on landscape studies is made explicit by the authors. Andrew Fleming, for example, explains that 'I first encountered Chris Taylor a long time ago, when I was an undergraduate on a field trip to Wessex. He showed us some Romano-British settlements. I was fascinated'.

It is appropriate therefore that this book should both record the stimulus which Taylor's work has given to that of other researchers, and act as a stimulus itself to other workers in the field. Peter Fowler, for example, in his analysis of the history of the Ridgeway across Overton Down demonstrates the way in which interpretations can be coloured by contemporary perceptions of landscape – in the case of the Ridgeway 'a particular, romantic image of the English countryside in the 1920s and 1930s'. It would be worth revisiting the history of the Icknield Way in Cambridgeshire in the light of this essay, to see whether the evidence might now usefully be re-evaluated.

In another example Tony Brown and Glen Foard re-examine the processes behind settlement nucleation and early open field agriculture in the late Saxon period in the light of recent research in Northamptonshire, itself a centre for Taylor's work on settlement origins. This essay is an extraordinary tour de force ranging

over an enormous complexity of sites, periods and theory. Their conclusions about the establishment of royal estates in the middle Saxon period, with dependent *cotes* of free tenants, provide an hypothesis which marks a substantial step forward in our understanding of these landscapes. It will itself stimulate further research and add to that – including work in Cambridgeshire – which is already underway.

No review can do justice to this important collection of essays – a short précis of each is a travesty of the whole. It will be essential reading for anyone with a serious interest in landscape history for many years to come, and it is a pity that Manchester University Press should have issued it in hardback at a price which is prohibitive to individuals, where a paperback volume, more competitively priced, would have served the purpose more appropriately.

Sue Oosthuizen

The Anglo-Saxon Cemetery at Edix Hill (Barrington A), Cambridgeshire

T. Malim and J. Hines 1998. CBA Res. Rpt 112. 343 pp + fiche. £25.

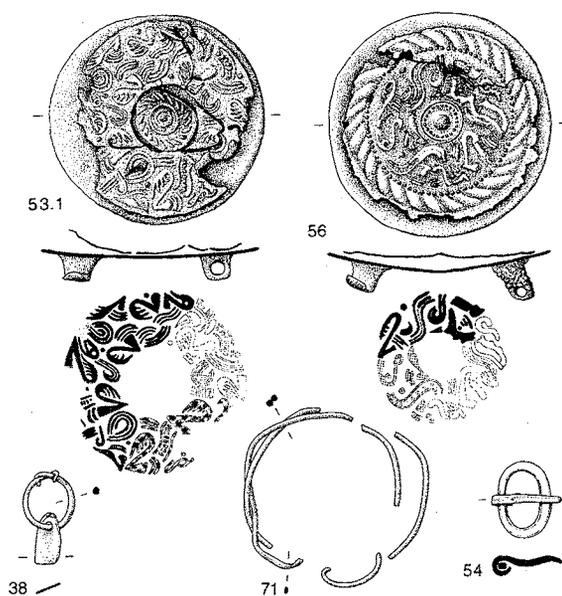
Annual excavations in 1989, 1990 and 1991 on this superb cemetery site, following its rediscovery in 1987, were the archaeological highlights of those years, and this massive and beautifully illustrated report does justice to the quality of the remains found there. In total 149 bodies were excavated, dating between about 500 AD and the early 7th century. There was a fair cross-section of the population in terms of age and wealth, and close study of the skeletons themselves and the grave goods deposited with them give a lively picture of life in this rural community.

The burial ritual demanded that bodies were laid out in their most prestigious dress, women with jewellery and personal items such as keys and bags, men with spears and shields and children sometimes with a pot (for food) or joint of meat, occasionally a few beads, and often (like everybody else) with an iron

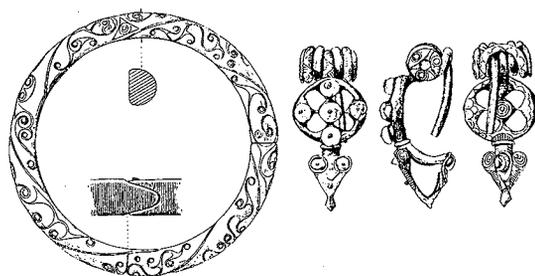
knife. Women were literally the holders of wealth in this community, and the most remarkable grave of all was that of a young woman suffering from leprosy who was buried in an iron-bound bed with many of her possessions, including the only sword from the site, apparently shortened for use in weaving. Otherwise, it is the women's brooches and their beads of amber, coloured glass, crystal and jet, together with a 7th century necklace of silver rings, glass beads and two gold pendants, that dominate the finds from this site, but it is the pathological reports that for many will make the best reading. These describe some of the diseases that affected the bones of the population: osteoarthritis, leprosy, cancers, tuberculosis and various dental problems. There is also evidence for broken limbs, wounds and the effects of hard physical work, peoples' stature and the patterns of age at death.

Also discussed is evidence for the cemetery in its regional context, including several neighbouring cemeteries, for southern Cambridgeshire is one of the best areas in Britain for studying this period, and there are extensive technical analyses covering items such as the shields, brooches, buckets, textiles, glass beads and beds. Interpretations of the chronology of the various elements of the burials will be of great value to those working with more fragmentary remains elsewhere, and the chapter on social analysis of the site sets out evidence for many important facets of early Anglo-Saxon life.

Alison Taylor



Artefacts found in grave 95 from The Anglo-Saxon Cemetery at Edix Hill



Brooch and bangle from an Iron Age princely burial at Newnham Croft from Cambridge: The Hidden History

Cambridge: The Hidden History

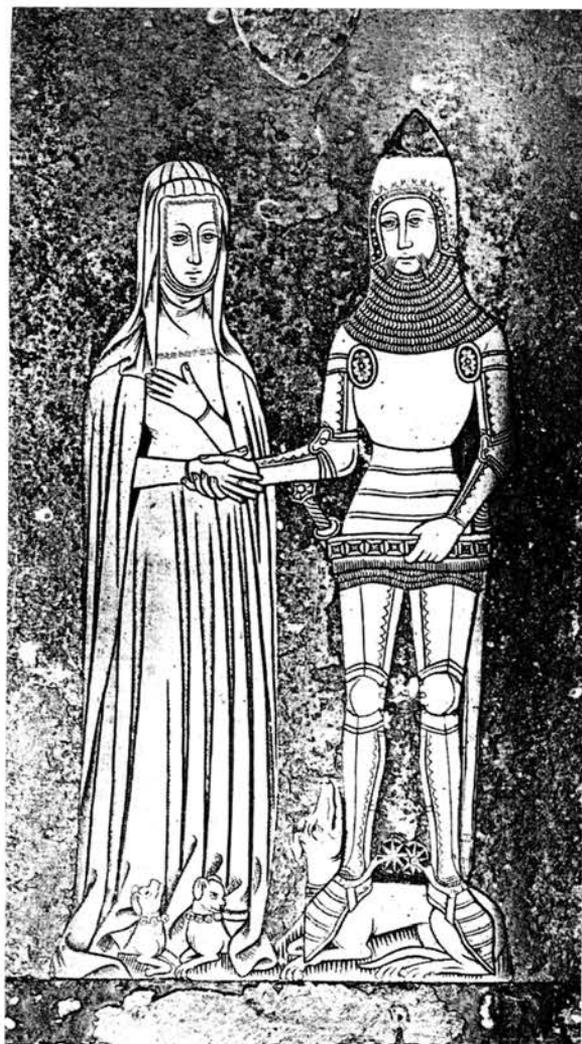
Alison Taylor, 1999, 160pp, 113 illustrations (31 colour). Tempus Publishing. £18.99

Miss Taylor is to be congratulated on having written a book which will be read with pleasure and profit by both those familiar with the history of Cambridge and those who are new to it. She is well qualified to do this, for as the first County Archaeologist for Cambridgeshire she had access to much unpublished evidence, and as a long-term resident is familiar with all parts of the city. To the archaeology she has added a careful study of photographs, drawings and paintings, including the Society's own Relhan Collection. The result is a scholarly, well produced and exceptionally well illustrated volume which will long be valued for evidence not easily available elsewhere. The use of the word 'hidden' in the title was not lightly chosen, for it includes much that has been obscured by later buildings as well as that recovered by excavation.

