
Proceedings of the Cambridge Antiquarian Society

(incorporating the Cambs and Hunts Archaeological Society)

Volume XCIII
for 2004



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(incorporating the Cambs and Hunts Archaeological Society)

**Volume XCIII
for 2004**

Editor Alison Taylor

Published by the Cambridge Antiquarian Society 2004

ISSN 0309-3606

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Contents

The Structure and Formation of the Wandlebury area Steve Boreham	5
Prehistoric Lithics from Station Road, Gamlingay, Cambridgeshire Jon Murray	9
Evaluation survey and excavation at Wandlebury Ringwork, Cambridgeshire, 1994–7 Charles French	15
A Roman Cemetery in Jesus Lane, Cambridge Mary Alexander, Natasha Dodwell and Christopher Evans	67
Anglo-Saxons on the Cambridge Backs: the Criminology site settlement and King's Garden Hostel cemetery Natasha Dodwell, Sam Lucy and Jess Tipper	95
The Origins and Early Development of Chesterton, Cambridge Craig Cessford with Alison Dickens	125
A late seventeenth-century garden at Babraham, Cambridgeshire Christopher Taylor	143
The Hearth Tax and the Country House in 'Old' Cambridgeshire Tony Baggs	151
The Cambridgeshire Local History Society Photographic Project 1992–2000 Gill Rushworth and John Pickles	159
Surface scatters, rates of destruction and problems of ploughing and weathering in Cambridgeshire Stephen Upex	161
Fieldwork in Cambridgeshire 2003	179
Book Reviews Alison Taylor	189
<i>Index</i>	195
Abbreviations	201
Recent Accessions to the Cambridgeshire Collection Chris Jakes	203
Summaries of papers presented at the Spring Conference 13 March 2004, Law Faculty, Cambridge: <i>Recovering Cambridgeshire's Past</i>	215
THE CONDUIT: local history and archaeology organisations, societies and events	221

Editorial

The first thing you will notice about these Proceedings is our leap (as a belated welcome to the 21st century) into colour, for our cover and a number of plates. This is not really an innovation: CAS had beautiful colour plates in 1883 and a few other 19th century volumes. At last this is affordable again, and the water colour drawings and photographs we wanted to show seemed to fully merit some extra expense. In future, we will look carefully at illustrations that would benefit from such reproduction and would be particularly keen to include fine examples of artefacts.

This volume contains some very substantial reports on archaeological work, for we are one of the few outlets available for full publication of excavations. It is refreshing to see that these all relate to recent work, not the backlogs that once were a feature of British archaeology. A quick look at the 'Fieldwork in Cambridgeshire 2003' section however reminds us what a small proportion of current work can be made available in this way. Of course, reports on all sites are produced and can be purchased from the relevant units or consulted in the county archaeological office. In future, these will also be added to a national data base known as OASIS, run by the Archaeology Data Service, so accessing this huge amount of data will eventually be much simpler. We aim to keep you abreast with such advances through our own website, www.camantsoc.org.

It was a great pleasure to be asked by the Cambridgeshire Local History Society to publish a short note on their superb photographic project, a worthy successor to CAS' similar project in the early part of the 20th century, now a much valued part of the Cambridgeshire Collection. This voluntary effort will likewise be used by those involved with the historic environment in years to come. The same Society asked us to include the list of recent additions to the Cambridgeshire Collection, compiled by Chris Jakes. This list used to be included in *Conduit* and has been much missed. It reminds us that our local historians are not far behind local archaeologists in their labours, a tribute to the floods of new data from an ever-active antiquarian community.

'Fieldwork', 'Reviews', 'Spring Conference report' and 'Conduit' are regular items we have managed to maintain – and which add to another substantial volume. This year, 'Conduit' was compiled at short notice by our redoubtable President, Tony Kirby, to whom we owe many thanks. In the nature of things this has to be done at the last moment, and even so many societies do not have a complete programme for the following year at the time we need it. We would therefore like to have a Supplement later in the year, as with original *Conduit*, but currently this is beyond our means. Perhaps we will have better news next year.

It remains to offer further thanks to our retiring President. Tony has taken the Society safely through two quite difficult years, and this October hands over to Nicholas James. Our Secretaries carry an even larger burden of work for the Society, of which organising nine lectures, often by speakers of national repute, is only one part. We are therefore extremely grateful to our retiring Secretary, Liz Allan, and to Janet Morris, who has now taken on the challenge. We must say a sorry farewell too to Don Fage, who has had the tough job of Registrar. It may also be noticed that we still have vacancies for Excursions Officer and for Editor of *Conduit*, so do contact us if you are interested in volunteering.

Alison Taylor
Editor

The Structure and Formation of the Wandlebury Area

Steve Boreham

Wandlebury on the southern edge of the Gog Magog Hills, is generally underlain by thin soils overlying Middle Chalk bedrock, but also includes a patch of deeper loam developed on gravelly 'superficial' deposits, mapped as 'Glacial Gravel'. Two distinct types of gravel have been identified capping the Gog Magog Hills; one rich in exotic far-travelled material, the other dominated by chalk and flint. The former is interpreted as glacial outwash of the Anglian ice sheet, whilst the latter appear to have been deposited by small local chalk streams. The position of these ancient river deposits high up on the Gog Magog Hills is explained by the inversion of relief through intense periglacial activity, which has occurred over the past 420,000 years. An appreciation of how this landscape has developed over time assists our understanding of the complex 'canvas' on which archaeological features are imposed.

Introduction

Wandlebury is situated on the southern edge of the Gog Magog Hills, some 6km southeast of central Cambridge. The Gog Magog Hills form the northern extremity of a broken ridge of higher land, including Copley Hill and Meggs Hill, that extends southeast towards Linton on the eastern side of the valley of the River Granta. The land in the vicinity of Wandlebury reaches up to a flat-topped plateau at about 75m OD.

In outline, the Gog Magog Hills form a characteristic 'bird's foot' (three-toed) or trefoil form, with three low ridges of land projecting from the plateau to the west, north and northeast (Figure 1). The soils here are generally thin, chalky and well-drained, except on the plateau and ridge tops, where deeper gravelly loams occur.

Bedrock Geology

The Gog Magog Hills and Wandlebury area are principally underlain by bedrock comprising Cretaceous Middle and Lower Chalk, overlying Gault Clay at depth (Figure 1). These 100 million year-old rocks were laid down in a deep tropical ocean that covered most of what is now the British Isles. Over time, these strata have been uplifted and tilted so that today they dip gently towards the southeast. In the Wandlebury area there is some evidence for a minor disturbance or flexure in this gentle tilt. The Chalk is a soft, but exceptionally pure limestone, largely composed of the microscopic skeletal remains of foraminifera, plankton (coccoliths) and of fragments of the fossil shell *Inoceramus* (Forbes 1965). The lowest part of the Lower Chalk, the Chalk Marl, is separated from the underlying Gault Clay by a thin glauconitic marly sand, locally known as the Cambridge Greensand (Table 1). It

Table 1. Classifications of Cretaceous bedrock underlying Wandlebury

Former Classification <i>Forbes (1965)</i>	Lithology	Thickness	Current Classification <i>Moorlock et al (2003)</i>
Middle Chalk	White Chalk	> 30m	Holywell Nodular Chalk Formation
	Melbourn Rock	c. 3m	
Lower Chalk	'plenus' Belemnite Marls	c. 0.6m	Zig Zag Chalk Formation
	Grey Chalk	c. 30m	
	Totternhoe Stone	6m	
	Chalk Marl	c. 30m	West Melbury Marly Chalk Formation
	Cambridge Greensand	c. 0.6m	
Gault Clay		c. 20m	Gault Formation

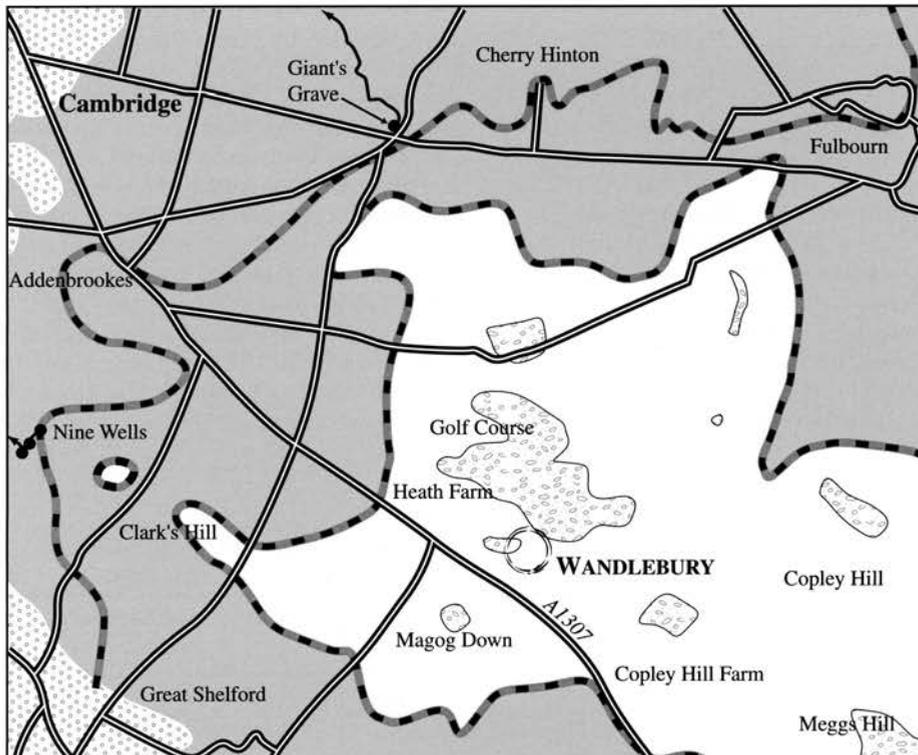
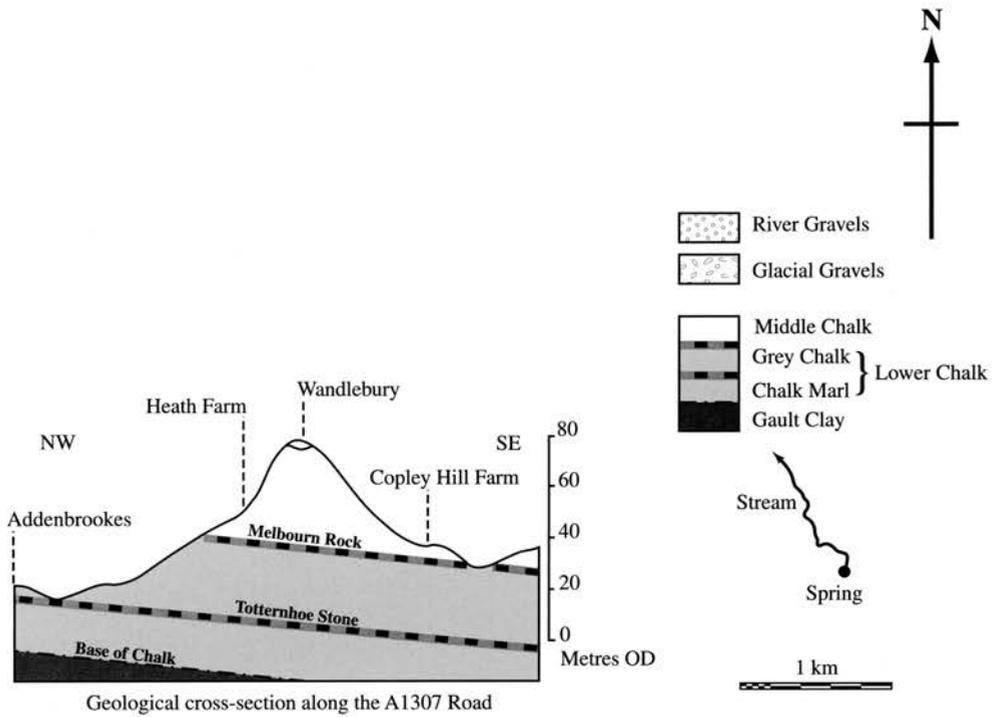


Figure 1. Geological map and cross-section of the Gog Magog Hills and Wandlebury showing the outcrop of Cretaceous bedrock and Quaternary deposits. Geology reproduced by kind permission of the British Geological Survey. Based upon the BGS Geological Map Sheet 205, Saffron Walden: 1:50 000. IPR/52-57C British Geological Survey. (c) NERC. All rights reserved. Base map reproduced by kind permission of Ordnance Survey (c) Crown Copyright NC/2004/27440.

is from this bed that phosphatic nodules, or coprolites were extracted by open-cast mining in the Cambridge District during the later parts of the 19th century. The upper part of the Lower Chalk, the Grey Chalk or 'Clunch' is separated from the Chalk Marl by a hard and fissured band known as the Totternhoe Stone or Burwell Rock. It is from this stratum that many of the springs in the local area, for example those at Nine Wells, Great Shelford, and at the 'Giant's Grave', Cherry Hinton, arise. The overlying Middle Chalk is marked by another hard band, the Melbourn Rock, underlain by the characteristic fossil belemnite *Actinocamax plenus*, which gives its name to the thin 'plenus' Marls, which outcrop on the upper slopes of the Gog Magog Hills. The Middle Chalk is also characterised by the first appearance of flints, which take the form of small globular and pear-shaped nodules. Many of these divisions of the Chalk have been superseded in recent times by formal lithostratigraphic units, which for the curious are described in Moorlock *et al.* (2003) (see Table 1).

Quaternary Deposits

The flattened summit of the Gog Magog Hills, onto which the Wandlebury enclosure encroaches, is capped by a deposit of gravel and sand, mapped as 'Glacial Gravel' by the British Geological Survey (BGS). These 'superficial' or Quaternary drift deposits were well known even at the end of the 19th Century. Osborne White (1932) writing in the Saffron Walden Geological Memoir states "The chief deposit is that of Wandlebury and the Golf Course. On and around the Golf Course exposures of sandy gravel exist in many places. The best of those seen by the writer is in a pit sunk in the flat ground about a furlong (220m) west of the northern angle of the Wandlebury enclosure. Here are shown some 14ft (4.6m) of lenticular, current-bedded gravel, sand and loam, covered and piped by red-brown clayey loam with seams of small stones (mostly angular flint)." This account presents compelling evidence that the gravelly material near Wandlebury was deposited by flowing water, probably a stream or river. However, White (1932) provides further evidence for the provenance of these deposits. "The gravel is among the coarsest in the district, the boulders of Chalk, Lincolnshire tabular flint, septaria, and sandstones ranging up to 1½ ft (45cm) in diameter. Red Chalk is common; Jurassic material and far-travelled siliceous rock are abundant."

These observations are very similar to those made by the author from sections at the top of Clarke's Hill, Great Shelford (Boreham 2002). At this location a unit of chaotically bedded cobbles was overlain by at least 1m of fine-grade current-bedded chalky gravel. The cobbles were generally about 13cm in diameter, although some reached 28cm across. In contrast, the pebbles in the overlying gravel rarely exceeded 1cm in diameter and were mostly rounded chalk. Only 12% of the cobbles were composed of chalk or flint, and almost 40% were Jurassic limestones and grits.

In addition, nearly 30% of the cobbles were Millstone Grit or Carboniferous Limestone originating from the Pennines, and 20% were metamorphic rocks such as quartzite and schist or igneous rocks like dolerite from the Whin Sill, in Northumberland. It is clear that very high energies would be required to transport cobbles of this size, and the fact that almost 50% of the cobbles were of far-travelled exotic lithologies, strongly suggests their transport by ice to the Cambridge District. The most extensive glaciation of southern England is widely accepted to have occurred during the Anglian Stage, some 450,000 years ago. These ice sheets brought a thick mantle of 'Chalky Boulder Clay' or till to the surrounding area. It is to this glacial event that the exotic cobble deposits of the Gog Magog Hills and Wandlebury area are attributed.

In contrast to these deposits, on the top of Magog Down (once known as Little Trees Hill) the author described current-bedded gravel and sand, dominated (>60%) by rounded chalk pebbles up to 3cm diameter, down to at least 1m below the surface. The fine-grade chalky gravel resting on the exotic cobbles at Clarke's Hill was almost identical in character to this, and similar chalky gravels have also been observed by the author at several locations on the plateau close to Wandlebury. Given that chalk is rather soft compared to flint, and is considered a non-durable component of river gravels, these chalk pebbles could not have travelled very far from their source. Indeed these deposits are very similar in character to those of a much younger age flooring dry valleys developed on the Middle Chalk at Therfield Heath, Royston. The position of some chalky gravels overlying the Anglian exotic cobbles mean that they are of Anglian or younger age. However, due to the lack of exposures, it is impossible to determine the exact stratigraphic relationship of all the known examples of chalky gravels and it is likely that some may underlie the cobbles and thus pre-date the advance of the Anglian ice. All that can be said is that the chalky gravels represent deposition in a particular environment.

It therefore seems clear that the 'Glacial Gravel' mapped by the BGS comprises at least two distinct types of gravelly deposit associated with the Gog Magog Hills and Wandlebury area. The first is a coarse-grade cobble gravel full of exotic lithologies from far-travelled sources, brought to the area by Anglian ice sheets. The second is a fine-grade gravel characterised by rounded locally derived chalk pebbles, deposited by local streams draining chalk hills.

Formation of the Wandlebury Area

There is little direct evidence to assist with palaeoenvironmental reconstructions from the Wandlebury area in pre-Anglian times. Most of what can be said relies upon evidence from areas adjacent to the Cambridge District. It appears that during the early Middle Pleistocene (more than 500 thousand years ago), the Chalk escarpment was a more striking feature of the landscape, and may have outcropped some

10km to the northwest of its current position (Clayton 2000) and reached to c.120m O.D. It is also clear that much of Fenland would have been at a considerably higher elevation (up to 60m O.D.) than today. Within the Cambridge District, only deposits beneath the Anglian till, and perhaps some of the chalky gravels of the Wandlebury area have the potential to be of this age. The chalky gravels may in part represent high-level headwater deposits from streams draining southeast from the edge of the Chalk escarpment.

The approach of the Anglian ice sheet appears to have been preceded by copious glacial outwash. There is some evidence for oscillations during this glacial advance from a till and outwash complex in the upper Cam valley (Baker 1977). During this period, ice lodged against the Chalk escarpment, and outwash streams followed the courses of headwater valleys draining towards the southeast. This outwash is represented by the exotic cobble deposits of the Wandlebury area. There is also evidence from the upper Cam valley that large pro-glacial meltwater lakes formed at this time in front of the advancing ice. Once ice overrode the Chalk escarpment, till was laid down in a thick mantle behind the escarpment edge. Along the main north-south Cam valley, a deep 'tunnel' valley was carved into the bedrock by sub-glacial drainage. Similar features are known from Stevenage, Hertfordshire, and from elsewhere in East Anglia. This incisional feature was subsequently filled by till, glacio-lacustrine and outwash sediments. The buried channel containing these glacial sediments can be traced in the Cam valley at Whittlesford Station and at Girton (Boreham 2002).

Following the Anglian glaciation, chalky gravels were deposited by streams flowing toward the southeast. Their presence suggests that the chalk escarpment partly survived being overridden by the Anglian ice. Today these deposits cap areas of high relief, but were originally deposited in stream valleys. For this inversion of relief to have occurred, there must have been major landscape change during the 420,000 years since the end of the Anglian Stage. Chalk bedrock is particularly susceptible to solution and erosion during periglacial climatic conditions. The period since the Anglian is characterised by cold or glacial conditions, punctuated roughly every 100,000 years by shorter warm or interglacial periods, each lasting around 10,000 years. The present-day Holocene interglacial does not represent the harsh climate that has prevailed during the past 420,000 years. Even a 1mm loss of height per decade on Chalk bedrock under intense periglacial conditions would produce a 40m loss in height over this timescale. The presence of deposits such as river gravels appears to armour the Chalk bedrock, and prevents or slows considerably erosive processes. Over time this armouring effect causes gravels once deposited on the valley floor to become resistant hill cappings. A useful adage to summarise this phenomenon is "the hills of today are the valleys of the past". Thus, the three-toed ridge morphology of the Gog Magog Hills can be interpreted as three tributary valleys draining

southeast from a chalk escarpment, and uniting with a common confluence at Wandlebury, before continuing to flow southeast following the regional dip of the Chalk bedrock.

Conclusions

It is clear that whilst the Gog Magog Hills are primarily outcrops of bedrock chalk, they owe their existence, at least in part, to a capping of resistant gravel. This gravel is not a single deposit, and comprises two distinct lithologies, the stratigraphy of which is not always clear. Indeed, the very form of the hills has been determined by the original mode of deposition of this gravel in chalk-sided valleys draining towards the southeast from an ancient escarpment; the opposite direction to the present river drainage. The high ground that gave rise to these valleys has long since been eroded by millennia of intense periglacial activity, leaving a skeletal tracery of an ancient river system, in the form of the hills we see today. It is upon this landscape that humans have imposed out of practical necessity and ceremonial significance the archaeological features that we currently observe.

Acknowledgements

The author would like to sincerely thank Dr CL Forbes and Dr C Turner for their considerable support, and express gratitude to Prof. RG West for inspiring the study of geology in the Cambridge district.

Cambridge Antiquarian Society is grateful to the Cambridge Preservation Society for a grant towards the publication of this article.

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Prehistoric Lithics from Station Road, Gamlingay, Cambridgeshire

Jon Murray

with contributions by Nina Crummy and Tom McDonald

Archaeological investigations in 1997 revealed a significant assemblage of Mesolithic to Bronze Age struck flint on the Greensand ridge east of the Millbridge Brook at Gamlingay, including six tranchet axes. No traces of prehistoric buildings were located, but pits and tree hollows containing prehistoric pottery were found. A possibly Neolithic pebble-hammer was recovered from the fill of an Anglo-Saxon sunken featured building.

Introduction

A significant assemblage of Mesolithic material was recovered during archaeological investigations by Hertfordshire Archaeological Trust (now Archaeological Solutions Ltd) in 1997. The site comprised c. 3.92ha of arable land immediately south of Station Road, Gamlingay, Cambridgeshire (TL 2430 5190), located on a partially alluviated Cretaceous Lower Greensand terrace above the floodplain of the Millbridge Brook to the southeast of the village at 46–48m OD.

The principal archaeological evidence at this site concerned an Anglo-Saxon farmstead and cemetery which is detailed elsewhere (Murray 2004). The present article summarises the results of fieldwork and analysis of prehistoric material. Full details can be found in the archive fieldwork and publication reports held at the Archaeological SMR for Cambridgeshire and the Cambridgeshire Collection, Cambridge Central Library, and in the full publication report mainly regarding the Anglo-Saxon site (Murray 2004).

Fieldwork and excavation

A significant scatter of Mesolithic material was discovered during rapid fieldwalking, gridded test pitting and evaluation (Murray 1996; Murray 1999). The Mesolithic component of the rich flint scatter found in the topsoil, on the crest of the Greensand 'dome' overlooking the Millbridge Brook c. 120m to the west, suggests occupation of this part of the river terrace. Blade cores, blades, microliths and five transversely flaked tranchet axes (Fig. 1; see McDonald below)

were present. One further tranchet axe was found on the surface of a natural, sand-filled hollow during the excavation. Struck flint was occasionally recovered from tree hollows features and dips across the site, although there was no recognisable pattern to deposition. Such features probably acquired intrusive flint through downward 'drift' of artefacts.

The surface flint scatter contained material predominantly dated to the Neolithic and Bronze Age. Three Neolithic or prehistoric pits, four tree hollows and a ditch revealed by excavation suggested occasional use and perhaps small-scale occupation or the site. A pebble-hammer (Fig 2; see Crummy below) was recovered from the fill of an early Anglo-Saxon sunken-featured building (Grubenhäus) constructed close to two Neolithic pits. Tree hollows, suggesting the presence of woodland on parts of the site during this period, may have been used as temporary shelters. The features and the flint scatter suggest the manufacture of flint tools for hunting while based at a temporary camp on the river terrace.

Struck flint

Tom McDonald

A large quantity of struck flint representing two or more industries was recovered from the subsoil and from the fills of tree hollows, pits and later archaeological features. 2598 pieces of struck flint weighing almost 20kg, and 31 lumps of fire-cracked flint were collected from the site.

The raw material varies from light grey to dark grey brown and is frequently grey or dark grey and some pieces are mottled. The flint is characterised by a thin and generally battered cortex typical of gravel flint collected from the surface. Flaws such as frost fractures and pitting are present on a small number of pieces. Yellow and reddish chert occurs in small quantities. The condition of the flint falls between not sharp and fairly sharp, with the sharper pieces coming from the fills of later features. Varying degrees of patination occurs throughout the collection, ranging from light to heavy. Reuse of patinated flint is evident on a small number of flints. Post-depositional edge damage and breakage is infrequent, as much of the flint was processed in the field. Few pieces display battered or

heavily rolled edges.

Five methods of collection were used. These comprised rapid field walking, sieved shovel test pitting set out on a staggered 20m grid, controlled fieldwalking of 10m collection points, material sieved from the fills of tree hollows, material sieved from features containing prehistoric pottery and material hand collected from later archaeological contexts.

The Mesolithic material comprises elements of the mixed flint scatter within the plough soil and much of the residual material found in later archaeological features. The derivation of the flint is uncertain, as it was recovered by surface collection and occurred in residual contexts, although the scatter generally fol-

lows the crest north-east of the Millbridge Brook.

The diversity of the debitage, the mode of knapping and variations in patination, suggest that both blade and flake industries are present. The small fine blade production found with flint tranchet axes is characteristic of the early Mesolithic period (Clark 1934). Many of the cores are small and heavily used, and are comparable to those at Peacocks Farm (Clark & Higgs 1960; Smith *et al.* 1989) and contain a high proportion of single platform (pyramid) type A1-2 cores and opposed platform types B1 (Clark & Higgs 1960).

The presence of a fragment of polished stone axe, soft and hard hammer struck flakes, small numbers

Table 1. *Flint summary.*

	Fieldwalking Evaluation	Fieldwalking in quadrants Excavation	Fieldwalking in 10m units	Test pitting at 20m intervals	Flint from features	Total
Flakes	54	128	163	187	726	1258
Blades	29	55	54	91	344	573
Chips	-	19	60	86	393	558
Flake cores	-	1	3	-	4	8
Blade cores	3	14	9	7	18	51
Pyramid cores	6	7	4	-	-	17
Core fragments	4	6	11	4	16	41
Core rejuvenated flake	-	-	-	-	4	4
Core tools	-	5	-	-	1	6
Lumps	-	11	26	10	28	75
Microliths	-	1	-	-	6	7
Burnt	5	4	6	-	16	31
Total	101	251	336	385	1556	2629

Table 2. *Retouched pieces.*

	Fieldwalking Evaluation	Fieldwalking in quadrants Excavation	Fieldwalking in 10m units	Test pitting at 20m intervals	Flint from features	Total
Point on a blade	-	1	-	-	-	1
Point	-	1	-	-	-	1
End scraper/Point	-	-	-	2	-	2
Oblique point	-	-	-	-	1	1
Sickle	-	-	-	-	1	1
Awl	-	-	-	-	1	1
Misc/retouched flakes	-	-	7	5	16	28
Misc/retouched blades	2	4	1	3	-	10
Microliths	-	1	-	-	6	7
Notched blades	2	-	-	2	-	4
Notched flakes	1	1	2	4	-	8
Notched/scrapper	-	-	-	1	-	1
Serrated blade	-	-	-	1	-	1
Side scraper	-	-	-	2	-	2
End scraper	-	1	-	2	1	4
Button scraper	-	-	-	-	1	1
Fabricator	-	-	2	-	-	2
Core fragment	-	-	1	-	-	1
Flaked axes	-	4	-	-	1	5
Axe fragments	-	1	-	-	-	1
Total	5	14	13	22	28	82

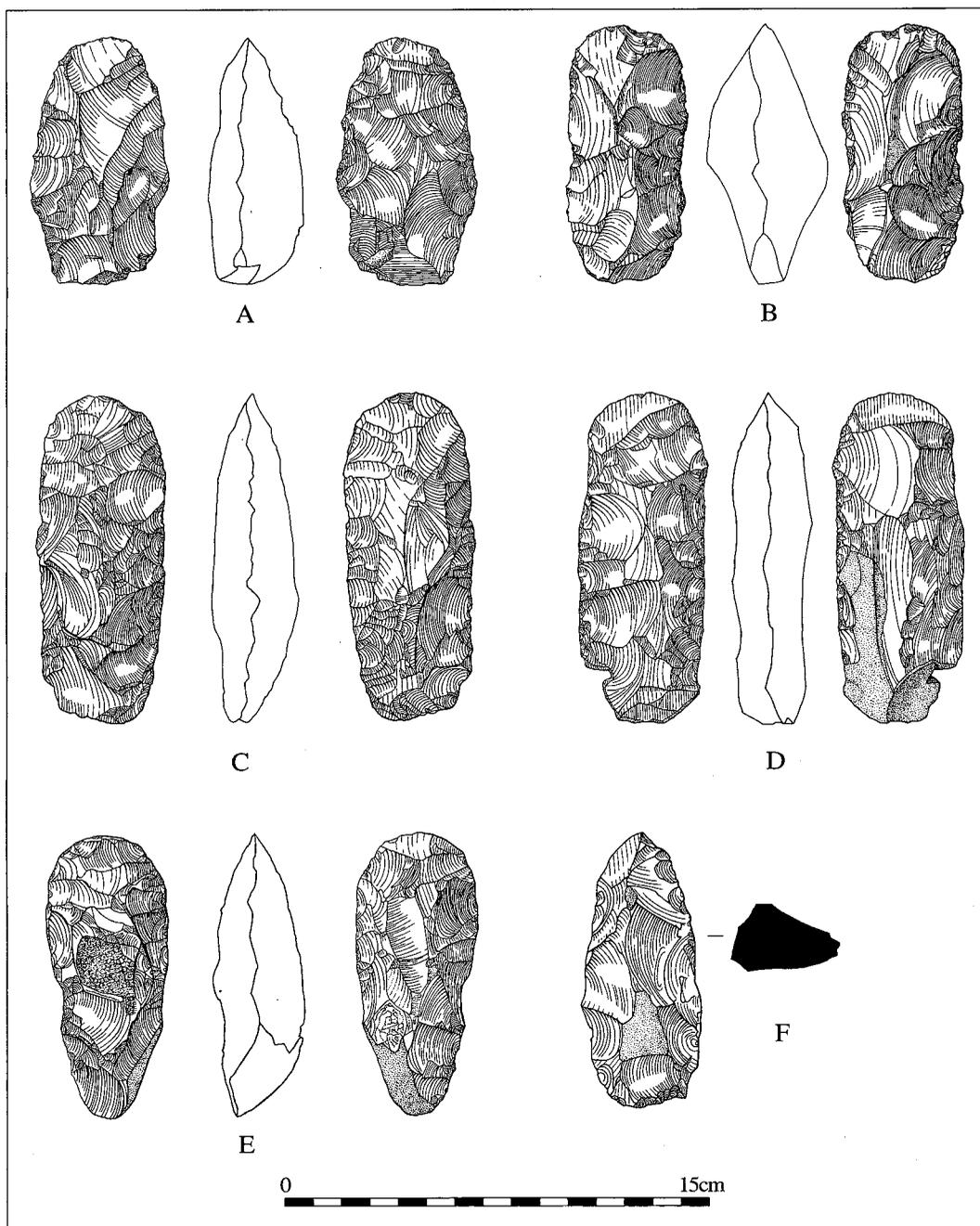


Figure 1. Mesolithic flint transept axes.

of flake cores, core fragments and core rejuvenation flakes is characteristic of later flake-dominated industries (Holgate 1985). Retouched flakes include a small number of distinct pieces, comprising two fabricators or strike-a-lights, a glossed single piece sickle and a fragment from a shallow scale-flaked round or button-shaped scraper. Sickle pieces were used up to 2000 BC (Pierpoint 1981). The button scraper is common to the early Bronze Age and fabricators are known from Mesolithic, Neolithic and Bronze Age periods. The presence of hard hammer-struck flakes is characteristic of the metal age industries (Ford *et al.* 1984).

Flint transept axes (Fig. 1)

Fig. 1A SW Quadrant Seg C (Fieldwalking)

Not sharp; light grey; cortical; tapered thick butt end; rounded cutting edge with minimal shallow retouch; pointed oval in cross section; striations and remnant blade scars are apparent on both faces. Length 91mm, butt: height 31mm, width 23mm; mid point: height 47mm, width 31mm; cutting edge: height 30mm, width > 13mm (146g).

Fig. 1B Area 25 (Fieldwalking)

Not sharp; grey/dark grey; cortical; tapered butt end; rounded cutting edge with irregular retouch, one face heavily chipped (through use); pointed oval in section; remnant

flake; blade scars. Length 94mm. butt: height 23mm, width 9mm; mid point: height 39mm, width 38mm; cutting edge: height 38mm, width >19mm (141g)

Fig. 1C L2000 (Topsoil)

Not sharp; light grey/grey; tapered butt end; rounded cutting edge; rounded oval in section; remnant flake scars. Length 120mm. butt: height 29mm, width 7mm; mid point: height 44mm, width 28mm; cutting edge: height 40mm, width >16mm (176g)

Fig. 1D L2000 (Topsoil)

Fairly sharp; light grey/dark grey; tapered butt end, cortical; rounded cutting edge; pointed oval in section; remnant flake scars, with irregular retouch. Length 120mm. butt: height 30mm, width 18mm; mid point: height 44mm, width 27mm; cutting edge: height 37mm, width 16>mm (176g)

Fig. 1E Grubenhau F2466 Upper fill L2594

Not sharp; fire cracked; grey/dark brown; tapered rounded butt end (cortical); rounded cutting edge; pointed oval in section; remnant flake scars, with irregular retouch. Length 109mm. butt: height 14mm, width 12mm; mid point: height 41mm, width 26mm; cutting edge: height 38mm, width 10 >mm (142g)

Fig. 1F NGR TL 2449 5251 (Recovered by Jim Brown during fieldwalking)

Not sharp; grey opaque, rounded butt end cortical; post-depositional damage around cutting edge; pointed oval in section; remnant flake scars, with irregular retouch. Length 100mm. butt: height 7mm, width 18mm; mid point: height 39mm, width 24mm; cutting edge: height 29mm, width 19>mm (137g)

Pebble-hammer

Nina Crummy

The basal fill of Grubenhau (F2430 L2432) contained half a pebble-hammer (SF72; Fig. 2), a prehistoric shafthole implement sometimes formerly referred to as a pebble mace (Cummins & Moore 1973, *passim*). However, unlike mace heads, pebble-hammers are made by setting a shaft into the centre of a naturally discoidal pebble, which is otherwise unadapted, and the shaftholes of these are always hour-glass shaped, whereas those of maces have straight or gently curving sides. Pebble-hammers first appear in the Mesolithic period, but may have continued into the Neolithic. They also occur on even later Bronze Age, Iron Age and Roman sites, but the extent to which they were multi-period tools is uncertain (Roe 1979, 36). This example is made from a large natural sandstone pebble (diameter 102.5mm, height 53.5mm) and the shafthole has a marked ridge at its mid-point (max/min diameter 37/21mm).

This example cannot closely be dated, but may originally have been associated with any one of three periods represented by the worked flint from the site. It is possible that the pebble-hammer derived from a Neolithic feature truncated during the construction of the Grubenhau. It was then probably collected and curated as an intriguing and valued object. At Mucking, the deliberate collection and curation of Roman finds was noted from at least one sunken-

featured building on the site (*ibid*, 71), and a number of objects deposited in graves in the Buckland Anglo-Saxon cemetery near Dover, Kent, had been collected and treasured. These included holed fossils and pebbles with an 'obvious visual attraction', which were probably credited with amuletic power (Evison 1987, 121–2). A direct parallel to the collection of the Gamlingay pebble-hammer fragment is a complete quartzite mace head from the fill of a sunken-featured building at West Stow (Pieksma & Gardiner 1989, 47, fig. 36).

The distribution of pebble-hammers within Cambridgeshire shows a cluster in the area of Cambridge, to which the Gamlingay example may be added (Roe 1979, fig. 15). The Fen Ditton pebble-hammer from this cluster is the only one from the county to have been assigned to a specific petrological group. It is made from a rare greywacke probably sourced from Cornwall, the only other examples of which come from Zennor (Clough & Green 1972, 145, CAM 81; Clough & Cummins 1979, 127, Group XIX; Roe 1979, 47). Most pebble-hammers from the eastern counties are quartzite, though sandstone examples are known from Stalham, Norfolk and Great Bealings, Suffolk (*ibid*, 36; Clough & Green 1972, 146–51).

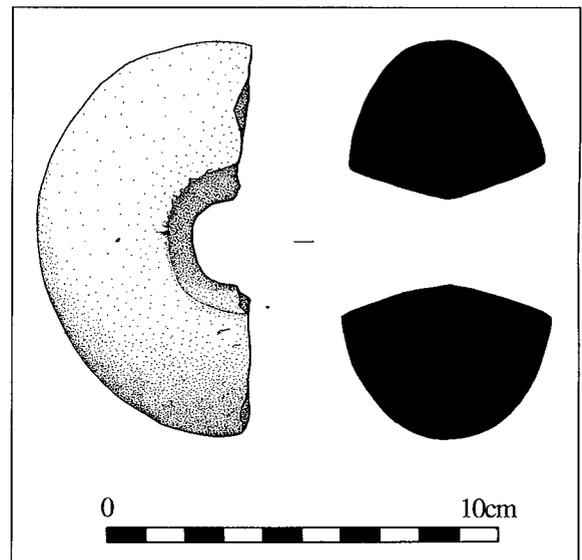


Figure 2. Sandstone pebble-hammer.

Discussion

Previous lithic finds in the vicinity of Gamlingay

Quantities of prehistoric finds have long been noted in the region (Fox 1923) and the Victoria County History recorded the discovery of early prehistoric microliths and later flints 'found on the surface at Gamlingay'. Gamlingay's sandy heaths and acidic bogs were unfavourable to medieval agriculture, thus preserving the prehistoric flint work until ploughed up by later agriculture (Taylor 1997).

Numerous findspots of Mesolithic, Neolithic and Bronze Age flints are recorded along the valley of the

Millbridge Brook at Dutter End to the east and on the Heath to the southwest of Gamlingay (SMR 2393a, 2395, 00105 and 00060; Brown 1989; Stubbart 1993; Taylor 1997, 51–2). Neolithic/Bronze Age flints have been discovered west of the village and river valley, suggesting a settlement in the vicinity (SMR 2395 and 2396). Jim Brown provided further information on findspots of Mesolithic to Bronze Age flint work in the vicinity of the village, mentioning a barbed arrowhead and flint tranchet axe. This was found at the medieval moated site of Dutter End to the north (Brown 1989), and is described in this report (McDonald above; Fig. 1F). Jim Brown also noted material from the northern terrace of the Millbridge Brook, including a leaf-shaped arrowhead, discoidal knife and microlith point, as well as a general scatter of flakes and cores.

The Mesolithic flint assemblage

The Mesolithic flint assemblage, though not in situ, adds to the known distribution of sites in the region (Austin 1997) and further confirms activity along the main river tributaries at this time. The presence of earlier Mesolithic sites along the Lea and Colne valleys has been noted (Holgate 1995), but none are recorded along the Ivel valley to the west until the later Mesolithic period. The presence of Mesolithic core tools in tandem with retouched pieces and cores is characteristic of a base camp (Mellars 1976; Pierpoint 1981), although this scatter probably represents a seasonal or low-density camp (Kvamme & Jochim 1989) that took advantage of the river margins along the wider and wooded stream which would have provided abundant fish, wild fowl and game.

During the Holocene era, much of lowland Britain was forested, with breaks around lakes and rivers, opening up the hunting and fishing potential of these areas (Jacobi 1996). The presence of Mesolithic axes, including a fragment from a broken axe, may suggest that tree clearance was occurring in the dense virgin forest of this valley. Jacobi (citing Cane 1986) suggests that there was a definite change in social and economic organisation between the Early and Late Mesolithic periods, with early specialised subsistence economies organised solely from base-camps, developing into generalised subsistence economies with task-sites satellite to base camps. However, supporting evidence comes from Central Pennine sites rather than East Anglia.

Occupation in the Neolithic/Bronze Age

Neolithic and Bronze Age occupation of the Gamlingay site was relatively small-scale. Fields about a mile to the south-west of Station Road, along the Millbridge Brook at Littleheath, have produced dense Neolithic flint scatters including barbed arrowheads, spear-tips, scrapers and flint knives, interpreted as a Neolithic settlement (Walker 1911, 64–65).

The cropmark of a ring ditch is present in the field c.150m the southeast of the site (SMR 5372), suggesting funerary use in the Bronze Age. The use of tree hollows as temporary shelters is well-documented at

Hinxton Quarry, Cambridgeshire (Mortimer & Evans 1996) and other sites in the southeast. The use of tree hollows suggests a temporary encampment, perhaps a seasonal hunting camp by the river where tool-making was carried out.

Acknowledgements

Archaeological work was carried out by Hertfordshire Archaeological Trust (now Archaeological Solutions Ltd) commissioned and funded by Merton College, Oxford. HAT would also like to thank their agents, DH Barford & Co, for their assistance during the execution of the project, in particular Martin Page.

The original desk-based assessment, archaeological evaluation, site stripping and preparatory works were undertaken by the author. The excavation team was supervised by Mike Trevarthen under the Project Management of Tom McDonald, who jointly prepared the Interim Excavation Report. Tom McDonald also prepared the initial phasing of the site. An Assessment and Updated Project Design for this publication was prepared by the Jon Murray. This publication text was edited by Leonora O'Brien.

Site works and the post excavation programme were monitored on behalf of the Local Planning Authority by Cambridgeshire County Council County Archaeology Office. HAT wishes to acknowledge Louise Austin and Simon Kaner of the latter for their input into the project. HAT thanks staff at the Cambridgeshire County Record Office for their assistance in providing historic documentary references.

Air Photo Services Ltd produced an air photographic assessment and replotting as part of the original desk based assessment. Thanks are due to Jim Brown of Art of Aviation Ltd for aerial photographs of the site and for allowing HAT to view flint artefacts collected from the local area, and to Michael Stubbart for providing a copy of his detailed dissertation on the development of Gamlingay.

NB Anglo-Saxon aspects of this site (settlement and burials) are published in *Anglo-Saxon studies in history and archaeology* Vol XIII, 2004.

Cambridge Antiquarian Society is grateful to Merton College for a grant towards the publication of this article.

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Evaluation survey and excavation at Wandlebury Ringwork, Cambridgeshire, 1994–7

Charles French

with contributions by Rachel Ballantyne, Andre Corrado, Claudia
Cyganowski, Natasha Dodwell, Christopher Evans, Kasia Gdaniec,
GSB Prospection, Bryan Hanks, JD Hill, Helen Lewis, Preston Miracle,
Alistair Oswald, Paul Pattison and Colin Shell

Evaluation investigations conducted both within and outside the Wandlebury ringwork in 1994–7 as a student training exercise by the Department of Archaeology and Cambridge Archaeological Unit (CAU), University of Cambridge, revealed an extensive area of later prehistoric and Romano-British settlement, both inside and outside the surviving earthworks. There is every likelihood that an earlier Iron Age settlement was located on the hill-top prior to the construction of the first rampart and ditch at sometime in the 5th century BC, and this appears to have been located outside and to the southeast of a precursor (undated but possibly of the Late Bronze Age/very Early Iron Age?) post-built wooden enclosure. Settlement activity predominated in the 5th and 4th centuries BC, but continued to a much lesser extent into later Iron Age times associated with the construction of the second rampart and ditch on the interior side of the first rampart in the 1st century BC and lasted on a less extensive scale into the earlier Romano-British period (1st–2nd centuries AD). Throughout, the circular and concentric nature of the enclosures persists, and a focus to the southeast with a main entranceway continues. Indeed fresh evidence substantiating the existence of an original entrance on the southeastern side and possible elaboration of the ramparts at this point is described.

A number of new discoveries were made that give us a better idea of this hill-top in the Iron Age. Features excavated within and outside the ring consisted principally of pits, but with good hints of structures which would be revealed if open area excavations were undertaken. The pits were primarily used for the storage of grain, and some also had evidence for 'closure deposits', including articulated animals (eg a dog), a male skeleton (face down with his hands possibly bound), small pots, and decorative spindle whorls and bone plaques. Uniquely, evidence for repeated episodes of grain storage and handling was documented using detailed micro-stratigraphic and bioarchaeological analyses. This stored grain had probably been brought to the site from the surrounding area. Other environmental analyses suggest that the economy around Wandlebury relied on sheep husbandry in an already open chalk downland landscape throughout the Iron Age and that cattle were predominant in the Roman

period. Finally, consideration of recent rescue investigations in the vicinity of Wandlebury suggest that this was but one substantial settlement in a highly developed and extensively occupied landscape in later prehistoric and Roman times.

Introduction

The site in its setting

Wandlebury ringwork is situated about 6.5 km to the southeast of Cambridge and 2 km north of Stapleford village, in the northeast corner of Stapleford parish in south Cambridgeshire (TL 4940 5343) (Fig. 1). It is positioned towards the northern end of the undulating chalk ridge of the Gog Magog Hills overlooking the Cam valley and the fens beyond (TL 4940 5343). The c. 330 m in diameter outer rampart and ditch encloses an area of about 6.25 hectares on a natural hillock that rises to c. 77 m OD above the surrounding chalk plain at c. 20–30 m OD. The ringwork itself occupies roughly one-half of the northern end of the hill-top, the remainder of which has never been systematically investigated for its archaeological potential. The later internal rampart and ditch reduced the diameter to c. 218 m and enclosed c. 3.73 hectares.

Wandlebury (Figs. 1–3) is a local nature conservation area, beauty spot and home to the Godolphin Arabian – one of three 18th century ancestral stallions from whom all modern thoroughbreds have descended. It was first investigated archaeologically by Clark and Hartley in 1955–6 (Hartley 1957), with the infamous and so-called chalk figures found and excavated by Lethbridge and Tebbutt (Lethbridge 1957; Lethbridge and Tebbutt 1959) in the same years. Forty years on, four seasons (eight weeks) of training excavations for the second year students from the Department of Archaeology, University of Cambridge, were undertaken at Wandlebury in June of the years 1994–7, with additional geophysical survey in 1998 (GSB 1998).

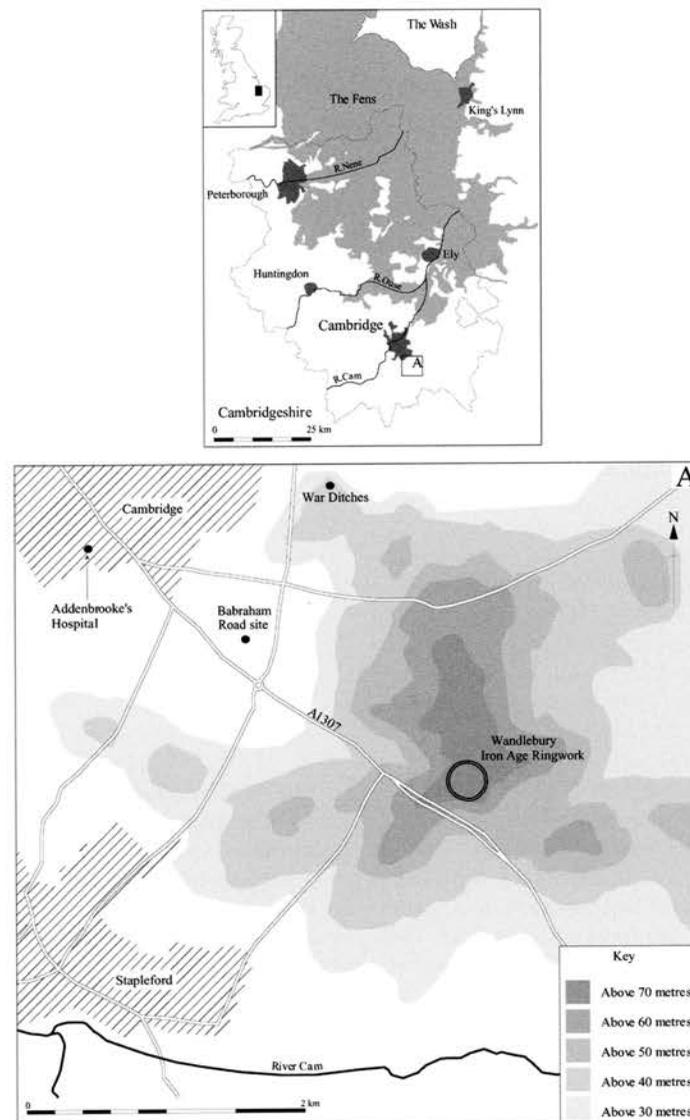


Figure 1. Location map of Wandlebury and sites in the surrounding area. (C Begg, Archaeological Field Unit, Cambridgeshire County Council)

Over the past two decades, prehistoric landscape archaeological projects have repeatedly demonstrated that monuments rarely exist in isolation but were integrally associated with extensively modified and utilised landscapes. These landscapes contained field systems, shifting and long term settlements (often elusive), industrial and/or processing areas, ceremonial routeways, burial monuments and cemeteries and ancillary/satellite structures (eg Stonehenge Environs Project (Richards 1991), Danebury (Cunliffe 1983; Palmer 1984), the Maxey/Etton areas of the lower Welland valley (Pryor and French 1985) and the lower Ouse valley (Evans and Knight 2000)). Consequently a similar approach to investigating the landscape outside the scheduled ringwork at Wandlebury using non-destructive survey and sample excavation tech-

niques was proposed, albeit on a much smaller scale, and has provided exceptional new data on the occupation of the hill-top and its immediate surroundings.