Her publication, as Cambridge approaches its third millennium as a settlement of more than local significance, is opportune, for it records a series of Cambridges, each rising, sometimes quite literally, from the ashes and rubble of its predecessor. From early prehistoric times a river crossing near both the Icknield Way and the Fen Edge route gave the site importance, and before the Roman conquest there was a sizeable settlement on Castle Hill, near the frontier of powerful Trinovantian/Catuvellaunian states, and after the conquest its future was assured. The second chapter summarises the Roman discoveries of recent years, showing how a government post on the hill developed into a civil settlement surrounded by prosperous farms and industrial complexes and then, in the 4th century, it became a stone walled *castrum*.

Evidence of the post-Roman centuries shows how the town expanded on the marshy southeastern side of the reconstructed bridge, largely deserting the hill top where the development of Chesterton may have inhibited growth; here further research is obviously called for. The southeastern expansion was reinforced after the Norman conquest by the building of a royal castle inside the old *castrum*, preventing other development and so determining the fate of this part of the town for at least five centuries.

The core of the book shows the rise of the medieval



20.3 Little Shelford, All Saints:
brass, Thomas and Margaret de Freville
from *Cambridgeshire Churches*

borough, its markets and the University, and there is a succinct account of the villages of Chesterton, Trumpington and Cherry Hinton, showing how much is known of their histories and their different relationships to the town. The volume ends with an account of how Cambridge changed from the 17th to the end of the 20th century, illustrated by some exceptional colour photographs.

John Alexander

Cambridgeshire Churches

edited by Carola Hicks, 1996, 448 pages, 24 plates, Paul Watkins, Stamford, £49.50

Any collection of 24 essays by almost as many authors will have its highs and lows and this book is no exception. One or two achieve little more than a bringing together of the relevant bits of the Pevsner volumes, while others are the product of extensive research and a knowledge of their subject which extends far beyond the bounds of one county.

In general East Anglia suffers from a paucity of pre-Conquest documentation which might help us to understand the ecclesiastical history of the county, and the number of surviving churches is small and most of those are 11th century. Morag Woodhuysen invokes the evidence of landscape history to fill out the picture but we are unlikely to move forward in any significant way until there have been excavations on some of the potentially early sites. The chapter on the 14th century by Pamela Tudor Craig begins with an essay in which she ranges widely and with great erudition to establish the context for local examples of the Decorated style, and continues as a descriptive catalogue. Eleven pages and no gazetteer seems too little for the Perpendicular but there is information in every line. Here for the first time there is much new building that can be dated by documents, Simon Cotton's speciality, as well as attempts to group architectural designs. Twice as much space is given to Lynne Broughton's chapter on the 16th and 17th centuries, and much of that is taken up by Little Gidding, of which little survives, and Leighton Bromswold, but they are churches of great interest because of the religious views of those for whom they were built. There is not much church building in the 18th century for Robert Walker to write about but the county does have its fair share of good fittings and he includes a selective list of monuments which goes some way to compensate for the even shorter list in the later chapter devoted to that subject. New churches in the Fens provide a diversion from the more familiar ground of the influence of the Cambridge Camdenians in the chapter on the Victorians, and the first half of the book is rounded off by essays on the 20th century and non-conformist chapels and meeting houses – the latter by Christopher Stell and a preview of what we may expect when the Cambridgeshire section of his RCHM survey is published.

Whilst it is tabled as being in part one the chapter on Huntingdonshire steeples could equally well have been in part two which treats 13 specialist topics. Isobel Henderson writes about Anglo-Saxon and Faith Johnson about Romanesque sculpture – the first appearance in print of her extensive work for the Courtauld Institute catalogue. There are also papers on brasses, on post-Reformation monuments, on wall paintings, on bells and on clocks, but there is nothing on church plate.

A text of 384 pages plus an extensive index and 24 pages of plates is a large book and the publisher should be praised for his courage. Most of all praise should be heaped upon Carola Hicks who, in addition to writing the chapter on later stained glass, edited the book for the press. Organising so many authors was never going to be easy and the long gestation must have added to the difficulty. There may be some less satisfactory sections but every reader should find much that will give both enlightenment and pleasure.

Tony Baggs



Plate 12 Excavations at The Still, Peterborough, 1995 from The Still, Peterborough.

The Still, Peterborough: Medieval Remains between Cumbergate and Westgate

P. Sperry and M. Hinman, 1998, 143pp, Archaeological Field Unit Monograph No. 1, Cambridgeshire County Council. £25

This site report covers an excavation on the outskirts of the medieval town and thus is concerned not with the usual urban features such as buildings, industry and ritual, but with the real basics of archaeology: rubbish pits, quarries and drains. These begin in or soon after 1000 AD, when quarry pits (presumably of a somewhat earlier date) were used as dumps for pottery and the debris of hearths and food preparation. Digging out the local cornbrash and reusing the subsequent holes for domestic rubbish continued through the middle ages, with some evidence for division of parts of the site by walls and paths into backyards of burghage plots. Stone-built ovens and drain, and a cess pit with insect, fish and bird remains were features of this period. After about 1500 there is periodic intensification of the site's use, with wells, purpose-built rubbish pits, more ovens and a small building. Animal bones are an important clue to the variety in an urban diet at this time, with the usual farm animals augmented by many wild species from forest and fen and plentiful sea and river fish, as well as non-food creatures such as cats, dogs, a rat and scavenging birds. Later on there were gardens here, and rubbish-dumping and use of cess pits continued well into the 19th century.

A large proportion of the report is devoted to descriptions, discussion and analysis of the quantities of pottery recovered, permitting, for the first time, an in-depth representation of the pottery industries for wide areas of Cambridgeshire, Northamptonshire and southern Lincolnshire.

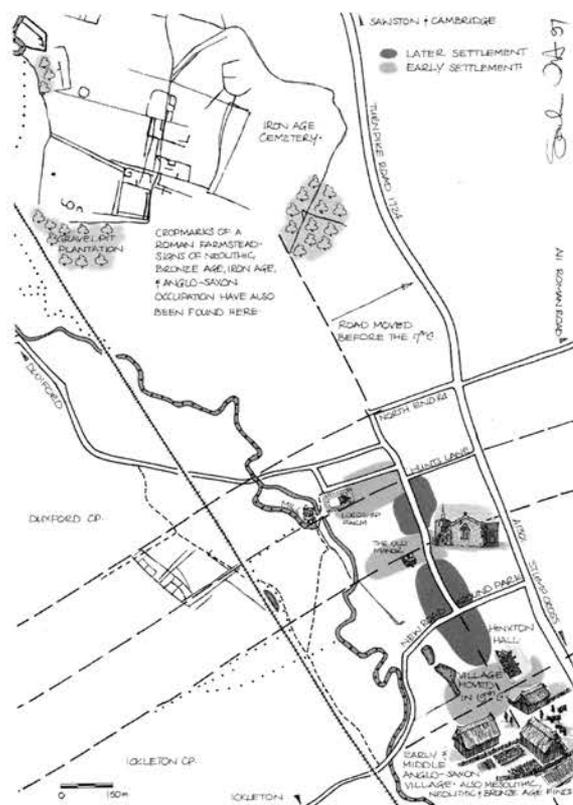
Alison Taylor

Also received:

Archaeology of Cambridgeshire Volume 2: South East Cambridgeshire and the Fen Edge

Alison Taylor, 1998, 130 pp, Cambridgeshire County Council, £11.95

Covers the archaeology and history of the Abingtons, Babraham, Balsham, Bartlow, Carlton, Castle Camps, Cottenham, Fen Ditton, Fen Drayton, Fulbourn, Hildersham, Hinxton, Histon, Horningsea, Horseheath, Impington, Landbeach, Linton, Longstanton, Milton, Oakington and Westwick, Over, Pampisford, Rampton, Sawston, Shudy Camps, Stapleford, Stow cum Quy, Swavesey, Teversham, Waterbeach, Weston Colville, West Wickham, West Wrating, the Wilbrahams and Willingham, with maps and colour photographs of these villages.