Evaluation work described here comprised two seasons of work in 1994 and 1995 which took place outside the ringwork in Varley's Field before obtaining scheduled monument consent to undertake an evaluation exercise within available parts of the interior of the monument in 1996 and 1997 (Fig. 4). In the interior, the evaluation was situated between the tree belt on the surviving line of the outer rampart and the brick wall bordering the current estate's garden in an arc from the southeastern to northern sectors of the ringwork interior (Fig. 4). In addition, there was evaluation work to the south of the rampart in the

area of the putative chalk-cut figures and in Picnic Field to the southeast. In total, 99 test pits and 19 trenches were excavated, and over five hectares of land subjected to geophysical survey (Figs. 4–10).

The methodological approach

Charles French and Kasia Gdaniec

Permission was granted by the Cambridge Preservation Trust and English Heritage for a unified programme of survey, geophysical prospection and evaluation excavation as a student training exercise, co-ordinated by the Department of Archaeology and CAU, both of the University of Cambridge. This study had five main aims:

- to assess the state of extent and preservation of archaeological features within the interior of the scheduled monument
- to investigate the possibility, extent and date of archaeological remains surviving on the remainder of the hill-top outside and to the east and southeast of the scheduled area
- to investigate how these remains related to the two sets of earthworks
- to procure new material for dating and palaeoenvironmental data with which to better understand the place of this monument in its landscape
- to reassess the surviving record from Clark and Hartley's 1955–6 excavations (Hartley 1957).

Working within the confines of a scheduled ancient monument meant that investigative methods were limited to prevent unnecessary destruction of the earthworks and unknown remains. Thus the investigations involved a combination of three main techniques designed to locate and test for possible archaeological remains, as follows:

- 1) a new topographical survey of the earthworks of the monument by the Royal Commission on the Historical Monuments of England as part of their survey programme of the Iron Age defensive earthwork sites of Cambridgeshire (Pattison and Oswald 1996)
- 2) geophysical survey (magnetometer and resistivity) of selected areas of the exterior and interior of the scheduled monument under the direction of Dr C Shell, Department of Archaeology, Cambridge
- 3) a test pit programme of trial excavation designed to systematically sample and evaluate the available area under the direction of CAU. This involved:

- excavation by JCB of 1m² test pits, from which the topsoil and buried soil (if it survived) were stored separately and completely dry sieved through a 5mm mesh for artefact and bone retrieval
- second, mechanical expansion of each test pit to a 2 m² test station in which all features revealed were excavated and recorded conventionally; in addition a further six 1.5m wide trial trenches, three c. 5x5m and one 10x8m areas were cut to examine particular linear and non-linear anomalies revealed by the magnetometer survey
- every context/layer of every feature was bulk sampled (30 litres) for both wet sieving for artefact retrieval and plant macro-fossil remains.

The recording of features and soil sampling for palaeoenvironmental data and bulk sampling for wet sieving for artefact and charred plant macro-fossil remains retrieval followed standard CAU practice (after Spence 1990).

Previous discoveries

Paul Pattison and Alistair Oswald

The previous work and history of the site at Wandlebury has been thoroughly reviewed by Pattison and Oswald (1996). Accordingly, only a few salient features will be described here. Wandlebury constitutes the only 'hillfort' in Cambridgeshire. Nonetheless, there are many other Iron Age ringwork enclosure sites in fen-edge situations: Wardy Hill, Coveney, near Ely (Evans 1992 and 2003), Arbury Camp, on the northwestern side of Cambridge (Evans 1992; Evans and Knight 2002), Stonea Camp, near March (Malim 1992), Belsar's Hill, Willingham and Borough Fen site 7 near Peakirk (French and Pryor 1993; Malim and McKenna 1993).

The 'defensive nature' of Wandlebury was suggested by Clark and Hartley's 1955–6 excavations (Hartley 1957). They excavated a trench across the inner and outer ramparts and ditches in the south-eastern sector of the hillfort, adjacent to the current investigations (Hartley 1957: fig. 1), as well as a series of Wheeler-box trenches on the interior of the inner ditch (*ibid* fig. 2) Fig. 2. The first phase of defences were believed to consist of the outer rampart with wooden revetment, outer ditch and counterscarp bank, with the ditch recut at least once and the outer rampart repaired at the same time (*ibid* figs. 4 & 5). The inner ditch and timber revetted inner rampart were added much later; these are now substantially flattened and infilled by gardening works associated with the estate and certainly by 1808 (Lysons 1808: 73). The inner rampart sealed a variety of pits and post-holes indicative of settlement features associated with the outer defences, which also extended within the interior of the remodelled fort (Hartley 1957: fig. 2). These features produced ceramics and metalwork then dated to the 'Iron Age B' period, which would now be approximately equated to the 3rd–1st centuries BC (Hill 1996 & below). Well preserved faunal remains were also recovered, but remain unanalysed, and a buried soil beneath the counterscarp bank and outer rampart was recognised but not investigated further.

Cunliffe (1974: 229–32) reassessed this construction sequence and suggested that Clark and Hartley's interpretation (Hartley 1957) was incorrect. He suggested that the first phase box rampart was replaced by a similar but more massive timber structure, but the associated ditch probably retained its original form at that stage. This was followed by a third phase, seen as an inner timber-revetted dump rampart and the recutting of the outer ditch, but without any super-structure on the outer bank. The variations between Hartley and Cunliffe's interpretations both



Figure 2. Oblique aerial view of Wandlebury from the southwest (with permission of the Cambridge University Committee for Aerial Photography).

make reasonable sense but are hard to prove one way or another without considerable new excavation. Nonetheless, as revealed in this report, there may be both modifications and additions to this story, and in particular, the possible existence of an earlier structure beneath the line of the inner rampart. But whatever the actual sequence, there is no doubt that in the 17th century the site was observed to be bounded by three ramparts (ie counterscarp bank, outer and inner ramparts) (Gough 1806: ii, 226) with two ditches or 'great trenches one within another' (Morris 1982), but by the early 18th century only one ditch and rampart remained (Defoe 1724).

Legends abound concerning the ringwork and the Gog Magog Hills in general, which describe ghostly giants of Celtic origin. These are enhanced by the supposed discovery, excavation and publication by Lethbridge (1957) and Lethbridge and Tebbutt (1959) of a set of figures of female goddesses and male warriors equipped with weaponry and chariots that were believed to have been cut into the chalk on the southern slopes outside the ringwork. Despite the dubious methods of prospection (dowsing) and subsequent excavation (cutting the shape of the figures from the turf surface downwards rather than in plan and sec-

tion from the base of the topsoil), examination of the published section drawings would suggest that the figures consist of a combination of real but plough damaged, archaeological features plus natural solution hollows in the upper surface of the chalk subsoil. Apparently Lethbridge (1957) marked the outline of these 'figures' with willow canes which took root, thereby removing the possibility of their authentication through re-examination.

Wandlebury appears in the 10th century 'Chronicle of Ramsey Abbey' in the form of *Wendlesbiri*. Between then and the 12th century, it was a hundred meeting place where land pleas were occasionally held. In the 'Historia Eliensis' it appears as *Wyndilbury*, an important meeting place of nine hundreds in the reign of Stephen (1134–54) (VCH Cambs 8 1982: 227; VCH Cambs 2 1948: 40). Between 1135 and the Dissolution in 1541, it was a holding of the prior and monks of Ely known as Stapleford Bury. So it remained until transfer to the Ecclesiastical Commissioners in 1870. But, before 1135, a small fraction of this Stapleford Bury estate was detached to form a second, smaller manor held as one-half of a knight's fee of the Bishopric until after 1600 and after the mid 14th century AD it became known as Sternes. This manor, which included

Wandlebury ringwork, was acquired by Francis, 2nd Earl Godolphin, in 1734 (VCH Cambs 8 1982: 229–30), by which time the whole area had become associated with equestrian pursuits. It is probably just after this in the 1740s that a manor house with stables was built within Wandlebury ringwork. Gogmagog House, also known as Gogmagog Hills, remained with this same family until the death of George, Duke of Leeds, in 1894, thereafter changing hands several times before it was acquired by the Cambridge Preservation Trust in 1954.

The 2nd Earl Godolphin's house (now demolished) was situated to exploit the ornamental opportunities presented by the framework of the ringwork's earthworks. Although the exact period of creation of the gardens is unsure, much effort went into creating space for them by the removal of the inner rampart and the backfilling of the ditch such that it had become a wooded perimeter walk by 1812.

Several minor pieces of archaeological work have been conducted on the hill-top prior to this evaluation. These include the examination of an electricity service trenches by Taylor (1976) and Alexander (1993) which revealed a few Iron Age artefacts and undatable linear features, just inside and outside the ringwork near the present bridge on the southern side of the site. Two human burials were discovered outside the rampart to the south during the extension of a cricket pitch and a further five burials revealed as a result of tree uprooting, all suspected of being Iron Age in date (Bevis *et al* 1967: 107–9; Taylor and Denston 1977). In the early 1970s, a large bell-shaped pit containing sheep and human bones was discovered as a result of tree-uprooting 25m to the south of the outer rampart in Varley's Field (Cambs SMR 09264). Inside the ringwork, Roman coins were discovered in 1685 during the construction of a cellar (Gough 1806: ii, 226). Archaeological evaluation for the extension of the Gog Magog golf course just off the northeastern edge of the hill-top discovered nothing of associated significance (K Welsh, pers comm).

Since the University of Cambridge evaluation took place in 1994–7, there has been a substantial amount of archaeological work done in the near vicinity in response to new developments. These include the extensive open area excavations done in advance of the construction of the Babraham Road Park and Ride facility by Hinman (1998; Hinman and Malim 1999) which revealed evidence of rather enigmatic earlier prehistoric settlement of the Neolithic and Bronze Age, while extensive investigations at the Robinson Way site at Addenbrookes Hospital has revealed a substantial area of farmsteads, roadways, field systems and burial features from the later Iron Age and early Romano-British periods, contemporary with the later phase of Wandlebury (D Mackay and C Evans, pers comm). Discussion of Wandlebury with respect to this 'developed' landscape is returned to at the end of this paper.

Topographical survey

Paul Pattison and Alistair Oswald

The RCHME officers and second year undergraduates completed a new topographical survey of the whole ringwork in 1994 and 1995 using an EDM and conventional measured tape topographical survey techniques (Pattison and Oswald 1996). This detailed survey provided important new information regarding the form and survival of the earthworks and contributed additional detail indicative of an eastern entrance way to the ringwork (Pattison and Oswald 1996) (Fig. 3). About 55m to the south of Clark and Hartley's excavations (Hartley 1957: fig. 1), two very straight lengths of outer rampart and ditch converge at a point where the inner rampart would appear to be broken (Fig. 3). Here the gently curving line of the defences straightens to form an obtuse but distinct angle, in fact the only variation in Wandlebury's striking circular plan. Indeed, the counterscarp bank increases steadily in size towards the apex of this angle, and then straightens out for about 25m. The change in angle is even apparent in the backfilled inner ditch, where there is a hint of a break with a rounded terminal to the south, possibly indicating the existence of a former causeway. Consequently it is hard to avoid the whole impression of a blocked off entrance way. Moreover, given that the pre- and contemporary settlements seem to be concentrated on the southeastern side of the monument, this would make considerable sense in terms of monument access and focus.

None of the existing entrance ways are believed to be more than recent access ways into the interior – an aspect strengthened by the presence of masonry retaining features in these areas. The exception to this is the gravelled entrance way into the north stable yard on the southwestern side of the ringwork which may represent an earlier entrance way through the surviving inner rampart (Fig. 3). This has previously been assumed to be the position of the Iron Age entrance (Hartley 1957: 2).

Like Arbury Camp, Milton, on the north side of Cambridge city (Evans 1992; Evans and Knight 2002; Knight 1995), and unlike most other hillforts/ringworks, Wandlebury is almost perfectly circular in plan. But, Wandlebury ringwork bears no relationship to the natural topography of the hillock at the northern end of the chalk ridge (Fig. 1).

The surviving earthworks comprise the deep outer ditch which maintains a quite constant width of 11.5m but ranges in depth from *c.* 1.8 to 2.7m and the outer rampart. The outer bank was substantially levelled during the construction of the gardens in the early 19th century, so now only survives to a height of 0.5m with a width of 7.5m at its base. The counterscarp bank ranges in height from 0.4 to 1.8m in height and 5–12m in width. In the southeastern sector of the monument, the counterscarp bank has been cut back and reformed into a level platform of about 5m by 20m. The inner rampart was levelled and spiked back into the inner ditch, except for an 80m stretch on the northern side of the ringwork which survives as a

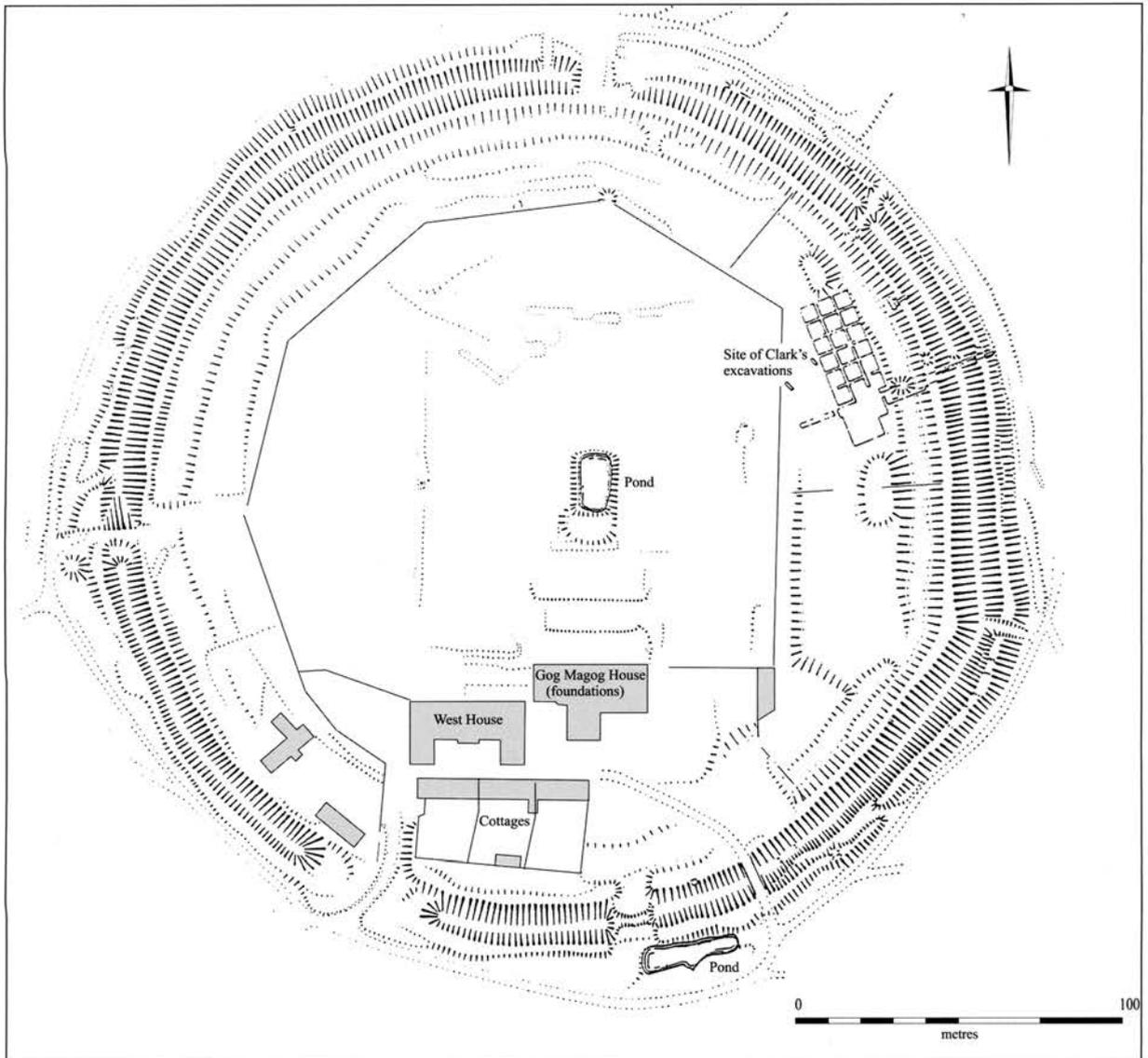


Figure 3. The 1996 earthwork plan of Wandlebury (RCHME).

very slight earthwork. The inner ditch now just about survives as a slight but regular depression, c. 0.2 to 0.5m deep and some 11m across. Clark and Hartley's excavations (Hartley 1957) suggested that this ditch had been 5.4m deep, which had been reduced to about 3m in depth through subsequent silting up.

Geophysical survey

Interior and exterior areas

Colin Shell and Charles French

Seven areas were surveyed using a fluxgate gradiometer or magnetometer, and two areas with both the magnetometer and resistivity meters. The first area to be surveyed using magnetometry was a 0.8 hectare area of the interior of the ringwork, immediately adjacent to the modern pond. Unfortunately, this indi-

cated little in the way of archaeology other than recent garden features such as brick/gravel paths.

A second area, a c. 60–100 x 120m (maximum) area (or c. 80,000 sq m) was surveyed in the southern part of Varley's Field to the outside of the ringwork and three areas (c. 50 x 100, 40 x 40 and 30 x 100m) within the eastern and northern arcs of the interior of the ringwork (c. 120,000 m²) and the area of the so-called Wandlebury figures to the south of the ringwork (Fig. 4, area A). Throughout the survey, the magnetometer presented better resolution than the resistivity meter.

The survey of Varley's Field revealed a variety of archaeological anomalies such as a 'double' hollow way, two ditched enclosures – one curvilinear and one rectilinear, and numerous large and small pits (Fig. 5). As is evident in Figure 5, the density of the archaeological features does begin to fall away northwards, an observation corroborated by the test station excavation programme.

Two other areas of the hill-top were also explored using geophysical techniques by S Fidler (1995) and C Shell with student assistance (Figs. 6 & 7). The first area (Fig. 4) was the area of Clark and Hartley's 1955-6 excavations on the interior of the hillfort (Hartley 1957). This revealed the Wheeler box trench plan of those excavations as well as an area of dense archaeological features being preserved beyond the limit of the previous excavations.

The area surveyed around the so-called hill figures (Lethbridge and Tebbutt 1959) situated on the slope just to the south of the ringwork gave no indication of the figures (if they ever existed) (Fig. 4, between test pits 89 & 90). Nonetheless, some anomalies strongly suggest the presence of pits, whilst others may rep-

resent natural (geological) features in the top of the chalk substrate.

In the interior, as in Varley's Field, the most common feature was the individual pit, and occasionally linear ditch features were visible (Figs. 6 & 7). However, the resolution of the archaeology was not as clear-cut as that seen for Varley's Field (Fig. 5). With the advantage of subsequent test pitting, it was evident that large areas of this part of the interior were disturbed by brick and chalk rubble deposits left after the demolition of estate buildings around the perimeter of the walled garden, as well as levelling of the inner rampart using soil and chalk rubble material derived from the inner rampart during the formation of the 19th century park around Gog Magog House

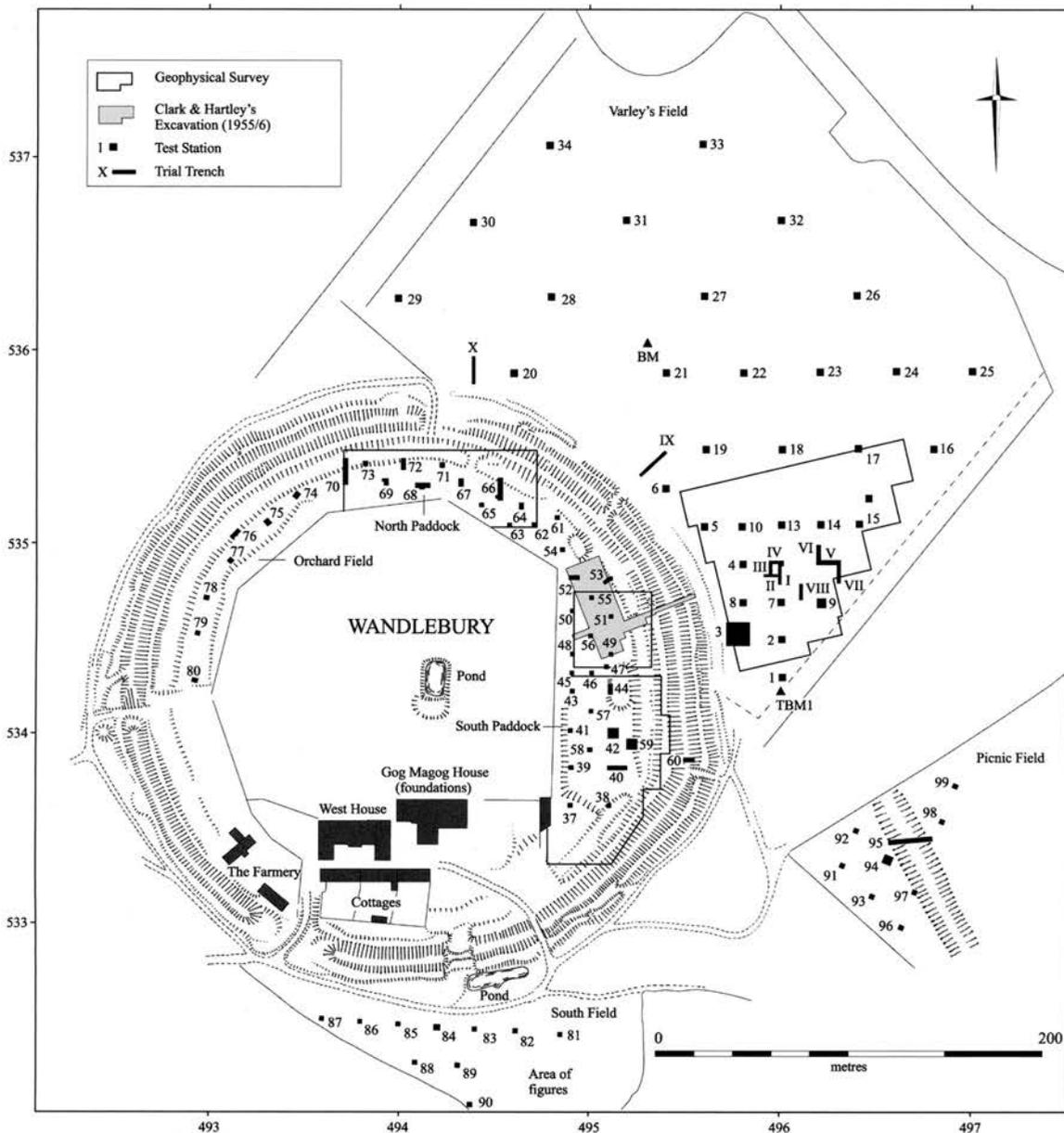


Figure 4. Location plan of the survey and excavation work carried out in 1994-7 set against the 1996 RCHME earthwork plan of Wandlebury (C French).

(Pattison and Oswald 1996). Nonetheless, this survey indicated that there is extensive archaeological survival with hints of post-built structures evident. Moreover, the magnetometer method has proved extremely reliable despite much post-depositional disturbance of the survey area and often relatively thick (c. 50–70 cm) topsoil/overburden deposits.

*Woodland Trust survey
GSB Prospection*

Subsequent to the 1994–7 evaluation, the Woodland Trust purchased and wished to plant an area of land between Furze Clump, Round Clump and Long Plantation, about 500m to the southeast of the ringwork (Fig. 8). Prior to planting, the two hectare field was geophysically surveyed by GSB Prospection (1998). The magnetometer survey recorded a complex of linear responses throughout the area that indicate

fragments of rectilinear field systems (Figs. 9 & 10). The linear zones in the northwest corner of the survey area certainly look like a pit alignment as it is regularly interrupted (Figs. 9 & 10). A number of its anomalies and areas of increased magnetic response were also identified, but there were no clear indications that remains of core settlement features are present (Figs. 9 & 10). Nonetheless, these results demonstrate that this is an extensive area of potentially later prehistoric land-use that is probably integrally related to Wandlebury.

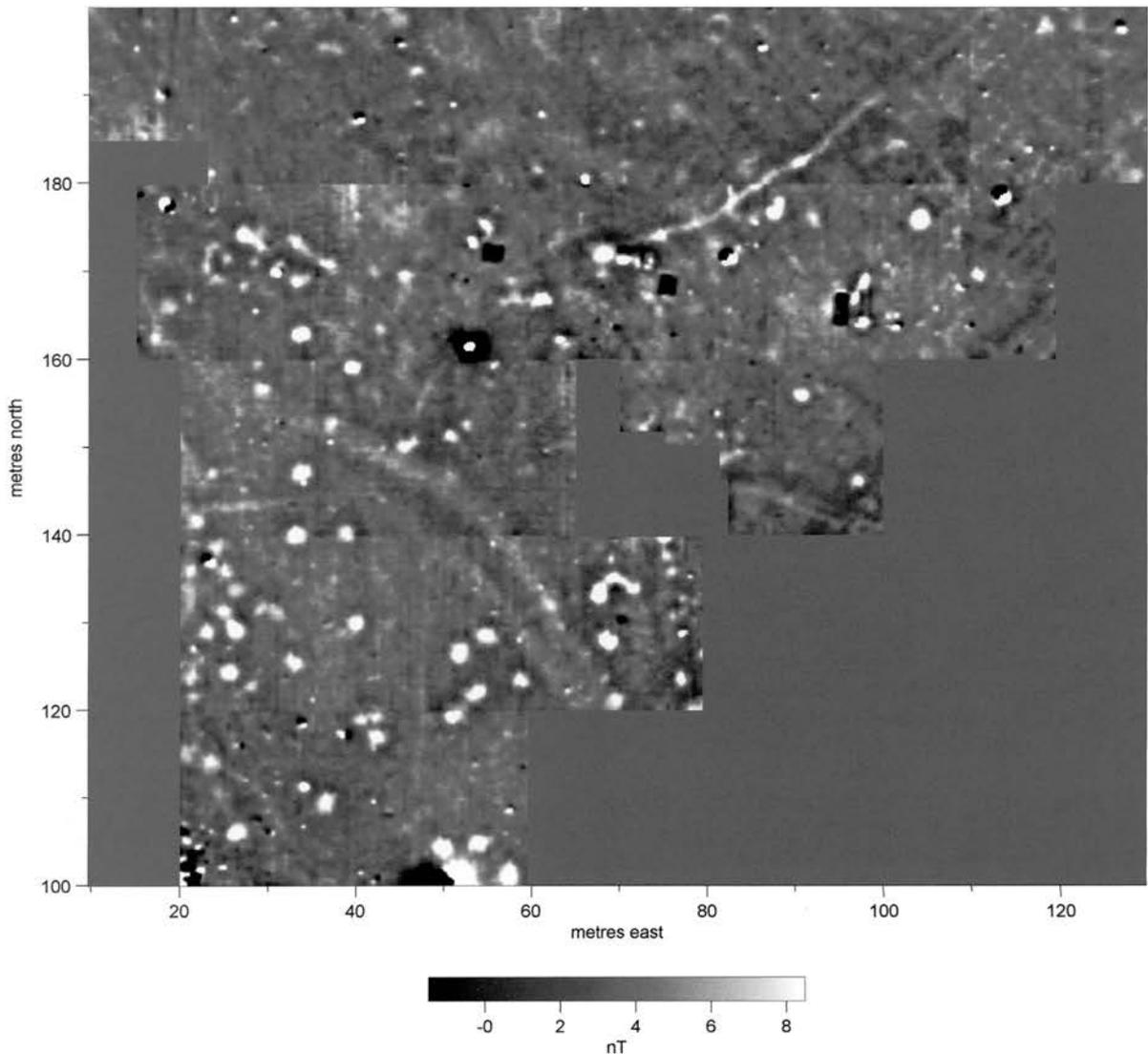


Figure 5. Magnetometer plot of the southern third of Varley's Field (C Shell).

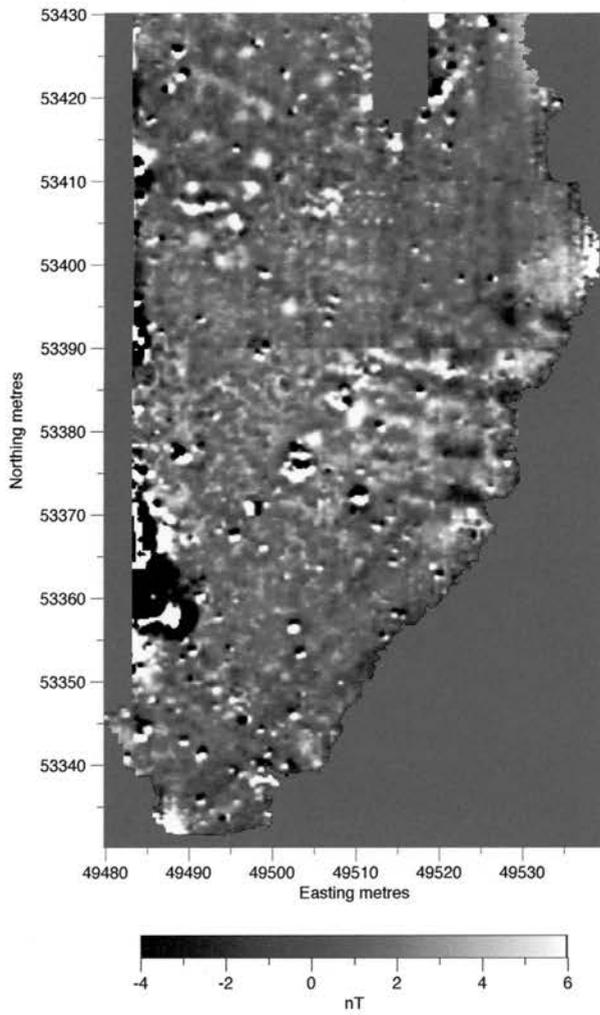


Figure 6. Magnetometer survey plot of the interior southern paddock (C Shell).

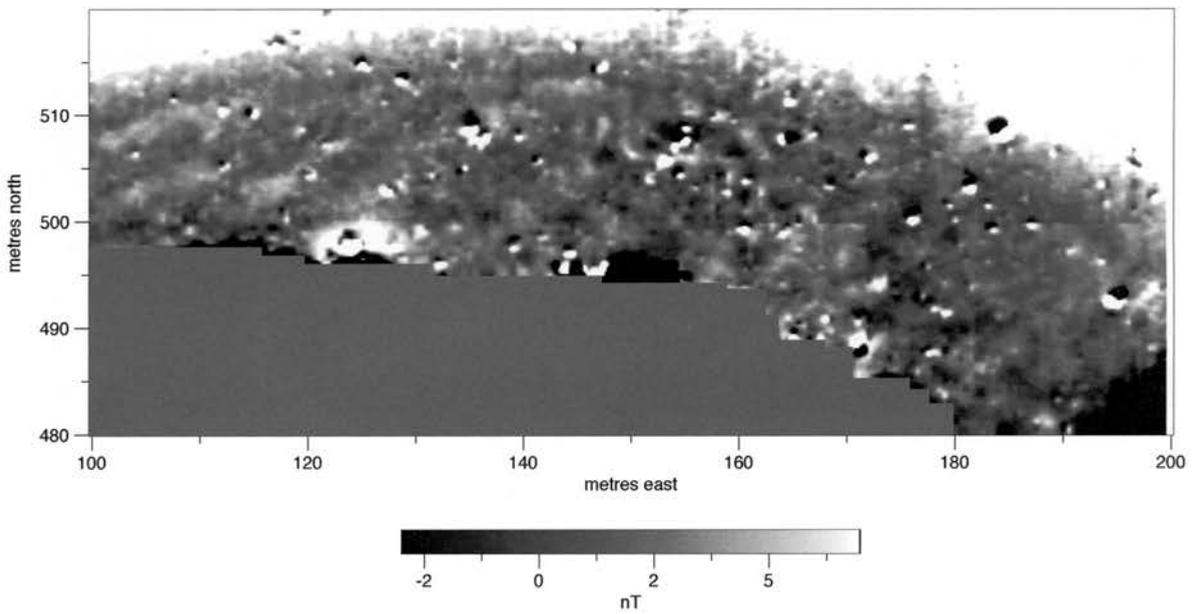


Figure 7. Magnetometer survey plot of the northern interior paddock (C Shell).

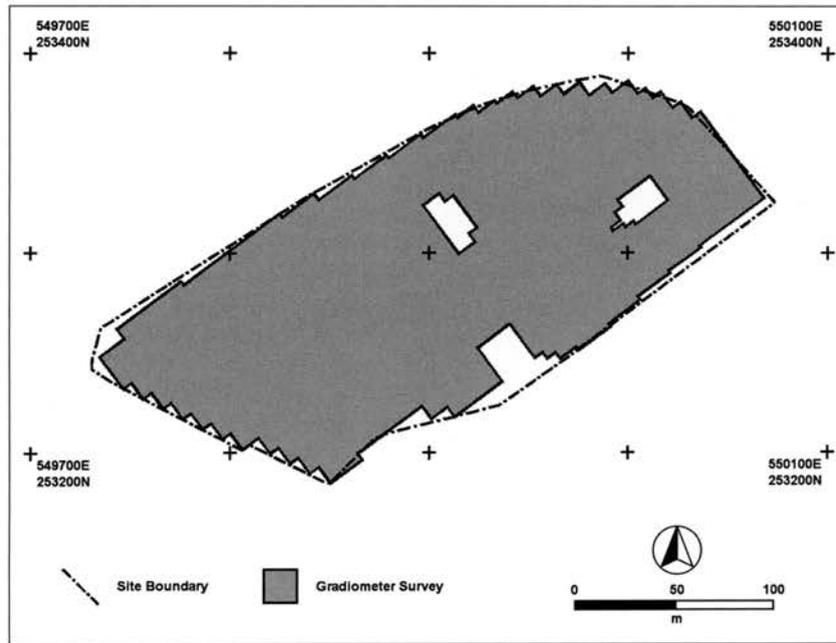


Figure 8. Location plan of the magnetometer survey of the Woodland Trust field to the south of the ringwork (GSB Geoprospection, with the permission of The Woodland Trust).

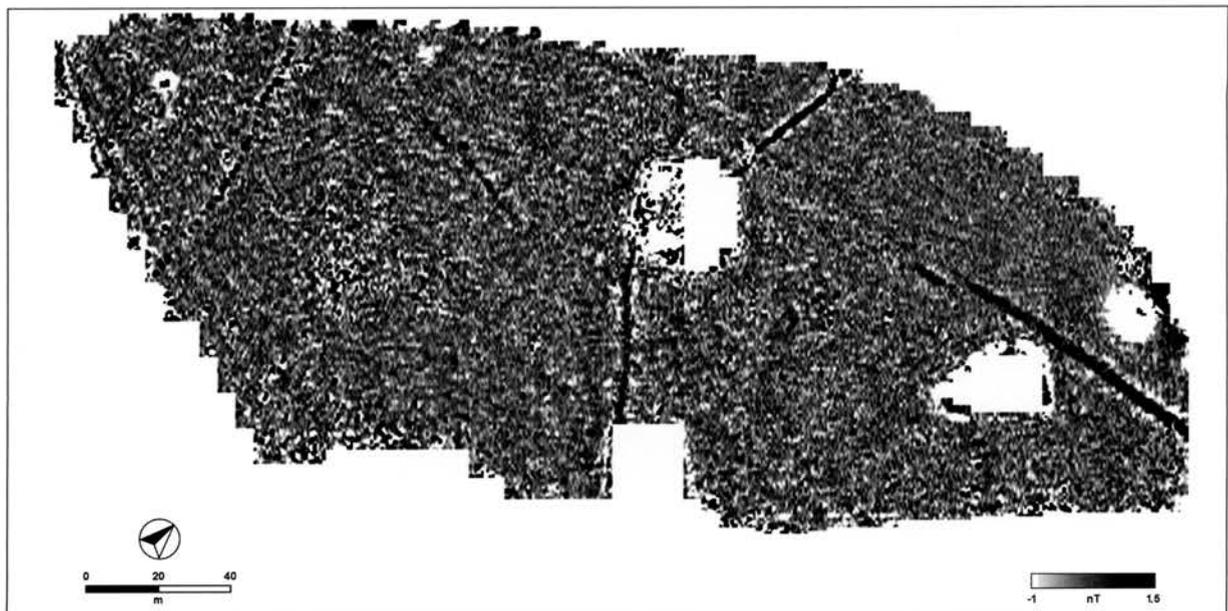


Figure 9. Magnetometer survey of the Woodland Trust field to the south of the ringwork (GSB Geoprospection, with the permission of The Woodland Trust)..

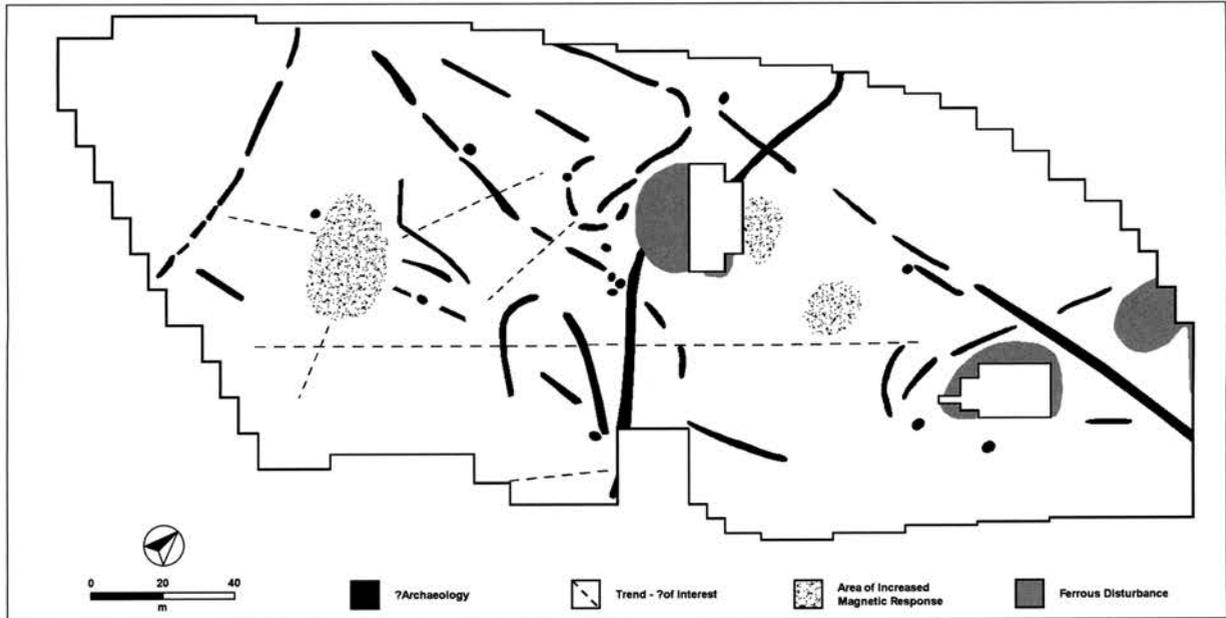


Figure 10. Interpolated magnetometer survey of the Woodland Trust field to the south of the ringwork (GSB Geoprospection, with the permission of The Woodland Trust).

The evaluation excavations

Charles French and Kasia Gdaniec

Introduction

A series of fields were investigated outside the ringwork to the east in Varley's Field, southeast in Picnic Field and the Woodland Trust area, and to the south around the area of the purported hill figures (Fig. 4). In all 55 test pits and 11 trenches were excavated. In the interior, another 42 test pits and five trenches were cut (Fig. 4). In total, this amounted to evaluation of about one-quarter of the available interior of the ringwork.

Investigations outside the ringwork

The topsoil artefact survey

Although artefacts were found in every test station, the recovery of Iron Age artefacts diminished markedly beyond the line of test stations 16–19 (Fig. 4; Table 1). These included Beaker to Iron Age to post-medieval pottery including handmade pottery of mainly earlier and some middle Iron Age types, Mesolithic to Bronze Age worked flint, one Neolithic polished flint axe fragment and animal bone. This evidence complements the results of the magnetometer survey and contrasts with the earlier prehistoric finds distributions which continued across the whole of Varley's Field. Indeed, archaeological features were absent in all but one of the enlarged test stations (16–34) in the northern part of Varley's Field.

In order to make sense of the artefact distributions in the former ploughsoil, the artefact distributions recovered in the test pits were compared with those contained in the tertiary fills of the excavated features

in each test pit (Mititelu 1996). This study revealed several major trends in terms of finds frequency and distribution in Varley's Field. First, although very little animal bone was recovered across the whole field (c. 2% of the artefact assemblage), it is mainly found in the vicinity of the main settlement area marked by the pits in the southern part of the assessment area, with occurrences dropping off markedly northwards (Table 1). Second, pottery sherds (c. 20% of the artefact assemblage) exhibited a similar and complementary distribution to the bone material. These two distributions effectively mirror the density of the archaeological features defining in the southern part of Varley's Field. On the other hand, flint artefacts (c. 78% of artefact assemblage) occurred in every test pit across the whole field and are essentially unrelated to the Iron Age period of use of this field. This testifies to the long-lived use of the hill-top prior to the Iron Age.

Artefacts were present in half of the tertiary fills of the features examined and were present in much larger numbers than in the sieved topsoil of most of the test pits. These feature fills were dominated by animal bone (c. 60% of artefact assemblage), with pottery representing about 30% of the assemblage and flint 10%. Although there were only five instances of features found directly beneath the sieved soil of a test station, there appeared to be no direct correlation in terms of type and frequency of artefacts recovered.

Excavations on the exterior of the ringwork

Excavations in Varley's Field

A series of 35 test pits and 10 trenches were cut by machine to evaluate the whole field (Fig. 4). Test pits 1–15 and 35 were systematically placed at 20m intervals over the dense area of Iron Age activity in

Table 1. Artefact retrieval (in %) from the topsoil test pits 1-34 in Varley's Field.

Test Pit	IA pot	R-B pot	Post- medieval pot	Modern pot	Bone	Flint
1	16.6		33.3		16.6	50
2	20				20	60
3	72.7				4.5	22.7
4						100
5	25					75
6	17.6				82.4	
7						100
8	42.85				9.5	47.6
9	35.7				50	14.3
10	41.2				11.8	47
11	22.3					77.7
12	8.57	12.5	3.125		6.25	68.75
13					8.3	91.7
14					50	50
15	11.1				3.7	85.2
16					10.5	89.5
17	3.2				0.8	96
18	25		37.5		12.5	25
19					16.2	83.8
20						100
21				22.2		77.8
22	12.5	12.5	18.75			56.3
23			19.05			80.95
24	7.7		7.7		84.6	
25				60		40
26	30				6.6	63.4
27	18.2					81.8
28						100
29			17.4	65.2		17.4
30						100
31						100
32	2.5					97.5
33						100
34				5.9	5.9	88.2

the southern (chalk subsoil) part of the field, with the remaining test pits placed at 80m intervals over the remainder of the glacial 'head'-dominated northern part of the field.

The features ranged from occasional shallow and enigmatic ring-gullies (Fig. 11, F1-3 in test pit 3 and trenches 5 & 7) to arrangements of post-holes (Fig. 11, F4-10) to many shallow pits (Fig. 3, F16) and more substantial and deep storage pits cut into the chalk (Fig. 11, F15), the ploughed out remains of the counterscarp bank (F 31) in test station 6 (Fig. 4), post-trenches in test pit 12/trench V (F88) and in Trench VII (F89), both probably of Roman date, and an historic period hollow way (F21) (Fig. 5).

Some evidence for structures was discovered, but it was not as prolific as expected nor able to be fully exposed given the nature of the evaluation. The best evidence was a clear arc of seven post-holes (F4-10) and two slightly curved, butt-ends of two possibly concentric ring gully-like features (F1 and F2), and a third, apparently unrelated, curvilinear gully (F3) test

pit/trench 3 (Fig. 11). Each set of features appears to be unrelated to one another, hinting at development within the construction sequence or subsequent to it.

From the magnetometer survey at least 120 pits are evident (Fig. 5), but only 25 were excavated. Of these, a 25% sample (six pits) were singled out for further bioarchaeological analyses (Fig. 12) (see below). There is a range of pit sizes and shapes, but they fall into three main categories: small (<1m deep and in diameter) and flat-bottomed; small (<1m deep and in diameter), concave-bottomed; and large (1-2m deep and in diameter), flat-bottomed and undercut. The first two categories are very similar to those recorded by Clark and Hartley (1957), as they noted that of the 33 pits investigated only three pits had a depth greater than 3 ft (c. 1 m), and only two exhibited undercut lower sides.

Of the pits excavated on the exterior of the ring-work in Varley's Field, the main features of the pits are as follows:

- in most cases, the outer/upper lip of the pit has been

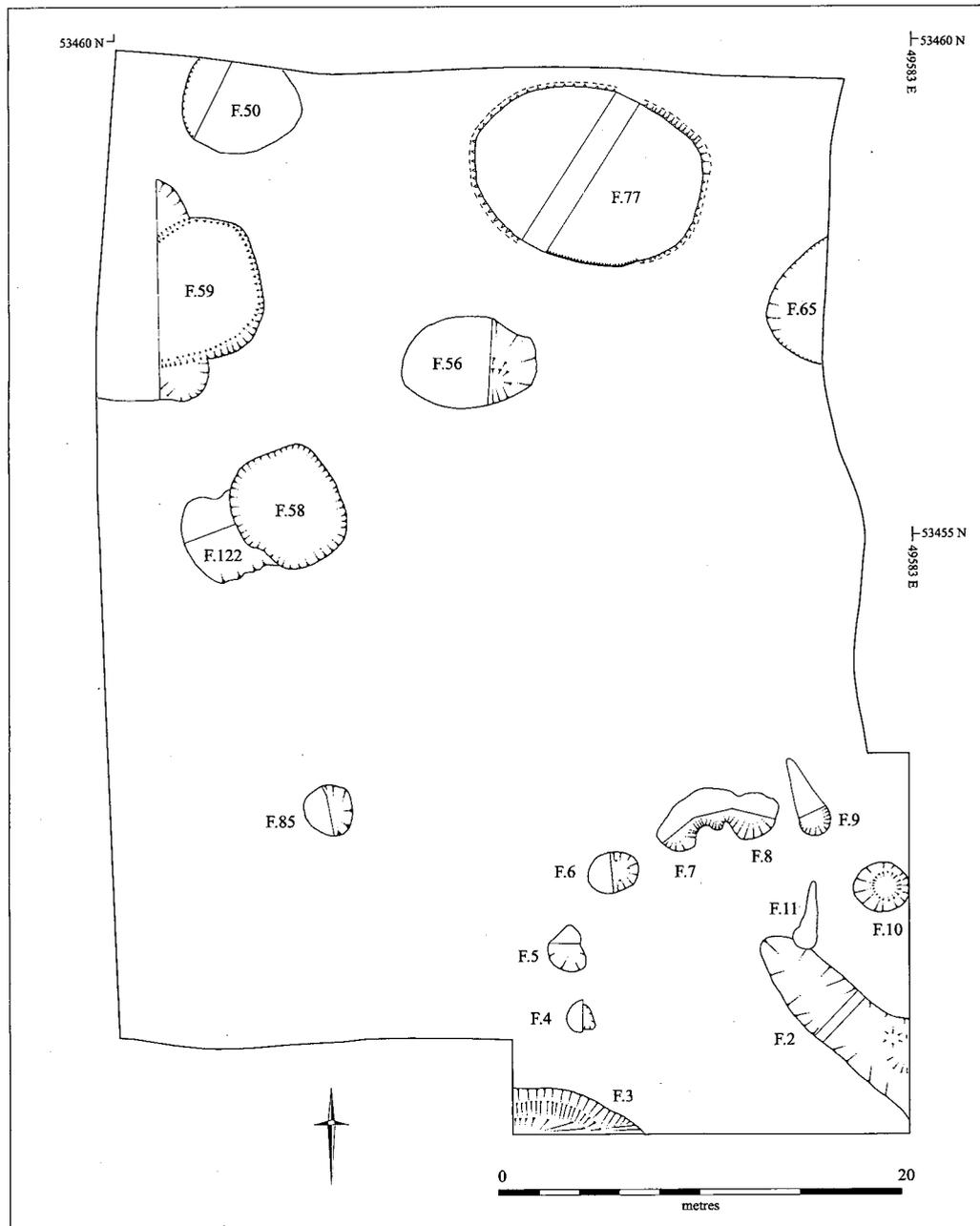


Figure 11. Extended test pit 3 showing the pit group and the possible post-hole and gully structures in Varley's Field (C French).

subject to much physical/chemical weathering, which suggests that many partly-infilled pits remained partially open for sometime

- three pits were undercut
- one contained a thick basal fill of charred grain
- one contained a thin basal fill of charred grain
- one contained the articulated torso of a sheep placed on the base of the pit with the head beside it
- two pits contained large quantities of phytolith-rich ash
- most of the pits contained relatively large amounts of animal bone and to a lesser extent, pottery, especially in their upper secondary and tertiary fills
- primary and lower secondary fills of the pits were generally devoid of artefacts.

The function of the pits is discussed further below, but encompasses several possibilities as set out in Table 2.

The southern slope and Picnic Field

Artefact densities were relatively lower than in Varley's Field and the interior areas, and dominated by more recent artefacts such as glazed pottery, iron nails, clay pipe fragments and coal/cinder.

The whole southern slope area was littered with tree stumps, root systems and new saplings, and had been ploughed earlier in the 20th century (Bill Clark, pers comm). The slope appeared to be very much

Table 2. The main features of selected pits excavated on the exterior in Varley's Field.

Pit number	Diameter (m)	Depth (m)	Dominant artefacts	Primary function
15	2.30–2.55	1.07	ash; primary charred grain processing waste	grain storage
50	1.15	0.55	near complete dog skeleton on base	'placed' deposit
58	1.0–1.10	0.25–0.30	1 sheep/goat bone	unknown
59	1.8	0.87	horse bone	unknown
77	1.70–2.10	1.15–1.25	primary charred emmer/barley grains; organic linings; spade marks and barley	two episodes of bulk grain storage of cleaned emmer
126	3.0–3.20	1.84	main pig bone assemblage on site, with cattle bone; primary charred grain at base	bulk grain storage; hay meadow in vicinity

Table 3. Artefact retrieval (in %) from the topsoil test pits (37-80) in the interior paddocks.

Test Pit	IA pot	R-B pot	Post-medieval pot	Modern pot	Bone	Flint	Glass	Other
37					9.55	3.18	0.63	86.62
38	8.57		11.42		11.42	17.14		51.42
39	0.62	0.62		3.72	13.04	0.62	1.55	71.8
40	0.8	0.8	4.76		25.39	4.76	1.58	59.5
41	0.35		0.35		5.37	6.09	0.7	86.7
42	0.9	0.9	2.75		6.42	3.67	3.67	81.65
43	6.1	4.1			24.5	12.25		53.05
44	16.72				42.46	1.8	0.8	38.2
45	34.8	4.3	4.3		21.75	13.04	8.7	13.04
46	10.16	4.4	3.4		22	6.8	1.7	11.86
47	13.3	15	13.3		21.66	10	6.66	20
48	22.4				53.64	6.24	0.5	17.2
49	14.3	35.7	7.1		21.42			21.42
50	26.2	3.4		4.76	50	11.9		4.76
51	19.04			4.76	66.6	9.52		
52	11.76		2.94	2.94	58.82	11.76		11.76
53	8.7		30.4	4.34	39.13	8.69	4.3	4.3
55	26.66			6.66	33.3	26.6	6.6	
56	12.5	3.12	3.12		34.37	9.37		37.5
57	8.3	16.6		16.6	25	12.5	4.12	16.6
58	2.7				3.04	1	1.35	91.55
61	37.5				37.5		1.25	12.5
62	10.7			7.14	32.14		21.4	28.57
63	1.84			5.52	6.13	1.84	6.74	77.9
64	2.77		9.72		5.55	2.08	1.38	78.47
65			5.6	16.8	11.2	4	4.8	57.6
66	0.8			4.86	2.97	0.54	0.54	90.27
67	0.6			5.9	14.45		4.21	21.68
68	0.96			18.26	3.84	1.92	4.8	70.2
69			32.87		23.28		1.37	42.46
70					41.66		8.33	50
71	24		2.66		2.66	1.33	2.66	66.6
72				14.28	7.79		2.59	75.32
73	3.92			25.49	21.56		11.76	37.25
74				7.4	3.7	3.7	2.47	82.7
75			1.33	21.33	8	9.33	5.33	54.66
76				28.57			14.28	57.14
77			1.69	10.16	3.38	8.47	13.55	62.7
78				31.8	6.06		13.6	48.48
79	4.54			11.36	2.27	2.27	2.27	77.27
80				36.4		1.63	3.8	55.97

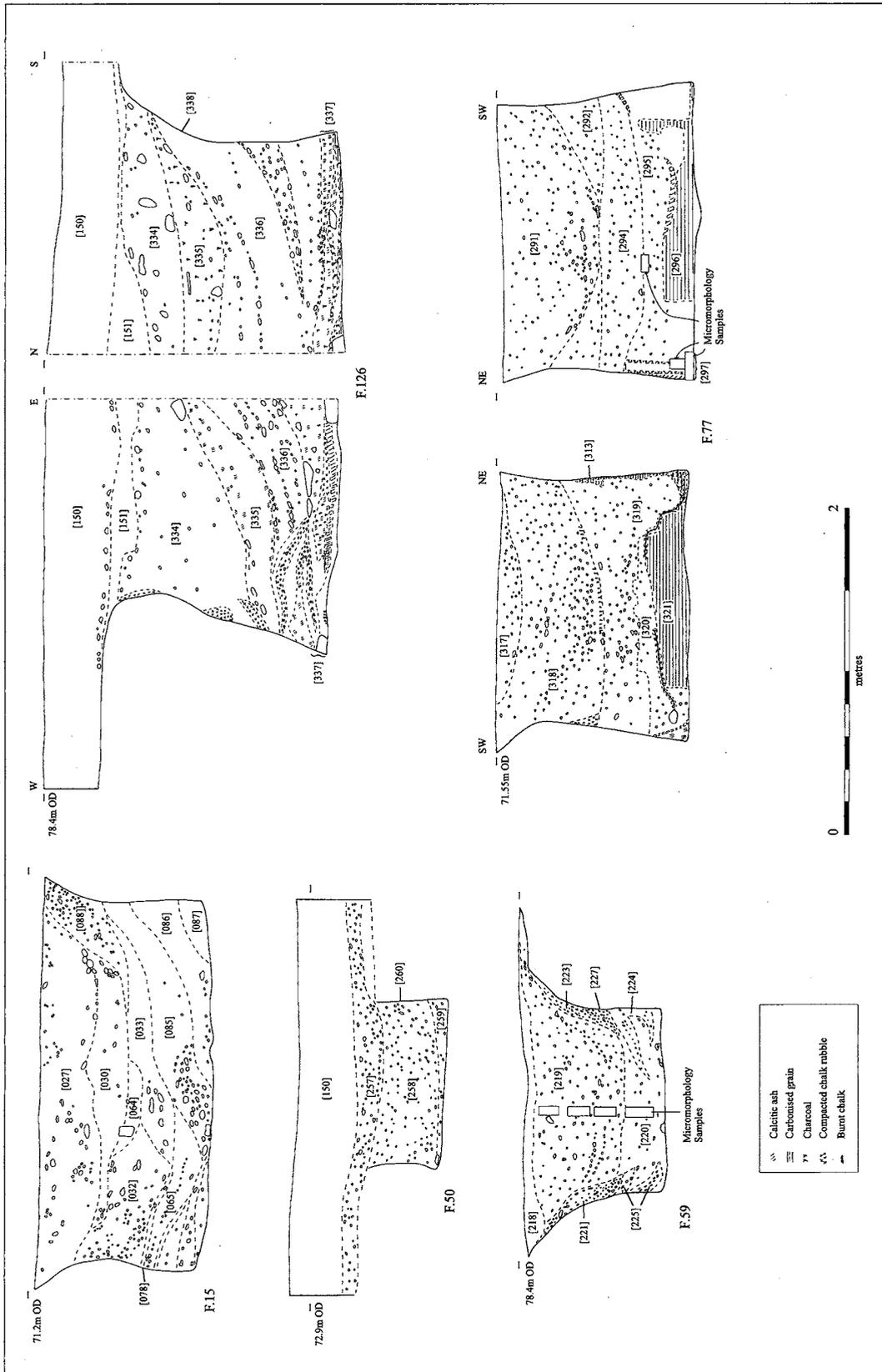


Figure 12. Sections of pits F.15, 50, 59, 77 and 126 in Varley's Field (C French).

denuded with a thin (<15 cm) topsoil, no buried soil survival and no hillwash deposits present. Test pitting (81–90) (Fig. 4) also indicated that there was little in the way of archaeological survival there, with no cut features present. But, re-examination of Lethbridge and Tebbutt's published section drawings (1959: figs. 2 & 3) does suggest the presence of at least a few cut archaeological features in this area.

In Picnic Field, a thin ploughsoil (<20 cm; pasture since 1995) overlay the clean chalk substrate, dominated by numerous recent ploughmarks. The artefact assemblage is dominated by recent brick/tile, coal/cinder and glazed pottery. Another eight test pits (91–94 and 96–99) and one trial trench (95) were machine excavated (Fig. 4), but as only two features (a tree-throw hole in test pit 94 and a hollow way in trench 95, continuing on from Varley's Field) were observed, no further work was undertaken in this area.

Investigations in the interior of the ringwork

Artefact survey

In the southern interior paddock, there was a good variety of recent brick/tile, coal/cinder, iron nails and glazed pottery, but also animal bone, Iron Age pottery sherds and the occasional flint flake in the topsoil (Table 3). The animal bone was most commonly occurring with pottery to a lesser extent, and both were undoubtedly related to the density of Iron Age and Romano-British archaeological features within this area of the interior.

In the northern paddock and Orchard Field, the artefacts recovered from the topsoil were dominated by more recent artefacts such as glazed pottery, iron nails, clay pipe fragments and coal/cinder (Table 3: modern pottery & other categories).

Evaluation excavations

Most test pits and trenches within the interior paddocks revealed archaeological features (ie pits, post-holes, gullies) (Figs. 13–20) surviving beneath variable

depths of topsoil/former ploughsoil (c. 25–70 cm thick). There were also two narrow ditches which may represent part of a later field system superimposed on the Iron Age monument.

Essentially the major discoveries of this phase of interior assessment consisted of:

- a sector of the inner rampart and its associated post-holes and the underlying old land surface surviving beneath the extant base of the chalk rubble rampart
- a probable original entrance way through both ramparts and ditches in the southeastern sector of the site
- a series of large and deep Iron Age pits on the interior side and line of this entrance way
- a dense area of Romano-British pottery and animal bone or 'midden' material within the entrance way area
- a series of roadways probably dating from the Roman period to the 19th century utilising this original entrance way.

As in Varley's Field, pits were the most common feature, but these tended to be small (<1m in diameter) and shallow (<0.5m deep) (Table 4), except in trial pits/trenches 42 and 59. Of the 21 pits occurring in the test pits and subsequently excavated (Figs. 13 & 14), a subset of three (12%) were subjected to further bioarchaeological analyses (see below). But there was no evidence of 'placed' or charred grain deposits as occurred in Varley's Field, nor evidence of partial human burials as Clark and Hartley (1957) observed. However, burials did occur: one undated cremation in a small pit in test pit 48, and one complete skeleton in the base of F229 (Fig. 24) (see Dodwell below). In addition, there does not appear to be the density of pits present that were observed in Varley's Field, except in trenches 42 and 59 which contained substantial pit complexes (Figs. 15, 19 & 20).

Despite many hints in the magnetometer survey plots (Figs. 6 & 7), good evidence of structures inside the ringwork was uncommon in the test pit excavations, as in Varley's Field. Of course, there are pairs and foursomes of posts that represent structural remains, but evidence of house enclosures, eaves-drip

Table 4. *The main features of selected pits excavated on the interior of the ringwork.*

Pit number	Diameter (m)	Depth (m)	Dominant artefacts	Primary function
115	1.65	0.3		on inner edge of inner rampart
117	1.0	0.35		on inner edge of inner rampart
177	1.02	0.56–0.62	conjoined sheep bone remains (same animal different layers); hare (intrusive)	unknown
182	0.8	0.75	chalk rubble	backfilled pit beneath eastern entrance
201/2	1.60–2.20	1.0	chalk rubble	backfilled pit beneath eastern entrance
213	0.82	0.40	1 sheep	unknown
220	1.40	0.80	human bone fragments; conjoined sheep bone remains (same animal from different layers)	rubbish pit
229	1.40–1.55	0.60	complete human skeleton; cow lower jaw and roe deer pelvis	rubbish pit

gullies or post-hole arrangements was rare. However, test pit 57 exposed a 1.2m length of shallow gully with a post-hole within its butt end (Fig. 13), which may be part of a contemporary structure within the ringwork.

The inner rampart

Given the large scale of 19th century landscaping of the interior of the ringwork, it was an unexpected find to discover that some of the inner rampart profile and the old land surface had survived. For example, in trench 40, the rampart exhibited the following sequence (Fig. 18):

- a core of chalk rubble, c. 2.4m in width and 30–35cm thick, placed directly on an *in situ* turf horizon of a buried soil
- a soil and chalk rubble dump, c. 3–3.5m wide; its original height is impossible to ascertain given the later truncation/destruction of the rampart by park landscaping
- more soil and chalk rubble material presumably slumping over the inner part of the rampart, giving a complete width of c. 6–8m for the rampart.

Defining the inner edge of the rampart was a continuous line of closely spaced, shallow post-holes. These were not observed by Hartley (1957: 8, fig. 2); rather they observed posts at regular, 14 feet (c.4.6m) intervals defining the outer edge of the inner rampart. Although the lateral extent of these post-holes is un-

known, the construction of this part of the rampart may well have been less formalised than the vertical, timber fronted rampart that Hartley (1957: fig. 4c) had envisaged. Rather it appears to be of chalk rubble and soil dump construction, defined on its inner edge by an insubstantial fence line. Moreover, the more formal and better constructed parts of the rampart could conceivably have only been to either side of the entrance way, and less grandly built elsewhere around its circumference.

In addition, there were two deep (40 and 50cm) post-holes, set 2m apart, defining just within the interior edge of the inner rampart (Figs. 13 & 18). Incidentally, these post-holes exhibited vertical grooves or tooling marks in their chalk sides suggesting that they had been cut using some kind of metal or wooden driving tool. Although no dating material was found in these post-holes, they were only visible when the pre-rampart palaeosol was removed and therefore appear to be unrelated and probably pre-date the first rampart's construction itself.

The *in situ* old land surface and palaeosol (comprised of turf and rendzina soil) found beneath the core of the inner rampart was sampled for pollen, plant macro-fossils, molluscan and micromorphological analyses. Unfortunately the poor preservation of bioarchaeological remains in this context did not add much to the palaeoenvironmental knowledge for this site (see below). In addition, 1m² of the buried soil

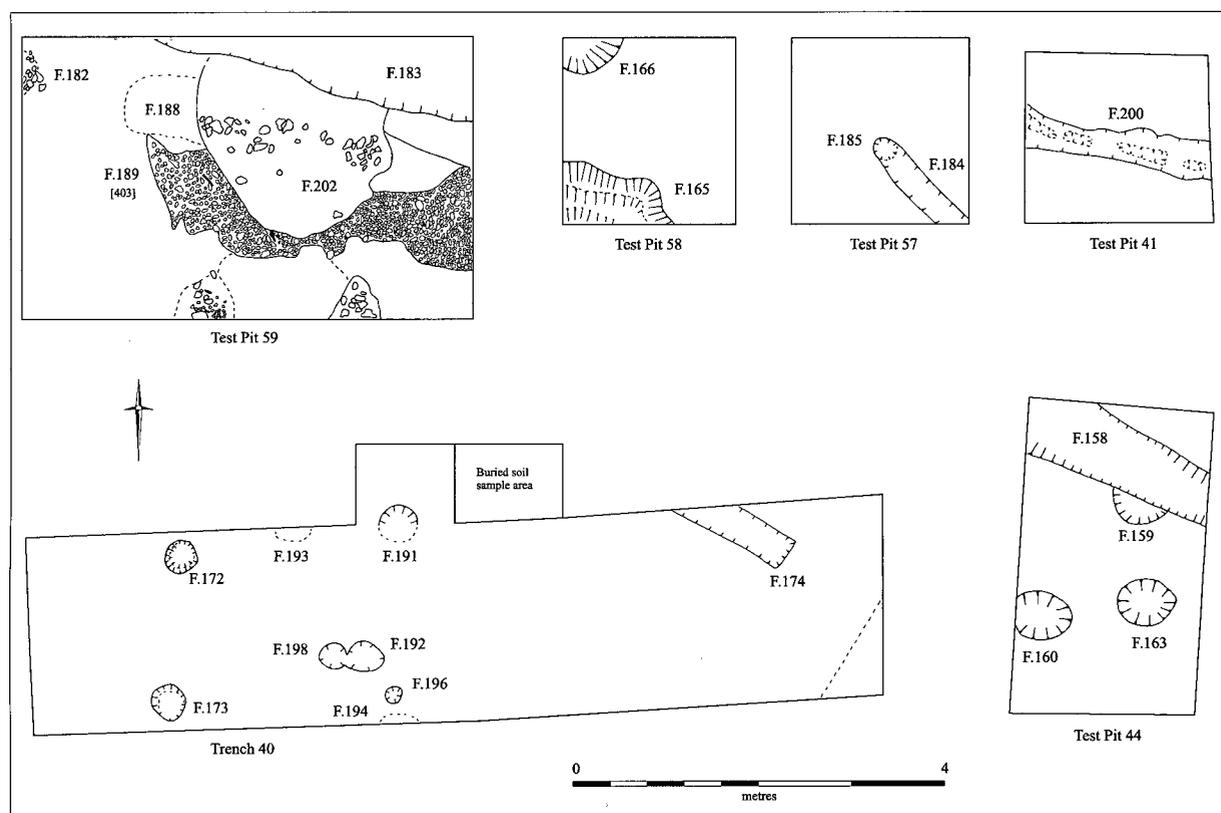


Figure 13. Test pits 41, 44, 57, 58 and 59 and trench 40 on the interior (note that F172 and 173 are probably pre-inner rampart posts) (C French).

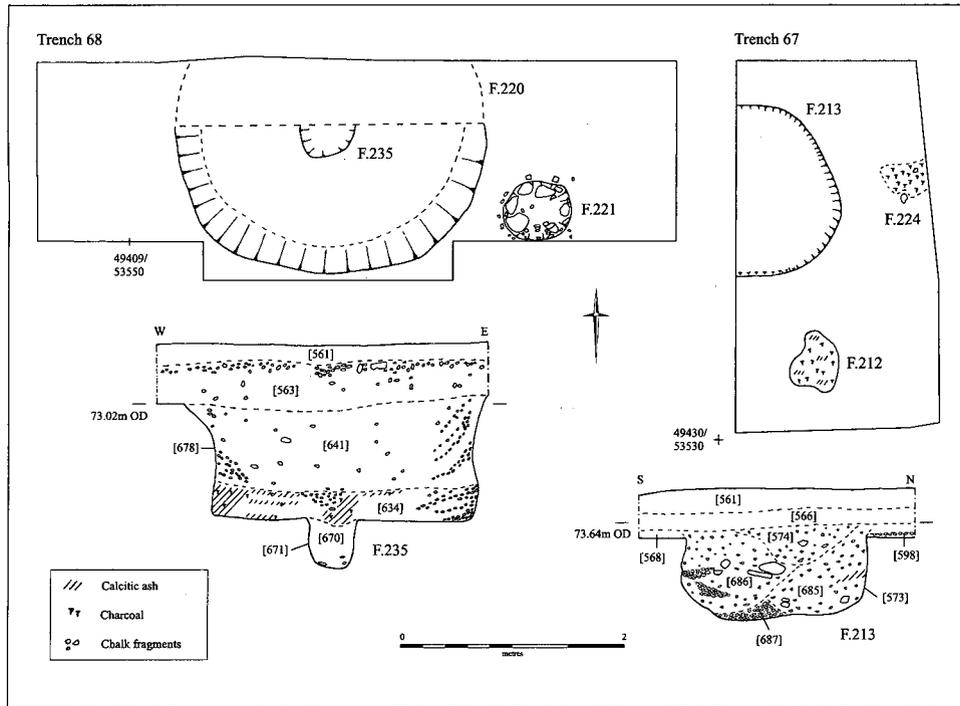


Figure 14. Trenches 67 and 68, and sections of F.213 and 220/235 (C French).

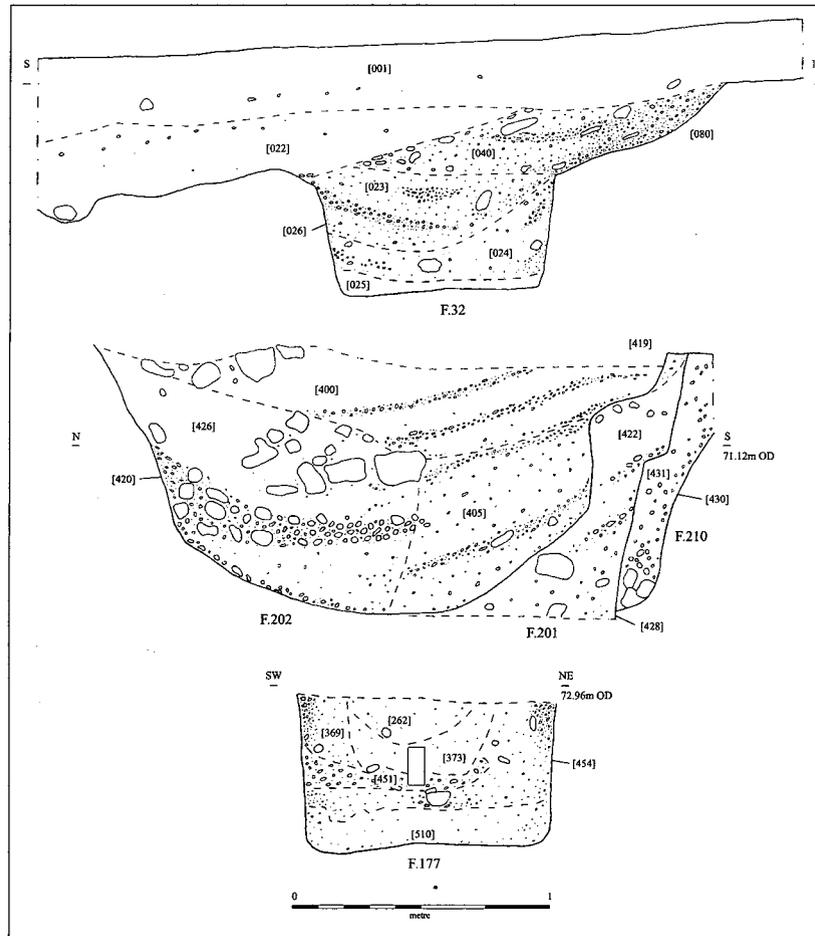


Figure 15. Sections of pits F.32, 177 and 201/2 within the eastern entrance way (C French).

was dry sieved for artefact retrieval, with only one flint waste flake (of indeterminate Bronze Age date) being recovered.

Trenches 42 and 59

These two trenches were located and excavated on the basis of a large anomaly on the magnetometry plot (Figs. 6, 19 & 20). There appeared to be two large (c. 8 x 12m) rectilinear features on the southern side of a c. 4-5m wide, c. 20m long, linear zone devoid of archaeological features. This was immediately to the inside of where the RCHME's new survey of the ringwork had observed a distinct 'kink' in the line of the outer rampart, indicating a possible entrance way zone through the inner rampart and associated features (Pattison and Oswald 1996) (Fig. 3).

Trenches 42 (Figs. 19 & 20) and 59 revealed a series of roadways with large pit complexes sealed beneath them, as follows:

- a series of large (c.4 x 5m in diameter), deep (c.1.4 m),

intercutting, earlier Iron Age pits; which contained large amounts of chalk rubble back-fill composing their upper secondary and tertiary fills

- a zone of large quantities of earlier Roman artefactual debris, mainly animal bone (see below) and Nene Valley Grey Ware and a few sherds of samian (Figs. 19 & 20), much of it exhibiting 'accordion-like' fracturing which is suggestive of being broken *in situ* by trampling, acting as the final tertiary infill of the pit F169 in trench 42
- medieval/post-medieval sunken way infilled with homogeneous brown silt loam material, on a similar alignment but situated slightly to the north
- 18th/19th century brick and chalk rubble roadway aligned east-northeast to east-southeast, with two wheel ruts evident.

This sequence of features strongly suggests that this was an entrance way into the ringwork from the east. As none of the entrances in use today are believed to be of any great antiquity (Pattison and Oswald 1996), this constitutes an important discovery. Indeed, an

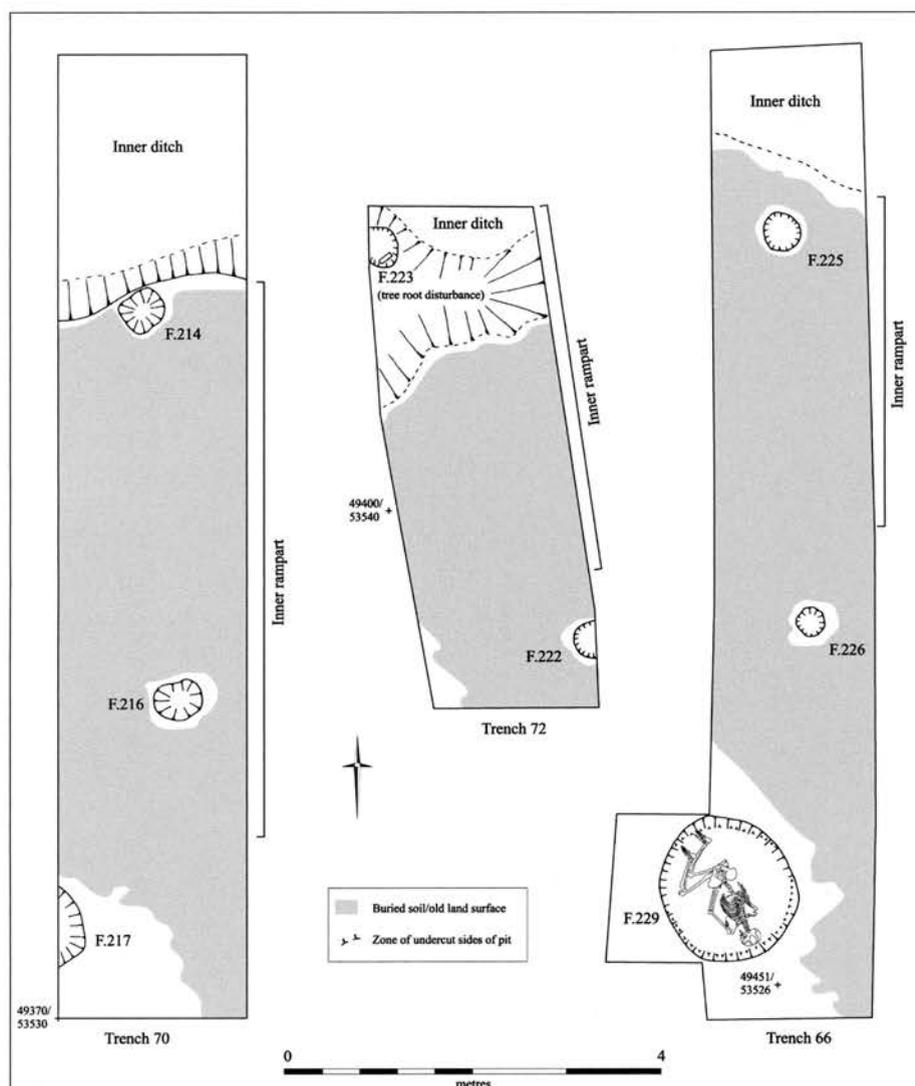


Figure 16. Trenches 66 (right), 70 (left) and 72 (middle) through the inner rampart showing the position of post-holes beneath the inner rampart (left) and the buried soil area (hatched) on the interior (C French).

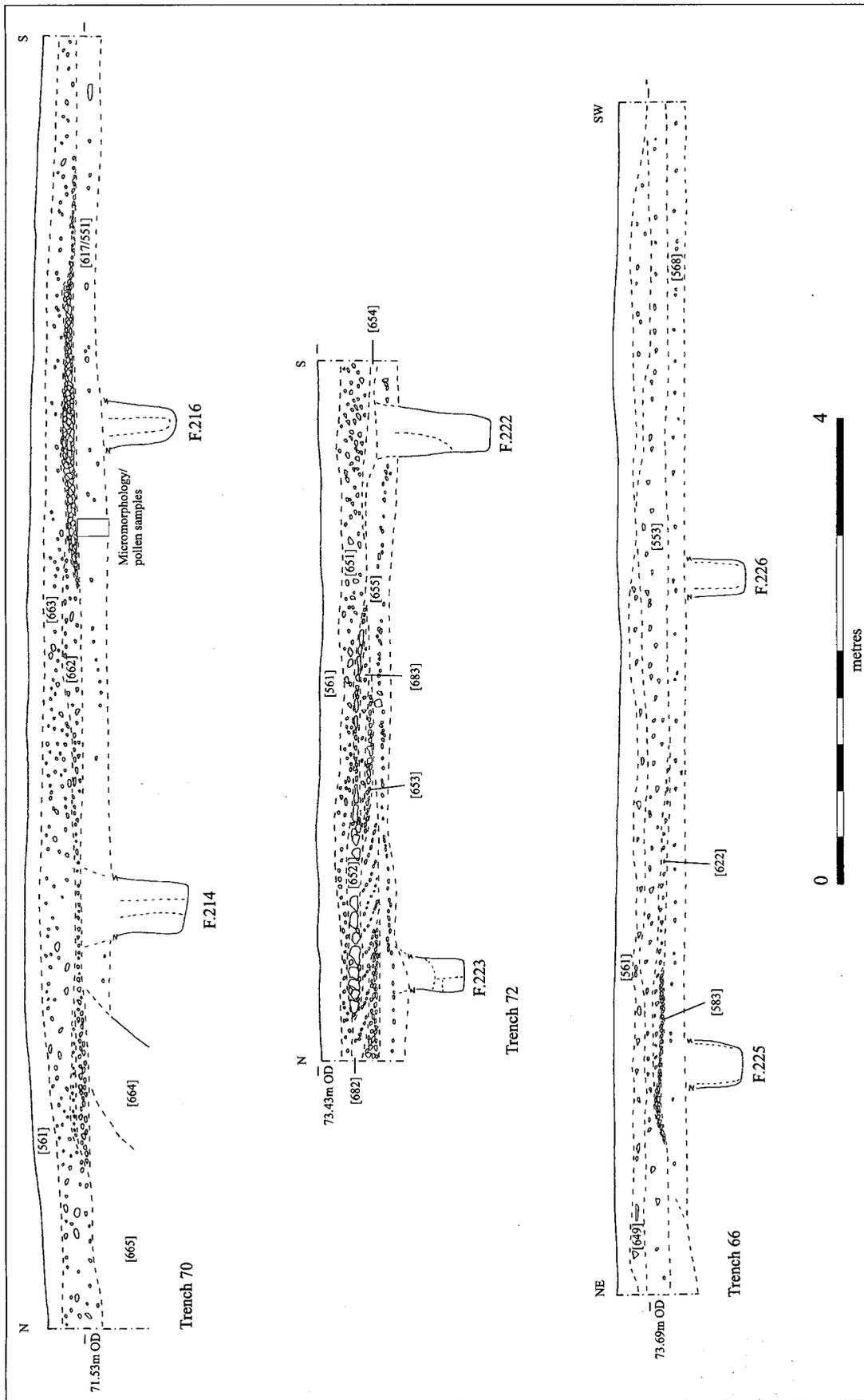


Figure 17. Section of trenches 66 (bottom), 70 (middle) and 72 (top) through the inner rampart showing the position of post-holes beneath the inner rampart (C French).



Figure 18. The inner rampart in trench 40 with the surviving chalk rubble rampart sealing a buried turf and rendzina soil profile, the retaining post-hole on its inner edge, and the two post-holes of the possible precursor palisaded enclosure in the foreground (C French).

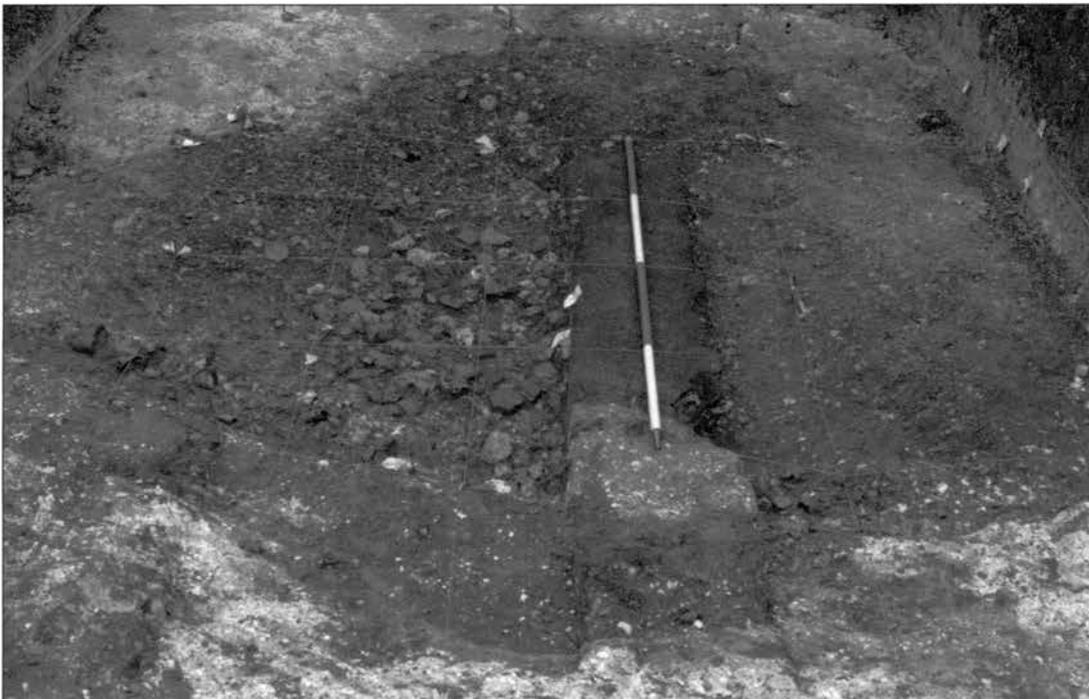


Figure 19. The in situ animal bone and pottery of Romano-British date in trench 42 (C French).

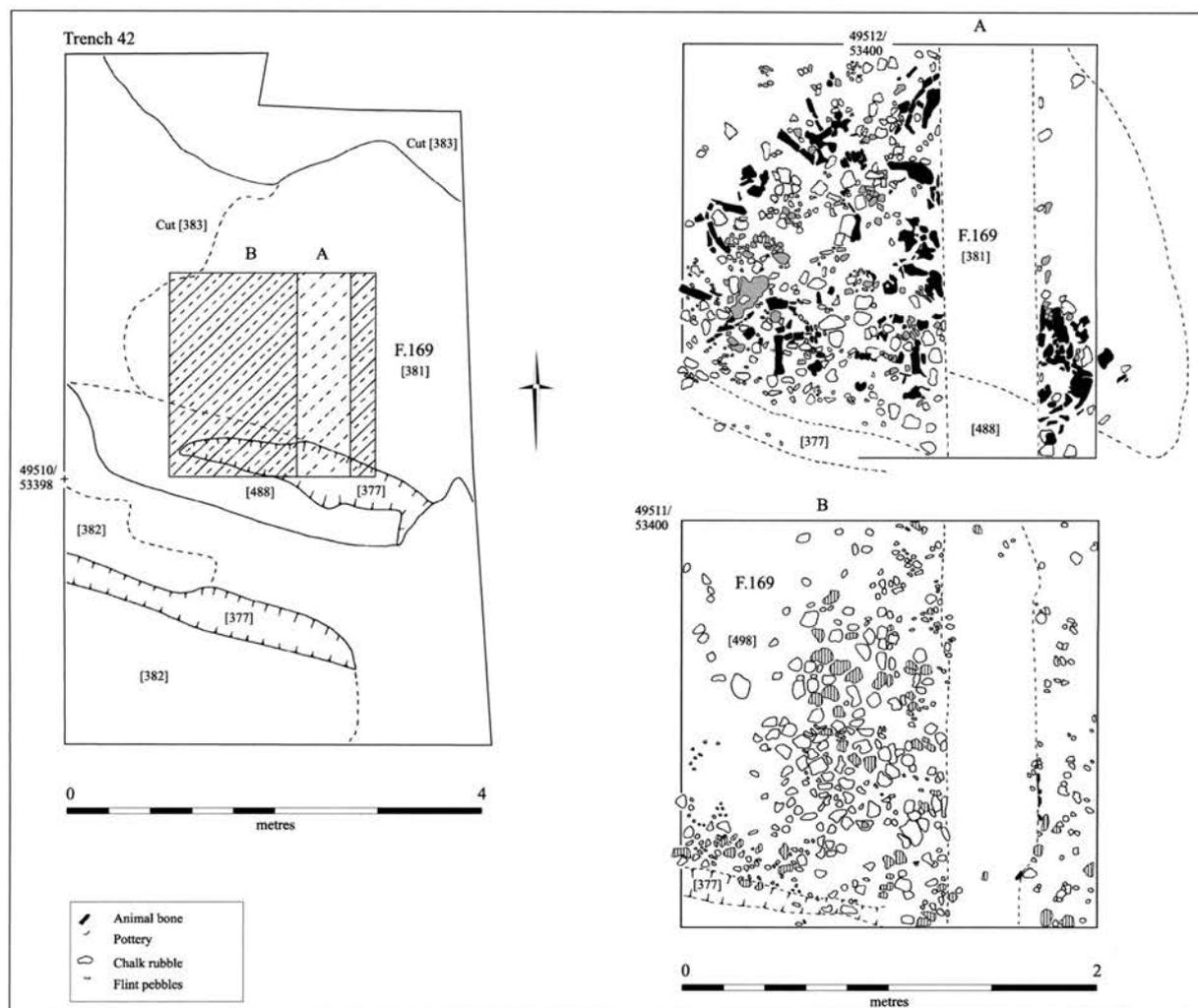


Figure 20. Plan of trench 42 showing the metal detector areas and the Romano-British material within the interior of the new eastern entrance way (C French).

1811 drawing by Relhan of this eastern aspect of the site and Gog Magog House clearly shows a distinct step, cutting and infilling of a section of the outer rampart (Clark 1985: 47). In addition, the slight staggering of the position of the gap in the inner rampart to the south at this point (Fig. 3) may suggest that this entrance is in fact associated with the earlier, outer circuit of the ringwork. Moreover, the presence of apparent rampart in trench 40, slightly inset from the surviving line of the inner rampart (Fig. 3), may suggest that the earthworks were much more complex around this entrance than is evident from the present state of the monument. This may perhaps have involved short, blocking lengths of rampart set back from the line of the inner rampart, and/or some form of staggered entrance created at the time of the construction of the inner rampart and ditch.

The northern paddock and Orchard Field

In the interior of the monument in the northern paddock, magnetometer survey (Fig. 7) was followed by the machine excavation of a series of 13 2m² test pits

(61 to 73) (Fig. 4), sited on a staggered 20m grid, situated on the Ordnance Survey grid. First, the topsoil from 1m² of each test pit was kept separately and dry sieved for artefact recovery and analysis (see above). Then the remainder of the topsoil was mechanically excavated, and test pits 68 and 72 were extended to 5m long trenches, and test pits 66 and 70 were extended to 10m in length (Fig. 4).

In the Orchard Field further to the northwest, despite the presence of many old and young trees as well as many stumps and root systems making any geophysical survey work unfeasible, it was possible to cut seven c. 2 x 3m test pits (74 to 80) at c. 20m intervals (Fig. 4). Again, the topsoil from 1m² was dry sieved for artefact recovery (see above). Test pit 76 was enlarged to a 5m trench to test for the presence or absence of a possible entrance way.

There were four main discoveries within the northern part of the interior of the ringwork. First, there was a well-preserved buried soil extant beneath the line of the inner rampart and between the inner edge of this rampart and the outer side of the estate wall.

Second, substantial, chalk-rubble packed post-holes were found consistently beneath the leading edge of the inner rampart at approximately 1.6m intervals (Figs. 16 & 17: trenches 66, 70 & 72, and test pits 71 & 73). Post-holes in a similar consistent position were observed in Clark and Hartley's excavations (Hartley 1957: fig. 2). As previously suggested, these posts would appear to have been part of a substantial wooden retaining structure to the outer face of the inner rampart.

Third, a consistent series of pre-rampart post-holes defined at the base of the buried soil in the upper surface of the chalk subsoil on the interior edge of the inner rampart, with an interval of about 1.5–2m between the posts (eg in trenches 66 and 70). Substantial post-holes in a similar position were also observed in trench 40 (Fig. 13). These post-holes may represent a pre-ringwork, circular, wooden enclosure. At present, there is no absolute dating for these post-holes and their lateral extent and arrangement would need to be proven by further large scale excavation and/or targeted geophysical survey.

Fourth, there continued to be pits and post-holes containing earlier and later Iron Age material present within the interior of the ringwork, although they had rapidly diminished in density northwards. One unexpected find in the north paddock was a complete skeleton of an adult male in the base of a later Iron Age pit (F229) in trench 66 (Figs. 16 & 24). The body was partially lying on its side in a semi-flexed position with the head face down. Beneath the face was the lower jaw of a cow. Analysis suggested that this adult male suffered from severe osteoporosis and *spina bifida* (Dodwell 2003 & below).

Specialist Studies

Although by no means exhaustive, several categories of evidence retrieved from the evaluation and previous excavations provided new data on the use in life of the ringwork, namely pottery (Hill 2003), soil micromorphology (French and Lewis 2003), plant macro-fossils (Ballantyne 2003; Cyganowski 2003) and faunal remains (Miracle *et al* 2003). These reports are presented here in summary form.

Pottery

JD Hill

Introduction

Hartley and Clark's excavations in 1955 and 1956 made Wandlebury a type site for the Early Iron Age in the region (Hartley 1957). The large pottery assemblage was later used by Cunliffe (1974) to define one of the key Early Iron Age type groups for the region: the 'Chinnor-Wandlebury' style. It can be argued that understanding of the chronology and affinities of Late Bronze Age and Early Iron Age pottery in the Cambridge region has advanced little since Cunliffe's (1968 & 1974) and Saunders' (1972) studies of the late 1960s and early 1970s. Until recently, this

has largely been due to the lack of excavation and publication of Early Iron Age sites in Cambridgeshire and neighbouring areas (such as south Essex and the Nene Valley), but likely regional variations and a lack of a secure absolute chronology pose problems in extending these local chronologies to southern Cambridgeshire. The recent work at Wandlebury can begin to address these issues afresh.

Pottery from the 1955–56 excavations: a reassessment

The pottery assemblage from Hartley and Clark's excavations at Wandlebury survives in the Museum of Archaeology and Anthropology, University of Cambridge. It consists of a sample of 525 sherds weighing 13,018g and three reconstructed vessels, with virtually no non-diagnostic body sherds surviving. Despite this bias, it can be assumed that the large majority of the rim and base sherds recovered during the excavations have been kept. This allows a fairly accurate guide to the shapes, rim forms and rim or base diameters recovered in the original excavations. There are almost no surviving archives from the 1955–56 excavations, just one long section drawing across the outer bank and ditch. Because of these problems, this re-evaluation of the older material has concentrated on recording pot form, decoration and dimensions to provide a basis from which to compare the pottery from the recent excavations.

All the surviving material has been re-examined and recorded using the approach recommended by the *Prehistoric Ceramics Research Group*. Each diagnostic sherd was examined, weighed, measured and assigned a form type as appropriate, with further detailed variables recorded as detailed in *The Study of Later Prehistoric Pottery: Guidelines for analysis and publication of later prehistoric pottery* (PCRG 1992). Particular attention has been paid to recording and analysing vessel rim diameters. In addition the older material has been used, as far as it has been possible, to reconstruct the nature of the deposits originally excavated.

Vessel forms and types

Despite the limitations of the surviving material, it allows a study of vessel forms and sizes. In general the pottery from the 1955–56 excavations represents a typical variety of Earlier Pre-Roman Iron Age open bowls and jar forms with rounded bipartite, tripartite and stack shouldered forms. The jars, defined here by rim diameter smaller than the vessel height (L Brown 1984: 232), have open or little restricted mouths. Profiles are rounded, even although vessels may have marked shoulders. The exceptions are a few angular profiled bipartite vessels which may be earlier than the bulk of the material (see below). The majority of the assemblage appears to be contemporary although there is some stratigraphic evidence for earlier material in the excavated area (see below).

Where it is possible to assign a sherd to a particular form of vessel, nine categories of vessel shape have been defined (Fig. 21; Table 5). Two categories include a variety of shapes; cups and shallow bowls. There are

Table 5. Wandlebury 1955-6: The basic body forms discernible in the collection.

Jars	8	Tripartite jars with distinct rounded shoulder	Unburnished & rarely burnished	Medium sized rims
	3	Bipartite jars with distinct rounded or sharp shoulders	Unburnished	Medium sized rims
	2 & 4	Straight or slightly 'S' shaped tall flared 'flower pot' shaped jars	Unburnished	Medium sized rims
	7	High shouldered jar	Unburnished	Large sized rim
	5	Barrel shaped jar with flared lower wall and small base	Unburnished	Medium & Large sized rims
	6	Slightly 'S' shaped walled jar with flared lower wall and small base	Unburnished	Large sized rim
Open Bowls		Variety of forms	Burnished	Medium sized rims
Cups		Variety of forms	Unburnished	Small sized rims

only three vessels for which complete profiles can be reconstructed (a burnished bowl, a burnished jar and a cup) (Hartley 1957: fig. 7, nos. 16, 24 & 34). Because of this low number of reconstructable profiles, the calculation of the probable volumes of different vessel types is difficult to establish. However rim diameter data is available for a minimum of 99 different vessels, and as Woodward (1997; Woodward and Blinkhorn 1997) has shown, the volume of a vessel is usually directly related to diameter of its rim for most British prehistoric pottery. Because of this large sample of measurable rims, and Woodward's (*ibid*) recent studies, attention has been paid to using rim diameters in this collection to examine questions of vessel sizes, classification and possible use.

It is possible to discern four groups of different sized vessels in the Wandlebury assemblage Fig. 36):

- 1) a small number of cups/small vessels with rim diameters between 4 and 10cm
- 2) the majority are jars with diameters of 8–20cm, with an apparent bi-modal distribution with vessels peaking at 8–10 cm and again between 18 and 20cm, especially for the unburnished rims in the collection
- 3) burnished vessels with rim diameters of between 12 and 22 cm, with a small peak of 14–18cm
- 4) a number of much larger vessels with rims up to 32 cm in diameter, which are also distinguished by their body shape, rim form and decoration.

The pottery broadly fits into the long lasting ceramic traditions of the Late Bronze Age/Early Iron Age (c. 1000BC to 400/300 BC) in southern Britain (Barrett 1980; Elsdon 1989; Cunliffe 1991). Although probably late in the history of these ceramic traditions, the assemblage can broadly be analysed in the terms Barrett (1980) outlined for later Bronze Age pottery.

There are two main types of vessel represented in the collection (Table 6):

- I. *Burnished* (132 sherds; 12.47% by weight or 12.3g): fine tempered bowls and some jars with tapered or rounded undecorated rims and occasional body decoration of incised lines or rows of fine dots.

- II. *Unburnished* (343 sherds; 87.53% by weight or 28.9g): more coarsely tempered, jars of different sizes often with flat or rounded rims which may be decorated, as may the body, with finger nail, finger tip or large dot impressions.

The distinction between surface treatment and type of decoration was long lasting in southern English pottery traditions, beginning in the Late Bronze Age and not finally disappearing until the emergence of Middle/Later Iron Age pottery traditions in c. 400–300 BC.

Burnished pottery

All the burnished pottery appears to have been made from fine burnt flint or chalk tempered fabrics with very small visible inclusions. The sherds are often very thin (less than 4–6 mm) and of a small size, with very little decorated.

Due to the fragmentary nature of the burnished pottery, it is only possible to measure the rim diameter of 22 vessels and establish the body shape of 14 with any certainty (Hartley 1957, fig. 7, nos 8, 16 & 73). Rim diameters range between 12 and 24cm. There are only four vessels with complete, or substantially complete, vessel profiles. One of these vessels is a rounded, tripartite jar (*ibid* fig. 7, no 8). The other three are all open bowls. The pedestalled very open bowl (*ibid* fig. 7, no 16) was used by Cunliffe (1968, 1974 & 1991) to define his Chinnor-Wandlebury style of elaborate vessels usually with a large flared rim, but it may not be typical of the collection. Rather, it is possible that a major component of the burnished vessels were either small 'S' shaped tripartite jars, or larger deep tripartite bowls with pronounced rounded shoulders. The closest regional parallels to such possible vessels come from Stansted, Essex (N Brown, pers comm), but the form has parallels in Kent and East Sussex (Elsdon 1989; Macpherson-Grant 1991). However, an alternative reconstruction of these fragments of sharp shoulders and short rims is that they came from shallow open bowls similar to that from Long Wittenham, Oxfordshire (Elsdon 1989).