Map of Hinxton from Archaeology of Cambridgeshire Volume 2

Field-Work in Cambridgeshire 1998

Tim Reynolds

Abbreviations used:

AFU	Cambridgeshire County Archaeological Field Unit
APS	Aerial Photographic Services
ASAC	Archaeological Services and Consulting Ltd.
CAFG	Cambridge Archaeology Field Group
CAU	Cambridge Archaeology Unit
HAT	Hertfordshire Archaeology Trust
JSAC	John Samuel's Archaeology Service
LAS	Lindsey Archaeological Services
SAS	Soke Archaeological Services
ULAS	University of Leicester Archaeological Services

Cambridge, Babraham Road

TL 477 546 (Preliminary Statement)

M Hinman for AFU

Area excavation following last year's evaluation identified distinct zones, mostly of non-functional activities. Area 1 had two large boundary ditches with a 5m wide entrance which was restricted by a wooden structure. All the zones of ritual activity took place to the north and east of this boundary, except for a ritual shaft. Radiocarbon dates on bone from the latest fill of one of the boundary ditches fell between the Early and Middle Bronze Age. The four zones in Area 1 are: 1, an area with large numbers of post holes, tree root holes and small pits. 2, a blank area except for a single pair of post holes. 3, a ritual shaft 1.90m diameter and deeper than 1.80m. There were also four pits. These and the ritual shaft were devoid of artefacts. Additionally, there were two clusters of three pits each, filled with debris including scrapers and bone awls. Zone 4 was characterised by small circular pits with bone and flint in them. Although all these zones are slightly different in character, they appear to span the late Neolithic/Early Bronze Age.

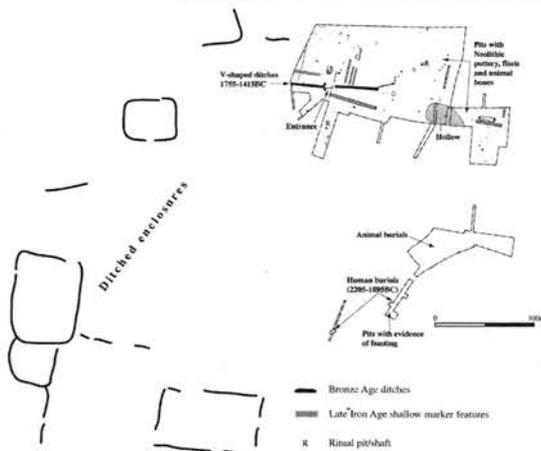
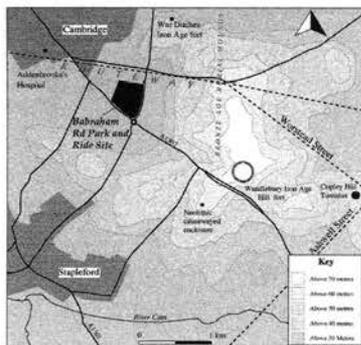
Area 2: Animal burials were excavated but radiocarbon dating of one of these showed it to be recent in age. Two human burials, both mutilated, were also recovered and a date on one of these was Bronze Age. Post-excavation analysis continues.

Cambridge, Chesterton High Street, Sargeant's Garage

TL 4618 5986 (Report 291)

M Alexander for CAU

Excavation revealed a Roman pit plus middle Saxon pottery redeposited in a Saxo-Norman pit. The site was occupied from Saxo-Norman times onwards with the main focus of development along Union Lane. Sporadic gravel extraction took place behind the street frontage, and a late 15th/early 16th century foundation of mortared clunch was partially excavated.



Location and plan of Babraham Road excavations

Cambridge, Clarkson Road, Centre for Mathematical Sciences

TL 4370 5896 (Report 252)

L White for CAU

Thirteen evaluation trenches uncovered remains (ditches, gullies and plough marks) of agricultural activities from the 13th/14th century to the present day. Pottery evidence suggests an increase in activity in the 14th/15th and 17th/18th centuries. No Roman or Saxon activity was found. It was possible to place the site on the junction of the Willow's Ditch with a hedgerow boundary, east of a field called Le Hearne.

Cambridge, Downing Place, Transco Pipe pit

TL 45142 58222 (SMR Summary)

L White and R Mortimer for CAU

A large ditch which does not appear on the early maps (e.g. Lyne 1574) was identified in a pipe trench. It ran east - west, roughly parallel with Downing Street and is interpreted as a large boundary ditch, not the King's Ditch which is on a different alignment. A weathered fragment of medieval pottery came from an upper fill.

Cambridge, King's Parade Water Main

TL 4482 5851 (Report 285)

M Alexander for CAU

Monitoring work on a pipe trench has revealed at least 7 layers of road surface in Trinity Street interspersed with debris from periods of use, whilst in King's Parade the trench cut through at least 5 cellars associated with former properties on the west side of the street, demolished in the 17th/18th centuries. Gaps between the cellar walls had earlier materials showing road side build up from at least the 13th century. There was a single Saxo-Norman pot sherd.

Chesterton, A1 roadside

TL 1206 9662 (SMR summary)

W Wall for AFU

Emergency recording along a drainage ditch near Durobrivae identified 160 graves and two stone coffins. There was some intercutting of graves and at least one ditch was present but this was not a boundary as graves continued beyond it. Metal detector survey recovered 6 loose Roman coins and numerous coffin nails. The site is an extra-mural cemetery for Durobrivae, probably dating to the 3rd or 4th century.

Chippenham, Foxburrow Plantation

TL 6580 6760 (Report A131)

A Connor and S Kenney for AFU

Twenty evaluation trenches all showed archaeological features. Roundhouse gullies, pits and a rectilinear ditch system were found along with Middle and Late Iron Age pottery, animal bone, daub and metalwork. At least two phases of occupation were suggested on the basis of ditch and gully alignments.

Diddington, Little Paxton Quarry

TL 202 659 (Project 219.09)

L Bevan for BUFAU

Fieldwalking on Field 5, where cropmarks reveal an

incomplete circular ditched feature and possible field boundaries, produced a lithic scatter but no other finds. The bulk of the collection would fit a Bronze Age date and includes three pressure flaked arrowheads preforms, probably for barbed and tanged arrowheads. The collection suggests low density, episodic use of the area with some tool manufacture.

Ely, Broad Street

TL 5428 7984 (Report 266)

R M Regan for CAU

Evaluation at the former Eastern Electricity Depot identified 13th century material on the Broad Street frontage. Above this a 15th century dump was used as a base for a building. The back of the property was delimited by substantial walls, and had internal divisions and a yard. This phase was sealed by further dumps and then a 17th century structure with identifiable rooms. On the Jubilee Terrace side of the site earliest material dated to the 13th/14th centuries with dumping layers and ephemeral structural evidence spanning the 14th and 15th centuries. A 15th century structure was indicated by a yard, postholes and pits. From the late 15th century this area was a garden. The Victoria Street frontage showed dumping layers but less structural evidence apart from a small oven/kiln associated with a building in the 15th/16th century.

Ely, Jubilee Terrace

TL 544 797 (Report 290)

M Alexander for CAU

A second phase of evaluation revealed waterlogged conditions which prevented development until the 14th century. The period between the 14th to the 17th centuries was marked by a build up of silts and clays showing the presence of a garden or pasture on the site. After this, substantial dumping took place and a lime kiln and pottery kiln were both constructed in the 17th century. A large amount of animal bone (especially sheep metapodials) was associated with pottery waste which was used to support pots in the kilns. These structures were capped by further dumps and demolition rubble.