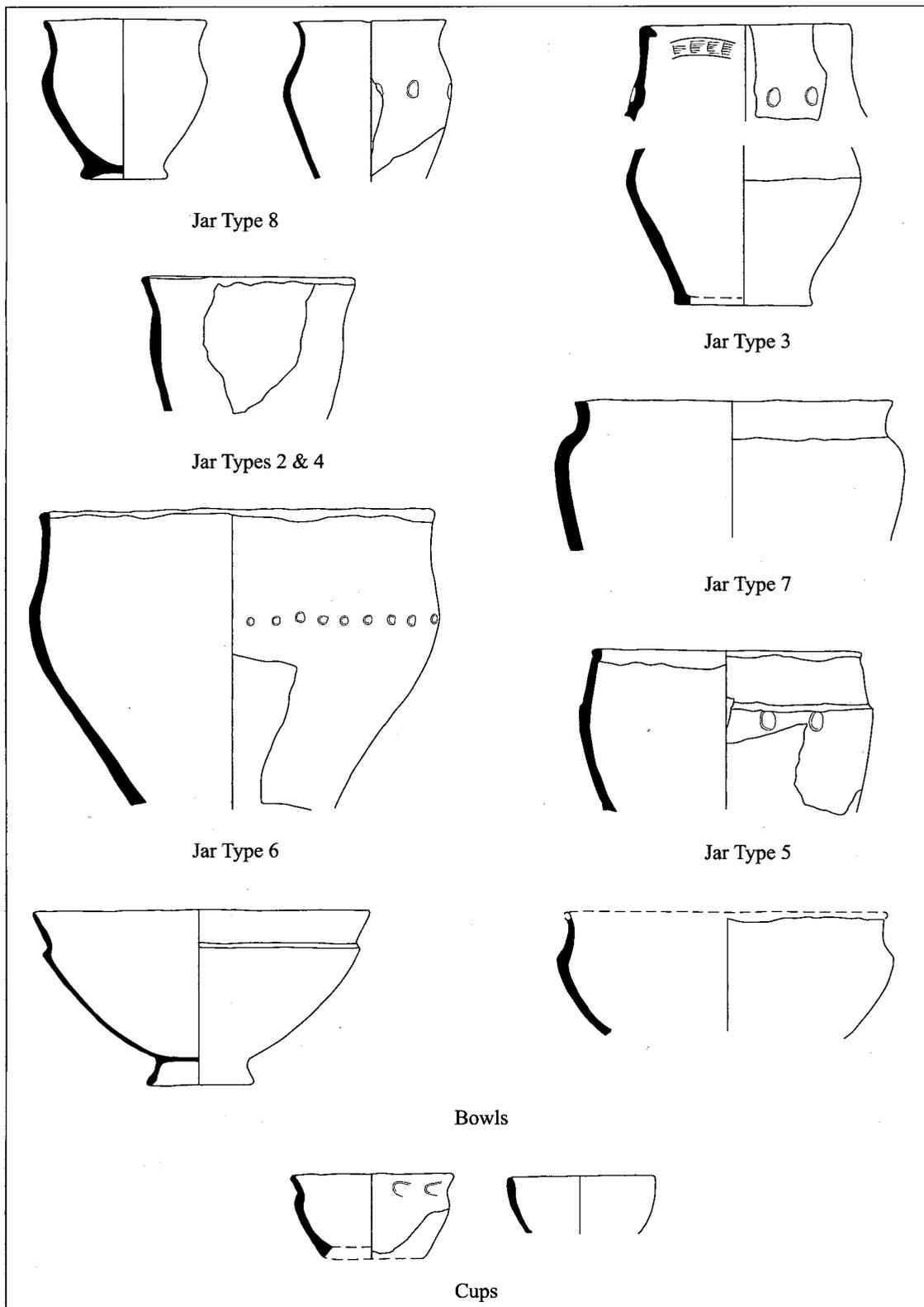


Figure 21. Different body forms used in the re-analysis of the Wandlebury 1955-6 pottery assemblage (JD Hill).

Unburnished pottery

The unburnished pottery represent a wide range of shaped and sized vessels ranging from a group of very small jars/cups to very large open jars, with rim diameters ranging from 4 to 32mm. They were made in burnt flint, chalk or occasionally fossil shell tempered fabrics which often contain significant proportions of larger sized inclusions than the burnished fabrics. Some of the pottery appears to contain unburnt flint inclusions, small fragments of rounded gravel which visually seem to have only been slightly transformed by heat, possibly during the firing of the vessel. There are a variety of unburnished, coarse ware rim forms (Hartley 1957: figs. 7 & 8). As well as tapered and rounded rims, mainly on the smaller vessels with diameters generally falling between 10 and 24cm, many are simple flat, flat and thicken, 'T' shaped, or flat topped and square lipped/hooked forms, with hooked and 'T' shaped rims mostly associated with the largest vessels with rim diameters between 16 and 32cm.

Unburnished vessels came in three different shapes of bases, although most had simple flat bases with the wall of the vessel raising directly up from the base which occurs on all types and sizes of vessel (Table 6). The two other forms are associated with medium to small sized bases: stepped and pinched down bases, neither stepped or pinched down base forms occur in burnished fabrics.

The unburnished pottery is more frequently decorated than the burnished pottery and decorated in a different manner. Decoration most commonly consists of impressed dots and is largely restricted to the rim. Other rim decoration consisted of small dots just below the rim (one example inside, one example outside), overlapping rough finger impressions around the outside of the rim, or short vertical scores, possible finger nail marks, around the inside of upright or inward leaning tapered rims (six examples). The latter might possibly be a late trait in the assemblage.

Deposition and distribution

Given the problems with the partial nature of the pot-

tery assemblage and lack of any detailed site archive, what can be said about the deposition of the pottery, and how it related to the possible ritual activities that took place on the site is limited. There would appear to be a distinction between (Table 7) those pits with large quantities of surviving pottery and those with little or no surviving pottery. For example, the two largest pits, 3 and 12, contained the largest quantities of surviving pottery, but the next largest pit, 23, contained very little. The large pit assemblages also have high mean sherd weights, which suggests that much of the pottery deposited in these features was either freshly broken or carefully curated. As on other Iron Age sites, it seems likely that few complete pots, broken or whole, were deposited.

Also, there is no clear relationship between the quantity of pottery in a feature and the presence of other finds, such as deposits of articulated human bone or metal and worked bone/antler objects (Table 7). In a number of pits, sherds from the same vessel were found in different layers (Hartley 1957), thus suggesting a rapid backfilling with deliberate dumps of material. It is also clear that three pits (27-9) were probably backfilled simultaneously as all contained sherds of the same vessel, the shallow 'Chinnor-Wandlebury' burnished bowl.

Pottery from the section across the ringwork's banks and ditches

The section across the 'defences' of the ringwork excavated in 1955 (Hartley 1957: fig. 4) yielded a small quantity of pottery.

There are 43 sherds of pottery (278g) from the inner ditch (Table 8). It contained Roman period pottery in its lower fills, with the upper half of the fills consisting of the remains of the original inner bank which was levelled into the ditch in the 18th century. The majority of the pottery is in a dense sandy fabric that is typical of the Later Iron Age (c. 300 BC-AD 40/60) pottery in the region (Table 8). The absence of abraded Earlier Iron Age flint tempered pottery is noticeable. Given the abraded nature of the assemblage and the naturally derived deposits in the lower ditch from

Table 6. Wandlebury 1955-6: sizes and types of burnished and unburnished bases.

Base diameter (cm)	Flat/Simple	Stepped	Pinched down	Footring	Pedestal	Burnished	Unburnished
2							
4		1					1
6	2	2	4				8
8	8	4	1	2		2	13
10	5	2	2		1	3	7
12	3	1				2	2
14	3	1					4
16	2		1				3
18	1						1
20	1						1
?	3	1	1				5
Total	28	12	9	2	1	7	45

Table 7. Wandlebury 1955-6: the pottery and associated finds recovered from the pits.

Pit	Feature descriptions	Human remains	Small finds	Pottery (g)
1				543
2		partial corpse	bronze needle	
3	very large pit			1452
4				
5			iron knife	934
6				
7	very shallow pit			
8				637
9				72
10	very shallow pit			199
11	very shallow pit			162
12	very large pit	human corpse	2 iron penannular brooches, bone comb, worked antler	1612
13			bone needle	357
14				
15	very shallow pit			105
16	very shallow pit			
17	very shallow pit			
18	very shallow pit			
19	very shallow pit	partial corpse		
20			decorated bone comb	2119
21	very shallow pit			6
22	very shallow pit			
23	unusual hole in base of pit		iron object	80
24	unusual hole in base of pit			96
25				73
26				47
27				1293
28			bronze penannular brooch, iron 'hook'	211
29				513
30				
31				183
32				299
33				

Table 8. Wandlebury 1955-6: pottery recovered from the excavation of the inner ditch (note: datum is 15.3ft above the base of main ditch).

Depth below datum	Number of sherds	Pottery weight (g)	Mean sherd weight	Context/period
1 to 2 ft				Bank Material
2 to 3 ft				Bank Material
3 to 4 ft				Bank Material
4 to 5 ft				Bank Material
5 to 6 ft				Bank Material
6 to 7 ft				
7 to 8 ft	4	22	5.5	RB pottery
8 to 9 ft	4	43	10.8	RB pottery
9 to 10 ft	1	6	6.0	
10 to 11 ft				
11 to 12 ft	11	50	4.5	RB pottery
12 to 13 ft	8	39	4.9	RB pottery
13 to 14 ft	12	101	8.4	LIA pottery
14 to 15.3 ft	3	17	5.7	MLIA pottery

Table 9. Wandlebury 1955-6: pottery recovered from excavation across the outer earthworks.

Site zone	Number of sherds	Weight of pottery (g)	Mean sherd weight (g)
Rampart	1	8	8
Buried Soil	16	48	3
Main Ditch	6	81	13.5
Ditch Re-cut	1	5.5	5.5

Table 10. Wandlebury 1955-6: pottery recovered from excavation of the main outer ditch (note: datum approximately 8ft above base of main ditch).

Depth below datum	Number of sherds	Pottery weight (g)	Mean sherd weight	Other artefacts
1 to 2 ft				
2 to 3 ft				
3 to 4 ft	1	22	22	Modern Glass
4 to 5 ft	4	50	12.5	
5 to 6 ft				
6 to 7 ft	1	9	9	
7 to 8 ft				

which they come, the pottery cannot give a close date for the construction of this ditch. However, the pottery probably points to a Late Iron Age/Early Roman period date for the accumulations of these fills – and by implication the construction of the inner earthwork.

There are 24 sherds of pottery (112.5g) from the outer earthworks (Table 9). Most sherds are very small and moderately to severely abraded. The pottery also differs from that in the inner ditch as there are no clearly Roman or Late Iron Age sherds. The outer earthwork produced a higher proportion of flint/chalk tempered sherds (Earlier Iron Age) compared to sandy fabric (Later Iron Age) pottery.

A small quantity of moderately to considerably abraded pottery was recovered from the buried soil horizon under the outer bank/rampart and the counterscarp bank beyond the ditch. This material is almost exclusively either burnt flint or chalk and sand tempered, and is probably residue material from the Earlier Iron Age. The small sherd size would suggest that either there was little settlement activity in the immediate area before the outer bank/rampart was constructed, or that a considerable time had passed since the activities which originally deposited the pottery in the buried soil.

The material from the outer ditch is equally imprecise as that from the inner ditch for closely establishing a date for the construction of this bank and ditch. The outer ditch contained both medium sized sherds of Earlier Iron Age shouldered pottery and probably later sandy tempered pottery. All came from deposits relatively high up in the sequence of ditch fills. The re-cutting of the outer ditch produced only a single small sherd of pottery.

Discussion and conclusions

Pottery from the 1955–6 excavations represents a typical variety of earlier pre-Roman Iron Age open bowls

and jar forms with rounded bipartite, tripartite and slack shouldered forms, either in burnished or unburnished finish. Cunliffe (1974) used this assemblage to define a key Early Iron Age type group for the region called the 'Chinnor-Wandlebury' style. The majority of the assemblage appears to be contemporary, and broadly fits into the long-standing ceramic traditions of the Late Bronze Age/Early Iron Age (c. 1000 BC to 400/300 BC). Close parallels are hard to find for the assemblage, but the majority probably dates to c. 500–300 BC, with some stratigraphically earlier material. Unfortunately, only a sample of the original assemblage survives in the Museum of Archaeology and Anthropology in Cambridge, the bulk of the body sherds having been discarded.

The surviving pottery from the banks and ditches does not provide any firm evidence for the date of either the inner or outer earthworks' construction and their relationship to the Early Iron Age settlement. The assemblage represents redeposited medium to very small sized sherds which may have entered the buried soil or ditch fills some time after they were originally broken and discarded. However, the pottery suggests that the outer bank and counterscarp bank were not constructed over a soil containing some large quantities of large well preserved pottery. The outer bank/rampart seals a buried soil containing small sherds of probably Earlier Iron Age pottery. The absence of Roman pottery from the outer ditches fills might be significant given the occurrence of 11 sherds (65g) of Roman and probable Roman period pottery and an oyster shell in the inner ditch, only 20m away, and Roman pottery in field ditches outside the earthworks (in the 1995 excavations). If this absence is not fortuitous, it supports the original interpretation of the ringwork sequence of the outer bank and ditch preceding the inner bank and ditch (Hartley 1957). The presence of Roman and Late Iron Age sherds in the middle and lower fills of the inner ditch probably

suggests a Late(r) Iron Age date for the construction of the inner ringwork. However, well preserved and stratified artefacts and/or radiocarbon dates are needed to securely date the earthworks and establish their relationship with the Earlier Iron Age activities excavated both inside and outside the ringwork.

The recently excavated material supports suggestions made on the basis of the re-examination of the old collection for a long span of activity on the hill-top. It ranges from small quantities of Late Bronze Age (900–700 BC) pottery from test pits north of the excavated area in Varley's Field to a substantial assemblage of earlier Iron Age pottery (c. 500–300BC) (Webley, in press) and lesser quantities of Middle/Later Iron Age pottery (300–1BC), from one pit in particular. The majority of the pottery from Varley's Field is broadly contemporary with that excavated by Clark and Hartley (1955–6) in the interior, but there are important differences. Most notable is the relative paucity of finds from the pits excavated outside the earthworks. A number of pits in the interior contained large quantities of quite large sherds of pottery unlike any deposit so far excavated in Varley's Field. It is also probable that the range of fine ware burnished vessels differs from those found in the interior. Although requiring further attention, the lack of large assemblages from Varley's Field might suggest that this area is peripheral to the main concentration of settlement, or lay outside an existing enclosure.

The faunal remains

Preston Miracle, Andre Corrado and Bryan Hanks

Introduction

The Wandlebury assemblage contains 3591 mammal remains (Table 11). Of these remains, 664 (18.5%) were identifiable to genus, 610 (17.0%) identifiable to element and body-size category (eg small animal, small ungulate, medium ungulate, large ungulate), and the remaining 2317 (64.5%) were non-identifiable or unidentifiable (Table 11). A total of nine taxa were identified, including the major domestic animals (sheep, goat, cattle, pig, horse, dog), a few wild animals (badger, hare, both potentially intrusive) and human (Fig. 22). This summary is based on studies of the Iron Age contexts by Meece (1997) and Corrado (1999) and the Romano-British contexts by Hanks (2001).

Methodology

The Wandlebury assemblage was described using a system developed from 'bonecode' (Meadow 1978) and quantified using the number of identified specimens (NISP) and the minimum number of individuals (MNI). The minimum number of elements (MNE) has not been used owing to inter-observer differences. The MNI has been calculated separately for each pit; by summing MNIs from these different contexts it is assumed that pits are independent of one another, ie a single animal was not divided among different pits.

Assemblage composition and taxonomic description

Cattle were predominant in terms of meat weight in the Iron Age at Wandlebury with 230 remains from a

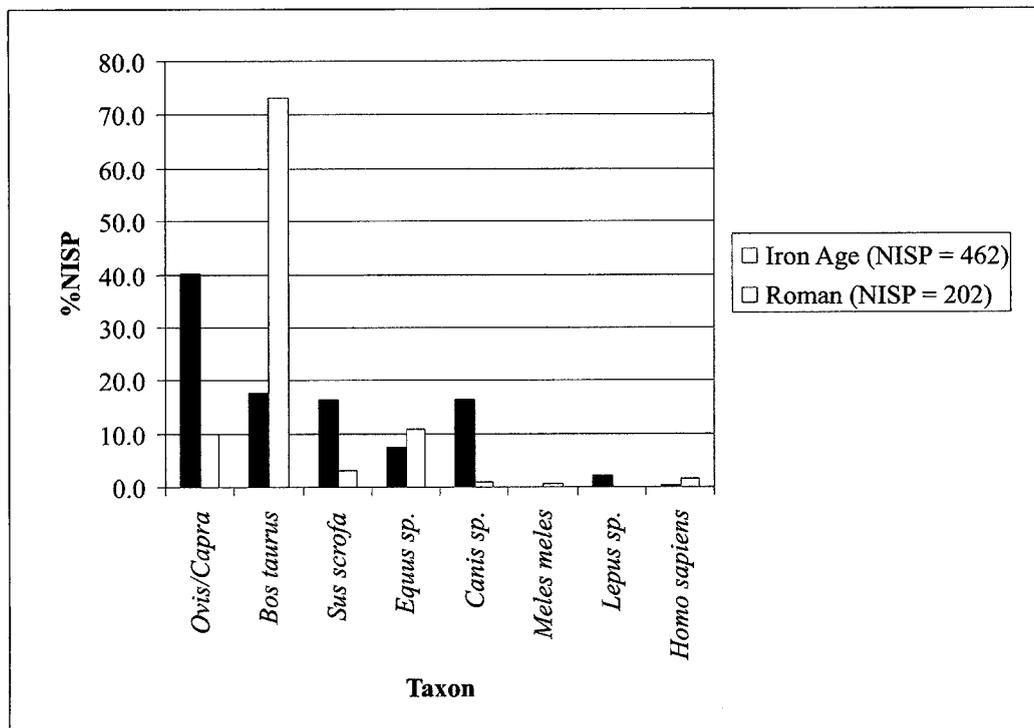


Figure 22. The faunal remains species representation at Wandlebury (P Miracle).

Species	Iron Age														Total Wandlebury					
	Outside ditches/ramparts							Inside ditches/ramparts							Roman					
	Pit 50 NISP MNI	Pit 58 NISP MNI	Pit 59 NISP MNI	Pit 77 NISP MNI	Pit 126 NISP MNI	Pit 177 NISP MNI	Pit 213 NISP MNI	Pit 220 NISP MNI	NISP	%NISP	MNI	%MNI	NISP	%NISP	MNI	%MNI	NISP	%NISP	MNI	%MNI
<i>Ovis/Capra</i> sheep/goat	11	2	1	1	26	2	32	3	28	2	31	2	1	1	55	5	205	30.9	20	31.3
<i>Bos taurus</i> cow	5	2	7	12	2	6	1	39	5	1	6	1	13	4	148	3	230	34.6	18	28.1
<i>Sus scrofa</i> pig	1	1	1	8	1	2	1	58	2	1	2	1	5	1	6	2	81	12.2	9	14.1
<i>Equus</i> species horse	0		11	1	1	19	1	1	1	1	2	1	2	2	22	2	56	8.4	7	10.9
<i>Canis</i> species dog	71	1	1	3	2	9	1	1	1	1	1	1	1	1	2	1	77	11.6	5	7.8
<i>Meles meles</i> badger																	1	0.2	1	1.6
<i>Lepus</i> species hare						9	1	1	1	1	1	1	1	1	10	1.5	2	3.1	2	3.1
<i>Homo sapiens</i> human															1	1	4	0.6	2	3.1
Total ID Species	88	6	1	1	46	7	56	8	126	10	67	6	2	2	76	12	202	100	64	100
Small animal	1					1			1		1				1		4		0	
Small ungulate	4		16	106		36		161			36				36		377		0	
Medium ungulate	0					1		1			1				12		29		0	
Large ungulate	1		15	13		35		59			35				65		200		0	
Non-identifiable															23		23		0	
Unidentified fragments	33	3	67	117		116		438			116		8		1446		2294		0	
Totals	127	6	4	1	144	7	292	8	786	10	256	6	10	2	191	12	1781	100	64	100

Table 11. Faunal composition at Wandlebury.

Species	Iron Age													Total Wandlebury				
	Outside ditches/ramparts						Inside ditches/ramparts						Roman	Cut Marks NISP %NISP	Burned NISP %NISP			
	Pit 50 CM Burn	Pit 58 CM Burn	Pit 59 CM Burn	Pit 77 CM Burn	Pit 126 CM Burn	Pit 177 CM Burn	Pit 213 CM Burn	Pit 220 CM Burn	CM Burn									
<i>Ovis/Capra</i> sheep/goat	1		1	1	1	4		3	1					12	5.9	4	2.0	
<i>Bos taurus</i> cow				1	1	2		1	3	2			4		8	3.5	3	1.3
<i>Sus scrofa</i> pig				2	1			1	3						3	3.7	3	3.7
<i>Equus</i> species horse										2					2	3.6	0	0.0
Small ungulate				1	7	1		2	11	2			3		13	3.4	14	3.7
Medium ungulate				1	8	1		4	9	4			4		0	0.0	0	0.0
Large ungulate				1	6	1		2	76	9			1		17	8.5	12	6.0
Unidentified fragments	1			4	6			9					1		8	0.3	93	4.1
Total Modified	1		1	6	24	14	13	14	102	24	0	0	15	2	63		129	
% Modified	0.79	0.79	0	0.69	0.69	2.74	2.74	5.47	5.08	3.05	0	0	7.85	1.05	1.75		3.59	

Table 12. Number of remains with cut marks and burning at Wandlebury.

minimum of 18 individuals (%NISP = 34.6). The cattle remains appear to be smaller and more gracile than bones of modern cattle (Corrado 1999), confirming a general pattern noted by Maltby (1996). It is not known if this pattern holds into the Roman period.

Sheep and goat is the second most common taxon with 205 remains (%NISP = 30.9), although it is numerically dominant at Wandlebury when quantified by MNI (20 individuals). Although a few horn core fragments of sheep and goat demonstrate the presence of both species, it is suggested that sheep were more common than goats during the Iron Age at Wandlebury (Corrado 1999). The bones appear to fit Maltby's (1996) description of Iron Age sheep, and are more gracile than those of modern animals. Two fragments of sheep horn core compare favourably to a Soay skull in the Grahame Clark Laboratory collections (Corrado 1999).

Suid or pig remains came in a distant third (NISP + 81; %NISP = 12.2; MNI = 9). These remains are mostly from domestic pig, although the presence of wild boar in the assemblage cannot be ruled out. Most of the Iron Age pig remains were concentrated in a single context, pit F126 (NISP = 58; MNI = 2).

Dog is represented by 77 remains (11.6% of NISP). Most of these remains (NISP = 71) comes from a partial skeleton placed on the very base of pit F50 lying on its right hand side. This skeleton was missing the skull and all of the main limb bones except for a left femur and right tibia. This dog skeleton does not show any signs of butchery or gnawing. The treatment of this dog clearly differed from the remains of other animals deposited in the pits. The significance of this 'placed' deposit (cf Cunliffe 1992; Hill 1995) is unclear, but there are other indicators of special treatment of dogs. Of the remaining six dog bones, four are radii that have been individually deposited in pits.

A total of 56 horse remains (%NISP = 8.4) were discovered. Most of the Iron Age horse remains come from only two pits, F59 and F177 (30 out of 56 NISP), even though most pits have a token horse bone or tooth. Most of the horse remains from pit F59 may come from a single, fragmentary skull, while the horse remains from pit F177 appear to come from a fragmentary skull and a single pelvis. Although sample sizes are small, there may be a selective interment of only particular horse bones, much as Grant (1984a) has noted at Danebury.

Both the minor presence of hare (%NISP = 1.5) and badger (%NISP = 0.2; a single auditory bulla) may be intrusive. These are probably disturbed remains of burrow deaths.

Four fragments of human remains were identified among the fauna in several pits, namely a right ilium (acetabular portion and shaft); left scapula (glenoid fossa and blade) and right scapula (acromion process). These remains do not show signs of bone modification. They could all come from a subadult to adult. In isolation their significance is unclear, but is a common occurrence in Iron Age pits elsewhere, for example at Wandlebury (Hartley 1957) and Danebury (Cunliffe and Poole 1995).

Taphonomy

Bone preservation varied dramatically by period. The Iron Age assemblage was very well preserved and only a low percentage of fragments were weathered (Corrado 1999). This was undoubtedly due to the high pH of the chalk and the rapid infilling of the pits. In contrast, the Roman assemblage was in quite a poor state of preservation (Hanks 2001). Most bone specimens were in a somewhat friable state and exhibited strong evidence of weathering, abrasion, and subsoil root action. There may be a contrast in soil chemistry between the Iron Age and Roman layers, but it is more probably due to the proximity of the Roman remains to the modern ground surface and the apparently extended length of exposure of these remains prior to burial.

Basic information on the frequency of bones that have been cut and burned is presented in Table 12. Only 63 bones preserve butchery marks (1.75% of assemblage), while 129 fragments are burned (3.59% of assemblage). The frequency of butchery and burning marks varies dramatically by period and strongly correlates with the evidence of bone weathering; burning and cut marks are much more frequent in the well-preserved Iron Age assemblage, while they are almost completely absent from the poorly-preserved Roman assemblage.

Iron Age Wandlebury

The faunal remains from eight pits (F50, 77, 126, 177, 213 & 220) were examined in detail. Many of the pits were probably infilled rapidly, a suggestion corroborated by the three sets of conjoined/articulated remains from different layers within two pits (two instances from pit F177 and one example from pit F220). These inter-layer connections indicate either post-depositional disturbance (Corrado 1999) or more probably very rapid infilling. Only one pit (F59) appears to have been infilled by slowly natural erosion. Treating each pit as a unit, there is clear variability among them in assemblage size and species composition. Pit 126 stands out for both its large size and dominance of pig and cattle remains over those of sheep/goat (Table 11). As noted above, pit F50 is unusual in terms of its dog burial.

There are important spatial contrasts in the Iron Age assemblage (Table 13). Pits from inside the ringwork are overwhelmingly dominated by sheep and goats (%NISP = 60.0) followed by horse (%NISP = 14.5) and cattle (%NISP = 13.1). Pits from outside the ringwork show a very even representation of sheep and goats (%NISP = 30.9), dog (%NISP = 23.7), pig (%NISP = 21.5) and cattle (%NISP = 19.9). The contrast in the treatment of dog and pig is most pronounced; they are limited to contexts outside of the ringwork. Most of the dog and pig remains come from individual pits (F50 and F126, respectively). In fact, if pits F50 and F126 are excluded from the exterior assemblage, faunal composition between the two areas is almost identical (sheep/goat %NISP = 57.3, cattle %NISP = 18.4, horse %NISP = 11.7, pig %NISP = 8.7, dog %NISP = 3.9). Pit F126 also stands out as having a very high

frequency of bone burning (Table 12).

Without further contextual information and relatively small sample sizes from individual pits, not to mention only eight pits analysed, it is difficult to make too much of these patterns. Nonetheless, the treatment of animal remains was more standardised inside than outside the ditch and bank of the ringwork. A higher number of fragments were identifiable to species inside as opposed to outside, which may indicate less bone fragmentation and more rapid filling of pits on the inside than the outside. Likewise, as shown in Table 12, cut marks are more frequent inside (%NISP CM = 6.3) than outside (%NISP CM = 3.3), while burning is less frequent inside (%NISP burn = 2.5) than outside (%NISP burn = 8.3). Chi-square tests show both of these differences to be statistically significant.

The two unusual deposits were both outside of the ringwork and consisted of the interment of a partial dog skeleton (torso without head) at the base of pit F50 and pig and cattle remains associated with increased burning in pit F126. The dog remains in pit F50 appear to have been buried after the removal of the head and limbs, but with the torso relatively intact. Too much of the body is missing to interpret this as 'skinning waste' or the removal of a dead dog to clean the interior. Whether or not this is ritual, dogs are clearly being singled out for special treatment, a pattern that has been commented on at Danebury and other sites (Grant 1984b & 1991).

The assemblage from pit F126, on the other hand, would appear to be food debris. The concentration of cattle and pig remains might imply food preparation and consumption in which large amounts of meat was being consumed, for example 'feasting'. But the remains were highly fragmented and there was a lack of meat-bearing bones among the identifiable fragments (Corrado 1999).

In many ways the Iron Age faunal assemblage from Wandlebury is similar to those from other Iron Age hill-forts in Britain. Sheep and goat dominate the assemblage in terms of number of remains, while cattle would have provided the largest amount of meat. Remains of wild animals are extremely rare. Dogs and horses received special treatment, although the latter appears to have been cut and butchered along with the other livestock. Iron Age activities appear to have differed on either side of the ramparts, with activities more variable on the outside of the ditch and bank. There are insufficient ageable remains to reconstruct culling patterns, although the presence of neonatal cattle and sheep/goat indicate that herds were kept and managed in or near the ringwork. There is no evidence from Wandlebury itself of specialised animal production, although this picture may change with the excavation of further remains and/or more detailed comparison with other Iron Age assemblages from the region.

Romano-British Wandlebury

The composition of the assemblage changes dramatically over time, shifting from a dominance of sheep/goat (%NISP = 40.0) and cattle (%NISP = 17.7) in the

Table 13. Faunal assemblage characteristics by excavation area and period.

Species	Roman	Iron Age		Total %NISP
	%NISP	Outside %NISP	Inside %NISP	
<i>Ovis/Capra</i>	9.9	30.9	60.0	40.0
<i>Bos taurus</i>	73.3	19.9	13.1	17.7
<i>Sus scrofa</i>	3.0	21.5	4.8	16.2
<i>Equus</i> species	10.9	4.1	14.5	7.4
<i>Canis</i> species	1.0	23.7	0	16.3
<i>Meles meles</i>	0.5	0	0	0
<i>Lepus</i> species	0	0	6.9	2.2
<i>Homo sapiens</i>	1.5	0	0.7	0.2
Total ID Species	202	317	145	462
Total Remains	1781	1353	457	1810
%ID species	11.3	23.4	31.7	25.5
% Cut marks	0	2.5	6.3	3.48
% Burned	0.11	8.3	3.3	7.02

Iron Age to cattle (%NISP = 73.3), horse (%NISP = 10.9) and sheep/goat (%NISP = 9.9) in the Roman period (Table 13; Fig. 22). The depositional context of these remains also changes significantly to tertiary fills of most pits and the midden-like spread of bone within the eastern entrance way in test pit 42. Also, the Romano-British remains are more highly weathered and fragmented than those from the Iron Age (Table 13), reflecting probably a longer period of exposure before burial as well as post-depositional modification (eg root damage and decalcification).

The basic ageing data show few changes between the Iron Age and Roman periods, but the assemblage size is really too small. Adult cattle outnumber juveniles by a ratio of 2:1; the absence of neonatal remains from the Roman period is explainable by the relatively poor bone preservation. The extremely poor preservation of bone surfaces makes it impossible to know whether the lack of evidence of butchery, cooking, and/or consumption reflects behaviour or site formation processes.

In conclusion, the Wandlebury assemblage is too small to make detailed inferences regarding the role of the site in the region during the Roman period. Maybe herders periodically penned stock at the site. Perhaps people occasionally came to Wandlebury to feast on a cow and celebrate a betrothal, alliance, or some other ritually or socially significant event. Unfortunately, the Romano-British animal bones are not very revealing about the nature of human visits. The increased importance of cattle in Roman compared to Iron Age sites has been noted at many other sites in Britain, and is probably related in part to the increase in consumers relative to producers and various strategies of provisioning urban and military sites with meat (Grant 1989). At the very basic level of species composition, the Wandlebury Romano-British fauna fits a known pattern. Further elucidation of this pattern must await more extensive excavations here.

Micromorphological analysis of the buried soils beneath the counterscarp bank and inner rampart
Charles French

The pre-counterscarp bank soil profile

A buried soil was observed at three locations (test pit 6 and trenches IX and X) on the northeastern side of the ringwork in Varley's Field (Fig. 4). Although these trenches were located outside the scheduled area, in each case there were the remnants of the presumed counterscarp bank (F31) preserved in section, with the best sequence preserved in test pit 6. Here about 15–20 cm of chalk rubble bank material (context 012) survived beneath 30–40 cm of topsoil (context 011), in turn overlying a c. 25–35 cm thick palaeosol which exhibited two horizons (contexts 014 and 015). Both the base of the present day topsoil overlying the counterscarp bank and the underlying palaeosol in this profile were sampled for micromorphological analysis in two sections in test pit 6 and trench IX (after Bullock *et al* 1985, Courty *et al* 1989; Murphy 1986).

The palaeosol profile in test pit 6 comprises a turf developed on an organic A horizon over a weathered B horizon composed primarily of illuvial silty clay (dusty or impure clay) intermixed with discrete, but irregular aggregates of calcareous fine sand. Although this soil has undoubtedly been subject to earthworm activity throughout its existence, its structural development is typical of a brown earth soil profile (Avery 1980; Limbrey 1975). In contrast, the palaeosol profile in trenches IX and X is indicative of a turf and rendzina soil fabric developed directly on the chalk substrate (Limbrey 1975).

The upper two-thirds of the palaeosol is essentially similar to the base of the modern topsoil (context 011) developed on the counterscarp bank, except for the absence of organic micro-aggregates. For this reason and the presence of amorphous organic matter throughout the groundmass, it is suggested that it is indicative of organic A horizon material immediately beneath the turf line. The sub-angular blocky structure exhibited in this upper horizon of the palaeosol is probably a relict feature formed prior to its burial in the later Iron Age.

The lower horizon of the palaeosol is characterised by a distinctly different composition. The prolific occurrence of the impure clay component is probably related to the clay-rich nature of the mixed 'head' / chalk subsoil in this part of the site, but does indicate that there has been considerable within-soil mass movement of fines down-profile. This illuviation may have been caused by slaking of fines from an exposed topsoil associated with rainsplash erosion (Jongerijs 1983). By implication, this soil may have been bare and even ploughed at least on occasion prior to turf formation. Further corroboration for previous arable use may be provided by the presence of discrete aggregates of calcareous fine sand material intermixed with the dominant clay loam fabric and the relatively poor structural development of this soil.

Thus, the pre-Late Iron Age palaeosol preserved on the northern exterior of Wandlebury hill-fort is varies

from a rendzina to a calcareous brown earth (Avery 1980). This palaeosol variation is primarily dependent on the underlying geology. Although it may have been disturbed occasionally, stable, grassland conditions appear to have existed by the later Iron Age. Nonetheless, this brown earth would appear to have been de-turfed either prior to and/or associated with the construction of the counterscarp bank, whereas the rendzina soil has not been de-turfed.

The pre-inner rampart buried soil profile

The pre-rampart buried soil was sampled at two locations: in trenches 40 and 70 (Figs. 21–24). The better exposure (c. 20–24cm) of the two profiles from trench 40, just to the south of the probable main eastern entrance way into the ringwork, was made into thin sections for micromorphological analysis (after Bullock *et al* 1985, Courty *et al* 1989; Murphy 1986).

The pre-rampart soil was composed of a turf Ah horizon over a micritic sandy loam lower A horizon over a mixed micritic sandy loam and chalk rubble B/C horizon, all developed on the chalk substrate. This is typical of a thin rendzina soil profile on chalk subsoil (Avery 1980; Limbrey 1975), and is the modal soil type for much of the chalk downland area of southern England (French 2003).

Nonetheless, throughout the whole soil profile there is evidence for mixing processes. First there are minor (10–20%) amounts of a yellowish brown calcitic sand fabric in irregular aggregates within the turf fabric, and minor (<10%) irregular micro-aggregates of turf fabric found towards the base of the soil profile. This suggests that the whole profile has been disturbed and not just through soil faunal mixing (or bioturbation), as one would expect. As the turf is *in situ* and sealed beneath the chalk rubble of the rampart, there has been no pre-ringwork stripping of the turf prior to the construction of the inner rampart (as appears to have occurred with respect to the construction of the counterscarp bank). Rather the whole soil profile appears to have suffered some mechanical mixing prior to the later Iron Age. This could conceivably be the result of periodic ploughing (cf Macphail 1998), but the absence of typical silty clay coatings and structural variations that can reasonably be expected to have been caused by ploughing (Lewis 1998) suggest that this mixing was more probably caused by human activities occurring within the ringwork earlier in the Iron Age.

Soil micromorphological study of a spade mark in pit F77

Helen Lewis

Introduction

Intact blocks of pit infill deposits were removed for thin section analysis from pit (F77) just outside the enclosure (Figs. 4, 12 & 23). The basal fills of the pit were very rich in ash and charred plant remains, and overlay a deposit of burnt grain (context 296). One soil block was taken for micro-excavation from the lower 45 cm of the pit, where lenses of carbonised

material and fine silt and ash layers were located (Cooper 1996), and this has been compared to plant macrofossil remains and to a micromorphology sample from the same location (Ballantyne 1997). Additional samples were taken from the possible spade marks cutting into the top of the uppermost basal fill (context 295) as part of research into the micromorphological characterisation of tillage and digging features (Lewis 1998). These spade marks are thought to represent the digging out or digging over of the underlying fill material. Preserved spade-marks are quite rarely reported, and the opportunity for detailed study of such features does not arise often. In this report the micromorphology of the features from Wandlebury will be described and discussed in relation to spade-marks from other sites, and to digging and tillage features in general.

The earliest spade marks known in England are Bronze Age in date (eg at Gwithian, Cornwall (Thomas 1970: 14–6)). Most spade marks are found in ditches or at the edges of fields, demonstrating the use of this implement for digging, including localised clearance, possibly of turf (Thomas 1970: 14–5 & 1978; Lerche 1977: 121; Evans 1970: 3; Macphail 1992; Crummy *et al* 1992). The earliest known example in southern England where a case can be made for spade tillage is the horizon of spade marks found at Hengistbury Head Site 6, thought to date to the early Iron Age (Chadburn and Gardiner 1985; Chadburn 1987; Lewis 1998 & 2002). Double paddle spades found in Denmark dating to the Iron Age are thought to be comparable to ethnographically known digging (*versus* tillage) spades, and to have been used for construction (Lerche 1977: 113–4 & 119).

Micromorphological characteristics of the spade mark

The spade mark sampled is characterised by several micro-features that can be related to those seen through study of experimental tillage features (see Lewis 1998) (Table 14). The cut of the spade mark is clear, defined by a line of voids (planar voids and interconnecting vughs and packing pores), which is partially infilled with fine particles and aggregates, creating both a structural and textural discontinuity between the fill and the surrounding material. The location and morphology of the lens of fine micro-aggregates, very fine sand and silt infilling the cut is similar to lenses created experimentally at the Silsoe soil bin (Cranfield University, Bedfordshire) and Lejre Historisk-Arkæologisk Forsøgscenter (Lejre, Denmark), both using an ard (Lewis 1998). This suggests that at least some of the same basic disturbance processes that are involved in ard ploughing are also evident in spade digging – namely disruption of aggregates, mechanical movement of finer components (under gravity and the action of the implement) to the base of the feature, and retention of these fines at that level due to the impediment of slightly denser material underlying the implement cut. In addition to the lens of fines, structural characteristics that could be related to digging are seen adjacent to the spade mark. Planar voids defining relatively large (for this

context) blocky aggregates immediately outside of the spade mark cut may be shear planes related to implement use (cf Lewis 1998). Finally, in the spade mark cut, frequent micrite (<10µm) cappings were seen. This suggests much quicker drying occurred at some point, possibly associated with the digging cut itself. Iron staining (oxidation) was seen in all contexts.

Thus, these spade marks are definitive and suggest the clearing out of the pit to this level and digging into the underlying fill (Fig. 12: context 295).

The macro-botanical remains from a selection in exterior/interior pits

Claudia Cyganowski

Introduction

As at many other Iron Age sites such as Danebury, pits dug into the chalk subsoil were the most common archaeological feature. Over the course of the 1994–7 excavations, 46 pits both inside and outside the ringwork were excavated and bulk samples taken for macro-botanical analysis. Of these, a 15% sample (from seven pits, including F77, see below) was sub-selected from the basal fills of these pits and a buried soil context for wet sieving and macro-botanical analysis (Table 15).

Bulk samples, ranging in volume from c. 26 to 71 litres, were floated using standard methods and a 500µm mesh to catch the charred plant material. The flots obtained ranged in mass from c. 2g to >100g, with a sub-sample of c. 1.5–3g extracted for analysis. Table 17 provides a summary of the pit contexts investigated (Cyganowski 2003) and the grain:chaff:weed ratio generally used for inferring crop processing stage (Hillman 1981 & 1984).

Preservation

The most obvious and consistent difference between the contexts outside and inside the ringwork is in the state of preservation of the charred remains. The samples taken from pit contexts inside the ringwork are generally more poorly preserved, with 75–100% of the grain having the honeycomb texture characteristic of severe charring (ie at high temperatures and/or for long periods of time) (Bowen and Wood 1968; Boardman and Jones 1990). All the samples from pits inside the ringwork also contained moderate to high quantities of such heavily charred, and thus unidentifiable and usually fragmented, grain. In addition, in F229 only the very densest parts of the chaff, those most resistant to destruction by charring (Boardman and Jones 1990: 4–5), survived in the assemblage. In contrast, samples from the pits outside the ringwork (with the exception of F59, which was heavily contaminated and disturbed by modern roots) were generally well-preserved (<25% of grain with honeycomb texture) and had only small quantities of honeycombed grain. The implication is that, overall, the plant remains deposited in the pits inside the ringwork had either been exposed to higher temperatures, burned for longer periods of time, and/or exposed to greater subsequent oxidizing conditions than those plant

Table 14. Summary of the micromorphological descriptions for the spade-marks in pit F77 at Wandlebury (%s based on visual estimates of area).

	Context 1	Spade mark cut	Context 2	Context 3	Context 4
Field Description	[294] – greyish brown silt loam with <25% ash content and fine chalk fragments (<1 cm). Pot and bone inclusions.		[295] – greyish brown/brown silt and ash and fine chalk rubble fragments. Pot and bone inclusions. Surface had possible spade marks visible in it.		
Characteristic Microstructure	Single grain with intergrain microaggregates	Sub-rounded aggregates of context 2 material	As context 1. Blocky peds adjacent to cut	As context 1	As context 1
Porosity	15-30%: packing pores, vughs and channels	Planar void and line of interconnecting pores/vughs	25-40%: as context 1	20-30%: vughs and channels	20-30%: vughs and packing pores
Mineral Components	20:80 (mostly very fine sand and silt, including calcium carbonate)	As context 1	25-30:70-75, as context 1	30:70, as context 1	35:65, as context 1, but increase in medium and fine sand
Organic Component	20-40%: amorphous black fragments, 'charcoal, 'punctuations	10-15%: as context 1	15-20%, as context 1 but more frequent very fine components	As context 1, except more coarse charred remains	20-30%: as context 1, but more very fine charcoal and coarse charred remains
Groundmass	Crystallitic; enaulic-porphyric	As context 2	Crystallitic; mostly enaulic	Crystallitic; enaulic-porphyric	As context 3, but rather chalky
Pedofeatures	Possible daub and other clay-rich inclusions. Sparite and microsparite replaced plant remains. Some iron staining.	As context 1. Also frequent micrite cappings.	As context 1	As in context 1. Root/Worm-related fabric inclusions. Frequent iron staining.	As in context 3, but all very chalky-looking. Possible pottery fragment.

remains deposited in pits outside the ringwork.

It should be noted that the poor preservation in the sample from the buried soil beneath the inner rampart in trench 70 stems from a different combination of causes. The chaff and 'weed' seeds are much more likely to have suffered oxidation through exposure, trampling and mechanical disruption in the course of monument construction and their heavy soil/mineral encrustation probably relates to the soil/drainage conditions of burial under the monument.

Crop processing and weed ecology

Buried soil in trench 70

The sample from the buried soil under the inner rampart (Fig. 17: trench 70) is unique among the samples analysed in not containing any cereal grain. There is, however, slight evidence of cereal cultivation in the vicinity (unsurprisingly, since the ringwork had been occupied for some four centuries before the inner rampart was constructed in the 1st century BC) in the form of a single glume base (probably from spelt wheat) (French and Gdaniec 1996, 3). The glume base could, of course, have been blown in from some dis-

tance. This is, however, less likely for a glume base than for a piece of lighter chaff. The bulk of the sample was composed of unidentifiable weed seeds, in addition to one Gramineae (wild grass) seed, a probable fragment of a *Bromus* seed, and a legume. The few identifiable seeds are widespread in 'grassy' areas (Clapham *et al* 1989: 628–33).

The pits on the interior Pit F177

The observed composition of this rather poorly preserved sample is not markedly similar to that of any other examined, and is distinguished by glume:grain and weed:glume ratios of *c.* 2:1 (see Table 17). The weed:glume ratio is particularly important as a distinguishing factor; the only other interpretable sample (ie excluding F59, see below) in which the number of weed seeds exceeds the number of glumes is F126, in which the weed:glume ratio is *c.* 12:1.

While the dominance of weed seeds in the sample might be a taphonomic artefact, the floristic composition of the weed component is still of interpretive interest, and the preservation of the weed seeds (as opposed to the grain and chaff) is quite good. All of the weed flora present can grow in grassy habitats or as weeds in arable fields (ie *Avena*

spp, from which two awn fragments were present, can be considered either a weed or a crop itself). *Bromus* spp prefers calcareous soils, which supports a local source for the weed flora, while Chenopodiaceae and *Polygonum aviculare* are indicators for nitrogenous, nutrient-rich, well-drained soils (in modern agriculture, and *P. aviculare* is a weed primarily associated with spring cereal crops) (Clapham *et al* 1989: 628–33; Hanf 1983: 202–5 & 397). Thus it is probable that the charred remains from the primary fill of F177 were waste associated with/derived from a locally grown cereal crop, but there is insufficient evidence with which to suggest a stage of crop processing. Given the association with burnt bone, charcoal and a loom weight, it is possible that the charred matter represents domestic debris.

Pits F229 and F220

These samples are united by the very high proportion of chaff relative to both grain and weed seeds. They produced larger, better preserved samples and very high chaff:grain ratio (c. 15). Samples dominated by small weed seeds and heavy bits of chaff (eg glume bases and rachis segments) are associated with fine sieving (Hillman 1984: stages 12 and 13b), a processing stage that, in wet climates, occurs after the grain has been removed from bulk storage and immediately before use (Hillman 1981: 132–3 & 1984: 10).

While the grain:chaff:weed ratios are quite similar for the two samples, the compositions of the weed flora in the two samples are slightly more divergent. The F229 sample contained only eight weed seeds (eg Chenopodiaceae and *Rumex crispus*, indicative of nutrient-rich soils; *Rumex crispus*, a common weed in grassy places (Hanf 1983: 404) and *Poa* spp). Pit F220 also contained Chenopodiaceae and *Rumex* spp, as well as *Bromus* spp, *Avena* spp and *Vicia cf tetrasperma* were present. *V. tetrasperma* grows in generically 'grassy places' (Clapham 1989: 188–9) or on arable land (unusually in lime-deficient soils) (Hanf 1983: 341). *Bromus* spp, *Avena* spp and *Chenopodium* spp have all been suggested as possible supplementary food sources, the seeds of which were deliberately not excluded from cereal harvests (Hanf 1983: 202). Both assemblages could, and probably do, derive from the weeds of cultivated fields; however, it seems likely that they either came from different fields and/or different harvests (when different weed assemblages were present) or were processed slightly differently or more or less thoroughly.

Pits on the exterior of the ringwork

Pit F59

The sample from pit F59 (Fig. 12), like that from the buried soil in trench 70, proved essentially impossible to interpret because of the very low quantity of charred material recovered and disturbed by modern roots. A single, indeterminate cereal grain was present, as was one *Bromus* spp seed and one *Chenopodium* spp seed. This sample thus falls within the pattern of seed assemblages found in other pits, but does not provide any useful interpretive information.

Pit F15

This sample is the most comparable to the basal fill of F77 (see Ballantyne below) in composition as well as state of preservation, although there are a number of important differences. The F15 fill (Fig. 12) is not as grain-rich as that of F77, but barley is present in equal or greater quantities (c. 1:1) than wheat, whereas in both the F77 spits barley was a minor component (present at levels of 2:11 or 2:39 compared to *Triticum* spp). The wheat component, while mostly spelt,

contains one distinctively emmer grain, and the barley component contains two unusual slender hulled barley grains. Unlike F77, there are more glumes than whole grains in the F15 deposit. But a large quantity of non-honeycombed broken grain fragments, mainly wheat grains, were present which might suggest that the grain:glume ratio should be revised upwards from c. 1:1.5 towards 1:1.

If this is the case, it suggests the possibility that F15 represents, like F77, the charring of a bulk spikelet store (Hillman 1984: stage 8). The primary fill of F15 consists of a light gray ashy layer with abundant charcoal flecks, which could represent the more complete burning of a basal grain fill similar to that present in F77. Roughly equal numbers of grains and glumes, combined with the presence of spikelet forks, suggests storage of whole spikelets (Hillman 1984: 10; Jones 1984). While the abundance of weed seeds might appear high for a storage deposit, the weed assemblage of F15 is remarkable in that it is heavily dominated by *Bromus* spp (>60% of the weed seeds present), as are the weed assemblages from F77 (see Ballantyne below). This supports the suggestion that F15 and F77 might represent similar storage deposits, and suggests that *Bromus* was either deliberately included in the stored assemblages or was not removed by a (size-dependent?) cleaning technique.

Pit F126

The macro-botanical assemblage from pit F126 (Fig. 12) is completely unlike any other examined. It is dominated by small weed seeds, particularly *Poa* spp (c.65% of the weed assemblage). Of the 24 categories of weeds recovered from the pits at Wandlebury, eight are found only in F126 (or 33%). The preponderance of *Poa* or meadow-grass is indicative of grassland, as is the presence of Gramineae, *Cerastium* spp and *Plantago lanceolata*, which occur only in the F126 sample and are indicative of dry pastures or meadows and light, neutral or calcareous sandy soils (Hanf 1983: 191–2 & 393).

This seed assemblage could represent either seed for planting a meadow or waste associated with the use of meadow grasses, possibly as fodder or animal bedding (M Jones, pers comm). In summary, the macro-botanical remains from pit F126 may represent an unusual example of charred debris not directly associated with crop processing for food production. Instead, the assemblage may derive either from other uses of cultivated crops (ie thatching with wheat straw) or from the harvesting and use of non-cultivated (but possibly managed) crops (Reynolds 1981: 119; Hillman 1984: 19; Greig 1984: 213).

Summary and comparisons to other sites

The archaeobotanical assemblages analysed from Wandlebury consist of one or two burned stores of whole spikelets, two assemblages which most likely represent the waste products of fine sieving, one assemblage that may represent the by-products of cleaning and using straw or meadow grasses, and three assemblages that are too small and/or too badly preserved to be interpreted with confidence. The first and second phenomena, including the mixed storage of wheat and barley, are well-known and documented at Danebury as well as other less intensively studied sites (Jones 1984). One significant difference between the possible storage deposit described in this report (F15) and other such deposits from Wandlebury (F77) and elsewhere is the relatively higher proportion

Table 15. Summary of contexts investigated and macro-botanical remains present.

Feature and Context Number	Location	Context Description	Preservation Index	<i>Triticum spelta/dicoccum</i> Grain: chaff: weed ratio	<i>Hordeum</i> spp Number of grains	Abundance of highly charred grain fragments
Pit: F15 Context [095] 90-105cm	Varley's Field (TS 9)	Primary fill: light gray ash with abundant charcoal flecks and lenses of fine chalk fragments. Deliberate dumping of hearth rake-out + pit-edge slip	5 Fragmented, non-honeycombed grain is evidence for mechanical breakage	26: 40: 36 (c 1: 1.5: 1.4)	29	low
Pit: F59 Context [200]	Varley's Field (Area 1)	Lower secondary fill: dark, yellowish-brown ashy silt with chalk fragments and charcoal flecks. Lens of primary inwash. Root disturbance noted	1 Majority of flot consisted of modern roots/twigs; most charred material is wood charcoal	0: 0: 2	0	low (all grain present is heavily charred)
Pit: F126 Context [333]	Varley's Field (TS35)	Primary fill: mottled black/red/pale gray/rich brown ashy silt with chalk fragments, charcoal flecks, and burnt stone. Intact, upright pot on south side of pit. Microfauna-rich, including rodents	4-5	2: 12: 178 (1: 6: 86)	1	low
Pit: F77 Spit 9 Context [241]	Varley's Field (Area 1, TP 3)	Mixed layer of charred grain and soil with possible spade marks, c. 40cm from pit base	38% of grain retained embryos	329: 241: 83 (c 4: 3: 1)	61	
Pit: F77 Spit 12 Context [285]	Varley's Field (Area 1, TP 3)	Basal fill of charred grain	25% of grain retained embryos	274: 148: 21 (c 14: 7: 1)	14	
Pit: F177 Contexts [503/504] 30-43cm	Inside ringwork (TP 52)	Primary fill: yellow sand, including 1 piece burnt bone, charcoal, and chalk loom weight	1 Weed seeds better preserved than grain/chaff	2: 5: 13 (1: 2.5: 6.5)	3	moderate
Pit: F220 Context [632] 90-100cm	Inside ringwork (TR 68)	Basal/primary fill of western side of pit. Silt loam and ash (phytolith rich) with a black lens representative of comminuted charcoal. Domestic rubbish and hearth rake-out deliberately deposited	2-3 Weed seeds and chaff better preserved than grain	4: 54: 25 (c 1: 13.5: 6.5)	7	moderate
Pit: F229 Context [621] 20-30cm	Inside ringwork (TR 66)	Fill layer immediately above human burial. Red-yellow-brown sandy silt	1-2 Only densest parts of chaff survive	2: 32: 8 (1: 16: 4)	0	moderate-high
Buried soil: Context [617]	Buried soil beneath inner rampart, near edge of inner ditch	Fairly compact mid-reddy-brown silt, >5% chalk content, occasional flint and chalk pebbles, charcoal flecks	1-2 Heavily encrusted with soil	0: 1: 29	0	none (no grain present, highly carbonized or otherwise)

of barley. This, along with the presence of emmer and some unusual forms of barley (slender hulled barley and naked barley) may hint that the cereal economy of Wandlebury was somewhat more diversified than at other sites. There is no evidence in the weed flora, however, to suggest that the crops stored at Wandlebury were grown other than locally. Indeed, the recorded weed taxa are quite similar at Wandlebury and Danebury – undoubtedly a reflection of Wandlebury's location on chalk.

The archaeobotanical evidence from sites more directly comparable to Wandlebury such as other Iron Age ringwork enclosures near the fen-edge is relatively sparse. Arbury Camp contained no contemporary settlement remains and the archaeobotanical work done on waterlogged remains in the enclosure ditch fills demonstrated no evidence of cereal cultivation (Roberts 1995). Stonea Camp was likewise apparently uninhabited, and poor preservation of seeds and modern contamination precluded any substantial archaeobotanical investigation, nor was any evidence of cereal cultivation found (Haselgrove 1999: 121; Philpot and Potter 1996: 39).

The most closely comparable site where any archaeobotanical work has been done on charred remains is probably Wardy Hill, Coveney (Evans 2003). Within the ringwork were six structures and associated pits and ditches. One striking characteristic that the Wardy Hill pits share with the majority of the pit assemblages from Wandlebury (in contrast to the assemblages at Danebury) is the very low number of cereal grains present (Stevens 2003: 138–43). In general, chaff and weed seeds predominated in the assemblages, and they are interpreted as crop by-products rather than prime grain (*ibid.*). The weed taxa do not contradict the idea that crops were grown locally. Interestingly, G Wilson (1984: 242), writing about the Cat's Water Iron Age settlement at Fengate, Peterborough, concluded based on similarly low concentrations of cereal and very small quantities of chaff that Fengate's corn supplies were brought in ready threshed, perhaps from farms on drier ground. Also, the weed flora evidence from fen-edge sites does indicate that nearby land (including wet areas) was being used in some way that resulted in the transport of local weed seeds back to the habitation sites, probably including (if not limited to) cereal cropping (DG Wilson 1984).

At Danebury, the charred archaeobotanical remains have been used to investigate which areas of the hillfort were used for which stages of crop processing and corresponding changes in societal attitudes towards the production and consumption of crops (Jones 1995). Despite problems of dating, such a study would be of particular interest at Wandlebury, a unique example of a site at which a ringwork appears to have been superimposed on an existing community, with people continuing to live both inside and outside the enclosure (French and Gdaniec 1997a & b).

Conclusions

Analysing the macro-botanical remains from the pits (c. 15% sample) at Wandlebury, both inside and outside the enclosure, has provided concrete evidence for a wider variety of agriculture-related activities taking place at the settlement in and surrounding the ringwork. Some of the assemblages (ie debris from fine-sieving) were anticipated, others (the meadowweed seed dominated assemblage) less so. The latter assemblage, from pit F126, may provide increasingly direct evidence for the use and management of meadow grasses, and/or the transport of weed seeds to a settlement site as part of a straw crop. Analysis of more samples and better dating would continue to fill in the picture of agricultural activity at Wandlebury.

A cross-disciplinary investigation of Iron Age pit deposition

Rachel Ballantyne

Introduction

The aim of this project was to investigate the depositional and taphonomic processes operating within pit F77, and thus develop a better understanding of deposition of the charred plant macro-remains and events that surround them. This involved the analysis of the plant macro-fossil remains from spits 9 and 12 in the basal third of the pit (Fig. 12: contexts 295 & 296) combined with micromorphological study of its south-western basal corner fill, with particular attention to the nature of combustion within the pit and its subsequent infilling. Both these processes are little studied in Iron Age pit contexts, yet have implications for the way in which original plant deposits are reconstructed from their charred remains.

Seven separate fill contexts (291–7) were recorded in pit F77, of which 295–7 appeared to contain the most charred organic matter (Figs 12 & 23). Lenses of phytolith-rich ash were noted overlying context 295 in one place, and also between context 296 and context 295 in another. Two parallel lines of charred grain (context 297) separated by ashy material, and running down the southwestern edge of the pit, prompted the taking of block samples from this area. Spade marks were apparent as shallow cuts, sub-rectangular in plan, cut into the top of 295 (see Lewis above).

Micromorphology of the basal pit fill

Two block samples of the south-western basal corner of F77 were removed during excavation of the pit (Fig. 16). One sample was subjected to micro-excavation (Cooper 1996), the other used to produce a thin-section slide through the basal layers of pit fill. Six units were identified in a sequence from right (inside) to left (outside) across the slide (Table 16). An open calcitic matrix with organics is present to a varying extent throughout all the layers, which represent three basic matrix types, as follows:

Layers 1 (inside) and 6 (outside) both represent a roughly equal mixture of carbonised organic (45–58%) and mineral components (mainly calcium carbonate). They are poorly sorted and grade into their adjacent

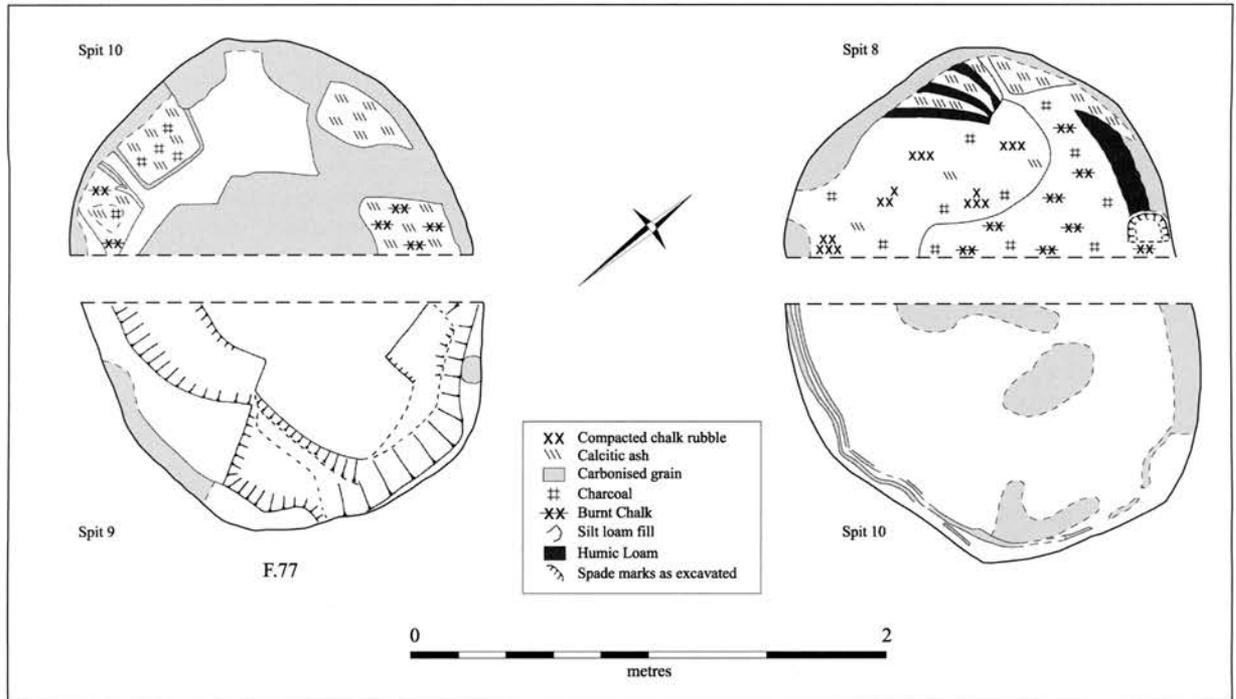


Figure 23. Charred grain deposits and spade marks in pit F77 (C French).

layers, 2 and 5, respectively.

Layers 2 and 3 contain a high mineral component (88%) comprising mainly aggregations of amorphous calcium carbonate, spirite and microspirite calcium carbonate. Organic matter is relatively rare (10%). 50% of layer 3 is fine chalk rubble (>2 mm), and the surrounding fine matrix is virtually identical to the composition of layer 2, which contains slightly more organic matter.

After the well-defined boundary between layers 3 and 4, layers 4 and 5 grade into one another. Both contain very high levels of organic matter (90%) and a very low mineral component. An extremely high level of phytoliths in layer 4 and found to represent numerous hair bases, intact hair cells, and prickles (trichome cells) remained attached to sheets of phytoliths 100–300 µm long. No bulliform cells or stomata – both diagnostic of leaves – were observed. The ‘hairy’ nature of the remains suggests that they derive from the inflorescences (especially glumes) of grasses; some particularly intact pieces are identifiable as awn fragments.

Several layers contain bone inclusions with partial mineral replacement and no evidence of exposure to charring conditions. Both layers 6 and 3 contained intrusive fragments of topsoil, and layer 1 a possible fragment of burnt soil.

The plant macro-remains

Two samples derived from different depths and contexts in the centre of pit F77 were examined, the highly carbonised basal fill (context 296) and the top of fill 295, a mixture of charred grain and soil with possible spade marks (c. 40 cm above the pit base)

(Fig. 12), with all identifiable components recorded and quantified. As the relative proportions of grain, chaff and weed components in an assemblage are useful indicators of the stage of crop processing at which charring occurred (Hillman 1981: 84), ratios of components within the two samples were calculated (cf Van der Veen 1992: 82–4) (Table 17). The ratios are also potentially good indicators of the taphonomic effects of charring and preservation conditions on the recovered assemblage (Boardman and Jones 1990; Hubbard and al Azm 1990).

The calculations highlighted some interesting contrasts between the two samples (Table 17).

In both samples, glume wheat grain, mainly emmer, was in significantly larger amounts than hulled six-row barley (11:2 in spit 9; 39:2 in spit 12). The high grain:rachis segment ratio of 4:1 for *Hordeum vulgare* in spit 9 further suggests that the glume wheat and barley had been processed separately.

In whole barley ears the ratio of grain:rachis segments is 3:1; once the greater vulnerability of chaff to taphonomic processes (relative to grain) is taken into account, it appears whole ears must have been present in spit 9 for a 4:1 ratio to exist.

The ratio of 4:3 for *Triticum spelta/dicoccum* glume bases to grain in spit 9, is close to that for spikelets (1 glume base:1 grain for glume wheats) and (once taphonomic processes are taken into account) it appears intact spikelets must have been present. A fully intact glume wheat spikelet was found in the sample, which further supports this statement. Only two ears of glume wheat were identified, creating a grain:rachis segment ratio of 329:2 for the sample. This is much less than the expected 2:1 ratio even when taphonom-

Table 16. Synopsis of micromorphology results for the basal fills of pit F77.

layer	% void	% stone-% soil	Coarse Fraction (%)	Fine Fraction (%)					Inclusion
			medium/fine quartz	phytoliths	Organic carbonized	other	Inorganic CaCO3	other	
1	30-50	0-100	< 7	0	30	15	43	2	<3
2	20-30	0-100	< 2	0	8	4	83	<3	0
3	30-40	50-50	< 2	0	4	<2	90	0	<2
4	30	0-100	< 2	78	10	<4	<6	0	0
5	30	0-100	< 2	15	<60	15	<6	0	<2
6	30	0-100	< 3	15	32	10	37	0	<3

Table 17. Seed, glume, embryo and rachis ratios in pit F77.

	OVERALL grain: seeds	<i>Triticum spelta</i> /dicoccum grain: glumes	% grain with embryos	<i>H. vulgare</i> grain: rachis	<i>T. sld</i> : <i>H. vulgare</i> ratio of grains
Spit 9	5:1	4:3	38	4:1	11:2
Spit 12	14:1	2:1	25	7:2	39:2

ic processes are taken into account, and this suggests the glume wheat must have been already threshed and winnowed into spikelets. This is in contrast to the unthreshed barley ears.

In the less well preserved context 296 sample, the 2:1 ratio of grain to chaff for glume wheats is very similar to that recorded by Jones (1984) for pit 1078 at Danebury. These values still support the hypothesis that a bulk charred spikelet deposit with barley ears is represented. Glume bases and rachis segments are both significantly more susceptible to fragmentation, and the clearly severe charring and subsequently poor preservation in context 296 would account for this loss of chaff components.

Weed species and morphology

The weeds found included some potential cereals, *Avena* sp and *Cereale secale*, but since only one grain of rye, and wild oat awns were found, neither appears a particularly significant (or intentional) inclusion.

The most substantial weed component was *Bromus* sp seeds, particularly in spit 9 where 58 seeds raised the total weed:grain ratio to 1:5. This species was also noted in high quantities at Danebury (Jones 1984). The seeds are a very similar size to the grain, but may have been deliberately left in the assemblage, depending on the means by which most other weeds were excluded.

Other weed species were in very small quantities, with often only one or two seeds present. They are also mostly of similar size to the spikelets (ie *Lithospermum arvense* or *Malva* sp seed head), although some are much smaller (ie *Phleum pratense*). If the weed species were removed by sieving, then it would appear to have been slightly inefficient, as also suggested by the presence of cereal tail grains. An alternative explanation for the low weed levels is that grain was collected by plucking, but the *Malva* sp sug-

gests against this. This genus is quite distinctive, and would be unlikely to be accidentally included during the harvest. Inclusion of many of the small-seeded weeds would also be unlikely in such circumstances, although it could be argued that the *Bromus* sp seeds were deliberately included.

The weed ecology

Many of the species present, particularly *Rumex* sp and *Avena* sp are common in a wide variety of temperate environments, and so it is difficult to conclude much from their presence. Several species, particularly *Bromus* sp and *Lithospermum arvense* (both annuals), exhibit a tendency to grow on arable land. The inclusion of *Malva* sp is interesting, as it is rare in arable fields today, being more likely to occur around the edges.

The crop processing stage at charring

It appears that glume wheat bulk spikelet deposits were charred in F77 at Wandlebury, which is similar to Iron Age pit deposits at many other British sites, particularly Danebury. The harvested ears (mainly emmer, with some spelt) had been threshed into spikelets, winnowed, and sieved to remove the main weed components. At some stage after this hulled six-grain barley ears were added to the spikelets. If the barley had also been threshed, winnowed and sieved then such a high proportion of barley rachis segments would not have remained. The subsequent assemblages were placed in pit F77, presumably for storage, before being charred.

The components of the two samples, particularly the relatively high quantities of chaff and grain, and low amounts weeds, correlate well with 'Hillman Stage' 8 (Hillman 1981: 84). This stage is associated with the products of accidental charring during parching of glume-wheat spikelets, but it is also

analogous to the result of charring a bulk spikelet store. Hillman (1981) noted from ethnographic research in Turkey that storage of spikelets rather than pure grain is common in 'wet' climates, since the chaff acts as a protective outer coating, which is then removed as and when the grain is needed. The mixing of partially processed glume wheat spikelets with barley ears suggests that they were harvested separately.

Pit infilling, preservation and charring

From the micromorphological study, it is clear that infilling and slumping within the pit has been significant since charring of the original grain deposit. The presence of phytoliths emphasises this point, confirming that charring must have occurred *in situ*, and that intrusive material since then has included surface debris (topsoil and bone fragments) and erosion from the pit edges (fine chalk rubble). Conditions within the pit have been well aerated and occasionally damp, with high micro-faunal and root activity. In terms of the plant remains, any uncarbonised or non-mineralised components are likely to have rapidly degraded, as suggested by the extensive void space (average 30%) observed in the thin section.

Hubbard and al Azm (1990) suggested a series of characteristics which could be used to estimate the levels of preservation within a context, based on the surface characteristics of charred grain. According to their classifications, the remains from spit 9 correspond with preservation stage 2, and spit 12 to stage 3, but the distinction seems quite subtle. In order to provide a quantitative estimate of preservation standard the number of whole *Triticum spelta/dicoccum* grains with embryos intact was recorded for each layer (Table 17). The results support earlier observations, with 38% of the whole *T. spelta/dicoccum* grains in spit 9 still with their embryos intact, compared to 25% for spit 12.

When interpreting the preservation standard of the remains in each layer the probable charring conditions should also be considered, since preservation is not independent of charring. As spit 12 was completely composed of carbonised grain with little void space, it implies that carbonisation effected all grain in this area, whereas spit 9 was less densely packed with carbonised material and therefore represents less complete carbonisation. But the grain in spit 12 was also less well preserved and the differing embryo preservation between layers represents the vulnerability of the more highly charred remains in spit 12 to mechanical destruction. Thus, even though context 296 appeared clearly more charred than context 295 during excavation, its remains are also much more degraded and less representative of the original (probably partially processed spikelet) deposit.

Implications for plant macro-remains analysis

Boardman and Jones (1990) clearly showed in a series of experiments that chaff components are much more vulnerable to the taphonomic effects of charring (and subsequent preservation conditions) than grain. In both samples, *T. spelta/dicoccum* and *H. vulgare* grain

are over-represented compared to glume bases and rachis segments (respectively) if whole spikelets or ears had been charred. This divergence is also more marked for the more carbonised remains in spit 12 than for spit 9.

Whilst F77 has so far been treated as the charred remains of a single deposit and episode of burning, this may not be the case. Patterns remain which suggest two charring episodes (and deposits) could be present. This observation is based on the phytolith-rich ashy material recorded between fills 295 and 296. As noted in the micromorphological analysis, phytoliths are produced in extreme charring conditions where high temperatures and oxygen levels cause the complete oxidation of plant tissue such that only silica components remain. In an enclosed pit, the only area where such conditions are likely to exist appears to be where a grain deposit is directly in contact with the air. Cunliffe and Poole (1995) note that at Danebury thick layers of ash were sometimes present overlying carbonised plant remains in 'undisturbed' pits, perhaps acting as an insect deterrent (Hakbijl 2002).

In an 'undisturbed' grain deposit resulting from one episode of deposition and charring within in a pit, clear patterning of the remains should be visible. Theoretically, an ashy phytolith layer would be present at the top of the deposit where the oxygen supply had been greatest, with layers of increasingly less charred remains underneath. But, no such layers were noted in pit F77, although well preserved phytoliths did occur in the thin-section taken, and also during micro-excavation of a basal corner fill sample (Cooper 1996). It is highly unlikely that the two fills and the ashy lens are *in situ* from the same episode of charring, due to the oxygen and temperature gradients involved. Earlier firing to 'clean-out' deposits around the edge of the pit is possibly suggested by the layer of phytoliths and charred remains (in 297) clearly present in the south-west basal corner fill of the pit, following the pit wall upwards (Fig. 12). This vertical element also strongly suggests that the grain was within a container, probably made of organic material (ie cloth/textile).

The presence of charred remains from two burning episodes would explain the sequence of charring levels within the pit – with more highly charred remains and phytoliths underlying a slightly less charred and better preserved layer. The decreasing level of preservation quality with depth would be the result of more extreme charring conditions associated with context 296 as compared to 295, rather than oxygen and temperature gradients during one episode of burning. If two different episodes of burning did take place, and the different charring intensities taken into account, then each assemblage appears to have originally been quite similar in composition.

Conclusion: the biography of a pit

It is suggested that pit F77 at Wandlebury contains the remains of two separate episodes of charring of different intensities, but relatively similar assemblages. The first grain deposit and charring is represented by context 296 which was severely carbonised, and the remains of an ashy phytolith layer formed which overlay the centre of this fill context and to its outer sides. Subsequently another grain deposit (mainly represented by context 295) was charred in the pit, but under less severe circumstances. This sequence has led to a heavily charred deposit with overlying phytolith remains which required high oxygen levels to be underlying less severely charred remains.

Both deposits were of partially processed mainly emmer spikelets, with some spelt spikelets, and ears of hulled six-row barley; in context 295 three times as much barley grain and *Bromus* sp seeds were present relative to glume wheat grains – which seems unlikely to be solely due to the differential charring and preservation of components. The few other weed species present suggest that the crop was grown on the chalky downland surrounding Wandlebury. Other differences between the two contexts (particularly grain:chaff) can be attributed to the different charring conditions they were exposed to. The more severely charred context 296 shows poorer preservation, linked to the increased fragility of the carbonized remains relative to context 295.

Intrusive eroded material and the high levels of void space (30%) in the southwestern basal corner fill of the pit suggest that the pit fill has been disturbed since charring. The concentration of context 296 in the centre of the pit, and erosion patterning revealed by the thin-section (see above) and micro-excavation block (Cooper 1996) suggests disturbance has been greatest around the edges of the pit. Root activity is usually greatest along the edges of cuts, and could have been a strong influence here. The mixing of contexts 295 and 296 is likely in this area.

The presence of eroded topsoil and bone slivers (perhaps from bone working?) within the base of the pit, combined with fine chalk rubble possibly eroded from the upper edge of the pit, suggests that it was partly filled for some time, probably after the charring event that formed context 295. The eroded upper edges of the pit may also be as a result of reuse. Possible spade marks in the surface of context 295 suggest that human activity may have disturbed the layers of fill in the pit, and this could explain why little ashy material was found overlying this context. If two charring episodes and deposits are present, then it is interesting that the assemblages were so similar, and that reuse of the pit occurred when it was not completely clean.

Much of the interpretation of the deposits in F77 is only suggested, particularly with reference to the charring conditions within the pit. A complex sequence of deposition, wall erosion, and fill slumping has obviously occurred here, and in trying to understand the fill patterning it is important to know how charring of grain actually proceeds within an enclosed

pit environment. This has not been experimentally investigated at all, although Reynolds (1974 & 1979) did burn the germinated grain 'skin' to sterilise used pits at Butser Farm. The lack of germinated grains in spit 12 of pit F77 clearly shows that this was not the case here.

The human skeleton in pit F229

Natasha Dodwell

The well preserved skeleton discovered in pit F229 was that of a mature adult male (Fig. 24), aged approximately 40–50 years old and about 1.68m tall. The body was lying on the base of the large circular pit, head towards the southwest, in a prone position, with its legs flexed to the right and hands together, in front of the pelvis. Two animal bones which appear to be deliberately placed were recovered close to the body; a cow mandible was recovered from below the shoulder area, facing the same direction as the human head and a roe deer pelvis (haunch of venison) from close to the feet.

The age of the skeleton was determined by a combination of the degree of epiphyseal fusion, the degree of dental attrition (Brothwell 1981), the macroscopic appearance of the pubic symphysis (Brooks and Suchey 1990) and the ilium auricular surface (Lovejoy *et al* 1985). The sex of the individual was determined using diagnostic characteristics of the pelvis and skull and by metrical data (Bass 1987; Buikstra and Ubelaker 1994). An estimation of stature was made using the regression equations developed by Trotter and Gleser (1958).

Pathological changes to the skeleton

The presence of Schmorl's nodes and an increase in porosity on the superior and inferior bodies of the lower vertebrae (T6–T12 & L1) are characteristic of the degeneration of the inter-vertebral discs and incipient osteoarthritis. Marginal osteophytes at the sternal end of the right clavicle and an alteration to the joint morphology are also indicative of osteoarthritis. The congenital defect of the spine *spina bifida occulta* was recorded. Although visually severe, it should be emphasised that this bony defect was, in life, bridged by cartilage or membrane. Problems with bladder control and lower limb paralysis recorded in modern cases of *spina bifida* would not have affected this individual.

Small holes and tiny worm-like depressions recorded on the surfaces of the orbits, *cribra orbitalia*, are indicative of childhood anaemia. The aetiology of anaemia is multifactorial and, for example, can result from an iron-deficient diet, diarrheal disease or parasitic infection (Roberts and Manchester 1995: 166–7). Other indicators of childhood stress were observed as defects in the tooth enamel, known as hyperplasias, on the mandibular canines.

The skeleton is relatively lightweight and this is most noticeable in the spine (including the sacrum), the ribs, sternum and pelvis. This may well be the result of the burial environment but diminished bone mass is characteristic of osteoporosis, a condition

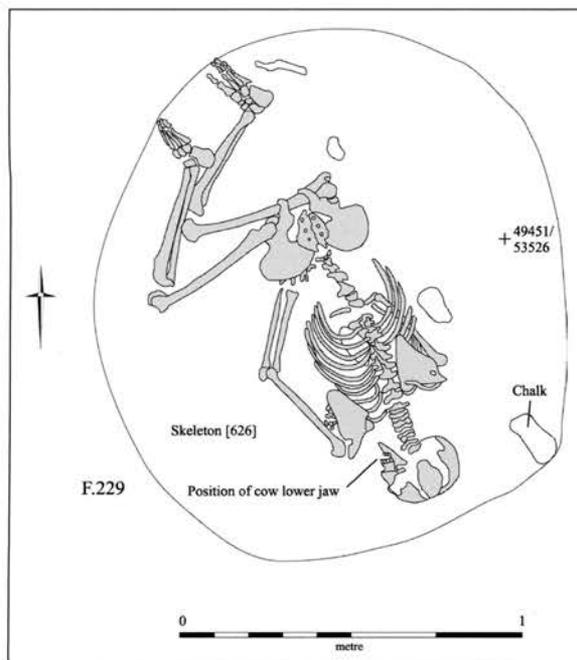


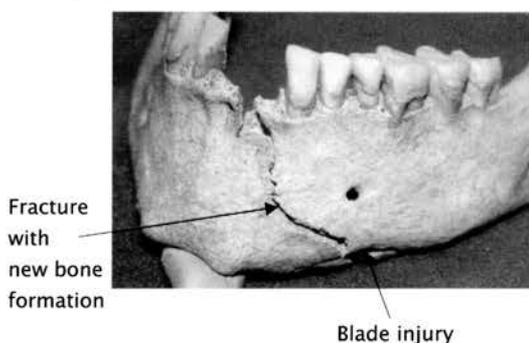
Figure 24. Pit F229 with the human skeleton (626) in its base (C French).

resulting from a long-standing imbalance between bone resorption and bone formation (Ortner and Putschar 1981: 289). It does not usually manifest itself until the fifth decade and is more frequent and severe in females. Where the vertebrae and sternum have broken post-mortem, the normally dense vertical and transverse trabecular system appears reduced, but X-rays would be necessary to confirm a diagnosis.

All the permanent teeth are present. Slight to medium deposits of dense grey/brown mineralised plaque, calculus, were recorded around the necks of all the teeth, particularly on the buccal and lingual aspects.

There is a probable blade injury *c.* 25 mm in length on the left side of the mandible, at its base, in the region between the mental tubercle and the inferior border of the ramus (Fig. 25). The lesion is well healed, although open and still visible. A small sinus (2 mm), which would have drained pus and is probably related to the blade injury, was located at the medial end of the lesion on the border, *c.* 10 mm below the mental foramen. The proliferation of grey brown new bone surrounding the sinus suggests that it was still active at death. Running medially in a jagged line from the sinus up to the alveolar, in the region of the left central incisor, is a radiating fracture. This injury is probably associated with, and secondary to the blade wound. The new bone, which was recorded around the sinus

Mandible



Underside of mandible

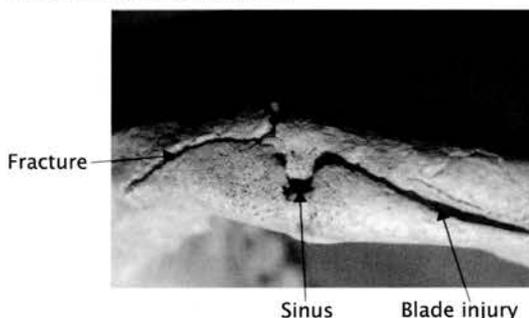


Figure 25. Blade injury at the base of the left side of the mandible in the mature adult skeleton found in the base of pit F229 (N Dodwell).

extends along the margins of the break indicating that the antemortem fracture was uniting but was still in the process of healing at death. How long the injuries occurred before death is difficult to tell, but it was probably some months as the interior cancellous bone seen at the site of the fracture appears to have reorganized. The mandible is actually in two pieces; a post-mortem/dry fracture has occurred in antiquity, along the line of the original fracture presumably because the bone is weakest here.

The ribs are fragmentary with many post-mortem breaks but it was still possible to identify an antemortem fracture on a lower left rib. Unfortunately, the most sternal end of the rib is missing but raised, striated new bone was recorded towards the sternal end of the rib shaft. It is similar in appearance to the new bone which had developed along the fracture in the lower jaw and likewise, the fracture would have been in the process of uniting at death.

The body of a mature adult male had been deliberately deposited in the pit with various parts of animal and the position of the hands suggest that they may have been tied in front of him. The injuries he received to his jaw and ribs were inflicted some months prior to death and were in the process of healing; it is not possible to say that he died of these injuries. Several other human burials excavated at Wandlebury ringwork in recent years have displayed signs of

mutilation and/or trauma. Excavations in the 1950s revealed three burials in pits, two of which had been mutilated (Hartley 1957) and in the 1970s a skeleton with a sword cut, that had removed part of the chin, was recorded (Taylor and Denton 1977). These would repay a detailed re-analysis.

Discussion

The suite of archaeological and palaeo-environmental evidence presented above indicates that there is an extensive and long-lived use of the hill-top. There is a sparse scatter of Neolithic and Bronze Age flint work in the former ploughsoil of Varley's Field, but no monuments or sites are yet known. There is strong evidence for an extensive earlier to middle Iron Age settlement surviving outside to the east of the hill-fort, as well as contemporary Iron Age and later, Romano-British, occupation within the southeastern sector of the interior. The intensity of Iron Age settlement appears to drop away northwards, but as so little of the interior and hill-top have been investigated thoroughly, this may be of unproven significance. It is clear that a major objective of any future fieldwork would be to define the real extent of this settlement and to relate this earlier settlement to the construction and use of the ringwork and the newly discovered and previously known contemporary sites in the hinterland.

The ditch and rampart construction and sequence

There is the possibility that the substantial post-holes found beneath the interior edge of the line of the inner rampart represent a palisade setting, rather than posts supporting/retaining the inner rampart. Rather than defining within the buried soil and containing chalk rubble-rich fills, these features significantly only define at the very base of the buried soil/top of the chalk substrate, and are infilled with soil material only. This suggests that this placement and removal took place prior to any chalk rampart material being present. If these observations could be repeated over a length of inner rampart, a pre-ringwork palisaded enclosure, perhaps of the latest Bronze Age and earliest Iron Age date, could become a very strong possibility. Alternatively, the palisade construction could be associated, spatially discrete and concentric with the first (outer) rampart and ditch. Whichever is the case, appropriate dating and phasing relationships are still required.

Although Hartley (1957) and Cunliffe (1974) have suggested somewhat different constructional sequences for the two sets of ditches and three ditches, there is still no adequate evidence to support either of these. The dating of the sequence is still based on pottery alone, much of which could be residual. But it does suggest that the outer ditch, rampart and counterscarp bank were earlier and of the 4th–1st centuries BC, and the inner ditch and rampart of the 1st century BC. Certainly more investigation of the ditches/ramparts sequence and adequate samples for radiocarbon assay are still much needed to refine

these interpretations. In order to do this, lengths of the outer and inner ramparts would require excavation to retrieve appropriate organic/carbonised material from the base of the rampart banks and upper surface of the old land surface/buried soil for radiocarbon dating as well as from the primary fills of both the inner and outer ditches.

The topographical survey conducted during this investigation discovered an original entrance through the inner rampart and ditch within the southern pad-dock in the southeastern sector of the monument (Fig. 3). There was also some additional elaboration of the defences here through the construction of a short length (c. 15 m) of chalk rubble rampart just within and to the south of this entrance. It appears to have been blocked and out of use by the earlier Roman period as 1st/2nd century AD occupation material was accumulating in the tops of back-filled Iron Age pits just within this entrance area. There may also have been a northern entrance way as observed within Orchard Field in this evaluation, but it is impossible to be sure whether it is of Iron Age, or some later date. These are both in addition to the other possible entrance way through the inner rampart which is represented by the gravelled entrance to the north stable yard on the southwestern side of the ringwork.

Although the double rampart and ditch defences of Wandlebury are substantial, they do not take any advantage of the natural contours of the hill-top. Indeed, they are placed well away from the northeastern scarp face of the hill-top and enclose only a proportion (less than half) of the highest part of the hill-top (Fig. 1). In addition, when the Wandlebury ditches are compared to the contemporary triple-ditched enclosure recently found at Borough Hill, Sawston (Mortimer 2001), they are shallow and insubstantial, and when compared to the location of the nearby War Ditches on a chalk spur to the north (McKenny-Hughes 1903), they appear to have little defensive aspect. Rather the importance, position and form of the post-built precursor monument at Wandlebury could well have dictated the position of the subsequent ramparts and ditches of the ringwork, that is set back from the northern scarp face of the hill-top.

In terms of the contemporary environmental conditions, there is now some new evidence from the buried soils themselves beneath the inner rampart and counterscarp bank, as well as the faunal and charred plant remains. The palaeosols are well preserved rendzina or brown earth soils present which are ubiquitous on chalk and limestone substrates and are associated with long established grassland vegetation (Limbrey 1975), but may have witnessed some arable use. This type of local environment would certainly fit with the faunal remains found in the pits in the recent evaluation which suggest that sheep husbandry was the norm and unchanging throughout the Iron Age at this site, with cattle becoming predominant in the Roman period. Nonetheless, grain crops were brought to and stored on the site in pits, in various stages of processing and storage handling. Further corroboration of open, mixed pastoral/arable

agricultural landscapes in the near vicinity comes from the charred plant remains which suggest open meadow and arable grain crops being grown. The generally poor preservation of molluscs, and the poorer condition of the animal bone in Roman than Iron Age contexts hints at post-Iron Age decalcification of the area. This kind of observation is regarded as a long-term trend in the Holocene especially on chalk downland landscapes (Keeley 1982), and is sometimes suggested as associated with over-grazing and a lack of suitable manuring practices.

The settlement outside and inside the ringwork

Evaluation of Varley's Field immediately to the south-east of the ringwork indicates that the first (outer) rampart probably cuts through an area of earlier Iron Age settlement eccentrically. Indeed several pits (ie in Fig. 11) appear to be situated beneath the line of the associated counterscarp bank, and therefore may slightly pre-date the first rampart and ditch construction. Again, good/tight archaeological stratigraphic relationships/sequences and dating are missing, and the question of the relationships between settlement inside and outside of the ringwork must still remain open.

What is striking is that there are dense areas of pits seen in the geophysical survey (Figs. 5–10) and tantalisingly in almost all the evaluation test pits and trenches. But without good archaeological visibility in much of the interior of the ringwork, it is impossible to suggest activity areas, as done at Danebury (Cunliffe 1995; Jones 1995). Nonetheless, pit density tails off rapidly beyond the southern third of Varley's Field on the exterior, and is more sparse in the northern paddock and more or less absent in the Orchard Field in the interior, for example. In fact, it does appear that there is a greater density of features around the newly discovered entrance way, both inside and outside the ramparts and ditches, in the southeastern sector of the site.

Structures and linear features were not common in the evaluation, but good hints of structures were uncovered. For example, several shallow and irregular gullies have been revealed in the trial trenches (ie II, V, VII, IX & X) and test stations (ie 3, 5 & 7) which may represent eavesdrip gullies around structures (Figs. 4, 15 & 17), fence lines and/or drainage gullies. In addition, test pit 3 contained a possible four-post structure, a very common structure on most English Iron Age sites and believed to be for the storage of grain (Cunliffe 1995; Reynolds 1981). The geophysical survey also contains hints of more substantial post-built structures (Fig. 6). Really only extensive open area excavations would provide sufficient detail and relationships to be sure of the density of above ground storage and domestic structures, both inside and outside the ringwork.

There are relatively few linear features so far investigated. Certainly the magnetometer survey (Fig. 6) shows a substantial, southeast to northwest oriented ditch of over 50m in length, although this was not investigated. There shallowness makes dating problem-

atic also, but the post-trench/gully F88/9 in trenches V/VII contained abraded sherds of Roman pottery, which suggests that it may be Roman or later in date. Nonetheless, these hints plus the aerial photographic record and the geophysical survey of the Woodland Trust area to the south (Figs. 9 & 10) indicate that an extensive area of later prehistoric and later field systems exist in the immediate vicinity of the ringwork.

The pits and their possible uses

Given the small number of pits excavated (46), there are a number of different uses and depositional events evident, effectively mirroring interpretations given for sites such as Danebury where a large number of pits were excavated (Cunliffe 1991, 1992 & 1995). In only one case is there the strong possibility that the pit was used for storage of grain, pit F77 (Figs. 12 & 23), but hints of similar use in pits F15 and F126 (Fig. 12). From pit F77, emmer (*Triticum dicoccum*) and barley (*Hordeum* spp) were the main cereals observed in a frequency ratio of 3:2, but with very few weed seeds or carbonised chaff fragments observed.

The lower fills of F77 exhibited clear, regular, vertical boundaries between the weathered chalk of the pit sides and the carbonised ash material which strongly suggest the presence of former organic linings of this pit. There are at least two linings evident marked by two repeated sequences of a fine chalk 'slurry' followed by carbonised grain, fine charcoal and ash deposits over a thickness of about 1cm. This feature is further corroborated by two episodes of grain charring *in situ*, sandwiched by two episodes of partial cleaning out using a spade. If there had not been such linings, the abundant earthworm soil fauna would have completely destroyed these sharp boundaries by mixing processes. In one other instance (F220), the pit appears to have been roofed as there is a single central post-hole in the centre of the pit (Fig. 14).

Observations from much larger samples of pits at other Iron Age sites (Hillman 1981; Jones 1984 & 1995) have revealed that glume wheats (ie emmer) and barley were often stored together at the same stage of processing. The general lack of range of weed species has been observed at other contemporary Iron Age sites such as Danebury (Jones 1995), and may suggest selective harvesting of the ears separately from the straw, or methodical weeding and cleaning of the crop. On balance and following Hillman's criteria (1981), the composition of the samples in the base of pits F77 and F126 suggest that they were bulk storage deposits. The vertical ashy (phytolith-rich) lens which separates the two burnt layers may well represent a 'scorching' of the pit as a form of sterilisation (Reynolds 1981).

Secondary use of the pits is evident in the 'closure deposits' that some of them contain. Specific depositional acts incorporate a variety of artefact and bone types, including fragments of human skull (in F220), a complete adult male skeleton in F229, decorated spindle whorls and bone plaques, small pottery vessels and parts of articulated animal carcasses (eg a dog in F50). Backfill layers often seal these deposits,

indicating intentional deposition as opposed to casual discard.

The faunal remains suggest the overwhelming predominance of sheep and to a lesser extent cattle in the agricultural landscape. Although the relative abundance to grain production/consumption was not established, it could mirror Danebury (Cunliffe 1995) where meat production was less than one-third of grain production. This begins to change in the Roman period with greater abundance of cattle, which may indicate a more equal status between meat, grain production and consumption.

Comparable sites in the surrounding contemporary landscape of Cambridgeshire

Although good summaries of Iron Age enclosure sites in the region have been presented elsewhere (Evans 1992; Malim 1992; French and Pryor 1993), it is important to bring out some salient points here. In particular, it is noticeable how there is now a considerable concentration of enclosed/fortified sites in and around the modern city of Cambridge.

At Arbury Camp, on the north side of Cambridge, Wandlebury's closest comparable site in terms of size and shape, evidence for contemporary settlement is substantially lacking and it appears to have been set in open grassland (Evans and Knight 2002). Also, Arbury Camp does not appear to have been occupied past the 1st century BC, whereas at Wandlebury there is limited earlier Roman occupation in terms of pits, post trenches and midden material being present.

The entrance way architecture and the perfect circularity of the ditch and bank at Arbury Camp were undoubtedly imposing against the flat surrounding topography. Similarly at Wandlebury, as it appears too that it was situated in a substantially open landscape, the ramparts and ditches would have been imposing from the southern, southeastern and southwestern approaches, but invisible from the northern fenland side. This suggests that the position of Wandlebury was deliberate, not taking advantage of the natural topography to exploit the highest part of the land and the northern spur overlooking the fens. Rather, it was to be seen and connected to the chalk downland area immediately to its south. This was where its population and wealth were probably derived, not the fenlands and Cam valley to the north.

Elsewhere, Iron Age enclosures of the scale of Arbury Camp and Wandlebury would be considered as 'defended enclosures' or 'fortified settlements' (Taylor 1977; Chowne *et al* 1986). It may be better to view these sites as of long-term importance in the landscape where there was a need to demonstrate power of people, place and land, and control of and/or access to agricultural resources. Indeed this emphasis on their visual impact and communal definition through the very act of enclosure has been suggested by several author writers (Bowden and McOmish 1987; Sharples 1991). The monument form varies from an imposing circular monument such as Wandlebury or Arbury Camp to those placed in a commanding position on a natural spur of land, whether at War

Ditches on the last chalk high ground before dipping into the fens, or on the last dry land before being submerged in the wet peat fen such as Wardy Hill, Coveney or Borough Fen site 7, with forms ranging from oval to circular to roughly D-shaped. Indeed, the 'defensiveness' of the ringwork enclosure may take many forms as several authors suggest (Pryor 1982; Evans and Serjeantson 1988; Evans and Hodder forthcoming). However it is argued, the ditches at all these sites are very substantial, and if they held water, as may well have been the case for at least part of the year, they would have been considerable imposing obstacles to pass, whether there were banks and/or palisades on the inside or not.

War Ditches, set 3km to the north of Wandlebury, may also be of some significance. Hughes (1904 & 1906) suggested that it was circular (c. 165m in diameter), surrounded by a steep V-shaped ditch of 3m depth and of 4–3rd centuries BC date and out of use by the 1st century BC. Nonetheless, Lethbridge's (1949) later work at the same site suggested that this site was incomplete on its eastern side and may have had a Bronze Age origin. Although most of this site is now quarried away, it would justify reappraisal to answer whether it is either a twin or precursor site to Wandlebury. Perhaps also, the long-lived prehistoric activity at the Babraham Road Park and Ride site (Hinman 1998) in the low ground immediately to the northwest of Wandlebury and southwest of War Ditches, hints at an extensively exploited and integrated Bronze Age landscape in which the Iron Age enclosures subsequently develop.

Recent investigations of the Borough Hill at Sawston (Taylor *et al* 1993; Mortimer 2001) have revealed a substantial D-shaped, multivallate enclosure, situated in the Cam river valley about 5km to the southwest of Wandlebury. The triple rampart/ditch sequence is not yet understood, but construction appears to have begun in the 5/4th centuries BC. Aside from the sheer scale of the three sets of ditches and banks, Early/Middle Iron Age settlement activity has been recorded from the centre of the enclosed area and later Iron Age material is seen to cover a much wider area but appears to be bounded by the ditched area. In addition, the well preserved buried soils beneath the ramparts produced worked and burnt flint of the Mesolithic to Bronze Age periods, and there is Roman occupation material, all of which signify very long-lived settlement activity.

There are two other possible contemporary enclosures on the western side of Cambridge which have seen limited investigations. The Ridgeon's Garden Site, Castle Hill (Alexander and Pullinger 1999: Enclosure IX), had a projected diameter of c. 100m with evidence of an entrance way structure, but is of later Iron Age date given that only Belgic pottery was recovered. The other nearby site of Marion Close, off Huntingdon Road, Cambridge, revealed a massive arc of Middle/Later Iron Age, V-shaped ditch that was 6m in width and 2.25m in depth with a palisade trench on its interior edge (Mortimer and Evans 1997). This site is also of comparable size to both Wandlebury and

Arbury Camp.