Ely, Lynn Road

TL 5402 8041 (Report A140)

S Kenney for AFU

Evaluation revealed at least three hearths and a probable cess pits along with other features. These are dated to the 13th/14th century by associated pottery.

Ely, St Mary's Vicarage

TL 5375 8030

O Bone for St Mary's Church

Improvements to drains revealed substantial foundations which may be associated with the great Tithe Barn which was demolished in the 19th century.

Fordham, Hillside Meadows

TL 6320 7070 (SMR Summary)

C Mold for BUFAU

Area excavation revealed a Saxon sunken featured

building with loom weights, a human burial, a series of boundary ditches, and both earthfast post and timber plate based structures. A large quarry pit of probable Roman date was also excavated. All the features were sealed by colluvium. Some of the boundary features are likely to be early medieval and have several recuts.

Fulbourn, Shelford Road, (1997)

TL 513 559 (AFU Report B24)

C Duhig and T Malim

Remains of a human male skeleton found during building works were dated to 1–220 AD (OXA-742)

Godmanchester, Cardinal Distribution Park

TL 2550 7030 (Report 416)

J Murray for HAT

Evaluation identified Late Bronze Age/Early Iron Age and Early/Middle Saxon phases. The range of features suggests settlement during both phases. Features include enclosure ditches, post built structures, pits and a possible Saxon sunken featured building. A small amount of residual Roman pottery was also found.

Godmanchester, Chord Business Park

TL 250 698 (Project 518a)

G Coates for BUFAU

Desk top assessment and evaluation identified Roman features including a ditch, a human burial and a post hole, all located near the Roman road. The grave fill included early 2nd century pottery.

Haddenham, High Street

TL 4642 7539 (Report 261)

P Whittaker for CAU

Evaluation revealed mid-late medieval activity, a pit and a post hole. There was also residual 14th–16th century pottery in later features. Most post medieval features were 18th century, associated with the extant building at the front of the plot.

Huntingdon, St Clement's Passage

TL 2413 7162 (SMR Summary)

J Roberts for AFU

A site fronting on to a minor medieval lane to the rear of the High Street revealed quarry and rubbish pits and dumps spanning the medieval and post-medieval periods. The earliest activity was medieval gardens/cultivation, then gravel quarrying and then dumping and rubbish disposal.

Houghton and Wyton, Houghton Mill

TL 282 719 (Report B38)

T Way for AFU

A watching brief monitored 19th century mill related features such as the foundations, walls and supporting block for the mill wheel. No earlier activity was identified.

Isleham, West Street

TL 6400 7405 (Report 246)

M Knight for CAU

Evaluation identified ditches containing 13th and 14th century pottery. One of these may have been the westernmost boundary of the original priory precinct. Other plot boundary ditches were also recovered. In the north of the site a prehistoric buried soil was found overlain by medieval and modern ploughsoil.

Madingley, Madingley Hall

TL 3930 6051 (Report 269)

R M Regan for CAU

Recording along service trenches revealed several phases of activity, the most complex being Saxo-Norman ditches and pits to the south and east of the present Hall complex. There were also a few medieval features and two patches of cobbling which appeared to be Tudor in date. Later, there were dumping layers and walls relating to landscaping of the gardens.

Milton, Recreation Ground

TL 475 623 (Report 262)

G Lucas for CAU

A concentration of pits and a ditch in one area and a double ditch line in another area were revealed. The pit cluster yielded a single Beaker vessel and is Early Bronze Age, whilst the double ditch line is probably Middle to Late Bronze Age. The pits were not rich in material and so settlement is not likely close by. The double ditch line is seen as part of a field system running through an earlier Bronze Age ritual landscape.

Peterborough, West Road

TL 1820 9970

D. Palmer for AOC Archaeology

Although most of the trenches in a second phase of evaluation contained no archaeological remains, one trench revealed an early Iron Age ditch and postholes and one Roman feature whilst another had evidence of much Iron Age and Roman activity. In this latter trench, a series of well dated early Iron Age features and a fairly high concentration of artefacts indicate permanent settlement. Roman features, close to a known cemetery, included building stone foundations, evidence for a hypocaust, wall plaster and window glass. It is likely that this was a well appointed farmstead, succeeding an earlier Iron Age settlement, away from the main area of Roman occupation.

Ramsey, Ramsey Abbey School

TL 2931 8512 (SMR Summary)

S Macaulay for AFU

Late Saxon buildings of earth-fast post construction, possibly used for iron smelting, were recorded, followed by a 12th–14th timber framed building with drains flowing east into a fish or eel pond. A short lived defensive ditch possibly associated with the Anarchy period ran across the site. The site was then covered by post-medieval dumping and the footings for two walls. This evidence suggests that the excavation area lay within the monastic outer court.

St Ives, The Priory

TL 3145 7115 (Report 343)

T McDonald and M Trevarthen for HAT

Excavation revealed Romano-British enclosure ditches (twice recut), other smaller ditches and pits. Saxon pottery and a polished bone pin beater were found inside the remains of a grubenhauser. An earth-fast post structure plus other stake and post holes may represent features secondary to this. A substantial 13th–14th ditch crosses the eastern part of the site from north to south and may be the western boundary of the Priory precinct. A layer of soil cut by further medieval pits and post-medieval features sealed the medieval features.

St Neots, Cambridge Street

TL 1878 6025 (Report 346)

T Vaughan for HAT

Evaluation within the Saxon town revealed an Anglo-Saxon ditch with associated post holes and post pad. Modern activity had removed any trace of the defensive ditch seen elsewhere parallel to Cambridge Street.

Shepreth, Foxton Brook

TL 399 485 (Report A139)

J Roberts for AFU

A number of ditches contained material of mostly Iron Age/Romano-British date. Lack of medieval and post-medieval material suggest the site was too wet for ploughing, and 19th century maps show the area as meadow.

Soham, formerly Qua Fen Common

TL 600 744 (Report 289)

D Hall for CAU

Field walking recovered Bronze Age flint work and burnt flint indicating background noise, not a settlement.

Somersham, Warner's Drove, Edward's Farm

TL 3575 8065

T Reynolds and S Kaner for Cambridge Mesolithic Project

Field walking confirmed that the site spans at least the late Mesolithic to late Neolithic. Evaluation trenching confirmed archaeological deposits beneath fen clay and identified medieval or post-medieval features at the base of the upper peat. One of these was a bush drain.

Swaffham Bulbeck, Old Mill Drain

TL 5310 6690

T Reynolds and S Kaner for Cambridge Mesolithic Project

Monitoring of dyke digging recovered further worked flint of Late Mesolithic/early Neolithic and Early Bronze Age dates though no features or substantial wood fragments were seen in the basal peats.

Swaffham Bulbeck, Primary School

TL 5564 6238 (Report A130)

A Connor for AFU

Clunch quarries were identified in the playground. One of these contained Roman pottery, so these could be Roman in date.

Swavesey, Blackhorse Lane

TL 360 688 (Report 151)

J Roberts for AFU

Trenching revealed a complex and dense set of deposits on the gravel part of the site, dated to late Iron Age, late Saxon, Saxo-Norman and medieval periods. Close to the High Street was a ditch known from early 19th century maps. A substantial ditch crossed the site from southeast to northwest and continues the defensive line of the castle bailey. It may, therefore, be the line of the medieval town ditch.

Willingham, Rampton Road

TL 409 694

W Hughes for CAFG

Two trial pits recovered Roman materials confirming the presence of Roman settlement

Yaxley, Manor Farm

TL 51760 29200 (Report 265)

R Regan for CAU

Excavations identified medieval fish ponds and associated ditches, several of them dated to between the 12th and 14th centuries. Roman pottery and a possibly associated feature indicate Roman activity. Building survey showed that most buildings were later than assumed and generally dated to the 18th and 19th centuries.

The following investigations also contributed to our understanding of the landscape, but yielded little archaeological information.

Abbots Ripton, Home Farm

TL 2325 7781 (HAT Report 371 & 377)

Alconbury, Sawfield House

TL 780 188 (Report SAS/98/4)

Alwalton, Minerva Business Park

TL 1361 9616 (SMR report form)

Bassingbourn, Back Orchard

TL 335 441 (AFU Report B31)

Buckden, Glebe Lane

TL 1934 6746 (AFU Report B28)

Burrough Green, The Hall

TL 635 556 (Report B36)

Cambourne

TL 3145 6033 to TL 3100 5975 (Wessex Archaeology Project 33226)

- Cambourne**
TL 318 600 (Wessex Archaeology Project 33227)
- Cambridge, Grange Road, St Chad's**
TL 440 581 (CAU Report 255)
- Cambridge, Herschel Road, Clare Hall**
TL 4352 5835 (CAU Report 286)
- Cambridge, Magdalene College, Benson Court**
TL 4467 5893 (CAU Report 256)
- Cambridge, St Edward's Passage**
TL 4484 5861 (CAU Report 235)
- Chatteris, South Park Street**
TL 393 857 (AFU Report A129)
- Ely, Cambridge Road**
TL 5354 8013 (JSAC Project 424/98/02)
- Ely, Central Area Development**
TL 543 804 (JSAC Project 341/98/03)
- Ely, St John's Road**
TL 5272 7989 (AFU Report B30)
- Fen Ditton, Greenhouse Farm**
TL 4920 5940 (CAU Report 248)
- Folksworth, Townsend Way**
TL 1500 8975 (AFU Report B21)
- Fordham, The Pines**
TL 6351 6797 (Report ASAC/B:TP/F/C98/3)
- Foxton, Herods Farm**
TL 4120 482 (AFU Report A141)
- Glatton, Glatton Hall**
TL 154 862 (CAU Report 270)
- Huntingdon, Hinchingsbrooke School**
TL 236 715 (AFU Report B25)
- Huntingdon, Hinchingsbrooke School**
TL 227 716 (AFU Report B37)
- Huntingdon, The Views**
TL 236 717 (AFU Report A134)
- Houghton and Wyton, St Margaret and All Saints Church**
TL 277 722 (AFU Report B42)
- Ickleton, St Mary Magdalene Churchyard**
TL 4950 4315 (AFU Report B27)
- Kirtling, Place Farm**
TL 65 75 (AFU Report B26)
- Lolworth, The Grange**
TL 372 640 (AFU Report B20)
- March, New Library**
TL 4159 9668 (AFU Report B40)
- Milton, Butt Lane**
TL 4610 6290 (AFU)
- Papworth Everard, Papworth Hospital**
TL 288 628 (AFU Report B35)
- Reach, Central Farm**
TL 566 652 (AFU Report B32)
- Sawtry, St Andrew's Way**
TL 7876 9768 (LAS Report 289)
- Waterbeach, Cambridge Road**
TL 493 651 (AFU Report B32)
S Macaulay for AFU
- Whittlesford, Mill Lane**
TL 477 484 (AFU Report B29)
- Wistow, Harris Lane, Rooks Grove Farm**
TL 276 809 (HAT Report 370)
- Desk top assessments were carried out on the following sites*
- Alconbury, Airfield**
TL 21 77 (Report 98/85 (ULAS) and APS Report 1998/12)
- Alconbury, School Lane**
TL186 762 (AFU Report A125)
- Dry Drayton, Park Street, View Farm**
TL 383 620 (A Taylor)
- Ely, Cambridge Road**
TL 5354 8013 (JSAC Project 424/98/01)
- Godmanchester, Cardinal Distribution Park**
TL 255 703 (HAT Report 391)
- Kimbolton, Kimbolton School**
TL 0982 6765 (A Taylor)
- March, New Library**
TL 4159 9668 (AFU Report A138)
- Papworth Everard, Papworth Village Centre**
TL 2860 6320 (W S Atkins Job BC 4724)
- Wistow, Harris Lane, Rooks Grove Farm**
TL 276 809 (HAT Report 352)

Church Recording

Tony Baggs

Cambridge, Peterhouse

TL 447 579

During extensive repairs to the north range of the old court the roof and some of the internal structures were exposed. Most, if not all, of the range is 14th century and it was probably the accommodation for the early fellows of the College. Payments for building work in the 15th century accounts, which had hitherto been used to date the range, presumably relate to a remodelling which included a section of new roof.

Coton Church

TL 408 5888

Repairs to the top stage of the tower and the parapets prompted an investigation into the history of the spire. It has been rebuilt on several occasions and the top of the tower has required frequent repair from the 16th century to the present day.

Grantchester Church

TL 434 555

Stripping of the tiles from the roof of the chancel revealed a blocked doorway above the chancel arch. It is post-medieval and it was presumably in use at some time prior to 1877, when the pitch of the nave roof was raised, and the chancel was, as now, ceiled.

Kirtling Church

TL 686 576

Following the removal of the tomb of the second Lord North (died 1600) for conservation, a test pit was dug to the level of the pre-chapel ground surface. No vault was found.

Over Church

TL 372 708

Renewal of the timber pew platforms in the nave exposed the bases of the piers in the 14th century south arcade. They are sitting off-centre on foundation pads which appear to have been for an older and narrower aisled nave.

Shudy Camps Church

TL 620 444

Discoveries during repairs included a possible 12th century eaves course for a lower roof on the north side of the nave and a blocked low-side window in the chancel. In the blocking there was the head of a high-quality 14th century canopy which retains some original colour.

Westley Waterless Church

TL 618 562

During the redecoration of the church an area of loose plaster on the west wall was removed to reveal 13th century decorative painting.

Wimpole Church

TL 336 510

Extensive repairs to the roof of the north chapel provided an opportunity for dendrochronology on the principal timbers. The 1615–16 felling dates confirm the early 17th century stylistic date which coincides with the death of Sir Thomas

Chicheley in 1616. (Dendrochronology by Dr Martin Bridge, Institute of Archaeology, London University: English Heritage Ancient Monuments Laboratory Report 59/98).

Cambridge Antiquarian Society is grateful to Cambridgeshire County Council for a grant towards the publication of this Field-Work report.

Index

The abbreviation *n*: note has been used in this index. Illustrations are indicated by the abbreviation *illus*.

- abbeys/monastic houses
Brecon 75
Canterbury 75
Carlisle 75
Castle Acre 79
Emmanuel College 71–80
Guildford 75
Isleham 103
Oxford 71, 75
Ramsey 103
St Ives 104
Sidney Sussex College 71
- Abingtons, the, settlement at 94
- Acheulean, flakes 5, 6
- aerial photography 81
- agricultural activity
Cambridge, medieval 102
- ALEXANDER, J. *Reviews* 97–100 *see also* Oosthuizen, S,
Taylor, A, and Baggs, T.
- Alexander, M, fieldwork in 1998 101–2
- Ancient Monuments Laboratory 16, 29
- Archaeological Field Unit (AFU)
Babraham Rd site 33
Penfold Farm, Milton 45
- arrowheads, Bronze Age, Diddington 102
- axe
stone 21
metal 21
- Babraham Rd, Bronze Age site 33
- BAGGS, T, *Reviews*, 97–100 *see also* Alexander, J, Oosthuizen,
S, and Taylor, A.
Church Recording 106
- Barclay, A, Prehistoric Pottery from Fulbourn Hospital 36–39
- Barleycroft Farm, hedged field system 27
- Barnack stone 66
- Barnwell 5, 6
- Barrington 6
- barrows 42
- Bawsey, tile kiln 71, 75, 76–79 *illus*
- beads, Anglo-Saxon from Edix Hill 97–8, *illus*
- bed, iron, Anglo-Saxon from Edix Hill 97–8
- Bedford
terrace 5
Royalist capture of 85
- beetles 28*n*
- Bevan, L, fieldwork at Diddington 102
- Biddenham 6
- Black Fens 87
- blades, Neolithic 13
- Blair Drummond 20, 28
- Bluntisham 6, 49
- Bone, O, fieldwork at Ely 102
- bones (see also cemeteries)
animal
Bronze Age: Fulbourn 40, 42
Medieval: Peterborough 100
Post-Medieval: Cambridge 101; Ely 102
human
Bronze Age: Cambridge 100
Anglo-Saxon: Edix Hill 98; Fordham 103
- Bourne, Lincolnshire Medieval pottery kilns 52, 56
- Bournemouth University, Archaeological Information
Project 96
- bowl, wooden 11, 16, 21
- Brecon priory guest house 75
- brickmaking
accounts for Wisbech 59–69
Hull 59, 65
Waldersea 65
- bronze objects
Bronze Age founders hoard 11
Roman tweezers 46
- brooches, Anglo-Saxon Edix Hill 98
- BROWN, R, *A Bronze Age Enclosure at Fulbourn Hospital*
31–43, *illus*. *See also* Score, D.
- Buckden Palace 66
- buckets, Anglo-Saxon Edix Hill, 98
- burials
human Roman: Fordham 103; Godmanchester 103
- Burwell castle 84
- Bury 28*n*
- Cam R, 5, 6, 31, 45
- Cambridge
archaeology 94
churches 106
Emmanuel College 71–80
fieldwork in 101–2
fort 84
geology 5
Hidden History, in *Reviews* 98–9, Taylor, A,
Jesus College 71
bricks, medieval 63
pottery, medieval 56
Parliament 71
St Michaels 79
Sidney Sussex College 71