Recent archaeological investigations in the area around Wandlebury have also begun to indicate the apparent density of unenclosed settlement and land-use activity in the vicinity. In particular, the Robinson Way site at Addenbrookes Hospital has revealed an extensive rural later prehistoric and early Roman farmstead landscape with production areas for pottery in the 1st century AD, connected by well established routeways to all adjacent areas (D MacKay and C Evans, pers comm). In addition, immediately to the south of Wandlebury, an area of land planted by the Woodland Trust has been geophysically surveyed and has revealed (GSB Prospection 1998) farmsteads, possibly pit alignments and associated enclosures (Figs. 8–10). Whilst these landscape features have not been investigated by excavation nor dated, they appear from the aerial photographic record (CUCAP, BY-75, 1949) to be part of a widely and densely utilised, later prehistoric landscape to the south of Wandlebury. Speculating a little, this area could be a grain and meat procurement zone for a site like Wandlebury.

Conclusions and further work

It is now very clear that we are dealing with a very extensive Iron Age, apparently unenclosed, settlement which either just pre-dates or is contemporary with the first ringwork at Wandlebury, probably from the mid-5th century BC. The ringwork continues to see occupation right into the 2nd century AD, but on a much less extensive scale by the later Iron Age and earlier Roman period. This open settlement appears to be concentrated in the southern third of Varley's Field and in the eastern sector of the superimposed ringwork. Re-examination of the aerial photographic record from the 1950s and 1960s would suggest that this same dense area of pits continues southwards down the hill-side and into the arable fields beyond the cricket pitch to the south and southeast of the ringwork. In future years the extent, date, relationships and forms of these features will also have to be assessed.

Despite the Iron Age pottery suggesting that the main period of settlement represented is about 500–300 BC, there are strong indications of very long-lived use of the hill-top. The general scatter of prehistoric flints across Varley's Field indicates that it was at least frequented in the 3rd and 2nd millennia BC. In addition, the relatively small quantities of later Iron Age and Roman pottery wares indicate continued use of the hill-top outside and inside the hill-fort into the earlier 1st millennium AD.

Thus this evaluation has reinforced our impression of the hill-top as one of variable intensity, but long-term activity and importance, and one that it is fully integrated into a much wider landscape.

Further work must appraise the extent and nature of use of the hill-top and ringwork enclosures throughout the later prehistoric and Roman periods, and the constructional and settlement relationships.

This must involve further larger scale, intensive survey and excavations. It needs to set out to examine the spatial aspects of the organisation of the settlement related to the earlier and later use of the hill-top, both inside and outside the ringwork, the reasons for the siting of the monument, provide comprehensive dating evidence and further elucidate the contemporary environments and land-use of the hill-top.

Acknowledgments

Both the Department of Archaeology and I would like to thank the Cambridge Preservation Society for permission to excavate and especially Bill Clark, the former Warden of Wandlebury, for all his help and enthusiasm throughout the course of the fieldwork. We would also like to thank Philip Walker and Dr Andrew David of English Heritage for enabling the scheduled ancient monument consents, and the Education Section of the University of Cambridge, the Ernest Cook Trust and Anglia Television Fund for financial support. In addition, we would like to thank the staff of the local office of English Heritage, Chris Evans and the staff of CAU, Wendy Clark, all the students who participated in the excavations, and those who examined various aspects in practical projects, various specialists who have given their time freely, as well as Kasia Gdaniec who co-directed the excavations, and Julie Miller, Natasha Dodwell, Mary Alexander, Dr Chantal Conneller, Dr Lesley McFadyen and Dr JD Hill who helped supervise the excavations. Many thanks to Matt Brudenell, David Redhouse, Crane Begg and Gwil Owen for making the illustrations camera-ready.

Cambridge Antiquarian Society is grateful to the Cambridge Preservation Society and the Anglia Fund (Dept of Archaeology, University of Cambridge) for a grant towards the publication of this article.

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A Roman Cemetery in Jesus Lane, Cambridge

Mary Alexander, Natasha Dodwell and Christopher Evans
with contributions by Andrew Hall and Gwladys Monteil

The excavation of a later Roman inhumation cemetery revealed a total of 32 skeletons, six being accompanied by modest grave goods and three decapitated (with heads placed lower down beside the body). Seventeen males, nine females and two juveniles were identified. Most of them lay supine with their heads to the southwest, and most appeared to have been buried in shrouds although there were possible coffin nails in some graves. Grave goods included two copper alloy rings with one woman, a bracelet on another, hob-nails from boots that had been placed alongside three bodies, a small Nene Valley pot with one juvenile and a pottery flask with an older woman. Analysis indicates a predominantly mature population exhibiting pathologies associated with heavy work and old age. Cut marks on the vertebrae of the decapitated males were consistent with sword blows.

Earlier, 2nd–3rd century AD features relate to extra-mural/suburban settlement within the lower Roman town, and wasters occurring amongst the site's substantial Roman pottery assemblage would confirm earlier proposals of industrial activity within the area. Previous observations, including other burials, are reviewed. In addition, the results from a recent small-scale intervention at Nos. 11 Park Street, where further Roman cemetery evidence was also forthcoming, are outlined. Finally the implications of the various lower town findings concerning the layout and scale of the Roman Cambridge are discussed.

In 2001 the Cambridge University's Archaeological Unit (CAU) excavated a Roman cemetery in the basements of Jesus College's student accommodation at Nos. 35–37 Jesus Lane, Cambridge during the course of refurbishment (Fig. 1). Its discovery was entirely unexpected and the co-operation of the College was exemplary (their sponsorship of the fieldwork being entirely voluntary).¹ Aside from excavation throughout the cellars of the three conjoining Victorian properties, drainage trenches dug in their backyards allowed further recording of deposits and the excavation of another skeleton (Fig. 2).

After removal of the old floor covering by the contractors within the standing buildings the rooms were cleaned and base-planned. All burials revealed by this process were fully excavated and recorded. Where

part of a grave ran below the load-bearing walls, it was often not possible to excavate the inhumation in its entirety without jeopardising the stability of the buildings. In these cases part of the burial was left *in situ* until the contractors hand-dug the underpinning pits, whereupon the remainder was excavated with whatever recording could be achieved. This methodology also applied to graves which lay entirely below the building walls, and which were themselves only discovered during the underpinning operations.

Other features such as ditches and pits were sample-excavated (Fig. 3). Many later pits had disturbed the burials and were found to contain disarticulated burials; every attempt was made to recover all human bone encountered during the underpinning process.

The cellar level had truncated the top of the natural terrace gravels and no horizontal strata survived. It was only during the subsequent monitoring of drainage trenches in the backyard of the three houses that a full soil profile/sequence was exposed (Fig. 2). 2–2.20m deep in total, it was generally undistinguished; below recent garden soil make-up were a series of loamy dump horizons of probable medieval date ([191], [198] & [199]). The latter overlay a lighter-hued buried soil that probably attests to later Saxon/earlier medieval agricultural activity ([190]). This in turn sealed a dark brown gravelly sandy silt horizon ([196]) that bedded upon the basal natural gravels, [196] being the old ground surface into which the Roman features were dug (and sealed/truncated by [190]). Aside from various later features observed in the upper section, two Roman ditches were present within these trenches (F. 1 & 2; see below). In addition two graves were exposed, one being left unexcavated as it was sufficiently deep that the groundworks would not disturb it ([187]) with the other being excavated (Sk [201]).

Settlement Features

The site was traversed by two converging ditches, F. 1 and F. 2, which crossed within the back room of No. 37 (figs. 2 & 3). Both contained 2nd/3rd century pottery, but were not contemporary; F. 2 was later than F. 1 and cut across it. F. 1 ran diagonally across the floor space of No. 37 in a NNE-SSW alignment. It had been

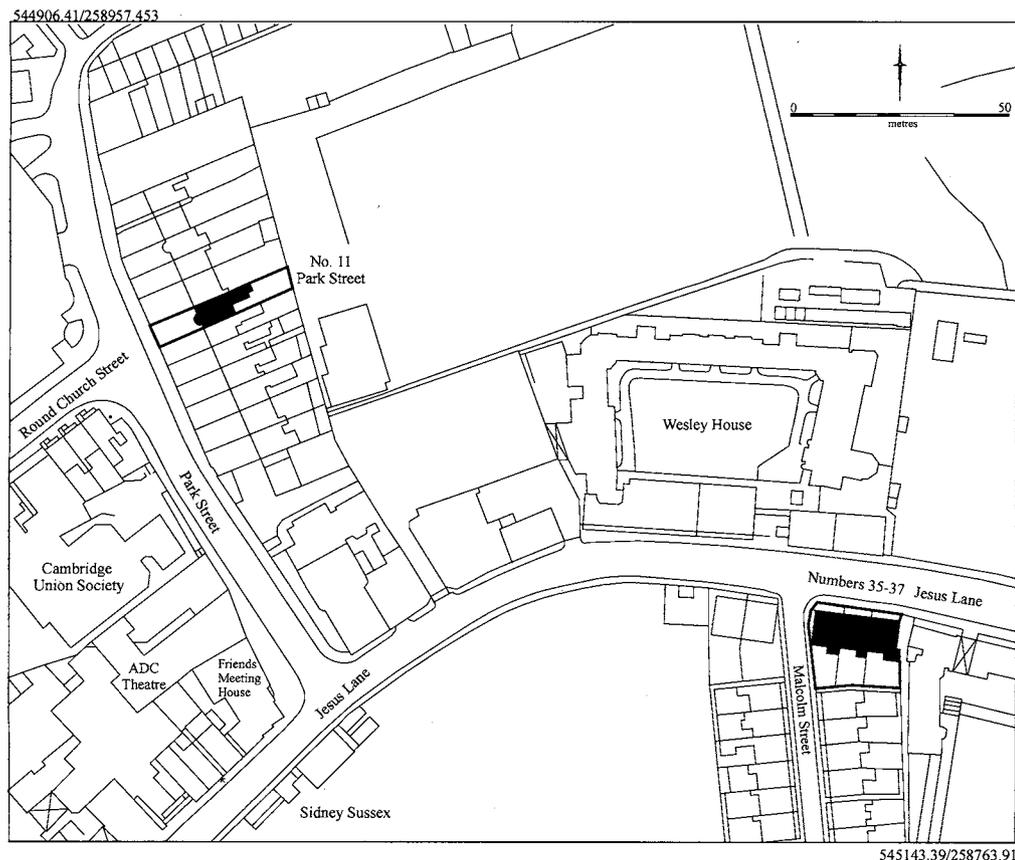


Figure 1. Site location.

truncated by the basements of the building, but survived to a depth of 0.35–50m, deepening towards the south. Approximately 1m wide, grey-brown sandy silt filled the upper part of the ditch and overlay a basal fill of silt and eroded gravels. Nearby occupation is suggested by the moderate quantity of charcoal fragments, animal bone and pottery within the fill. The ditch had been cut by three, or possibly four, graves. Although silted up before the interments took place, the ditch may have still been visible as a hollow but, with burials dug to either side, it evidently did not define a limit to the cemetery (though see *Discussion* below).

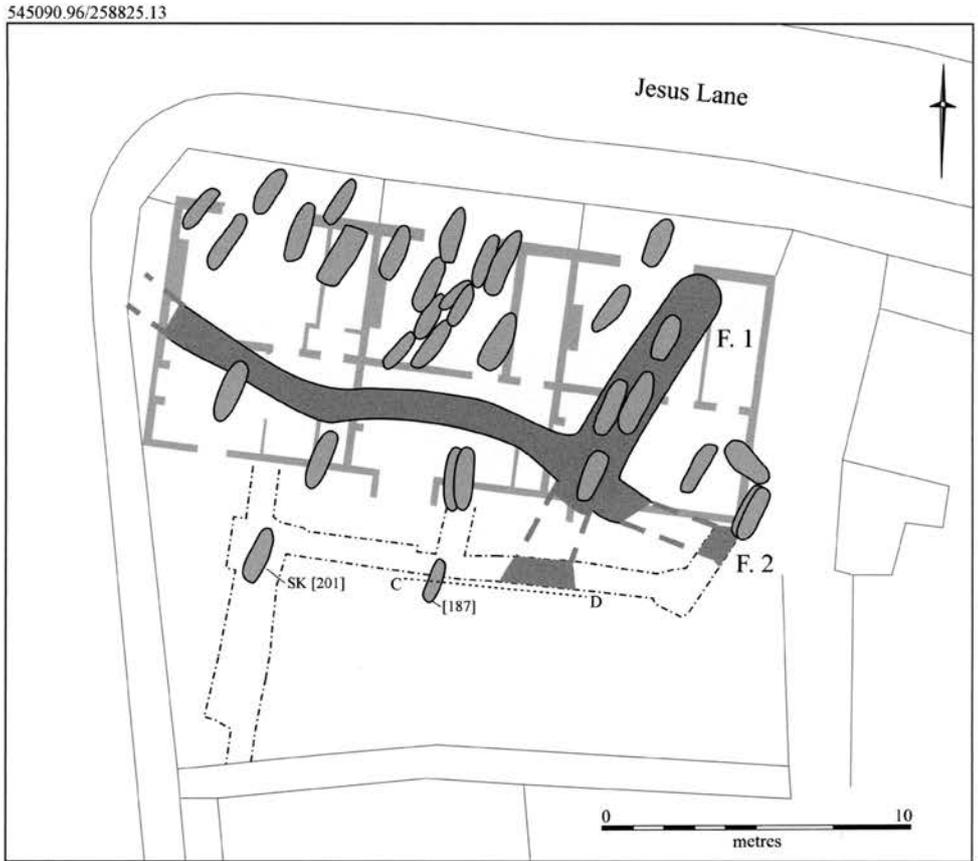
F. 2 was a sinuous ditch aligned east-west across the excavation area, but curving off slightly to the north as it ran below the western wall of No. 35, and towards the south at its eastern extent, where its alignment was recorded in the drainage works trench in the backyard of No. 37 (Fig. 2). The cut was steep sided, approximately 1m wide at the top with a maximum recorded depth of c. 0.50m, although its dimensions before truncation may have been considerably greater. The grey-brown sandy fill with redeposited natural gravels contained animal bone, fragments of disarticulated human bone, 2nd/3rd century pottery and a copper alloy coin of mid 2nd century date.

The third feature assigned to the Roman period was pit [125]. This was extensively truncated by an interior wall to the building, a medieval pit and two burials (Sks [052] and [059]). The pit was at least 1.8m across from north to south and more than 0.80m wide. Its surviving edges would suggest a grave, but proximity to the standing wall of the building did not permit its full exposure and excavation ceased at a depth of 1m. The fill was sterile apart from a disarticulated human left fibula.

The Roman cemetery

Dating of the pottery associated with the burials suggests this is a late Roman cemetery. Of the 32 individuals recovered, 22 lay wholly or partially within the basement rooms; nine were found beneath the walls during underpinning or as residual bone in later pits, and a single burial was recovered in the backyard of the properties (figs. 2 & 3). The burials varied in depth from just below the basement floors at c. 6.80m OD to c. 6.15m OD, approximately 1.90m below modern pavement level.

The most densely clustered burials lay below the northern room of the middle property (No. 36), with a thinning out of graves towards the northeast and southwest. However, distribution of the surviving



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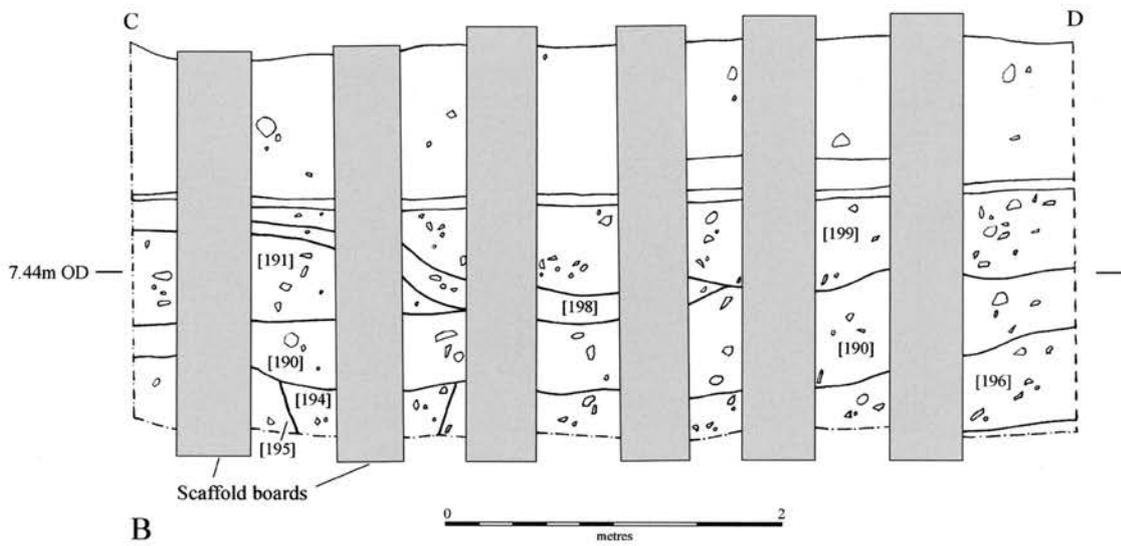


Figure 2. Site layout and soil profile exposed within drainage trenches.

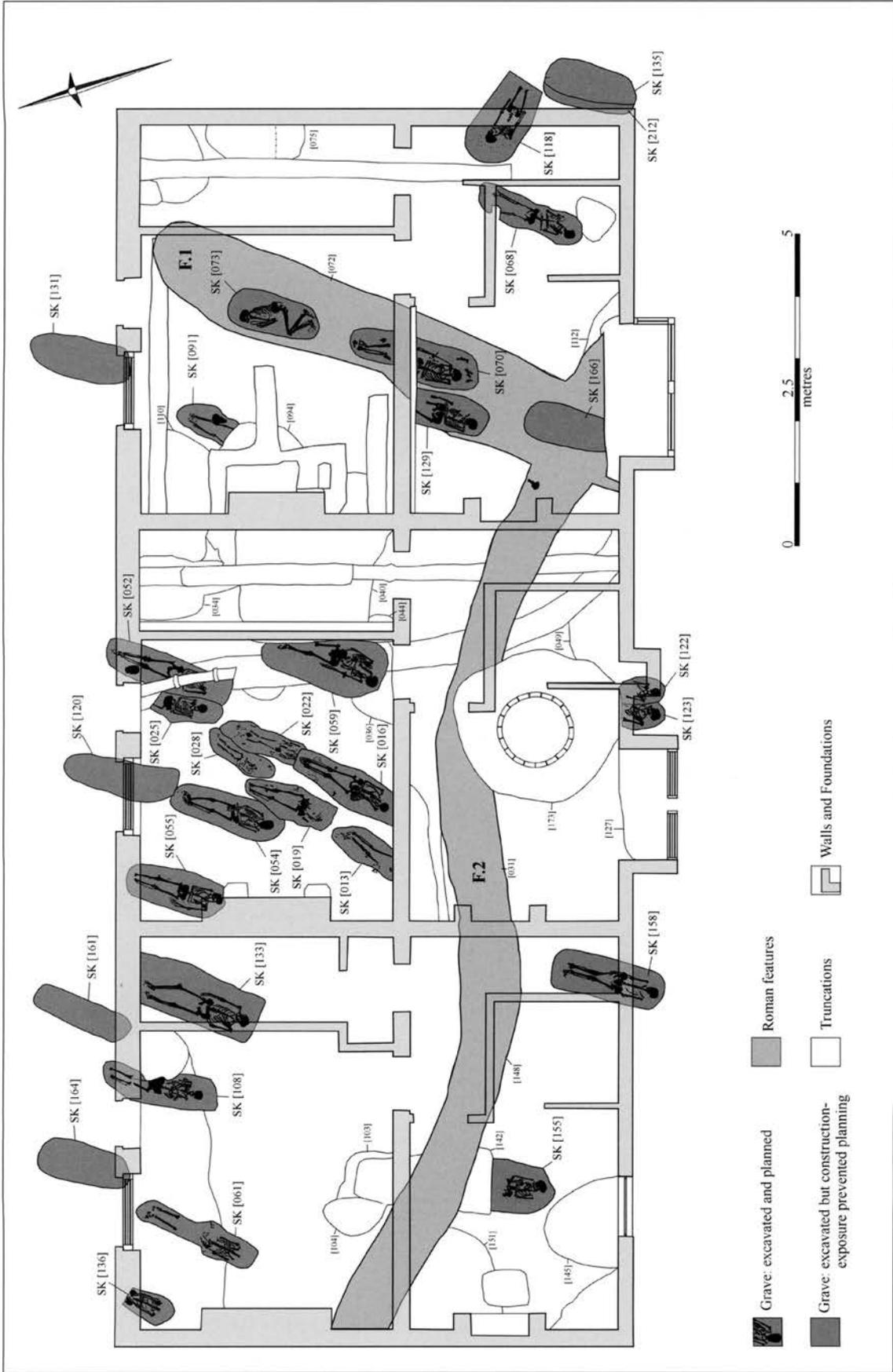


Figure 3. Base-plan within cellar interior of houses Nos. 35–37.

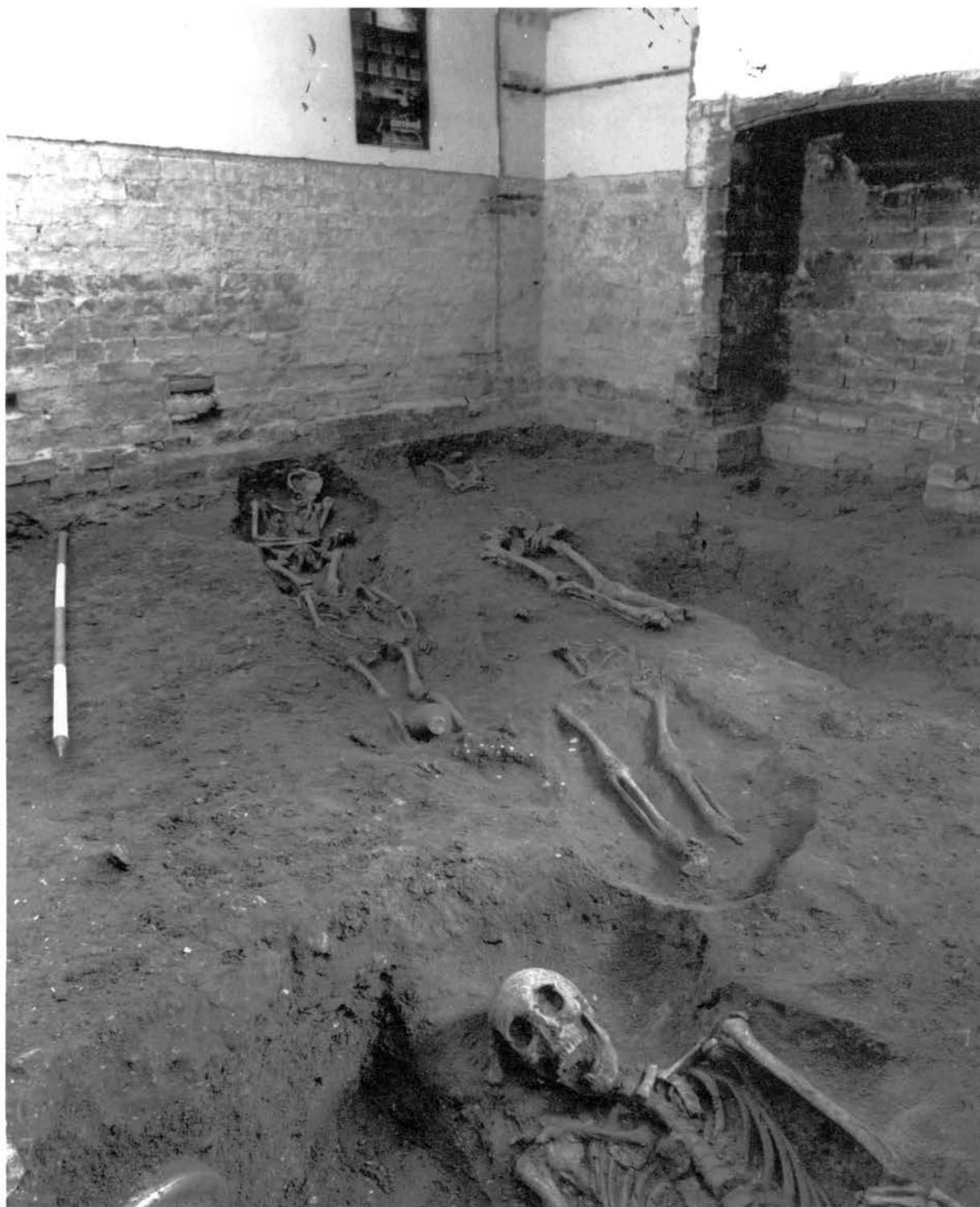


Figure 4. North Room, No. 36 Jesus Lane, looking south with Skeleton [025] in foreground and with Skeletons [013], [019], [022], [028] and [054] behind (photograph: G Owen).



Figure 5. Detail of Figure 4, with Nene Valley vessel set between legs of Skeleton [022] (white dots indicate position of hobnails; photograph: G Owen)

graves is partly determined by the incidence of later deep-cut features, the largest of which was the well in the south room of No. 36 that had severely truncated two burials and possibly destroyed others. Survival of the inhumations may also have been affected by the depth of burial; many of the shallower inhumations had been severely truncated and damaged by the floors and walls of the 19th century basements.

The majority of burials were supine and oriented on a SSW-NNE alignment with the head to the south. Each lay within its own grave cut, though there were some cases of intercutting burials where later interments had truncated or disturbed earlier graves. Four burials were found within ditch F. 1, also aligned NNE-SSW; three of these were cut into its backfill (Sks [070], [703], [129]); as outlined in Note 1, the fourth, Sk [166], was unearthed prior to the main excavation and its detailed stratigraphic relationship with the feature was not determined).

The position of the limbs of some of the individuals could suggest shroud burials. Nails were recovered from some grave fills, possibly indicating coffins. The most positive indication of a coffin came from Skeleton [118] where nails were found at roughly spaced intervals around the head and shoulders. The unusually large and square grave cut for Skeleton [133] may also attest to coffin burial.

There were three examples of shoes either on or

buried beside the body as indicated by surviving hobnails (Sks [016], [022] & [073]; Figs. 5 & 6); two of these were adult males, with the other a juvenile. The juvenile skeleton [022] also had a small complete Nene Valley colour-coated pottery vessel placed between the ankles (Figs. 5 & 6); the refitting fragments of another vessel associated with Skeleton [068] were identified during post-excavation processing and it may also have been deliberately placed in the grave (see Monteil below). Jewellery accompanied two individuals, both mature females: two copper alloy rings on the right hand of Skeleton [054], and a bracelet on the left wrist of Skeleton [129] (see Hall below; Fig. 10).

Although the majority of the burials conformed to the general layout, there were notable exceptions. One did not follow the expected alignment, and was oriented northwest-southeast (Sk [118]). Equally one of the ditch burials, while conforming to the general alignment, was arranged in a crouched position with the head towards the north (Sk [073]). Three other burials, which in all other respects were unremarkable, had been deliberately decapitated with their heads laid alongside the body (Sk [052], [091] & [161]).

Very few grave cuts had escaped some later truncation and general assumptions about the intended size and shape of the grave cut cannot be made.

Nevertheless, most appear to have been dug to accommodate the size of the buried individual, with rounded head ends, slightly tapering towards the feet. Exceptions to this appear to be the rectangular shape of the grave cut for Skeleton [133], and the crouched burial Skeleton [073] that fitted tightly into an oval cut with the feet set at an angle against the side of the cut.

Human Remains

Natasha Dodwell

The following information is given for each inhumation: a) details of the skeleton, with comments on sex, age, preservation, pathology and position; b) grave orientation, dimensions and shape; and c) associated finds.² Unless otherwise stated, all the bodies were buried in a supine position with their heads to the southwest.

Skeleton [013] Adult, ht. 1.66–1.69m (Fig. 6)

A partition wall has truncated the upper body and only the legs and elements of the hands and feet survive; these bones are all in good condition. The grave cut was shallow and subrectangular, measuring 1.08 x 0.52 x 0.15m.

Marginal osteophytes and an area of eburnation, changes

characteristic of osteoarthritis, were recorded on the anterior facet of the right calcaneus. Smears of a white chalk-like substance were identified below the legs.

Skeleton [016] Younger mature adult male, ht. 1.67m (5' 5 1/2"; Fig. 6)

The skeleton is in excellent condition although being so close to the surface much of the face is crushed or missing. The left upper arm lay slightly behind the body and the right arm crossed the body so that the hand clasped around the left lower arm. His knees were tight together and his left foot rested over his right. The grave cut was long and subrectangular with a squared northern end, measuring 1.78 x 0.53 x 0.22m.

Changes characteristic of osteoarthritis, including osteophytes, an increase in porosity and eburnation were recorded in the spine, particularly in the cervical and upper thoracic vertebrae. Similar changes were recorded in the left hand and in the left and right wrists. Multiple, smooth margined erosive lesions on the medial sides of the left and right 1st metatarsal heads could be indicative of *hallux valgus* or bunions (Rogers & Waldron 1995, 82–85). These can be hereditary and/or result from tight-fitting shoes. Additional facets on the right inferior transverse process of the 5th lumbar and on the right wing of the sacrum indicate the commencement of partial sacralisation. *Osteochondritis dessicans*

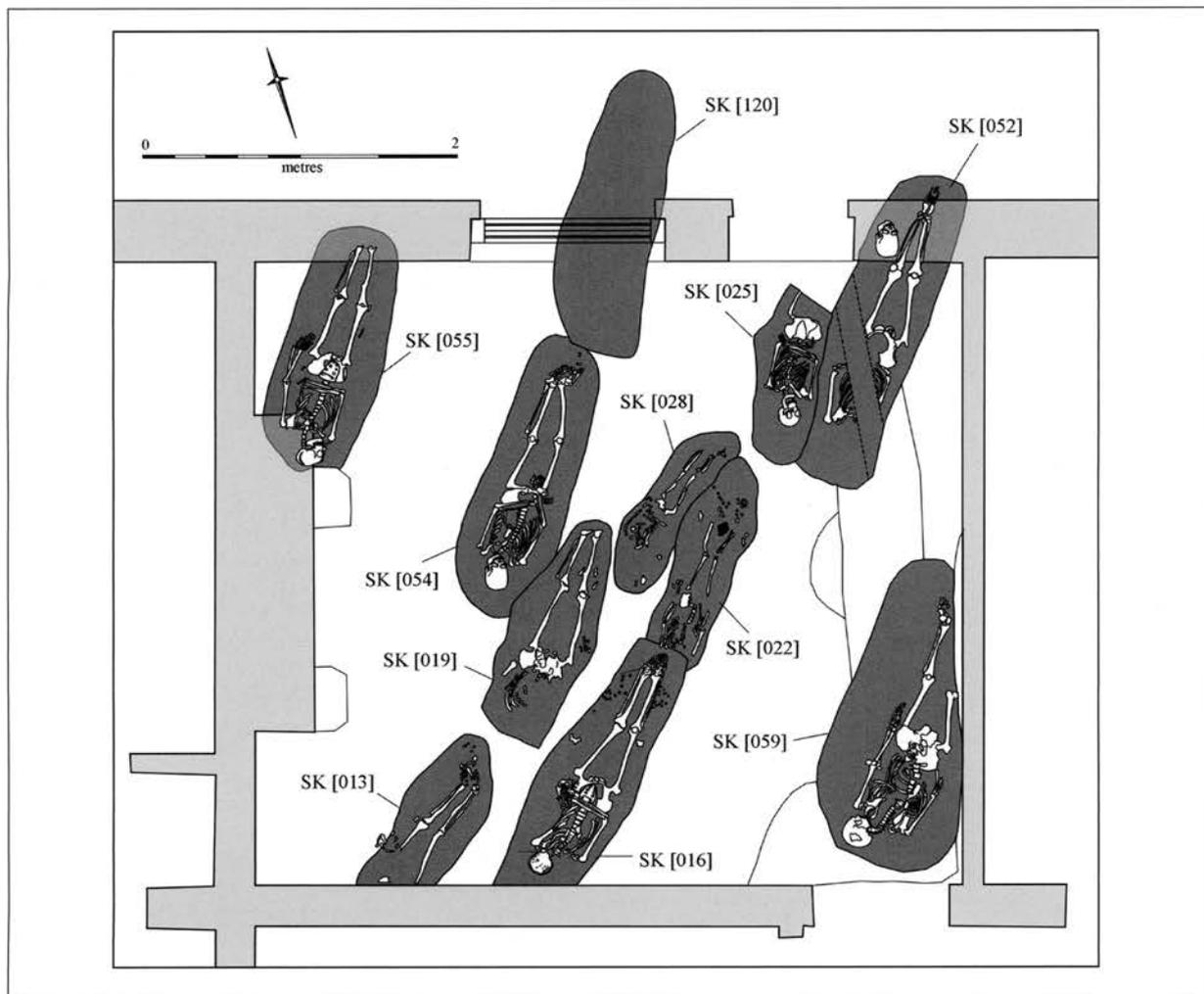


Figure 6. Detailed plan of interments within the north room of No. 36.

on inferior facet of the left talus. No dentition survived to be examined but at least four teeth were lost prior to death.

Hobnails were recovered from either side of the lower legs. Fragments of juvenile bone, probably from Skeleton [022], an earlier burial, were recovered from the grave fill.

Skeleton [019] Adult male, ht. 1.77m (5' 9 1/2"); Fig. 6)

Again the body was very close to the ground surface and much of it had been truncated by the basement floor. Except for fragments of the left elbow joint, elements from the hands and a few left ribs, all the body above the sacrum is missing. Many of the surviving bones have post-mortem breaks. The legs were extended; the knees and ankles were tight together. The grave cut was subrectangular, indistinguishable in the south because of truncation, and measured 1.40 x 0.50 x 0.09m. Three well-healed fractures were recorded on the lower legs. The left tibia has two fractures on the distal end. One is an oblique fracture where the distal end has been displaced upwards on the lateral side of the shaft (the bone is foreshortened by approximately 5mm). An ?intra-articular fracture was recorded on the tibia base diagonally crossing the articular surface from behind the medial malleolus. Unfortunately the foot bones had been truncated and so any damage to them could not be recorded. A large, smooth callous with vascularity had formed over the fracture site on the shaft and there is some evidence of infection and current or active periostitis on both the tibia and fibula shafts. Soft tissue involvement has resulted in ankylosis (fusion) of the left tibia and fibula at both the proximal and distal ends. There is a well-healed, oblique fracture on the distal quarter of the right fibula. The overlying callous is comprised of smooth and striated lamellar bone. Like the fracture on the left tibia the realignment of the bone is good. Pale grey woven new bone, indicative of an infection active at death, and striated lamellar bone was recorded along the shaft. The bony spicules on the long bones, particularly on the distal end of the linea aspra of the left femur, could well be myostis ossificans and the result of muscle and other soft tissue trauma. Despite some post-mortem damage it can be seen that the left sacroiliac joint would have been fused in life which again suggests soft tissue trauma. The fractures are likely to have occurred at the same time, perhaps in an incident where the man fell or jumped heavily onto his feet and then twisted sharply. The bony spurs on the right lesser trochanter and the marginal osteophytes on the right knee joint might suggest that after the incident the man would have favoured his right leg. Marginal osteophytes and a small area of eburnation were recorded at the 1st metacarpophalangeal joint of the right hand.

Smears of a white chalk-like substance were identified below the pelvis and where the vertebrae should have been.

Skeleton [022] Juvenile, c. 6 years old (Figs. 4, 5 & 6)

Moderately preserved skeleton; the surfaces of the surviving bone are very abraded, many of the epiphyseal ends are damaged and few of the loose epiphyses survive. The head was truncated by a later burial, Skeleton [016], and so the dentition could not be recorded. A maxillary incisor was recovered from the fill of the later burial and it undoubtedly belongs to this juvenile. Both the arms and legs were extended. The grave cut was shallow and subrectangular, measuring 1.35 x 0.37 x 0.09m. No pathology was observed.

Hobnails were recovered from around both feet, and a small Nene Valley colour-coated flask had been placed between the ankles (Fig. 9.2). Two iron nails were recovered

(points upwards) either side of the ankles, and could represent a coffin.

Skeleton [025] Mature adult (Fig. 4 & 6)

The skeleton was in good condition although many of the surviving long bones had recent post-mortem breaks, presumably caused by the laying of the service pipe, which rested over the body. The pipe had also truncated the right leg and the left leg from the mid femur down (the femur was recovered from the back fill). Both the skull and the pelvis exhibited male and female traits and this was the only near-complete skeleton for which estimating a sex was impossible. Both arms were tight against the body, flexed at the elbows, the right hand resting on the left elbow, the left on the right pelvis. The body was tilted to its right side, slumping into the earlier grave for Skeleton [052]. The grave cut was subrectangular, measuring 1.38 (min.) x 0.52 x 0.25m.

The surfaces of both pubic symphyses exhibited increased porosity, there was a billowing of osteophytes around the margins and approximately one third of both joint surfaces was eburnated. The degree of eburnation indicates that the cartilage was damaged which resulted in bone rubbing directly on bone. The cartilage could have been damaged by trauma or infection or simply old age. A heavy, jolting impact injury to the pelvis whilst, for example horse riding may have torn the cartilage. If this individual is female the cartilage may have ruptured during childbirth; the pelvic outlet is extremely narrow. Osteoarthritic changes were recorded in the upper cervical, the lower thoracic and lumbar vertebrae, and on the sacrum (both where it articulates with the spine and with the pelvis). Porosity on the left mandibular condyle is indicative of incipient joint disease. Seven teeth had been lost ante-mortem, one tooth survived only as a root and a large caries was recorded on the distal aspect of the 2nd left maxillary molar. Deposits of calculus, ranging in severity from slight on the surviving maxillary dentition to heavy on the mandibular were recorded on the roots of the surviving dentition. Exposure of the roots caused by resorption of the alveolar bone is characteristic of periodontal disease.

The skeleton is gracile with pronounced muscle attachments at the deltoid tuberosities and enthesopathies on the pelvic rim.

Skeleton [028] Juvenile, c. 7 years old (Fig. 6)

The preservation of the skeleton is poor; the head, the right side of the thorax and the left upper arm are missing and this presumably occurred during the building of the property. Several of the surviving bones have been disturbed but the legs and the left arm were extended and the right arm was flexed and crossed the body. The grave cut was subrectangular and shallow, measuring 1.20 x 0.38 x 0.09m. No pathology was observed.

Skeleton [052] Middle adult male, ht. 1.68m (5' 6"); Fig. 6)

The skeleton was in excellent condition despite lying directly below the service pipe. The lower body extended c. 0.5m under and beyond the northern wall and the head, which had been decapitated, was placed beside the left foot. Both arms were tight against the body, flexed at the elbows so that the hands (truncated) would have rested close to the elbows. The grave cut was subrectangular, measuring 2.00 x 0.60 x 0.60m.

The three uppermost vertebrae were recovered with the

skull but *no* cut marks were observed on them. Unfortunately the lower cervical and upper thoracic vertebrae (C4–T3) had been disturbed by the service pipe and were missing/damaged. The highest *in situ* vertebra was T4. Scraps of vertebrae were recovered from the disturbed fill; one thoracic vertebra shows a sharp blade wound clipping the left superior articulating facet and the surviving fragment of body. A cut mark measuring *c.* 28m in length and *c.* 2mm deep was recorded on the right parietal bone *c.* 20mm above the lambdoidal suture and 20mm from the sagittal suture. The angle of the cut suggests that if the head was face down, the blow, from a sharp blade (probably a sword) was struck from the right side of the body and from above.

Several developmental defects were recorded in the spine. The posterior arch of the atlas is bifurcated; this is not uncommon and is generally asymptomatic. There is partial lumbarisation of the 1st sacral body and the neural arches of two of the lumbar vertebrae (L3 and L5) are not present; this could be a congenital absence or spondylolysis. A compression fracture in the body of L5 and the lack of its neural arch have led to eburnation and porosity on the superior articulating facets of L5 and the inferior facets of L4 where they articulate with the sacrum. These changes are likely to have led to lower back pain. Schmorl's nodes, increased porosity and marginal osteophytes were recorded on the vertebral bodies of T5–L5. Flecks of calculus were recorded on the buccal aspects of the maxillary dentition and one tooth, the left maxillary 2nd incisor, was lost prior to death. Heavier deposits of calculus were recorded on the retained deciduous right, maxillary 2nd incisor.

A large iron boss or stud was found within the grave, between the pipe and the skeleton, with its head lying directly above the left ilium (Fig. 10.6).

Skeleton [054] Mature adult female, ht. 1.55m (5' 1"; Fig. 6)

The skeleton was moderately preserved although the surfaces of some of the bones are abraded. The upper arms were tight against the body and flexed at the elbow, the left hand was clenched and rested on the ilium, and went below the right wrist. The legs were extended with the feet together. The grave cut was subrectangular, measuring 1.86 x 0.57 x 0.46m.

A well-healed spiral fracture was recorded on the proximal end of the right fibula *c.* 4cm below the styloid process. The realignment was good with the superior portion of the shaft having twisted only slightly medially to the distal part; no fracture or periosteal reaction was observed on the tibia. The sacrum is angulated in its mid portion anteriorly between the 3rd and 4th sacral body; although this is normal this woman may have experienced difficulty during childbirth, as the pelvic inlet is narrow. The vertebrae and the pelvic girdle are extremely lightweight which could suggest osteoporosis although taphonomic variables can affect bone weight. Where the anterior portions of several of the vertebral bodies are damaged one can see that the trabecular bone has an open structure, indicative of osteoporosis.

There is unilateral spondylolysis of L5 with non-union on the right side between the right superior articular facet and the lamina. Porosity, eburnation and osteophytes were recorded on the inferior facets of L4 and on the lamina of L5 where they articulate. Osteoarthritic changes were recorded in the right mandible at the condylar process and the mandibular fossa (porosity and osteophytes around the margins and on the joint surface). A total of nine teeth were lost prior to death and there were five caries lesions, four of which

were at the junction of the enamel and root.

The woman was wearing two copper alloy rings on her right 4th metacarpal/proximal phalange or the ring-finger (Fig. 10.3 & 10.4).

Skeleton [055] Older subadult/young adult female, ht. 1.63 (5' 4"; Fig. 6)

The skeleton is in excellent condition. Both arms were tight against the body, the left was extended and the right was flexed, crossing the body. The lower legs extended beyond the northern wall of Room A and were recovered by the workmen. The grave cut was deep and subrectangular, measuring 1.40 (min) x 0.60 x 0.62m. Slight to moderate deposits of calculus were recorded on the buccal aspects of the mandibular anterior dentition and the right maxillary premolars and molars.

An iron nail, possibly indicating the presence of a coffin, was recovered from beside the right femur.

Skeleton [059] Younger middle adult male, ht. 1.71m (5' 7"; Fig. 6)

The skeleton is well preserved although a later pit had truncated the lower right arm and hand and the lower right leg and foot and several bones in the lower spine had been displaced. Both arms are extended and lay tight against the body. The grave cut was deep and subrectangular, measuring 1.90 x 0.70 x 0.80m.

Schmorl's nodes were recorded on the bodies of the two lowest thoracic and the lumbar vertebrae. Slight deposits of calculus were recorded on the dentition. The deltoid tuberosities on the humeri were pronounced, suggesting heavy work.

A disarticulated left adult calcaneus was recovered from the grave fill, and an iron object was recovered below the left elbow.

Skeleton [061] Mature adult ?male

The skeleton lies almost on the ground surface and has been disturbed and severely truncated by the basement floor and a later ?ditch. The skull, the upper cervical vertebrae and both femora are missing. The pelvis is fragmentary and the surviving long bones have suffered post-mortem breaks. The upper arms were tight against the body and the legs extended.

This individual exhibits the classic bony lesions associated with DISH (diffuse idiopathic skeletal hyperostosis). The lower seven thoracic vertebrae are ankylosed (fused) by massive, flowing osteophytes focused on the anterior and right or left sides of the bodies. The lowest lumbar vertebra is similarly fused to the sacrum. Large, drip-like osteophytes were also observed on the intervening lumbar vertebrae and although the anterior portions of the bodies have been damaged the freshly broken surfaces on the osteophytes suggest that they too were fused in life (ie there are no 'skip lesions'). Similarly the large, freshly broken osteophytes on the bodies of T3 and T4 suggest ankylosis. The osteophytes are fused on the anterior and/or the right and left sides of the vertebrae. In addition the ribs have fused to T8 and T12. The fusion of the vertebral column, from the sacrum all the way up to T6 or possibly even T4 has led to kyphosis or the bending of the spine. Enthesopathies were recorded on the distal end of the fibula. These lesions are characteristic of DISH. Involvement of the sacro iliac joints is also characteristic of this disease. Unfortunately only a fragment of one of these joints survived but there is a freshly broken enthesopathy on

the superior part of the left retroauricular area which may indicate fusion in life.

Osteoarthritic changes were recorded on the wrist and hand, with eburnation recorded over the whole of the proximal joint surface of the left 1st metacarpal and on the corresponding facet of the trapezium. There is some increased porosity on the joints with osteophytes around the margins, and the joint morphology is altered. There is also eburnation and porosity on the left lunate. On the left radius the ulna notch is greatly enlarged and deepened and the altered joint is eburnated and grooved from where it has rubbed against the head and styloid process of the ulna. Both of these features have eburnated surfaces with porosity and osteophytes. Similar changes were recorded on the right distal ulna and radius although the carpal and metacarpal bones were unaffected. Increased porosity on the sternal ends of the clavicles and fragments of ossified cartilage are characteristic of old age.

Three nails, possibly representing a coffin, were recovered from below the shoulder with more identified down the left side of the body.

Skeleton [068] Mature adult female, ht. 1.52m (5')

A well-preserved skeleton whose left foot was truncated by a party wall. The arms were tight against the body and were flexed so that the right hand clasped the left humerus just above the elbow and the left forearm crossed the lumbar vertebrae. The legs were slightly splayed. The grave cut was subrectangular, measuring 1.80 x 0.45 x 0.15m.

Changes indicative of osteoarthritis were observed in the spine; marginal osteophytes and increased porosity were recorded on the bodies of two of the lower cervical vertebrae (C5 and C6) and Schmorl's nodes were recorded on the bodies of two of the lower thoracic vertebrae (T8 and T9). At least six teeth had been lost prior to death and moderate deposits of grey/green subgingival calculus were recorded on the surviving mandibular dentition/roots. The maxillary premolar survived only as a root and three caries were recorded in the upper jaw.

Nails were found in the fill and beside the right foot and refitting fragments of a small, pottery flask were identified during post-excavation processing and may well have been a grave good (Fig. 9.1).

Skeleton [070] Older middle adult male, ht. 1.78m (5' 10"); Fig. 7)

A robust, well-preserved skeleton, cut into a ditch fill. A party wall lay directly on top of the pelvis. A single hobnail fused onto the 7th right rib. The humeri were tight against the body, the right arm was extended and the left flexed with the hand resting on the right elbow. The right leg was flexed medially at the knee. The grave cut was subrectangular, measuring 1.74 x 0.54 x 0.37m.

Two of the left ribs have transverse fractures approximately mid way along the shafts. They are well-healed as evidenced by good realignment and the raised callous of smooth lamellar bone. An oblique fracture was recorded on the proximal end of the right fibula. A raised callous of new bone, some of it striated suggesting that remodelling was still in progress, was recorded over the proximal quarter of the shaft. Periostitis along the shaft and raised spicules of bone on the distal end of the fibula and on the tibia around the fibula notch suggest soft tissue and ligament involvement and damage.

Osteoarthritic changes including osteophytes, increased

porosity and Schmorl's nodes were observed in the cervical, lower thoracic and lumbar vertebrae. In addition to these degenerative changes, two well-defined, aggressive lesions were noted on two of the lumbar bodies. On the anterior of the superior vertebral body of L3, a depression measuring 35 x 12mm and 8mm deep was recorded. The base of the cavity is irregular and pitted but the annular (rim-) epiphysis is intact. A similar lesion was recorded on the superior body of L4 although this rim was incomplete. Both lesions were associated with an increase in porosity on the bodies and marginal osteophytes. These lesions to the endplates may be the result of avulsion injuries or of herniation of the disc material into the end plate. Endplate injuries from avulsion can be caused by relatively minor accidents such as falls, horse riding accidents, blunt abdominal traumas and hits from bars (Maat & Mastwijk 2000). In the light of the other traumatic injuries this individual had sustained it is



A



B

Figure 7. A) Skeleton [070] extending between two rooms of No. 37; B) upper torso (photograph: M Alexander)

interesting to note that healed extraspinal fractures in other body parts were also recorded in individuals with healed endplate avulsions (*ibid.*, 146). Approximately half of the right acetabulum is eburnated and exhibits increased porosity and osteophytes inside the socket and around the margins. The anterior half of the femoral head has an eburnated surface with overlying porosity and there are osteophytes on the other half of the joint surface and around the margins and neck of the femur. The fractured right fibula combined with the joint disease in the hip suggests that this man would have had a limp. Marginal osteophytes and a small patch of eburnation on the head of the 1st right metatarsal is characteristic of osteoarthritis. The increased porosity and marginal osteophytes at both of the sternoclavicular joints and at the clavicular surfaces of the scapulas is indicative of degenerative joint disease.