- Cambridge Archaeological Unit (CAU) 11, 31, 39, 45, 71–80
 Cambridge University Extra Mural Dept 81
 Canterbury, priory guest house 75
 Car Dyke 46
 Carlisle, priory church 75
 Castle Acre priory Chapter House 79
 carts 27
 cart ruts 14, 26
 cemeteries (*see also* bones, human
 Roman: Durobrivae 102; Peterborough 103
 Anglo-Saxon: Edix Hill 97–8)
 cereals, prehistoric 22
 Chatteris
 prehistoric pottery 25
 settlement 94
 Cherry Hinton 99
 Chesterton 98–9
 Chigborough Farm, Essex 22
 Chilterns 5
 Chippenham
 beaker pottery 36, 39
 fieldwork 102
 churches
 in Cambridgeshire, *Reviews* 99
 Civil war forts
 Earith 81–6
 Horsey Hill 82, 84, 85
 Newark 83
 Coates, G, fieldwork at Godmanchester 103
 coffins
 Roman: stone, at Durobrivae 102
 coins, Roman 45, 102
 Colchester, Essex, 56
 Colne
 Medieval pottery kiln 49–58
 Connor, A, fieldwork at Chippenham 102; Swaffham
 Bulbeck 104;
 see also Kenney, S.
 cores, flint 6
 Coton, church 106
 Cottenham, Lingwood wells 11–30
 Courtauld Institute catalogue 99
 cropmarks
 Fulbourn 31, 33
 Lingwood 11, 29
 Little Abington 33
 Darrah, H, Wooden Artefacts, Lingwood Wells 18–21
 DAVIS, N, *Archaeological Investigations in Cambridgeshire: A National Overview* 93–96, *illus*
 Deeping St James, Lincolnshire
 excavations 28
 pit-well 26
 dendrochronology 106
 Denmark, peat bogs 20
 Denny Abbey, medieval pottery 52
 DICKENS, A, *A New Building at the Dominican Priory, Emmanuel College, Cambridge, and associated Fourteenth Century Bawsey Floor Tiles* 71–80, *illus*
 disc-wheel
 Bronze Age/Early Iron Age 11, 28*n*
 Doddington, medieval bricks 63
 Dolonog, prehistoric wheel 28*n*
 Duhig, C, fieldwork at Fulbourn 103
 see also Malim, T.
 Duogarymore, Ireland, Bronze Age woodwork 20–21
 Durden, T, The Flint from Fulbourn Hospital 39–40
 Durobrivae, fieldwork 102
 Eames, E, Bawsey tile kiln 76–79
 Earith 49
 Bulwark 81–86
 mammoth remains 8
 ridge and furrow 84
 Edix Hill
 Anglo-Saxon cemetery, in *Reviews* 97–8, *illus*
 Ely
 archaeological investigation 94
 Bishop's palace 66
 brick making 59, 65
 castle 65
 diocesan archives 59
 faunal remains 28*n*
 fieldwork 102
 isle of 85 87
 medieval pottery kiln 56, 58
 enclosures
 Bronze Age: Fulbourn 31–43
 Iron Age: Lingwood 11
 Civil War: Earith 81–6
 English Heritage
 Fenland Management Project 11, 12
 NMR Excavations Index 93–96
 EVANS, C, *The Lingwood Wells* 11–30, *illus*
 Everson, P, *The Archaeology of Landscape*, *see Reviews* 97
 see also Williamson T.
 Eynesbury, Civil War 85
 Ezinge 20
 faunal remains
 Paleolithic: South Cambridgeshire 6, 8
 Bronze Age: Lingwood 22–3; Fen Drayton 22–3, 28*n*;
 Fulbourn 40
 Fen Drayton
 faunal assemblage 28*n*
 field system 33, 42
 flints 6
 Fengate
 beaker pottery 36
 wells, 24, 26–7 42
 Fenstanton, 6
 field systems
 co-axial 27
 hedged 27
 Bronze Age: Fen Drayton 33
 Roman: Lingwood 11
 field walking 11, 13, 45
 fish ponds, medieval 104
 Flag Fen
 Bronze Age pottery 39
 timber assemblage 29
 wheel 20, 21, 26
 Fleam Dyke, ring ditches 33
 flints
 Acheulean 5, 6
 Mesolithic/Neolithic 104
 Bronze Age 13, 28*n*, 39–40, 42, 102, 104
 floor tiles
 Medieval: Bawsey 76–79
 Fordham, fieldwork 102
 founder's hoard
 Late Bronze Age 11
 FRENK, W.H.C, *Roman Kilns at Penfold Farm, Milton* 45–47,
 illus
 Fulbourn
 Bronze Age enclosure 31–34
 fieldwork 103

- Girton 5
 Glapthorn, Northamptonshire
 medieval pottery kiln 52, 56
 Godmanchester, fieldwork 103
 Grantchester
 Bronze Age pottery 9
 church 106
 Guildford, Surrey, priory buildings 75
- Haddenham
 fieldwork 103
 Iron Age enclosure 28*n*
 Level 87–91
 Hall, D, fieldwork at Soham 104
 handaxes
 Paleolithic: S Cambridgeshire 5–8
 HEALEY, H, *A Medieval Kiln at Colne, Cambridgeshire* 49–58, *illus*
see also Malim, T, and Watson, K.
 hedges
 Bronze Age/Iron Age: Barleycroft Farm 27; Fulbourn 41; Lingwood 11, 18, 27
 Hicks, C, ed. *Cambridgeshire Churches*, in *Reviews* 99
 Hill, J.D, Later Prehistoric Pottery, Lingwood Wells 23–27
 HINES, J, *The Anglo-Saxon Cemetery at Edix Hill*, in *Reviews* 97–8, *illus*
see also Malim, T.
 HINMAN, M, *The Still, Peterborough*, in *Reviews* 100, *illus*
see also Spoerry, P.
 fieldwork at Cambridge, Babraham Road 101
 Horningsea, kilns 45
 Hotham, John, Bishop of Ely 59
 Houghton Mill, fieldwork 103
 Hughes, W, fieldwork at Willingham 104
 Hull
 brickworks at 59, 65
 Huntingdon
 civil war troops 85
 excavations 94
 fieldwork 103
 fortifications 84
- Icknield Way 33, 97, 98
 Institute of Field Archaeologists 96
 Ireland, peat bogs 20
 Isleham, fieldwork 103
- JAMES, N, *Fen Draining: detection in the archives* 87–91, *illus*
- Kaner, S, fieldwork at Somersham 104;
see also Reynolds, T.
 Kenney, S, Fieldwork at Chippenham 102; at Ely 102
see also Connor, A.
 keys,
 Anglo-Saxon: Edix Hill 97
 kilns
 pottery
 Roman: Horningsea 45, Penfold Farm 45–47
 Medieval: Bourne 52; Colne, 49–58; Ely, 56; Glapthorn 52; Old Bolingbroke 56; Tounton All Saints 56
 brick: Hull 59–69; Thornham Prior 66; Wisbech 59–69
 tile: Bawsey 71, 75; Quarr Abbey 66
 Kings Lynn
 bricks 64, 65
 medieval pottery 56
 Museum 79
 Kirtlington, church 106
 knife, iron, Edix Hill 98
- Knight, M, fieldwork at Isleham 103
- land snails 40–1
 Leighton Bromswold, church, 99
 Linton,
 archaeological investigations 94
 Iron Age pottery 24, 39
 lime kiln, at Ely 102
 L'Isle, Thomas, Bishop of Ely 59
 Little Abington, cropmarks 33
 Little Downham, bishop's palace 66
 Little Gidding, church 99
 Little Paxton
 flints, 6
 fieldwork, 102
 Little Shelford, church 99, *illus*
 Little Thetford
 fen drainage 87
 Iron Age fauna 28*n*
 Little Wilbraham, barrows 33
 Loft's Farm, Essex, prehistoric well 26, 27
 London
 Civil War 85
 Medieval floor tiles 76
 London University Extra Mural Board 81
 Longstanton 5, 6
 loom weights
 Anglo-Saxon: Fordham 103
 Lucas, G, fieldwork at Milton 103
- Macaulay, S, fieldwork at Ramsey 103
 Madingley, fieldwork 103
 MALIM, T, *A Medieval Kiln at Colne, Cambridgeshire* 49–58, *illus*
see also Healey, H, and Watson, K.
Anglo-Saxon Cemetery at Edix Hill, Cambridgeshire, in *Reviews* 97–8, *illus*
see also Hines, J.
 fieldwork at Fulbourn 103,
see also Duhig, C.
- March
 sconce 84
 settlement 94
 McDonald, T, fieldwork at St Ives priory 104,
see also Trevarthen, M.
 Mepal 89
 Mildenhall, ring ditches 31
 Milton, fieldwork 103
 moats 43, 49
 Mold, C, fieldwork at Fordham 102–103
 Mortimer, R, fieldwork in Cambridge 102
see also White, L.
 Murphy, P, The Wood Assemblage, Lingwood Wells 17–18
 Plant Macrofossils, Lingwood Wells 21–22
 Murray, T, Fieldwork at Godmanchester 103
 Museum of Archaeology and Anthropology, University of Cambridge 6
 sgraffito pottery 56
 Museums and Galleries Commission 94–5
- necklace,
 Anglo-Saxon, Edix Hill 98, *illus*
 Nene 81
 Nene Valley Research Committee 56
 New Model Army 85
 Newport Pagnell, Buckinghamshire 86
 Newark
 Civil War fort 83, 86

- Norwich 56
- Observatory 5
- Old Bolingbroke, Lincolnshire
Medieval kiln 56
- Oosthuizen, S, *Reviews* 97–100
see also, Alexander, J, Taylor, A, and Baggs, T.
- Ouse 5, 6, 8, 49, 81, 82, 85, 87
- Over, church 106
- Overton Down
the ridgeway 97
- Oxford Archaeological Unit
Fulbourn excavations 31, 42
- Palmer, D, fieldwork at Peterborough 103
- Pampisford
archaeological investigations 94
barrow at Bourne Bridge 33
peat turves 59–69
- Peterborough
Bronze Age pottery 25
excavations in *Reviews* 100, *illus*
fieldwork 103
Medieval pottery 56, 58
Museum 87, 91
- Pevsner
Cambridgeshire churches 99
- plant macrofossils 21–22
- Pleistocene 5
- pit alignments 18
- pollen
sequence at Cambridge 5
Lingwood 18, 22
- pottery
Prehistoric
from Lingwood 13, 15, 23–26; Fulbourn 36–39
by type Beaker: Fulbourn, 36; Milton, 103
- Bronze Age
from Wandlebury 33
- Iron Age
by type Chinnor–Wandlebury 24
Darmsden–Linton 23–25
Deverel–Rimbury 23, 25, 36
Fengate–Cromer 23–25
Ivinghoe–Sandy 39
West Harling–Staple Howe 24
- Roman
by type Castor ware 47
Horningsea ware, 45–47
Nene Valley 28*n*, 47
from Lingwood, 13, 15; Godmanchester, Peterborough 103; Shepreth, Swaffham Bulbeck, Yaxley, 104; Milton 45–47
- Middle Saxon
from Cambridge 101; St Ives 104
- Saxo–Norman
from Colne, 49; Madingley, 103; Swavesey, 104
- Medieval
from Cambridge 56; Colchester 56; Colne 49–58; Denny Abbey 52; Ely 102; Haddenham 103; Isleham 103; Kings Lynn 56; Norwich 56; Peterborough 58, 100
by type Grimston ware 49; Hedingham ware 73
- kilns: Bourne 52, 56; Colne 49–58; Ely 56, 58, 102; Glapthorn 52, 56; Old Bolingbroke 56; Toynton All Saints 56
- priorities: *see* abbeys
- querns, Roman 45–6
- Radio–Carbon dates 101
- Ramsey, fieldwork 103
- Regan, R.M, fieldwork at Ely 102; Madingley 103; Yaxley 104
- Relhan collection 98
- REYNOLDS, T, *A Review of Paleolithic finds from Southern Cambridgeshire* 5–11, *illus*
Fieldwork in Cambridgeshire 1998, 101–106
- Rhine 5
- ridge and furrow 84
- Ridgeway, the 97
- ring ditches 31, 33, 42, 43
- ritual activity
Neolithic/Bronze Age: 33, 101, 103
- Roberts, J, fieldwork at Huntingdon 103; Shepreth 104; Swavesey 104
- Robinson, B
Potters Lane, Ely 58*n*; *see also* Sperry, P.
- Robinson, M, Land Snails at Fulbourn Hospital 40–41
- Royal Commission on Historic Monuments (England)
Bulwark, Earith 81
Excavations Index 93
Taylor, C, at 97
- Runnymede Bridge, 27
- St Ives
bridge 85
flints 6
hedges 27
market town 57
priory 104
wood, prehistoric 18
- St Neots
bridge 85
fieldwork 104
flints 6
- Sawston, 94
- Sawtry, 84
- sconce
Earith 81–6
Horsey Hill 82
March 84
Newark 83
- SCORE, D, *A Bronze Age Enclosure at Fulbourn Hospital* 31–45, *illus*
see also Brown, R.
- Scotland, peat bogs 20
- scrapers
South Cambridgeshire 6
Fulbourn 39
- Shepreth, fieldwork 104
- SHERLOCK, D, *Brickmaking Accounts for Wisbech, 1333–1356* 56–69, *illus*
- shields
Anglo–Saxon: Edix Hill 97–8
- Shippea Hill, beaker pottery 36
- Shudy Camps, church, 106
- Slough House Farm, Essex, well 22
- Somersham,
Bishop's palace 49, 57
fieldwork 104
Palaeolithic tools 6, 8
- Soham, fieldwork 104
- spears
Anglo–Saxon: Edix Hill, 97
- Sperry, P, *The Still, Peterborough*, in *Reviews* 100, *illus*