A total of seven teeth had been lost ante-mortem, the dentine was exposed on all the surviving dentition, and a large caries was recorded on the occlusal aspect of the left maxillary canine. Flecks to moderate deposits of calculus were recorded on the surviving dentition.

Skeleton [073] Mature adult male, ht. 1.65m (5' 5")

This well-preserved skeleton was buried in a crouched position, lying on its right side with his head to the north. The arms were flexed, with the hands close to the chin. The grave cut into ditch fill [071] and measured 1.50 x 0.65 x 0.18m.

Well-healed fractures were observed on the 2nd and 3rd metacarpals in the right hand. The fractures are transverse, angled across the mid shafts, and may have been caused by punching something hard. The fractures have healed although small cloacae in the calluses of lamellar bone suggest osteomyelitis or infection of the bone, resulting from the trauma. The fractures have resulted in some deformity to the bones; the distal ends of both metacarpals, but particularly the 2nd, are curved towards the palm and in comparison to the bones in the left hand are foreshortened by c. 7.4mm and 3.0mm respectively. Transverse fractures were recorded on three ribs; both the 8th and 9th left ribs had been broken c. 30mm from their sternal ends and two fractures were recorded on an unside rib c. 20 and 50mm from the sternal end. The calluses of new bone which have formed over the fractures are a mix of lamellar and woven bone indicating that the bone was still in the process of healing at death. Ribs are fractured as a result of a fall or a direct blow to the rib cage. Marginal osteophytes and increased porosity on the bodies of the lumbar vertebrae are characteristic of osteoarthritis. Eburnation and an increase in porosity indicative of osteoarthritis were also recorded at the right sternoclavicular joint and the right clavicular surface of the scapula. Both hips and the left knee exhibited lesions indicative of osteoarthritis. Gross osteophytes were recorded on the superior margin of the right acetabulum, with porosity and eburnation affecting c. one third of the socket. The femur head has similarly prolific marginal osteophytes, porosity and eburnation with additional osteophytes on the head itself and new bone formation extending down the anterior neck and proximal shaft. The lesions affecting the left hip and knee joints are visually less severe, marginal osteophytes were recorded on both joints and patches of eburnation measuring c. 15mm on the femur head and lateral epicondyles of the femur and tibia and in the acetabulum. Although there is some post-mortem damage to the right innominate, a cloaca (29 x 7 x 18mm deep) with smooth remodelled edges was recorded medial to the acetabulum above the ischial tuberosity. This

could be the result of osteomyelitis, an infection such as tuberculosis or be a septic arthropathy. On the spine there are erosive lesions on two of the thoracic bodies, almost masked by post-mortem damage, which could be indicative of tuberculosis in the spine. The inferior body of the 7th thoracic vertebrae and the superior body of the 8th thoracic vertebrae have lobulated, with destructive cavities and bumps which refit. There is kyphosis of spine; if a diagnosis of TB is correct this deformity of the spine would be called Pott's disease. Lace-like perforations and erosive lesions of unknown aetiology were recorded on the left articulating facets of the lowest three cervical vertebrae. Raised calluses of lamellar and striated bone on the distal and mid shafts of the right tibia and fibula and the proximal shaft of the left fibula are indicative of a non-specific infection. Six teeth were lost prior to death and the 1st maxillary left molar survives only as roots.

Hobnails were found *beside* the left foot.

Skeleton [091] Mature adult male, ht. 1.67m (5' 5 1/2")

This robust skeleton had been decapitated and his head placed beside his right knee upside down. The body had been truncated from the mid femur upwards by [094], a late medieval (14th century) pit, but the surviving skeletal elements are in good condition. The grave cut measured 0.84 (min) x 0.48 x 0.20m. The upper five cervical vertebrae were recovered with the skull. There is post-mortem damage to several of the spinous processes and although no obvious cut mark was observed on C5, a shallow cut, measuring 11mm, was recorded on the 4th cervical vertebrae just beneath the left superior articulating facet. This shallow nick made with a sharp instrument would *not* have separated the head from the body. It suggests that at least two blows were needed to detach the head and that at least this one was struck from the back. In addition to the cut on the vertebra a linear cut mark measuring 37mm was recorded on the left parietal, crossing the coronal suture at an angle, c. 50mm above the temporal bone. The wound is c. 2mm deep and would have been made with a sharp edged weapon. The cut is angled with one surface smooth and polished and the opposite surface flaked and roughened suggesting that the blow would have come from above, either delivered from the front by a right handed person or from behind by a left handed person. There is no evidence of healing. Twelve teeth were lost prior to death and three teeth survive only as roots. A large, externally draining abscess was recorded below the right mandibular canine and premolars; the 1st premolar has a large caries on its distal aspect and the 2nd survives only as a root. This individual has retained his metopic suture.

Disarticulated thoracic vertebrae, ribs and scapula fragments were recovered from the later pit and it is likely that they derive from this skeleton.

Skeleton [108] Mature adult male, 1.76m (5' 9")

Several of the bones have been damaged by later features. The right femur had been truncated by a late medieval pit but was recovered when this was excavated. The lower legs extended beyond the edge of excavation and were retrieved by the workmen. Both arms flexed at the elbows; the right wrist lay under the left humeral mid shaft and the left lower arm rested on the right lower arm with the wrist below the right humeral mid shaft. Both hands were clenched. The grave cut was subrectangular, measuring 1.38 x 0.53 x 0.25m. There were marginal osteophytes around the head of the right femur and approximately half the head exhibited an increase in porosity and was eburnated. Unfortunately the

acetabulum was missing so any corresponding changes in the pelvic portion of the hip joint could not be recorded. Marginal osteophytes on the glenoid cavities, porosity and osteophytes on the sterno clavicular joint are indicative of osteoarthritis. One tooth was lost prior to death and a large caries was recorded on the distal/occlusal aspect of the left maxillary 2nd molar.

Skeleton [118] Older middle adult female, ht. 1.56m (5' 1")

A well-preserved skeleton with its head in the northwest of the grave with the body below the shoulders extending beyond the eastern boundary of the property. The wall was undermined by 0.75m to retrieve as much of the rest of the body as possible; the femora were recovered, but not the lower legs. The grave cut measured 1.60 (min.) x 0.80 x 0.56m. Moderate deposits of calculus were recorded on the lingual aspects of the mandibular dentition with flecks on the buccal aspects of the anterior teeth in both upper and lower jaws. Much of the deposits was on the root suggesting that the gums had receded. Other than the deposits of dental calculus no pathology was recorded. The arachnoid granulations recorded on the inside of the parietals are indicative of increased age, as is the near-total obliteration of the cranial sutures. Nine iron nails were recorded around the head of the individual.

Skeleton [120] Adult

Only fragments of the left lower leg of this skeleton survived as much of it had been previously removed by workmen and it extended northwards beyond the property. No cut dimensions were recorded. No pathology was observed.

Skeleton [122] Mature adult male, ht. 1.61m (5' 3")

This skeleton and Skeleton [123] were identified by workmen whilst underpinning the wall at the rear of the property. The bodies lay immediately below the wall and extended beyond it. This and their proximity to each other meant that their stratigraphic relationship was uncertain, although on site it was thought that Skeleton [122] was later than Skeleton [123]. The lower legs had been truncated by the well but the surviving bones were in good condition. The grave dimensions were approximately 0.90 (min) x 0.50 x 0.25m. Osteophytes, a dramatic increase in porosity and eburnation were recorded on many of the surviving vertebral bodies and articulating facets, and several of the ribs exhibited similar changes on their costal facets. Osteophytes and increased porosity were noted on the sternal end of the clavicle. These changes are characteristic of osteoarthritis. Three cervical vertebrae (C2–C4) were had fused together at their articular processes and at their arches. This type of block vertebrae is probably congenital. Only the mandible could be recorded and at least ten teeth had been lost prior to death.

Skeleton [123] Mature adult male, ht. 1.73m (5' 8")

This skeleton was identified by workmen whilst underpinning the wall at the rear of the property. The body lay immediately below the wall and extended beyond it. The lower legs were truncated by the well but most bones were retrieved and their condition was generally good. The individual's relationship with Skeleton [122] is discussed above. The grave dimensions were approximately 0.90 (min) x 0.50 x 0.25m. Changes characteristic of osteoarthritis, such as marginal osteophytes, porosity, Schmorl's nodes and eburnation were recorded in several of the thoracic vertebrae. Marginal osteophytes were recorded on the right femoral head and

acetabulum. At least five teeth had been lost ante-mortem and four teeth survived only as roots. Moderate deposits of calculus were recorded on the buccal and lingual aspects of the surviving dentition. A weathered, disarticulated infant humerus was also recovered from the grave fill.

Skeleton [129] Mature adult female

The skeleton was identified by the workmen whilst underpinning an internal wall. Many of the long bones have post-mortem breaks and most of the lower legs are missing. The right arm was extended and the left arm was flexed, with the hand touching the left lower arm. The grave cut was subrectangular, measuring 1.68 (min) x 0.57 x 0.18m. A well-healed Colles fracture just below the mid shaft of the left radius has resulted in an 18mm foreshortening of the bone in comparison to the right. No fracture was observed on the ulna. Fractures to the radius may be the result of falling on the outstretched hand. Three teeth had been lost prior to death, four mandibular teeth had rotten and survived only as roots and large caries were recorded on the buccal aspects of three teeth. An external draining abscess was recorded below the left 2nd mandibular molar. Arachnoid granulations recorded on the interior of the skull are indicative of increasing age. The deltoid tuberosities on the humeri are robust.

A copper alloy bracelet was worn on the left wrist (Fig. 10.2).

Skeleton [131] Adult

This skeleton was identified whilst underpinning at the front of the building. No dimensions of the cut were taken. The head and cervical vertebrae were missing, presumably truncated by the wall as the body lay immediately below it. Although the wall was undermined to underpin and to retrieve bone only the left shoulder and upper arm, the right lower arm, vertebrae T1–L2 and ribs could be collected. The arms would have been slightly flexed so that the hands would have rested in the pelvic region. A slight increase in porosity and marginal osteophytes on the bodies of some of the thoracic vertebra (T12–T5) are indicative of osteoarthritis.

Skeleton [133] Mature adult male, ht. 1.71m (5' 7")

A well-preserved skeleton with the right arm extended, the left arm slightly flexed with the hand over the pelvis, the left leg extended and the right leg slightly splayed. The grave cut was wide, deep and rectangular, measuring 2.20 x 0.80 x 0.60m. This man suffered from scoliosis and kyphosis of the spine; scoliosis is the lateral deviation (curvature) in the normally straight vertical line of the spine and kyphosis is the deformity of the spine characterised by extensive forward curvature (flexion), especially in the thoracic region. The spinous process of T1–4 are deflected to the left (the concavity), the vertebral column straightens to the mid line, then from T7 it bends to the left until T10 and then back to the right through the lumbar vertebrae. Scoliosis, with or without a significant kyphotic component, often starts in childhood and progresses throughout the growing age and early adult life. The changes are to a large extent the result of altered growth and remodelling under abnormally directed static and dynamic stresses (Ortner and Putschar, 1985, 323–4). In addition to these deformities and perhaps as a result of them much of the spine exhibited changes characteristic of osteoarthritis. All of the bodies except for T3–5 exhibited marginal osteophytes and an increase in porosity. In addition, eburnation and Schmorl's nodes were also observed on many of the

bodies and sharp edged voids were recorded on the inferior body of L2 and superior body of L3. The right transverse processes of T3–T6 and T11–L1 were similarly affected. Slight osteophytic lipping was recorded around the margins of the acetabulums, particularly the right where there was also a small area of eburnation. Marginal osteophytes, an increase in porosity and eburnation were recorded in the 1st metacarpal phalangeal joint of the left hand and on the left glenoid cavity. The epiphysis of the acromion process of the left scapula is separate (*os acromiale*) which might suggest heavy work. The muscle attachments on the upper arms are robust and enthesophytes were recorded on the iliac crests of the pelvis in the region of the muscle attachments for the abductors and extensors of the hip. A total of seven teeth have been lost ante-mortem and a further three teeth survive only as roots. The dentine is exposed on all of the anterior dentition. Flecks of calculus were recorded on all the surviving dentition but heavy deposits were recorded on the lingual aspects on the right mandibular dentition and even on the occlusal surfaces of the 2nd and 3rd molars where the opposing tooth had been lost prior to death. This man had retained his metopic suture.

Skeleton [135] Mature adult male, ht. 1.61m (5' 3")

This skeleton was identified during underpinning an external wall and was lifted under rescue conditions; skeletal elements belonging to an earlier interment were identified whilst lifting the body and these have been allocated context [212]. The left lower leg was not retrieved, as were many of the foot and hand bones; some of those that were recovered may in fact belong to Skeleton [212]. No cut dimensions were recorded. The bodies of the lower thoracic and lumbar vertebrae exhibit marginal osteophytes, an increase in porosity and Schmorl's nodes; the costal facets of the ribs are porous. In addition to the osteoarthritic changes in the spine degenerative changes were observed at the knees, right shoulder and sternum; slight osteophytic lipping was recorded around the margins of the both femoral epicondyles, around the right glenoid cavity and humeral head (where there was also porosity) and an increase in porosity was recorded on clavicular end of the left and sternal ends of both clavicles. The lesser tubercle on the left humerus is robust and very pronounced. A total of nine teeth had been lost prior to death and a further three survived only as roots. Two large caries were recorded on the occlusal surfaces of the right mandibular 2nd incisor and canine and an external draining abscess was recorded above the latter tooth. Flecks of calculus were recorded on the surviving teeth.

Skeleton [136] Younger middle adult female, ht. 1.56m (5' 1")

This skeleton's head has been truncated by a later ditch and its lower legs and feet, which extended beyond the front of the property, could not be retrieved. Her arms were tight against the body, her hands in the pelvic region. The grave cut was subrectangular, measuring 1.20 (min) x 0.45 x 0.18m. Developmental defects were recorded in the vertebral column; the neural arch of T1 is bifurcated and there is lumbarisation of the 1st sacral segment.

Skeleton [155] Middle adult male, ht 1.67m (5' 6")

A well-preserved skeleton which was truncated by pit [142] below the pelvis; most of the elements of the lower body were recovered from the ditch fill. The arms were flexed and crossed the torso, the right hand resting on the left pelvis, the left arm going below the right with the hand resting on the

lower right ribs. The grave cut was wide and subrectangular, measuring 0.92 x 0.82 x 0.24m. Osteoarthritic changes were recorded in the spine and hips. The bodies of several of the lower thoracic and lumbar vertebrae exhibited an increase in porosity and Schmorl's nodes. Severe osteophytic lipping around both femoral heads has altered the morphology of the joints so that they have a slight mushroom head appearance. The distal and proximal ends of both clavicles exhibited increased porosity. Seven teeth had been lost prior to death and three teeth survived only as roots. Moderate to heavy deposits of calculus were recorded on the surviving dentition and on several of the roots. Calculus is the major predisposing factor in the development of periodontal disease, which was evident in both the jaws of this individual. The disease manifested itself as inflammatory pitting and resorption of the alveolar bone to the extent that the roots of the surviving dentition were exposed. An abscess was recorded in the maxilla above the right premolars; it had two external cloacae and an internal one into the roof of the mouth all of which had sharp edges indicating that they were active at death. A large caries was recorded on the distal/lingual aspect of the 2nd right maxillary molar.

Skeleton [158] Mature adult female, ht. 1.57m (5' 2")

All of the body was retrieved although the upper half of the skeleton extended beyond the southern wall of the property. Many of the epytheaseal ends of the long bones are damaged. The arms were tight against the body, with the right hand resting on the right thigh and the left in the pelvic area. The knees and the ankles were also tight together, perhaps suggesting wrapping of the body. The grave cut was subrectangular, measuring 1.58 x 0.70 x 0.44m. Changes characteristic of osteoarthritis were recorded throughout the spine. Marginal osteophytes and a small area of eburnation were recorded at the 1st metacarpophalangeal joint of the right hand. A total of five teeth were lost ante-mortem and a further five survive only as roots. Several muscle attachments were enlarged, particularly in the right arm at the deltoid and also pectoralis major. Iron nails were recovered above and along the left side of the body and may indicate a coffin.

Skeleton [161] Older middle/mature adult male, ht. 1.64m (5' 4"; Fig. 8)

This skeleton was identified whilst underpinning the northern wall of the property and the lower legs and feet could not be retrieved. The body had been truncated from the mid humeri upwards by a later pit [137]. Some human bone recovered from the pit belongs to this individual. Initially the skull was believed to have been truncated by the pit or the wall but in fact it was identified *beneath* the left lower ribs. The left arm was extended and the right was slightly flexed with the hand over the pubic symphysis. The grave cut was subrectangular, measuring 0.85 x 0.50 x 0.20m. The two upper cervical vertebrae were retrieved with the skull. There was a cut mark *c.* 37mm long on the anterior of the 2nd cervical vertebra *c.* 7mm beneath the base of the dens. The cut was clean but had ragged edges and penetrated only half way through the body. Another cut mark was recorded on the lower jaw; the inferior *c.* 4mm of the left mandible between just medial of the mental protuberance and just medial of the mandibular angle had been sliced off. The cut is smooth with a small nick of bone at the dorsal end of the cut. The blow would have been made from the front and high up the neck so that the lower jaw was clipped. A small

area (24 x 8mm) of porosity and eburnation were recorded on the anteriolateral part of the left femur head. In addition marginal osteophytes and a proliferation of new bone on the anterior neck, dripping from the head of the left femur, were recorded. A small area of porosity and eburnation recorded in the acetabulum and a raised area of smooth new bone overlain by porosity was recorded superior to the acetabulum on the dorsal side of the ilium. The changes to the right hip joint are more extreme, with gross alterations in the joint morphology, which would have restricted movement. The femoral head is mushroom shaped with osteophytes flowing from the margin down the neck and porosity, eburnation and osteophytes on the joint surface. Similar changes were recorded in the acetabulum. In addition, a smooth, well-remodelled cloaca (26 x 10mm) leads from the acetabulum to the anteriolateral side of the obturator foramen and this is suggestive of infection of the bone or osteomyelitis. The cloaca in the right pelvis, in association with the gross alterations to the acetabulum and femoral head is indicative of a septic arthropathy. Marginal osteophytes were recorded on the upper bodies of the lower lumbar vertebrae (L4 and L5) and slight osteophytic lipping was also noted around margins of distal humeri, the proximal ends of the radii and ulnas, and the distal femora. There is spondylolysis of the 3rd lumbar vertebrae; this is a relatively uncommon location for this trauma as it usually occurs on C5 or sometimes C4 (Roberts & Manchester 1995: 78).

At least nine teeth had been lost prior to death and a further three survived only as roots. There was a large caries on the mesial aspect of the right mandibular 1st premolar. An external draining abscess was recorded below the right mandibular canine (lost post mortem). Flecks to moderate deposits of calculus were recorded on the surviving dentition. There is an interesting pattern of wear on three of the maxillary incisors which may be the result of artefact use or production. The wear on the right incisors and the left central incisor forms an arc-like line; the left central incisor is worn more heavily towards its mesial side, as is the right lateral incisor and the right central incisor is worn to an oblique '^' shape. At the point of the '^', a groove with striations runs from front to back of the tooth. In addition the central incisors are worn on both their buccal and lingual aspects. Unfortunately the occluding teeth in the mandible are missing.

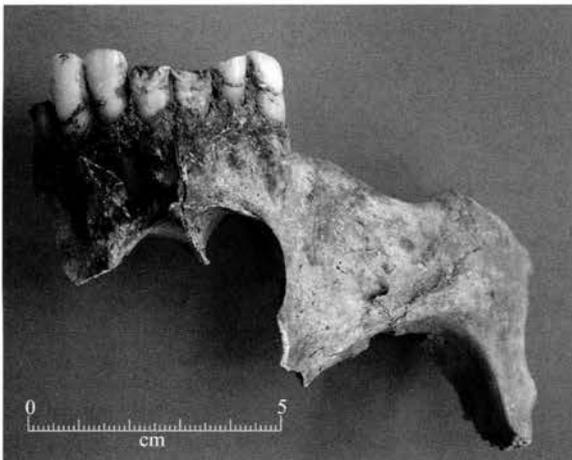


Figure 8. Mandible of Skeleton [161] shows teeth wear (photograph: M Abbott).

A sternal foramen, a non-metric trait caused by an ossification defect, was recorded and the metopic suture was still visible. Two thoracic vertebrae (T4 & T5) recovered from the later pit belong to this individual.

Skeleton [164] Mature adult male

The skeleton was identified whilst underpinning the northern wall of the property. The skull and cervical vertebrae were missing as was the right humerus and they had presumably been truncated when the property was constructed. The right femur was missing, possibly truncated by earlier underpinning and the lower legs had to be left *in situ* because they extended too far to the north. The right arm flexed across the body, the left was extended. Dimensions of the grave cut were 0.62 (min.) x 0.52 x 0.28m. The 2nd and 3rd lumbar vertebrae are ankylosed (fused) by flowing osteophytes at the left side of the bodies and at the left articular facets. Although damaged/broken as they were lifted it was possible to see that both of the sacroiliac joints were fused in life; a raised area of smooth, new bone at the lumbosacral ligament insertion on both ilia flowed over and fuses the upper portion of the joints.

The interosseous crest on both radii is pronounced, there are tufts of new bone on the olecranon process and there is a bony extension c. 25mm long extending ventrally from the right ischial tuberosity. These bony changes could lead to a tentative diagnosis of DISH, or at least the early stages of the disease. This being said, Rogers and Waldron insist that at least three contiguous vertebrae need to be affected for a secure diagnosis of DISH (2001). Fusion of the sacroiliac joints and vertebrae also occurs in *ankylosing spondylitis* which will always affect the lowest parts of the vertebral column first. But in this disease process it is the ligaments that become ossified and the vertebral bodies that are said to become squared; the vertebral osteophytes recorded here are more massive and characteristic of DISH, except that only two vertebrae are affected. Calcification of cartilage occurs in individuals with DISH but also in more mature individuals and so the retrieval and identification of ossified sternoclavicular cartilage, the 1st rib cartilage and tracheal rings is not in itself diagnostic of DISH. Marginal osteophytic lipping and porosity were observed on the thoracic and lumbar vertebral bodies with Schmorl's nodes in the lower thoracic bodies. Osteophytes, porosity and eburnation have altered the morphology of the right sternoclavicular joint and marginal osteophytes were recorded at the left glenoid cavity. Eburnation, porosity and marginal osteophytes, changes characteristic of osteoarthritis, were recorded on the left trapezium on the facet where it articulates with the navicular. Robust muscle attachments were noted, particularly on the left humerus.

Skeleton [166] Older middle/mature male, ht. 1.64m (5' 4")

This was the first skeleton to be identified; the workmen and the police removed it. The collection of the bones is good although unfortunately the pelvis, lower arms and hands were not retrieved. The skull is fragmentary and the face including most of the maxilla is missing. The surviving bones were in good condition although many had fresh breaks. The right femur had three breaks that had occurred post mortem but in antiquity. The dimensions of the cut could not be recorded although its depth was 0.42m. A well-healed fracture was observed across the lateral third of the left clavicle. The bone has realigned itself well although there is a 6mm foreshortening of the bone in comparison to the right. A pos-

sible well-healed fracture was recorded on a rib shaft. Of the surviving 12 vertebrae, four of the thoracic exhibited marginal osteophytes and porosity and Schmorl's nodes. Smooth remodelled and active sharp edged erosive lesions were recorded around and encroaching onto the heads of both the right and left 1st and 5th metatarsals and are suggestive of an erosive arthropathy or a systemic infection. The head of the right 3rd metatarsal has similar lesions although the left was unaffected (neither of the 4th metatarsals were collected). Periostitis was recorded on the medial shafts of both the left and right tibiae and may be associated with the lesions on the feet. At least three teeth were lost ante-mortem and two large caries were recorded, one on the buccal/occlusal aspect of the 2nd mandibular molar and one on the mesial/occlusal aspect of the loose right maxillary 1st premolar.

Skeleton [201] Mature adult female

This skeleton was identified at the rear of the house, as drains were being mechanically excavated. Only the upper body could be recorded *in situ* (the arms were extended and tight against the body) but the majority of elements from the lower body were recovered from the spoil. Many of the bones had recent post-mortem breaks.

The left clavicle is fractured and there is possible underlying osteoporosis; the horizontal trabeculae in the vertebral bodies appeared to have thinned which may have predisposed the individual to fracture. The fracture, which is well healed, is sited in the middle of the diaphysis and the alignment of the bone is good although it has foreshortened; 8mm in comparison to the right clavicle. Fractures of the clavicle often occur in incidents involving falling. Marginal osteophytes and porosity, changes characteristic of osteoarthritis, were recorded on both humeral heads and at both acromioclavicular joints. Similar changes were recorded in all the vertebral bodies except the upper thoracic, and the lower lumbar and the sacrum also exhibited changes on their articular surfaces. Neural arch deficits were recorded in the sacrum; both the 1st & 2nd sacral segments display cleft arches (*spina bifida occulta*). Fourteen teeth were lost prior to death and one of the surviving teeth survived only as a root. Moderate to frequent deposits of calculus were recorded on the surviving dentition; the occlusal surface of the 3rd maxillary molar is covered in calculus because it has no opposing dentition.

Skeleton [212] Adult ?female, ht. 1.57m (5' 1")

This individual is represented only by the disarticulated femora, right acetabulum, the humeri, the right ulna and five vertebrae. It was only identified as Skeleton [135] was being excavated under rescue conditions and probably rep-

resents an earlier burial. No cut dimensions were recorded and no pathology was observed.

Disarticulated material

Disarticulated bone was recovered from several medieval and post-medieval features and in all but a few cases it is clear from which skeleton the bone derives. One of the exceptions is a left innominate (mid/mature adult male) recovered from the top of ditch fill [111]. Another is the adult left fibula from pit fill [124] which is cut by two graves and may derive from an unidentified grave. In the trench behind the properties adult human bone including fragments of a mandible, a pelvis, vertebrae and ribs was recovered from two possible pits, [195] and [197]. A fragment of an adult temporal bone was identified whilst cleaning a ditch [183].

Demography and burial rite

A total of 32 articulated human burials were identified. Some of the disarticulated bone points to additional disturbed burials and a further possible burial was identified in the trench behind the properties but was left unexcavated. Of the burials identified and excavated, two were juvenile and the remaining 30 were adult. The majority of adults (60%) were mature, dying over the age of 45 years. The only young adult identified was a female and hazards associated with pregnancy and childbirth are often proffered as the reasons for females in this age-category dying. The two juvenile burials were aged c. 6 and 7 years old. The paucity of immature remains is a common phenomenon in archaeological cemeteries of all periods. Explanations usually focus on the fragility of the immature skeleton or differential burial practices. At Jesus Lane it is unlikely that the former explanation pertains, as the preservation of the skeletal material is excellent. Indeed a single, disarticulated infant femur was identified in an adult grave fill suggesting that graves of younger individuals are (or were) close by.

Whilst the majority of disarticulated bone recovered can easily be attributed to the burials which were identified on the site, some recovered from the Roman settlement features (see above) are likely to derive from further, unidentified graves.

Both male and female adults were identified; four of the adults could not be sexed but if one includes the 'uncertain' categories (?M and ?F) then there are sev-

Table 1. Summary of age and sex of skeletons.

	Female	?Female	?	?Male	Male	Total
Mature	5	0	1	1	9	16
Older mid/mat	0	0	0	0	2	2
Older middle	1	0	0	0	1	2
Middle	0	0	0	0	2	2
Younger middle	1	0	0	0	1	2
Sub adult/young	1	0	0	0	0	1
Adult	0	1	3	0	1	5
Juvenile	0	0	2	0	0	2
Total	8	1	6	1	16	32

enteen males and nine females, a ratio of 1.9:1. Whilst this ratio would be significant if it was replicated throughout the cemetery, as stated above the limits of the cemetery are unknown and this is only a sample of the burial population. If the four individuals who could not be sexed are actually female then there are seventeen males and thirteen females, a far less dramatic difference. Details regarding the age and sex of the articulated individuals are presented in the table below.

Stature

Long bones were sufficiently well preserved to calculate the stature of 22 of the 30 adults. Where possible calculations were made using a combined femur and tibia length, which is the most accurate method. This gave a female (n=5) height range of 1.52–1.63m (5'–5' 4") with a mean of 1.57m (5' 11/2") and a male range (n=9) of 1.61–1.78m (5' 3"–5' 10") with a mean of 1.69m (5' 6"). In order to increase the data set, where the combined femur and tibia length was not available the femur length only was used, followed by the tibia length. Using this method the stature could be calculated for a total of seven females and 15 males; interestingly neither the height ranges nor the means for either sex varied from that calculated using combined femur and tibia measurements. At the late Roman cemetery at Foxton, Cambridgeshire, the males had a height range of 1.68–1.75m and the females a range of 1.55–1.63m (Price *et al* 1997).

There are several instances of spinal curvature (scoliosis and kyphosis), and the living stature of these individuals (Sks [061], [073] and [133]) would be less than that calculated using long bone length.

Pathology

Joint Disease is the most frequent post-cranial pathology recorded in both archaeological and modern populations. Eighteen of the skeletons excavated exhibited changes characteristic of osteoarthritis. The spine was the most commonly affected area of the body although the hip, shoulder and knee joints, and hands and ankles were also affected. Osteoarthritis involves damage to the cartilage and its frequency increases with age. It is perhaps unsurprising that 60% of the adults exhibited osteoarthritic changes given the maturity of the sample population and also the evidence that they were involved in heavy physical work. The sceptic arthropathy in the right hip of Skeleton [161] would have restricted movement of that joint.

DISH (diffuse idiopathic skeletal hyperostosis) is a systemic condition of older adults, particularly males, in which vertical osteophytes appear on the right anterolateral area of the thoracic vertebrae and calcification or ossification of extra-spinal entheses and ligaments. Skeleton [061] exhibited all the classic hallmarks of DISH and a further possible example was recorded in Skeleton [164]. In the medieval period there would appear to be a correlation between high calorie intake, obesity, type II diabetes and DISH. Nothing, such as

the inclusion of grave goods, marks these graves out from the others although it is interesting to note that the burials lay adjacent to each other.

Trauma: Seven of the adults had fractures and five of these had multiple fractures. The skeletal element affected is presented in Table 2 below. The high incidence of fractures recorded is likely to be the result of the maturity of the individuals observed and the excellent preservation. All but three of the individuals with fractures ([054], [129] & [166]) were male and all of the fractures could have resulted from everyday incidents.

Table 2. Skeletons showing fractures

Skeleton	Sex	Fracture
[019]	M	r. fibula, l. tibia (x2)
[054]	F	r. fibula, L5
[070]	M	r. fibula, 2 ribs
[073]	M	r. hand, 4 ribs
[129]	F	l. radius
[133]	M	l. scapula (os acromiale)
[166]	M	l. clavicle, rib?
[201]	F	l. clavicle

Two individuals, one male ([166]) and one female ([201]), had fractures to the (left) clavicle and this injury is most commonly linked to incidents involving falling. Female [201] may also have had osteoporosis, which would have predisposed her to fracture. The other mature female with osteoporosis, Skeleton [054], had a vertebral compression fracture and a fractured fibula. The third woman ([129]) had a fracture to the left distal radius, also known as a Colles fracture, which can result from falling on an outstretched hand and is the commonest fracture in people, especially in females over 40 years (Roberts 2001, 346). Ribs can also be fractured as a result of a fall or as a direct blow to the rib cage. Skeleton [073], a mature adult male who may also have suffered from tuberculosis, had fractures to the right metacarpals which could have been caused by punching something hard or falling heavily on a clenched fist. Their poor realignment suggests some deformity to the hand; he also had four fractured ribs. Male [070] had two fractured ribs and a fractured right fibula. Three individuals had suffered fractures to the lower legs; these injuries are attributed to twisting of the leg whilst the foot is held solid or are a result of a direct force. The fractures to both the lower legs of Skeleton [019] are more severe and there is also considerable soft tissue and muscle involvement and possibly secondary infection. The intra-articular fracture of tibia base may be the result of falling heavily on that foot from a height. In sum, these fractures suggest that the individuals were involved in physical activity and manual labour; they were not heavily involved in activity of a violent nature.

Developmental and Congenital Disorders and Non-metric Traits: Developmental and congenital disorders were recorded, as were some non-metric traits. Many

of these disorders are heritable or familial but no pattern emerged when they were plotted (ie no family groups or plots could be identified using these traits). The disorders and traits observed are discussed below and summarised in tabular form.

The most commonly recorded developmental defect of the vertebral column is the cleft neural arch (Barnes 1994, 117–21). Amongst the bodies excavated at Jesus Lane two individuals ([052] & [136]) have a bifurcated vertebra (C1 and T1 respectively) and another ([201]) has spina bifida occulta (S1 and S2 are open). These, particularly the former two, would have been asymptomatic.

Spondylolysis, or the separation of the neural arch either unilaterally or bilaterally from the vertebral body, is an example of the interrelationship between genetic tendency and trauma. There is thought to be a congenital predisposition to the fracture and it has been attributed to excessive strain on the lower back during adolescence. Four cases of spondylolysis affecting three individuals were recorded ([052], [054] & [161]). In two of these individuals, both male, the 3rd lumbar vertebra is affected, a relatively uncommon location for this trauma as it usually occurs on L5 or sometimes L4 (Roberts & Manchester 1995, 78–9). Three individuals, [016], [052] and [136], exhibited partial sacralisation or lumbarisation.

Three individuals, [091], [133] and [161], had a retained metopic suture, which is a familial trait. It is interesting although probably not significant that two of the decapitated burials also had retained metopic sutures. The older middle mature male, [161], also had a sternal aperture, which is an order of delayed development with a prevalence of approximately 4% in Europeans (Barnes 1994, 223).

Infectious Disease. Skeleton [073] has destructive lesions in the spine and the hip that may be characteristic of tuberculosis. Tuberculosis is an infectious disease and is transmitted from person to person by

exhaling or coughing bacilli. It is usually considered to be a disease of closely gathered persons – in essence an urban disease – although in a rural community the infection is as likely to be the less virulent bovine form caught from infected milk or meat of domesticated cattle.

Metabolic Disease: Two possible cases of osteoporosis were identified; Skeletons [054] and [201].

Dental Disease: The dentitions of 22 individuals, all adults, could be examined and a total of 434 teeth were observed. A total of 55 caries were recorded (this includes teeth where the tooth was so rotten that only the root survived) and this gives a prevalence rate of 12.7%, which is within the norm for this period. The number of tooth positions observed was 633 and the number of teeth lost ante-mortem was 125, which gives a prevalence rate of 19.8%. The mean tooth loss in the Romano-British period is 13.9% (Roberts & Manchester 1995, 57) and so the degree of tooth loss appears high until one remembers the maturity of the sample. Ante-mortem tooth loss prevalence at Baldock, Hertfordshire, was 20.1%. In the 22 dentitions examined 633 tooth positions were observed and five individuals had an external and/or internal draining abscess. This gives a prevalence rate of 0.8%, which is slightly lower than the 1.2% recorded elsewhere in the Romano period (Roberts & Manchester 1995, 51).

Although not pathological, the interesting wear pattern in Skeleton [161] should be highlighted as it suggests use of the teeth as a 'third hand'. The skeleton is that of a mature adult male and his central maxillary incisors are worn on both their buccal and lingual sides. In addition the left central incisor is worn more towards the mesial line as is the right lateral incisor. The right central incisor is worn to an oblique '^' shape and at the point of the '^' a groove runs from front to back of the tooth. Unfortunately the occluding teeth in the mandible are missing.

Table 3. Skeletons with developmental or congenital disorders or non-metric traits

Skeleton	Sex	Age	Spondylolysis	Neural arch deficit & border shifting	Non-metric traits
[016]	M	mature		partial sacralisation	
[052]	M	middle	bilateral spondylolysis L3 and L5	bifurcated C1, partial lumbarisation of S1	
[054]	F	mature	unilateral spondylolysis L5		
[091]	M	mature			metopic suture
[133]	M	mature			metopic suture
[136]	F	younger middle		bifurcated T1, lumbarisation of S1	
[161]	M	older middle/mature	bilateral spondylolysis L3		sternal foramen, metopic suture
[201]	F	mature		S1 & S2 arch open	

The groove across the crown suggests some sort of habitual activity such as wear from pulling a fibre. Ethnographic examples of threads being pulled between the teeth in spinning are known (eg flax in modern Egypt; Barber 1991, 46) but this results in thinner grooves. Dental parafunctional wear believed to be caused by leather working have been identified amongst the mummies in Greenland (Hansen *et al* 1991). In both the examples however the activities are likely to have been common to a group and this individual is the only example identified at Jesus Lane and, therefore, its precise cause can only be a matter of speculation.

Decapitation

Three of the 32 burials had been decapitated. This rite appears to have been relatively common in the late third and fourth centuries AD, and Philpott in his study of Roman burial practices found that 162 examples of decapitation are known from 76 sites (1991, 77–89). In Cambridgeshire he identified twelve decapitations from five sites (*ibid*, Tables A24–A26), and since then at least a further ten such burials have been discovered in the county (McKenna & Meadows 1993, Lucas & Hinman 1996, Casa-Hatton & Wall 1999, Dodwell 2003 and forthcoming, Price *et al* 1997 and BUFUA forthcoming); this figure does *not* include the three decapitated individuals identified at Jesus Lane.

All of the decapitations identified at Jesus Lane were adult males and in each instance the head was not in the correct anatomical position. In the case of Skeleton [052] the skull was beside the left lower leg, for Skeleton [091] the skull was beside the right knee and in the case of Skeleton [161] the skull was below the left ribs. The position of the skull in the first two instances is relatively common, but no other examples of a skull position similar to [161] are known (Philpott 1991, 78). In the majority of cases, the decapitation occurs between the second and the fourth cervical vertebrae (Harman *et al.* 1981, Table 7). In Skeleton [052] several of the vertebrae were missing or fragmented but a cut mark was identified on a fragment of a thoracic vertebrae (either T1, T2 or T3). This individual also had a blade injury on the skull. Skeleton [091] also had a blow to the head and the decapitation occurred at C5. The blow to Skeleton [161] left cut marks on C2 and on the inferior portion of the mandible. In the two former cases of decapitation the blow through the neck would appear to have been made from the back whereas in the latter instance the blow would have come from the front. The blade injuries to the two of the skulls are curious. Neither shows signs of healing and so must have been inflicted perimortem. They are non-penetrative wounds and it is conceivable that they were inflicted to stun the victim or otherwise were just miss hits.

Body Position

With the exception of a single interment, Skeleton [118], all of the graves were aligned southwest-northeast. The Roman ditch F. 1 is also on this alignment,

and it is probable that the graves were dug to respect this feature. Indeed four of the graves actually cut into the ditch. Of those graves aligned southwest-northeast all but one were supine and had their heads in the southwest. The exception was Skeleton [073] who lay in a crouched position with his head in the northeast. There is nothing to distinguish this individual except that he might have suffered from tuberculosis and had a severely deformed spine (Pott's Disease). The position of several of the bodies, with their limbs tight against the torso and knees and ankles together, might suggest binding prior to burial in a coffin.

In conclusion, the majority of individuals examined from Jesus Lane are mature adults and the diseases that show themselves on the bones reflect their excellent preservation and the age of the individuals. The prevalence of dental caries, tooth loss, fractures and joint disease are all likely to increase with age. Many of the males are robustly built and all of the adults, including the females, have robust muscle attachments which, in conjunction with the high incidence of spondylolysis, suggests heavy physical work.

Roman Pottery

Gwladys Monteil

A total of 657 Roman pottery sherds were recovered (9357g; 11.35 EVEs). Although small, the assemblage is diverse, especially if compared to the assemblage yielded by the site of Vicar's Farm on the other side of the Roman Cambridge (Monteil in Lucas 2002). While this group is mainly domestic in nature, the presence of two grave goods with Skeletons [022] and [067] and of two possible wasters (in grave fill [097] and ditch [149]) provides a significant insight into the activity carried out in this part of Roman Cambridge.³

Although several contexts yielded mixed Roman, medieval and post-medieval pottery, most of the contexts produced homogenous Roman groups. Apart from a residual 1st century *Terra Nigra* fragment found in the fill of the service trench ([005]) and other possible early material, the pottery is mainly dated to the mid to late 2nd and early 3rd centuries AD. While reasoning in terms of absence is less than satisfactory, the lack of typical late forms usually found on Cambridgeshire sites (eg Nene Valley colour-coated versions of earlier types made in Nene Valley grey ware) suggests a main phase of occupation from the mid 2nd to the mid 3rd centuries AD. The settlement probably still existed in the mid to late 3rd and the 4th centuries but on the face of the pottery evidence its activity significantly decreased (the presence of the cemetery itself would suggest a reduction of the size of the occupational space).

Table 4. Wares present within the assemblage.

Fabric	Sherds	Weight	EVEs
BB1	1	213	
BB2	3	38	0.06
BBS	30	292	0.59
COLCC	6	17	
COLWW	5	345	0.52
CSBW	3	12	
CSGR	349	3875	4.32
CSGS	9	69	0.25
CSRE	29	281	0.47
CSRS	2	8	
CSWS	11	265	0.45
CSWW	1	33	
EARSW	1	4	
FSBB	2	25	
FSBW	3	13	
FSGR	12	73	0.75
FSRE	11	76	0.02
FSRS	3	46	0.05
FSWS	5	136	
HADBS	1	2	0.05
HADRE	10	96	
HORNBB	1	37	
HORNGR	37	889	0.48
HORNRE	2	44	0.1
HORNWS	28	1043	0.09
NVCC	35	504	1.45
NVGW	5	46	0.1
NVWW	1	37	
OXRE	1	62	
PORD	1	6	0.1
SAMCG	8	92	0.26
SAMLG	1	19	0.08
SAMMV	1	7	0.03
SMSW	16	230	0.06
TN	1	1	
VERRE	12	287	0.5
VERWW	10	134	0.57
Grand Total	657	9357	11.35

Imports

Samian is the only imported ware of the Jesus Lane group with one South Gaulish bowl and seven Central Gaulish examples being represented (1.52% of total sherds). While most of the Central Gaulish samian comes from Lezoux with a very limited range of plain forms present (dishes Dragendorff 31R and cup Dragendorff 33), one Central Gaulish samian Dragendorff 18/31 comes from Les Martres de Veyre ([001] dated AD 100–125).

*Romano-British Wares**Nene Valley Wares*

Not surprisingly, part of the assemblage was composed of Nene Valley products (6.24% of total sherds). The domestic range of Nene Valley forms was relatively limited and is confined to the first two centuries of the industry with beakers being dominant (2nd and 3rd centuries AD). The domestic assemblage included colour-coated bag-shaped beakers with cornice rim ([001] & [005]), beakers with underslip barbotine decorations (mainly scroll decorations), funnel-necked and rouletted and/or indented. The Nene Valley cream wares

chiefly include a single fragment of mortarium in [105]. An unusual Nene Valley colour-coated form was deposited as a grave good with Skeleton [022] (Fig. 9.2). It is a small flask of the form Cam 339 (Hull 1963) with 'Romano-Saxon' style white-painted circles around the shoulder (dated to the late 4th century AD).

Colchester Wares

A small number of vessels come from Colchester (1.67% of total sherds). Colour-coated beakers formed the largest part of this group with five examples identified, including two folded and rouletted examples ([063] & [146]) and a roughcast decorated fragment in [027]. An almost complete Colchester white ware mortarium of the form Cam 501 (Hull 1963) was identified in [143] (Fig. 9.7).

Hadham Ware

A total of ten sherds of Hadham red ware were catalogued, while one fragment of Hadham black-burnished ware was identified in [168]. They represent 1.67% of total sherds.

Oxfordshire Wares

Very little Oxfordshire ware was identified, a single fragment from [035].

Verulamium Ware

One cupped-rim flagon in [074] and at least five jars including a jar close to the Cam 307 and jars with everted grooved rims were recovered both in a white and a red version of Verulamium fabric (3.35% of total sherds).

Portchester

A jar in a Portchester Fabric D with the typical smoke-blackened surface was found in [009].

Black-burnished Type Wares

A dish fragment in a black-burnished fabric (One) was identified along with three dishes in a black-burnished Two Fabric. Forming 5.18% of the total sherds, the major part of the black-burnished grouping remains unsourced. Most of the sherds are characterised by a hard fine sand-tempered fabric varying from buff to pink. The surfaces are covered with a thick black slip slightly burnished (BBS). The repertoire is poor with beaded bowls and plain-rimmed dishes.

Fine Grey Ware

The second possible grave good was found associated with Skeleton [068] (Fig. 9.1). It consists of a slit cordoned small flask in a fine reduced fabric. The flask was used before being deposited as a grave good and could date to the late 2nd/3rd centuries AD.

Terra Nigra

One abraded sherd of *Terra Nigra* was found in [005]. The core is off-white and the slip is black.

Local Wares

Horningsea grey, white-slipped and black-burnished wares form 10.35% of the total sherds. The range of forms is relatively varied with plain-rimmed dishes, beaded bowls and dishes and several types of jars. The bulk of Horningsea vessels is made up of typical Horningsea storage jars. Two Horningsea storage jar fragments display the vertical strips of combing as described by Lucas (1999, Fig. 6, 62), they are usually dated between 90 and 150 AD and are probably residual in these contexts ([041] & [095]). The rest of the

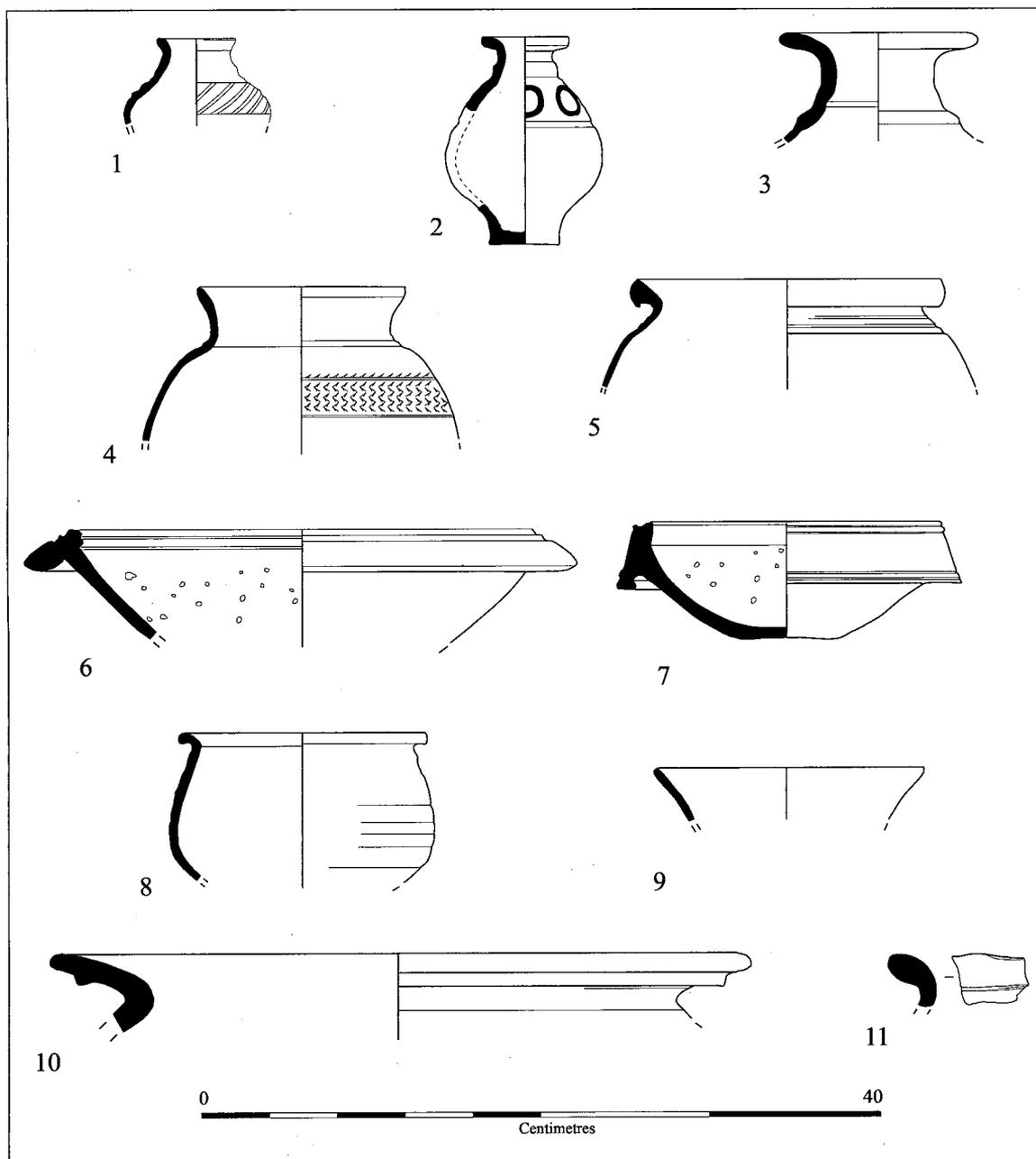


Figure 9. Selected Roman pottery.