- see also* Hinman, M.
see also 58*n*, with Robinson, B.
 stakes, wooden
 Lingwood 16–17, 21
 Lofts farm, Essex 26
 Stamford, Lincolnshire
 Civil War 85
 Standing Conference of Archaeological Unit Managers 96
 Stilton
 Civil War 85
 Stonea Grange
 Bronze Age pottery 25
 Stretham 87, 89
 structures
 Bronze Age/Iron Age: Barleycroft Farm 27
 Fulbourn Hospita 35
 Lingwood 11, 14–15, 27–28
 Runnymede bridge 27
 Welland Bank 27
 West Harling 28
 Roman: Peterborough 103
 Middle Saxon: Fordham, Godmanchester 103; St Ives 104
 Late Saxon: Ramsey 103
 sword
 Anglo-Saxon: Edix Hill 98
 Sutton 28, 87, 89, 90
 Swaffham Bulbeck, fieldwork, 104
 Swavesey, fieldwork, 104

 TAYLOR, A. *Reviews* 97–100
 see also, Alexander, J, Oosthuizen, S, and Baggs, T.
 Cambridge: The Hidden History in Reviews 98–99
 Archaeology of Cambridgeshire Vol 2. In Reviews 100
 TAYLOR, C. C., The Bulwark, Earith, Cambridgeshire 81–86,
 illus
 Essays in honour of, *Reviews* 97–8
 Tebbutt, C. F., 49
 Thames 5

 Thornholm Priory, Lincolnshire, brick kiln 66
 Totternhoe stone 31
 Toynton All Saints, Lincolnshire, medieval pottery kilns 56
 Trevarthen, M., fieldwork at St Ives priory 104
 see also McDonald, T
 Trumpington 99
 tweezers, Roman: Milton 46

 Vale of St Albans 5
 Vaughan, T., fieldwork at St Neots 104
 Vermuyden, fen draining 82
 via Devana 71

 Waldersea, brickworks 61, 65
 Wall, W., fieldwork at Durobrivae 102
 Wandlebury 24, 25, 33
 War Ditches 33
 Wardy Hill, ringwork 28*n*
 WATSON, K., *A Medieval Kiln at Colne, Cambridgeshire* 49–58,
 illus
 see also Healey, H, and Malim, T.
 Way, T., fieldwork at Houghton Mill 103
 Welland Bank, excavations 27, 29
 wells, early Iron Age 11–30
 Wentworth 87–90
 West Harling 24, 28*n*
 wheels, wooden
 Lingwood 18, 20–21, 26, 29

 Flag Fen 20, *illus*
 Westley Waterless, church 106
 Whittlesford, archaeological investigations 94
 White, L., fieldwork in Cambridge 102
 Whittaker, P., fieldwork at Haddenham 103
 Wilburton 11, 87
 Willingham 23, fieldwork at 104
 Williamson, T., *The Archaeology of Landscape, in Reviews* 97
 see also Everson, P.
 Wilson, B., The animal bones from Fulbourn hospital 40
 Wiltshire, P., Pollen from Lingwood Wells 22
 Wimblington 94
 Wimpole, church 106
 window glass, painted, Emmanuel College 71, 74–5, *illus*
 Wisbech
 brickmaking 59–69
 castle manorial account rolls 59
 Civil War troops 85
 wood, waterlogged, Lingwood 16–21, 26
 Woodbury 28*n*
 Wymer, J. J. 8

 Yaxley, fieldwork at 104

Abbreviations

AFU	Archaeological Field Unit, Cambridgeshire County Council	RCHME	Royal Commission on Historical Monuments (England)
<i>Ant.</i>	<i>Antiquity</i>	SAS	Soke Archaeological Services
<i>Antiq. J.</i>	<i>Antiquaries Journal</i>	ULAS	University of Leicester Archaeological Services
AOC	AOC (Archaeology) Ltd.	VCH	Victoria County History
APS	Aerial Photographic Service		
<i>Arch. J.</i>	<i>Archaeological Journal</i>		
ASAC	Archaeological Services and Consulting Ltd.		
BAR	British Archaeological Reports		
BUFAU	Birmingham University Archaeological Field Unit		
CAFG	Cambridge Archaeology Field Group		
CAU	Cambridge Archaeological Unit		
CBA	Council for British Archaeology		
CCC Rpt	Cambridgeshire County Council Report by the Archaeological Field Unit		
CUCAP	Cambridge University Committee for Aerial Photography		
CUP	Cambridge University Press		
<i>Cur. Arch.</i>	<i>Current Archaeology</i>		
EAA	East Anglian Archaeology		
FAT	Fenland Archaeological Trust		
HAT	Hertfordshire Archaeology Trust		
HBMC	Historic Buildings and Monuments Commission		
HMSO	Her Majesty's Stationery Office		
HRO	Huntingdonshire Record Office		
JBAA	Journal of the British Archaeological Society		
JSAC	John Samuel's Archaeology Service		
LAS	Lindsey Archaeological Services		
<i>Lincs. Hist. and Arch.</i>	<i>Lincolnshire History and Archaeology</i>		
<i>Med. Arch.</i>	<i>Medieval Archaeology</i>		
OAU	Oxford Archaeological Unit		
PCAS	Proceedings of the Cambridge Antiquarian Society		
PPS	Proceedings of the Prehistoric Society		
PRO	Public Record Office		

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Manuscripts: Buckinghamshire Record Office (hereafter Bucks RO) Dormer estate, D/93/Box 2, Court
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A complete list of figures and their captions must accompany each article; note that photographs are to be referred to as figures and included in the list of figures rather than separately as plates. Each piece of artwork and/or digital file must be clearly identified with the correct figure number. The desired location of each figure must be marked in colour on the paper copy of the final text.

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Note that the PCAS page is set in two columns: maximum column width is 73mm ; maximum full page width is 155mm; maximum full page height is 240mm.

Photographs

Prints: glossy black and white prints should be submitted at the size at which authors would ideally wish them to appear. Crops should be marked on an overlay.

Scans: greyscale image resolution should be 300dpi when printed at the desired size. TIF and EPS are appropriate file formats.

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Camera-ready artwork must be supplied at the desired final size, in finished form, and with adequate keys and scales included (a textual statement of scale is not sufficient). The scanning process is less able to compensate for some problems than was the camera – extremely fine lines and small text cause particular problems.

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Graphic files should be produced using graphics packages such as Illustrator or Freehand, and be in a standard graphic format such as TIF or EPS which can be imported into another application.

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Papers are accepted for publication on the understanding that they have not already been accepted for publication elsewhere. The copyright will normally remain with the Society.

Other information

Twenty-five offprints of each paper will be supplied. Further offprints may be ordered at extra cost at proof stage.

Contributors who know of possible sources of subventions towards the cost of printing their paper should inform the Editor of this when submitting the typescript; long articles will not normally be accepted without some financial support.

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Contents

A Review of Palaeolithic finds from Southern Cambridgeshire Tim Reynolds	5
The Lingwood Wells: Waterlogged remains from a first millennium BC settlement at Cottenham, Cambridgeshire Christopher Evans with contributions by R Darrah, J D Hill, P Murphy and P Wiltshire	11
A Bronze Age Enclosure at Fulbourn Hospital, Fulbourn, Cambridgeshire R Brown and D Score, Contributions by A Barclay, P Blinkhorn, T Durden, M Robinson and B Wilson	31
Roman kilns at Penfold Farm, Milton W H C Frend	45
A Medieval Kiln at Colne, Cambridgeshire Hilary Healey, Tim Malim and Kit Watson	49
Brickmaking Accounts for Wisbech, 1333–1356 David Sherlock	59
A New Building at the Dominican Priory, Emmanuel College, Cambridge, and associated Fourteenth Century Bawsey Floor Tiles Alison Dickens	71
The Bulwark, Earith, Cambridgeshire C C Taylor	81
Fen Draining: detection in the archives N James	87
Archaeological Investigations in Cambridgeshire: A National Overview Nicholas Davis	93
Reviews Sue Oosthuizen, Alison Taylor, John Alexander & Tony Baggs	97
Field-Work in Cambridgeshire Tim Reynolds	101
<i>Index</i>	107
Abbreviations	112