Horningsea white-slipped ware storage jars are plainer with the usual combing and thumb-impressed herringbone at the base (*ibid*).

2.59% of total sherds were made up of shell-tempered jars, most of them used as cooking pots.

A local (?) white-slipped mortarium with a bead and reeded rim was found in [74] (Fig. 9.6). The fabric is unsourced but probably local and a very similar example was found on Vicar's Farm site on the other side of the town (Monteil in Lucas 2002).

A small fragment of a 'ring and dot' beaker with a characteristic metallic shine and panels of barbotine dots decoration was identified in [143].

Two jars of the form Cam 207 with frilled pedestal bases, one in a fine white-slipped fabric and another in a coarse sand-

tempered reduced fabric. Another narrow-mouthed possibly pedestalled jar was identified in [041], the fabric is reduced and black-slipped and the general appearance is, in many ways, close to the wasters found in the 20th century (see Lucas 1999, Fig. 9, n.1)

The bulk of the assemblage is made out of General Coarse Sandy Grey Ware (CSGR, 54.49% of total sherds). They cater for a wide variety of forms: beaded bowls and dishes, plain-rimmed dishes, a carinated flanged reeded bowl was recorded in [001], flanged bowls and various jars including several examples of the form Cam 307.

Two contexts yielded fragments of possible wasters ([097] & [149]). These display twisted and cracked rims in a coarse sand-tempered reduced fabric with

white inclusions (chalk?). A fresh break looks like a fragment of volcanic bomb stones (with frequent rounded voids). In terms of fabric, they do not bear any immediate resemblance to the wasters found on the site of Friends Meeting House in the early 20th century (Hughes 1902; now stored at the Museum of Archaeology and Anthropology, Cambridge),⁴ but they do support the presence of an industrial complex on the southern 'suburbs' of Roman Cambridge.

Table 5. Proportion of the different pottery forms (% total sherds and % total EVEs)

Forms	%Total sherds	%Total EVEs
Bowl	2.13%	8.02%
Beaker	4.57%	7.05%
Cup	0.46%	1.76%
Dish	4.57%	8.81%
Flagon	1.83%	13.22%
Jar	40.33%	51.37%
Lid	0.61%	1.85%
Mortarium	1.07%	5.81%
Storage jar	8.68%	0.79%
unidentified	35.77%	1.32%
Total	100.00%	100.00%

The jar-dominated functional pattern of this group (see Table 5) would suggest a relatively rural type of living for this area in the 2nd and 3rd centuries AD (Evans 2000). It seems to fit the local pattern, as a similar proportion of jars are visible at Wimpole (Horton *et al* 1995, 60). However, the diversity of the pottery in terms of supply (ie imports, Romano-British and local) and the presence of beakers, bowls and dishes in decent quantity could suggest a fairly urbanised 'Roman' way of living. The high level of flagons (see % total EVEs in Table 5) is related to the presence of two grave goods, both with almost complete rim and classified as flagons.

This group also demonstrates the presence of an extra-mural settlement where industrial activity (i.e. pottery production) was carried out alongside normal domestic occupation from possibly 150 to 250 AD. As outlined above, while a few early sherds found residual in later contexts could point towards a possible 50–150 AD phase of occupation, overall the pottery dates from the mid 2nd to the mid 3rd centuries AD.

⁴ A few sherds (Hadham, Oxfordshire and Portchester) suggest a late 3rd and 4th centuries AD occupation, but probably of a diminished scale which would explain the use of this space as burial ground.

Metalwork

Andrew Hall

Six items of copper alloy were retrieved from the excavation (Fig. 10), with three firmly identified as grave goods.

Strip Bracelet, Skeleton [129] (Fig. 10.2). A bracelet was worn on the left wrist of this mature female. The position of the arm over the stomach had caused the bracelet to press into the surface of a lumbar vertebra to become fixed within the bone as illustrated. The bracelet measures 60mm in diameter, with a simple subrectangular cross section 4mm in width. Similar bracelets have recently been found with burials at the Vicar's Farm inhumation cemetery, West Cambridge (Lucas 2002). A date within the 3rd–4th centuries AD would seem appropriate.

Finger Rings, Skeleton [054] (Fig. 10.3 & .4). A pair of rings were recovered from the 'ring'-finger on the right hand of this mature adult female. Both are formed from a simple band of metal bent to form a ring with an overlap. One ring is plain (.3), although the corrosion may obscure some decoration. The other (.4) has cross bands and indistinct chevrons inscribed into the surface. The preservation of this ring is much better suggesting a different metallic composition. The metal does have a slight silvery appearance perhaps indicating silver is included within the alloy.

In addition to the grave goods, three other copper alloy finds were recorded. These included a large 2nd century bronze coin recovered from the east-west ditch. Although badly worn, it seems likely that this is a Dupondius of Antoninus Pius (AD 138–161). A small belt fitting (Fig. 10.1) was retrieved from a service trench, and lacks any secure context. The cast copper alloy attachment is shaped like a flower head with two integral hooks on the back. The find is reminiscent of furniture attachments or belt fittings of a medieval or early post-medieval date. A small brass pin fragment was also recovered from another service trench, and a similar date is suggested.

A single short rod of lead, or possibly pewter (Fig. 10.5), was recovered from the grave fill of burial [051]. This rod, 85mm in length and 5mm in diameter, has a chamfered end forming a chisel-like point. Although similar to styli of this period, comparison with examples from Verulamium demonstrates clear differences. The flattened end does not flare or fan out from the rod, and it lacks the tapered point at the opposing end, and in general the object lacks the quality of manufacture seen in the published examples (eg Stead & Rigby 1989). A 19th century drain truncates the burial and therefore it is possible that the rod is much later in date, most likely post-medieval. This argument is further supported by the rarity of styli accompanying inhumations as grave goods. Two examples are recorded from Butt Road in Colchester, but no further examples are referenced within Philpott's survey (Philpott 1991).

A total of sixty iron objects were recovered with a further three groups of hobnails (an additional 70). By far the majority of the finds were of nails, a selection

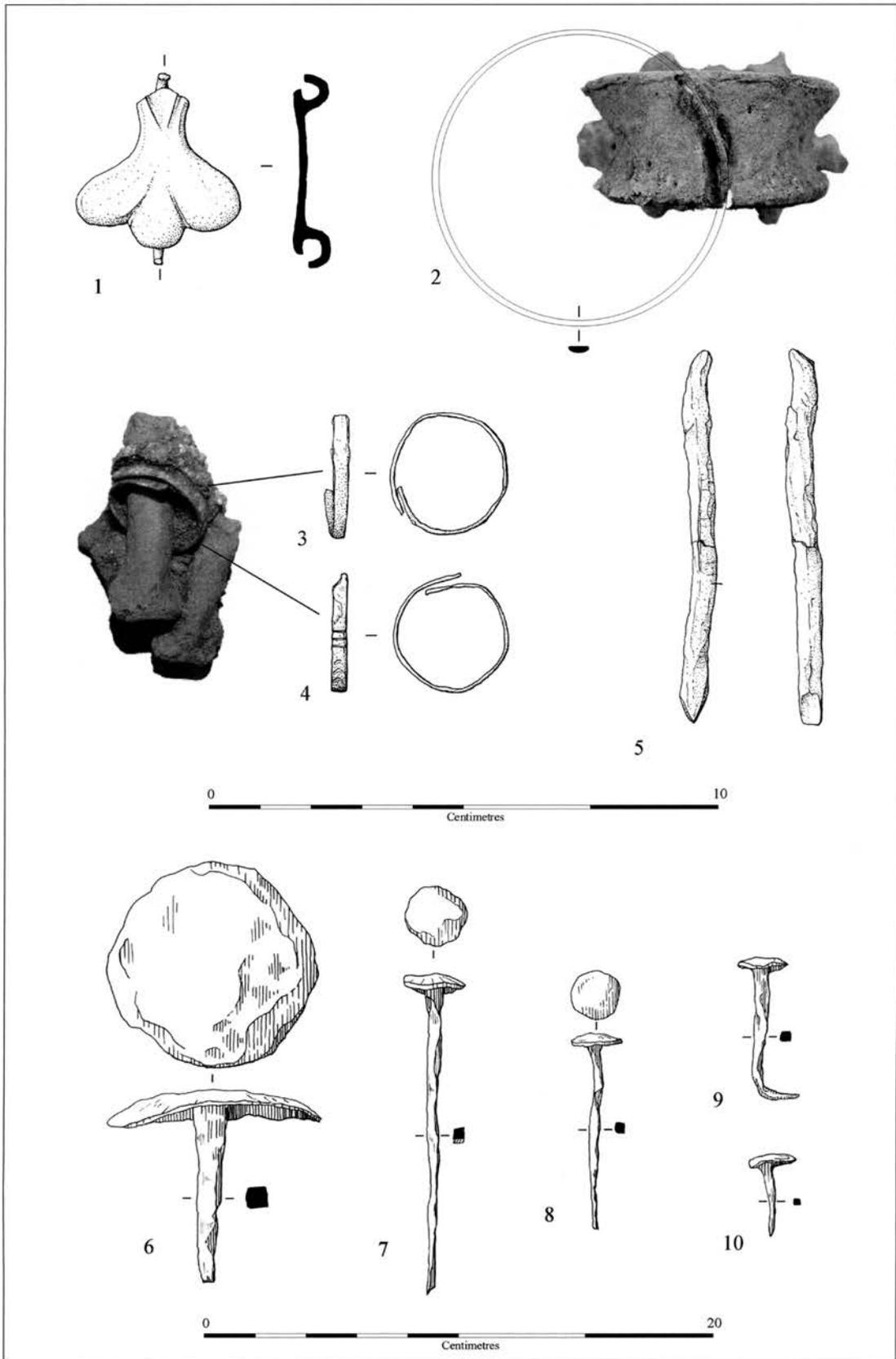


Figure 10. Metalwork.

of which is illustrated (Fig. 10.7–10.10). Their lengths range from 120–150mm. Many of these are coffin nails. This is clear within grave [118] where the location of the nails clearly mark the coffin outline. However, many of these nails are probably not directly associated with the burials and originated from within the backfill of the graves.

One artefact that stands out is a large boss or stud with domed head of 80mm diameter and square-section shank (Fig. 10.6). It was recovered from directly above the stomach area of Skeleton [052]. The long shank (70mm) suggests this object had a more structural role than purely being a decorative attachment, although it cannot be ruled out as an item of coffin furniture.

Hobnails were recovered from three graves; [016], [022] and [073], those of two adult males and a juvenile of unknown gender. The position of the nails within grave [016] demonstrates that the shoes or sandals were deliberately placed within the grave on either side of the legs and not worn at the time of burial. In the other two cases it is unclear whether the shoes were worn or placed above or below the feet (shoes within burials are much discussed within Philpott's 1991 survey).

Economic and Environmental Evidence

As identified by A Clarke, some 298 pieces of animal bone were recovered, of which 161 came from Romano-British contexts, the remainder being medieval or post-medieval. Only 41% of the Roman assemblage was identifiable to species. These consist entirely of the major domestics, with cattle (62%) and sheep/goat (32%) the most prevalent, while pig and horse were also present. The bones are mostly those that are discarded when an animal is slaughtered and the carcass prepared (ie the bones of the skull and distal limb bones). Many of these fragments bear cut and chop marks and spiral fractures from the primary stage of butchery, together with a small number of horn cores that have been broken or chopped off the skull for the removal of the horn. The emphasis on these activities may indicate that the site was located away from domestic settlement, perhaps in a dedicated industrial area. The few bone fragments from grave fills show the same characteristics as the rest of the assemblage and are considered to be intrusive (ie not grave goods).

As reported by R Ballantyne (in Alexander *et al* 2003), five samples were processed by hand using bucket flotation (grave fills [070], [132], [147], [154] and [157]). Low quantities of charred plant remains and charcoal were recovered in all. Grains of wheat predominate, mostly of a free-threshing variety (*Triticum aestivum sensu lato*), though grains of hulled wheat (*Triticum spelta/dicoccum*) were also identified. Lesser amounts of barley grain (*Hordeum vulgare sensu lato*) occur, along with occasional grains of rye (*Secale cereale*). Other plant taxa are represented in very low

quantities, including garden pea (*Pisum cf sativum*), goosefoot type (*Chenopodiaceae* indet.), knotgrass (*Polygonum* sp.), vetch/wild pea (*Vicia/Lathyrus* sp.) and brome or oat (*Bromus/Avena* sp.).

The cereal assemblages from the grave fills are unusual for the Roman period. Free-threshing wheat and rye only became significant crops during the Saxon period, and Roman sites in East Anglia tend to be dominated by chaff of hulled wheats. Charred plant remains from a grave in nearby Park Street (see below) are very different and characteristically 'Roman', with large amounts of hulled wheat chaff and no free-threshing wheat or rye. The material may thus be intrusive, although the consistent recovery of charred grain in all sampled contexts would be impressive if this were so. An alternative explanation would be that these are unusual Roman period remains, indicating the increasing use of new cereal crops. The dominance of grain, with little seeds or chaff, may suggest that a cleaned grain product has been charred, probably within a domestic setting.

Discussion

The evidence from the cemetery is consistent in indicating its Late Roman usage. The burials post-date settlement features of mid 2nd to mid 3rd century, and the datable grave goods consist of a (used) vessel of the late 2nd–3rd century in burial [068] and a later 4th century Nene Valley vessel in burial [022]. The exclusive use of inhumation, the presence of decapitation burials, the occurrence of hobnails and the low frequency of grave goods are all suggestive of a later 3rd–4th century date.

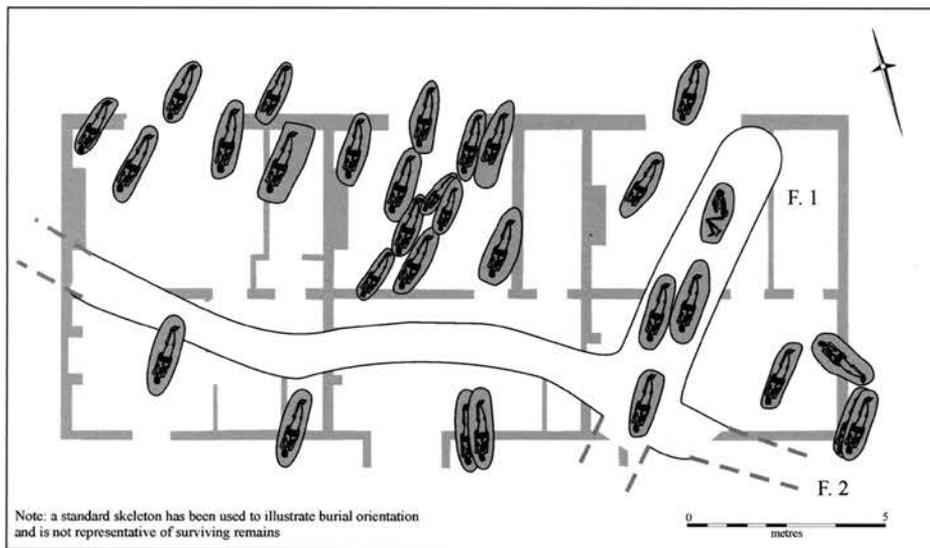
As is typical of the period, almost all of the inhumations were laid out in a supine position, with only a single crouched burial present. Although no coffin stains were identified, iron nails recovered from several of the burials may suggest the use of wooden coffins ([022], [055], [061], [068], [118] & [158]). As discussed above, the three decapitation burials represent a burial rite now well attested as a recurrent practice in the Cambridge region, as elsewhere in southern England.⁵ The smears of a white 'chalk-like' substance noted by the excavators in the graves of skeletons [013] and [019] could indicate 'plaster burials'. This similarly late Roman rite involved the covering of the body with gypsum plaster, lime or chalk, apparently in an attempt to preserve the body (Philpott 1991).

The demographic make-up of the sampled area of the cemetery indicates a strong bias towards males of 1.9:1, though this need not have been replicated throughout the wider cemetery. Barber and Bowsher (2000) have noted that biases towards males of between 1.5:1 and 2.2:1 seem typical of large urban Roman cemeteries, while rural cemeteries tend to have a more even balance. This is suggested to reflect the presence of greater numbers of men in towns, or cultural factors causing men to be buried in towns, whereas women were more often buried in rural areas. In this context it can be noted that females

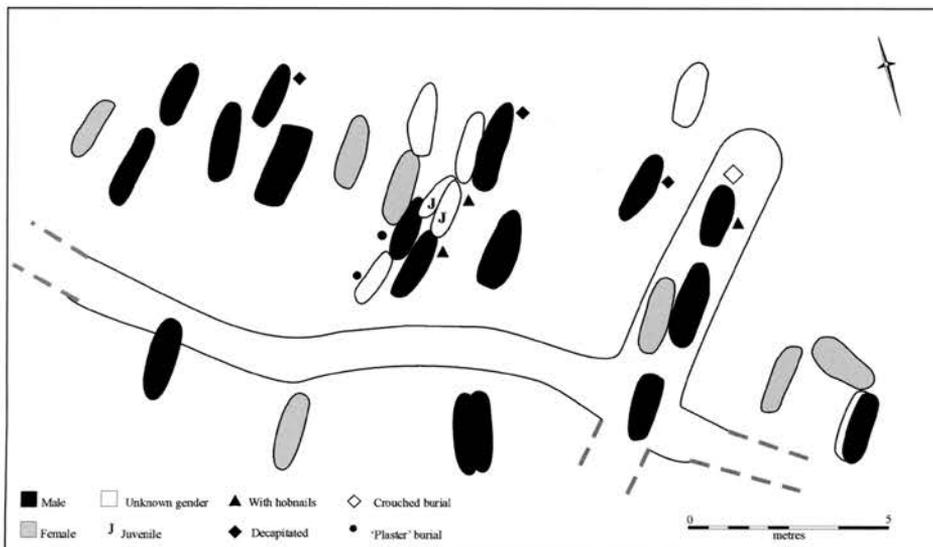
formed the majority of the sexed burials in the small later Roman inhumation cemeteries to the west of the town of Cambridge at Vicar’s Farm (ten female and six male; Lucas 2002) and New Hall (four female and two male; Evans 1996), although the small sample sizes implies that little can be attached to this.

While acknowledging the biases that may entail from only its partial exposure – it extends in all directions and the site only represents a sample of a larger burial ground – some observations can be made of the cemetery’s layout. Firstly, although four graves cut the fills of F. 1, and another truncated ditch F. 2, in general the arrangement of the graves gives a sense of ‘stand-off’ or respect of the ditches that suggests a degree of contemporaneity. The density of graves generally seems to have been greater in the swathe

northwest of the junction of the two ditches, and it is possible that the ditches originally bounded the cemetery plot. Secondly, there are hints of patterning or grouping in terms of burial rites. The three decapitated inhumations and the only crouched burial all fall along the same northwest-southeast axis, and this could suggest some manner of ‘conceptual boundary’ – perhaps at one time marking the ground’s northern limits (Fig. 11). Further patterning can be seen where the cemetery is most dense, under the northern room of the No. 36 Jesus Lane property, where there seems to be a propensity for pairing of graves. The two ‘plaster’ burials (Sk [013] & [019]) and two out of the site’s three interments with hobnail footwear (Sk [016] & [022]) are in each case placed together in a head-to-foot relationship.



A



B

Figure 11. A: Reconstruction plan showing Roman ditch system in relationship to graves; B: Cemetery distributions.

While the extent of the Jesus Lane cemetery is unknown, there are some possible hints that it was large. Following immediately upon its investigation, work at 11 Park Street in 2001, located c. 170m to the northwest, also unearthed cemetery remains, with the graves of two adults (one buried with a neonate) and the disarticulated remains of a sub-adult and five neonates being identified (Fig. 1 & 12; Dodwell 2002). A total of 54 sherds (2375g) of pottery was recovered, mostly dating to the late 2nd and 3rd centuries AD, with some 4th century material also. All of the ceramics comprised domestic waste as opposed to grave goods.⁶ A residual sherd of 2nd/3rd century pottery was recovered from one of the grave fills and one of the burials was cut into a ditch containing 4th century sherds.

If part of the same cemetery as the Jesus Lane

plot, given its frequency of neonates the Park Street portion would be quite distinct. Equally, that the orientation of its graves differed from the Jesus Lane exposure could argue that they were, in fact, separate burial grounds. Yet, against this would have to stand the evidence of other burials within the immediate area. Although not recorded in the Cambridgeshire Sites and Monuments record, human remains excavated over a century ago at the Union Building, Friends Meeting House and along Jesus Lane are catalogued in both the Duckworth Collection and the Cambridge University Museum of Archaeology and Anthropology. Unfortunately the human bone in the Duckworth Collection consists only of disarticulated material (mainly skulls and leg bones) and in most cases it is poorly provenanced (eg '0409A, Cambridge Jesus Lane Drainage works, 1896, Baron Von Hugel'

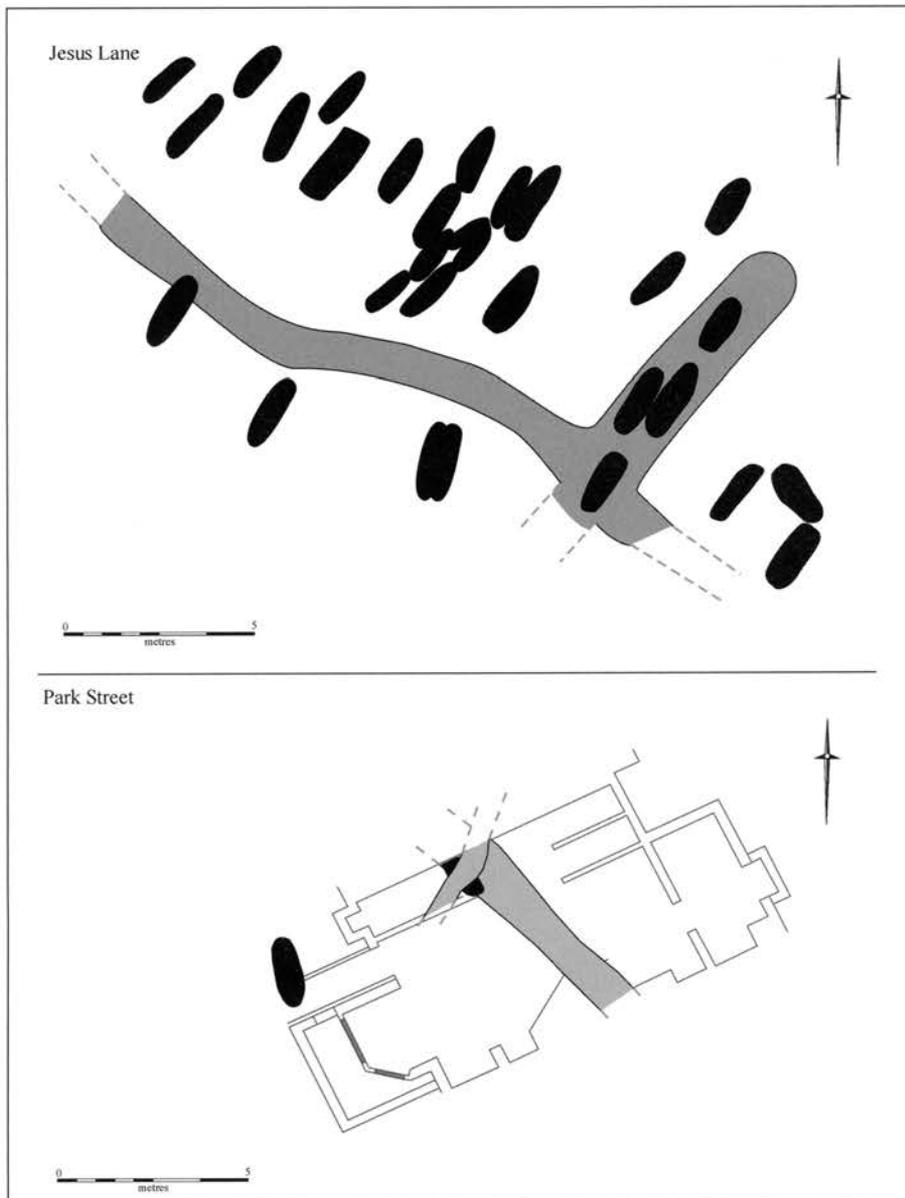


Figure 12. Comparative plans of Jesus Lane and Park Street burials.

or '0597A, Cambridge behind Round Church [Union], Prof. Hughes'). In addition, dating this material is difficult. Both Roman and Anglo-Saxon material has been found in the area and those human remains recovered from behind the Round Church may be later and derive from the church graveyard. With these reservations, a total of 24 skulls are held in the Duckworth Collection with some reference to either Jesus Lane, the Friends Meeting House or the Union Building. The long bones held in the Duckworth Collection, all collected during drainage works, have been briefly examined and derive from a minimum of 15 individuals (12 adults and three sub-adults).

It is possible that the larger cemetery may have also included cremation burials as Roman 'cinerary urns' found in Jesus Lane and under the Union Building are held in the Museum of Archaeology and Anthropology (id. numbers 1901.43 and 1893.125 respectively; the cremated bone does not appear to have been kept). Cremation burial would attest to Early Roman occupation, and could correspond with the reported recovery of amphorae from Jesus Lane. The latter could, however, equally suggest a Late Iron Age presence (possibly burial related; see Hill *et al* 1999). If so, then this could resonate with the recovery of the sherd of Terra Nigra from the Jesus Lane excavations and perhaps relate to the recent discovery of Iron Age settlement within the grounds of the College itself (Hattersley & Evans 2003).

Regardless of whether the Jesus Lane/Park Street findings relate to one continuous Roman cemetery swathe or a series of separate nuclei or clusters, these findings are of the utmost importance for the understanding of the scale of Roman Cambridge. On the one hand, the recovery of what are obviously earlier settlement-related features (ditches, pits, etc.) indisputably attests that there was a lower 'town' on the eastern side of the river below Castle Hill. Equally, the recovery of pottery wasters in the course of these investigations – confirming earlier 20th century findings along Jesus Lane (Hartley 1960) – indicate industrial activity within the area. This could be further demonstrated by the possible evidence of horn-working from the site and also the robust musculature of, and injuries to, the populace interred at Jesus Lane. Much of the skeletons' pathology could be attributable to sustained quasi-industrial labour; the worn notch in the incisor of Skeleton [161] (possibly the result of leatherworking) would be a specific case in point. In this regard, a sense of 'urban gradient' or 'edge' can be established in relationship to excavations within Jesus College proper. Only field boundary ditches have thus far been identified from the period with the College's grounds, and the quantity of contemporary pottery recovered would suggest no more than manuring activity (Evans *et al* 1998; Whittaker 1998).

In contrast, more recent evaluation fieldwork at the ADC Theatre opposite No. 11 Park Street showed a high density of Roman settlement activity of 2nd–3rd century date with no interments present (Whittaker 2002). Together with the evidence of Hughes' earlier Union Building investigations (1906: 410), this sug-

gests a focus of Roman occupation straddling the Via Devana approach road adjacent to the eastern Cambridge bridge-crossing.

Pending any further investigation along Jesus Lane any estimation of the scale of the Nos. 35–37 cemetery must be a matter of speculation. If continuing uninterrupted to No. 11 Park Street in the same densities, then it is estimated that it could have had an interred population of upwards of 750–1000 individuals. This would be considerable given its Late (-only) Roman attribution and could represent a population of c. 150–300 individuals at any one time depending on whether an average age of death is assumed to be either 30 or 50 years. In this case, this finding could call for some reappraisal of the status of Roman Cambridge (cf Evans 2000). Alternatively, of course, the Jesus Lane and Park Street burial plots may have been entirely separate and their respective scales may not have greatly differed from the Vicar's Farm and New Hall cemeteries (30 and 6 individuals). Yet for reasons already outlined, the percentage of male burials could attest to a larger, more specifically 'urban-type' cemetery.

The results from excavations within the upper town proper – including its defensive walling (probably by Imperial decree; see Taylor 2000 and 2002) – would indicate that Cambridge remained a significant centre during the 4th century, and this would be furthered by the recovery of the Jesus Lane cemetery. Although the evidence of human burial and industrial activity (kilns/furnaces; Alexander & Pullinger 2000: 73) from within the walls would seem at odds with expectations of Roman urban life, together with Jesus Lane pottery wasters the latter would attest that the town still sustained an economic/commercial role.

Acknowledgements

We are grateful for the exemplary co-operation of Jesus College in response to the discovery of the cemetery; particularly that of its President, Dr S Heath, the Domestic Bursar, the late V Osborne, and its Buildings Manager, Mr A Forsbeary. Equally, representing Bidwells, the assistance of S Drury was essential to the success of this project.

Natasha Dodwell would like to thank C Duhig and N Powers for advice and information concerning the site's human remains.

The efforts of the CAU site staff are hereby acknowledged and they are duly thanked. N Challands processed the finds with great efficiency, the graphics within this report attest to the skills of M Abbott and A Hall, and the photographs are by G Owen. The final version of this text has greatly benefited from the editorial abilities and researches of L Webley, and also the comments of S Lucy.

Cambridge Antiquarian Society is grateful to Jesus College for a grant towards the publication of this article.

Endnotes

1. The work was initiated by the discovery of a skeleton by workmen, revealed during the removal of the floor in No. 37 Jesus Lane. The local Coroner was contacted and the pathologist/archaeologist, Corinne Duhig investigated the discovery, which had been excavated by the local police. Establishing the antiquity of the burials, no police enquiry was required and a programme of work was thereafter rapidly negotiated to dovetail with the refurbishment schedule.
2. The general methods used are those of Bass (1992), Buikstra and Ubelaker (1994) and Steele and Bramblett (1988). An assessment of age was based on the stages of dental eruption and epiphyseal union, on the degree of dental attrition (Brothwell 1981) and, where possible, on changes to the pubic symphysis (Brooks & Suchey 1990) and the auricular surface. The following age categories are used:

Infant	0–4 years
Juvenile	5–12 years
Subadult	13–18 years
Young adult	19–25 years
Middle adult	26–44 years
Mature adult	45 years +

There may be overlaps between categories or a broad category, such as adult, may be used where insufficient evidence was present. Sex of the adults was ascertained where possible from sexually dimorphic traits on the pelvis and skull and from metrical data. A five sexes classification (female, ?female, indeterminable, ?male, male) is used. No attempt was made to sex immature individuals. The living stature of the skeletons was, where possible, calculated from the long bone lengths using the regression equation devised by Trotter and Gleser (1958). Combined femur and tibia were used in most cases, the ranges being $\pm 29.9\text{mm}$ and $\pm 35.5\text{mm}$ for males and females respectively.
3. The pottery from each was sorted by a combination of fabric and form, and then quantified (number of sherds, weight and rim EVEs). Lucas (1999) was used as the reference for the local ware. All fabrics were compared with the Roman fabric reference collection defined for the Romano-British site of Earith, Cambridgeshire (unpublished).
4. The Friends Meeting House wasters were attributed to the late 3rd and 4th century by Hartley in 1960 because of similar forms being found in Great Chesterford in contexts of that date (1960, 27). However, this type of narrow-mouthed jars, one of which is pedestalled, is a relatively long-lived type and their production in Cambridge could have started earlier in the 2nd century AD. One very similar jar was found in [041] associated with 2nd century material.
5. Having a ratio of 1 per 10.7 inhumations, the occurrence of decapitated burials on the site is well in keeping with the frequency of such interments in other later Roman rural and small town cemeteries (eg Foxton, Cambs. – 2 out of 24 or 1:12; Kempston, Beds. – 12 out of 92 or 1:7.7; Dunstable, Beds. 12 out of 116 or 1:9.7). Interestingly, they appear to occur in lower frequencies in large Roman towns (Philpott 1991; see also Roberts & Cox 2003: Table 3.29).

6. Analysed by G Monteil, most of the assemblage consists of local grey and black-burnished wares, probably from Horningsea (Lucas 1999), in a limited range of forms. The only imports are one samian dish Walter 79 and a 'Mozelkeramik' rouletted beaker fragment. Nene Valley colour-coats dominate the finewares with indented and rouletted beakers and one beaker with underslip barbotine decorations. Other finewares consist of a Hadham red-slipped samian imitation of the form Dragendorff 31 and two sherds of Oxfordshire red-slipped ware. One Nene Valley mortarium was found, it is typologically close to M36 and can be dated to the later 3rd century (Dannell *et al* 1993, Fig. 78).

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Anglo-Saxons on the Cambridge Backs: the Criminology site settlement and King's Garden Hostel cemetery

Natasha Dodwell, Sam Lucy and Jess Tipper

Excavations in 2000 and 2002 on two separate sites just over the Backs in Cambridge revealed evidence for a probably 7th-century Anglo-Saxon cemetery and, possibly related to it, a settlement site of the 6th to 7th centuries. Within the cemetery, 21 burials in 20 graves were found, including one double grave, and the survival of bone was generally good. Five of the burials were accompanied by grave goods. These included a copper alloy bowl with beaded rim (Perlrandsbecker) containing the remains of three eels, a bag ring, a curated Roman bracelet, a reused Roman coin, a bag or pouch assemblage, an unusual pendant, a spear-head and several knives. There were no characteristically 5th-century grave goods, and this group appears to date mainly to the 7th century. Study of the skeletal remains indicates a population of mixed age and sex. The settlement site revealed evidence for one earth-fast post-hole building and two other structures associated with sunken-featured buildings or Grubenhäuser, both with probable suspended floors, together with a small number of pits, two other possible structures and a later ditch.

Introduction

This paper reports the results of two separate excavations by the Cambridge Archaeological Unit (CAU; University of Cambridge) in west Cambridge: that in 2000 of part of a small probably 7th-century inhumation cemetery in advance of the building of King's College Garden Hostel (at TL 442 582), and 300m to the south, that of part of a settlement site of similar date, commissioned by Cambridge University Estates Management Services in advance of the construction of the new Institute of Criminology building on the University's Sidgwick campus (TL 4428 5812) (Fig. 1a).

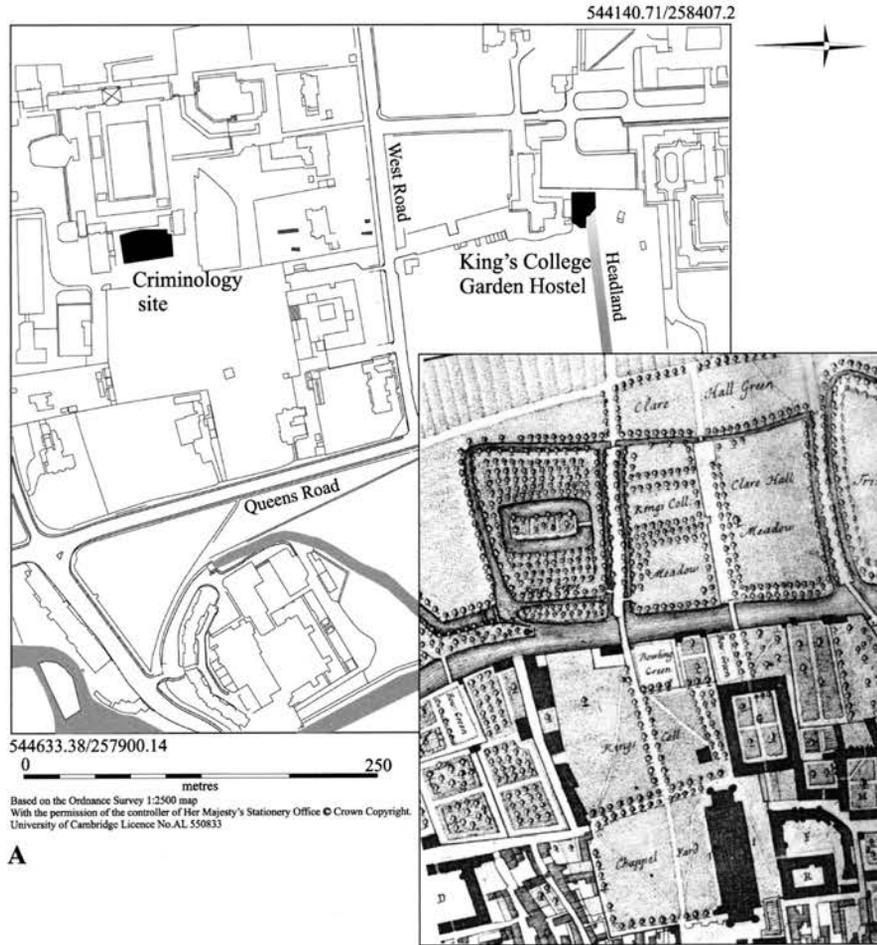
These sites both lie on second terrace river gravels, c. 1.5–2m above the Cam floodplain which lies 150m to the east, the settlement between 8.60 and 8.90m OD and the cemetery at 9.40m OD. They are situated to the west of Queens Road, with the cemetery lying to the north of West Road and the settlement to the south. The sites both lie to the north of an area of reported Iron Age and Anglo-Saxon burials at Newnham and

to the south of the Anglo-Saxon cemetery at St John's Playing Fields which is dated between the mid 5th and 7th centuries AD (Fox 1923: 242). There was evidence at St John's Playing Fields of Bronze Age features and the corner of a Romano-British field system just east of Akeman Street (the Roman Road is thought to run in a NE to SW alignment to the west of the Garden Hostel; Evans 1991a and b), and the 1992 excavations at Burrell's Walk revealed the northern margin of a probable Roman settlement complex, with prehistoric features also present (Gdaniec 1992). However, more recent work in the area at St Chad's (Whittaker 1998) and at St John's School (Mortimer 1995) found no archaeological remains. A ditch of probable Iron Age/Romano-British date was found during fieldwork in 1996 in the grounds of the University Library immediately to the northwest (Gibson 1996), while traces of a boundary ditch system of possible Anglo-Saxon date were found in an evaluation at No. 5 West Road (Mackay 2002).

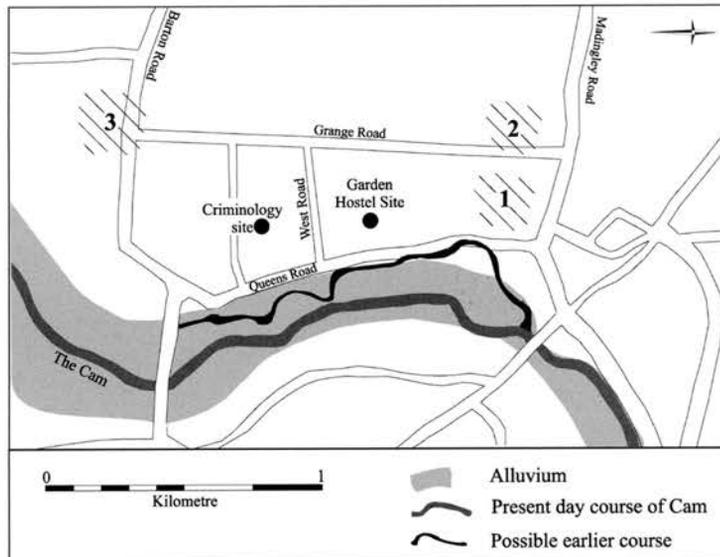
In the medieval period the area was part of an extensive system of open-field agriculture, the West Fields of Cambridge (Hall and Ravensdale 1976). This was documented in the cemetery excavation, where the immediate area of the site underlay a broad west/east aligned headland (Fig. 2, section), whose line still survives in the lawn of King's College Fellows Garden and must have continued east to join the causeway leading to the late medieval bridge crossing (Fig. 1a). Parts of the surrounding area were also subject to post-medieval quarrying (Patten 2002; A Dickens pers comm).

The cemetery

The cemetery was first discovered during an archaeological evaluation in advance of building work at King's Garden Hostel (Whittaker 1999). Three graves were recorded during this 1999 evaluation, and these and a further 17 graves (containing 18 individuals) were excavated in 2000 (Fig. 2). The excavated area consisted of the footprint of the new building, with an additional extension to the west, so that the graves



A



B

Figure 1. A) Location map, with Loggan map of 1688 inserted, showing position of the King's College bridge crossing along the projected line of the headland. B) Main Cambridge western Cam-side Anglo-Saxon cemeteries: (1) St John's playing fields (2) 71 Grange Road (3) Neunham Croft.

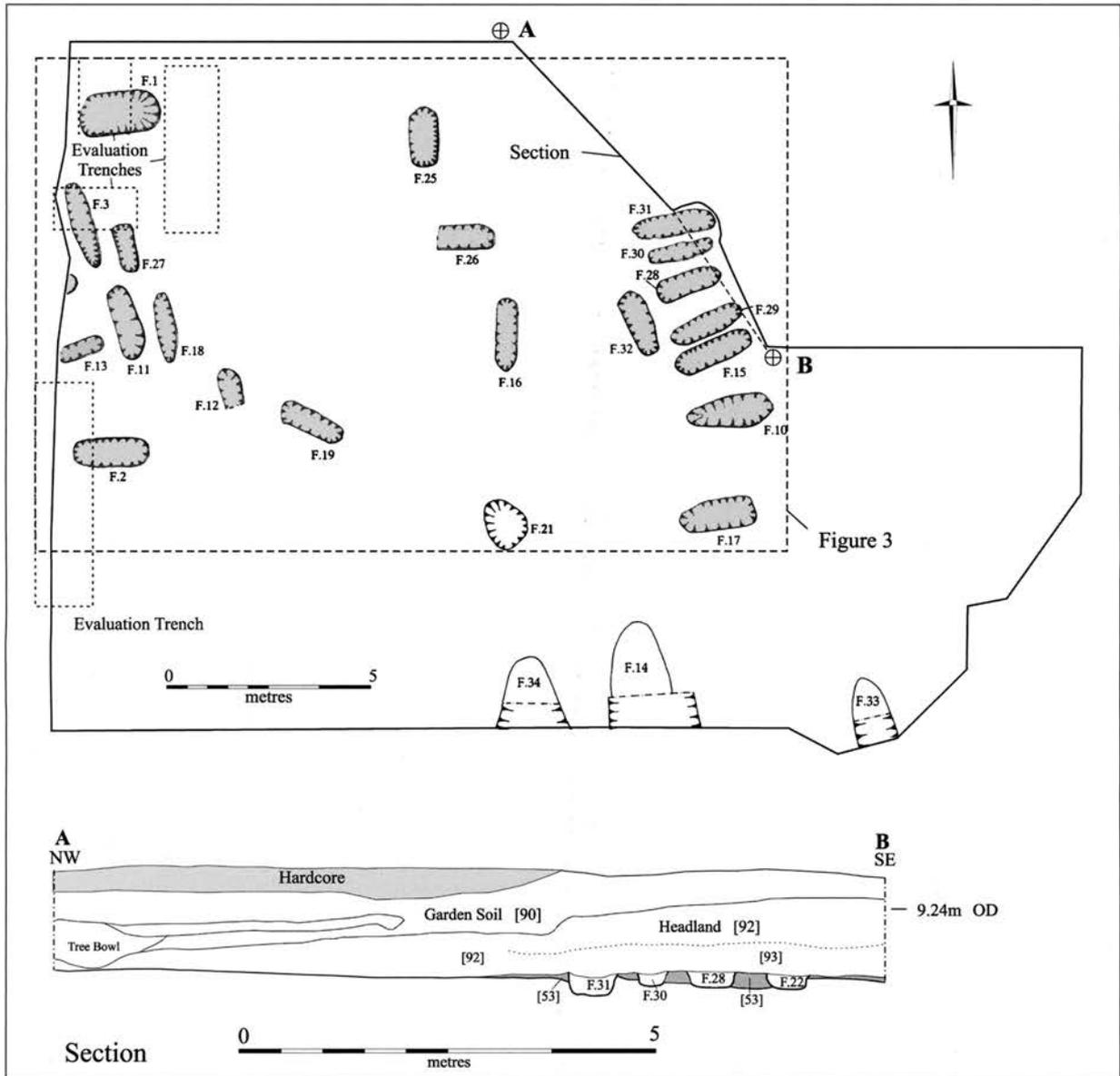


Figure 2. Cemetery excavation with graves, showing location of evaluation trenches, section through the headland below.

noted during the previous year's evaluation could be fully recorded and lifted (Fig. 3). There was evidence of prehistoric activity in the vicinity, in the form of a Late Bronze Age/Early Iron Age pit close to the centre of the site, and some residual worked flint and pottery recovered from the buried soil through which the later graves were cut.

Grave Catalogue

The following information is given for each inhumation: a) the grave number, followed by the original context number assigned to the skeleton; b) details of the grave orientation, dimensions and shape, and details of the skeleton, with comments on sex, age, preservation, pathology and position; c) information about associated finds, in each case followed by the small find number assigned during excavation.

Grave 1 ([012]; Fig. 4) Female, aged about 25 years

The skeleton is extremely poorly preserved and the surviving bones are very abraded. The absence of most of the pelvis and epiphyseal ends meant that this individual was aged on the degree of dental wear. The head was in the west of the grave and the body was extended, supine with slightly flexed arms; the right hand rested palm down on the hip, and the left on the pelvis. Wide, sub-rectangular cut, 1.90 x 1.10 x 0.27m. Linear enamel defects were recorded on the incisors, canines and the maxillary premolars and are indicative of episodes of feverish illness or starvation in childhood. These stress periods affected the development of these teeth from around one year up to the completion of the 2nd premolar at about six years. Medium deposits of calculus, or mineralised plaque, were recorded on much of the surviving dentition indicating poor dental hygiene.

Associated Finds

1. Copper alloy bowl, lying by the left foot of the skeleton,

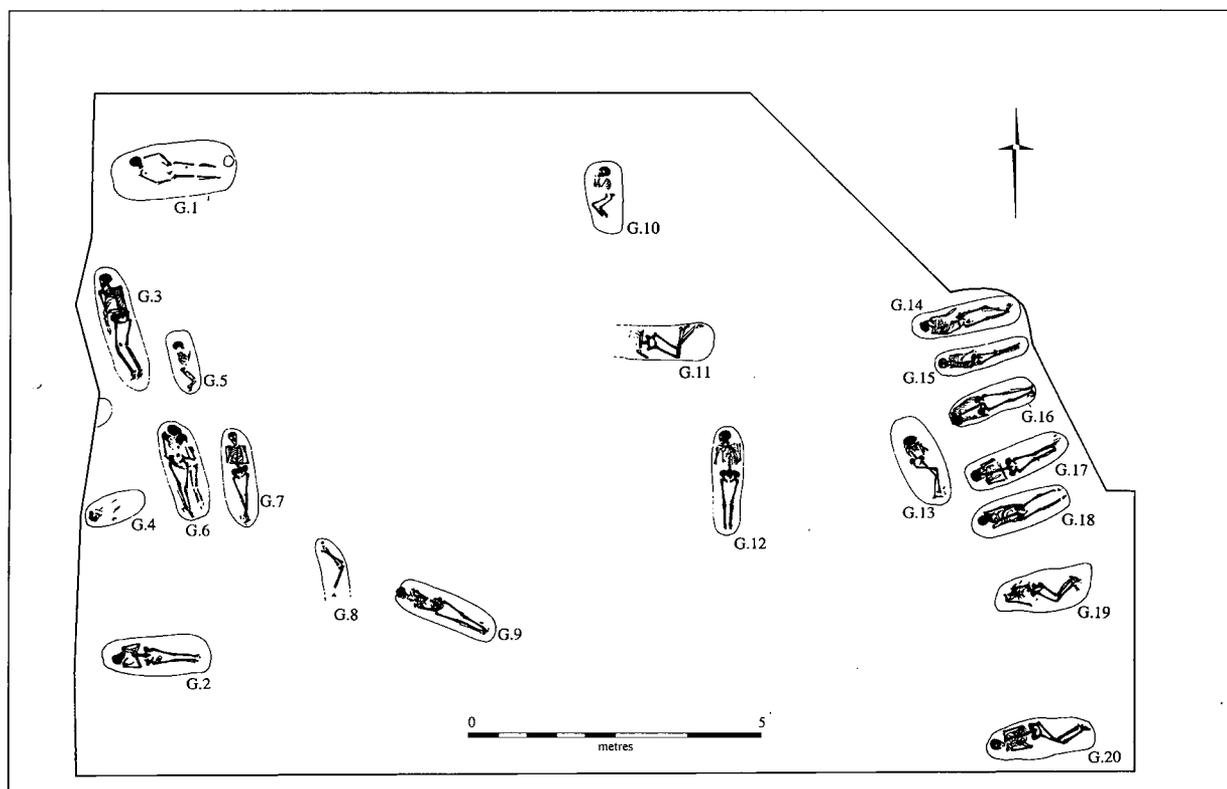


Figure 3. King's Garden Hostel cemetery, showing skeletal positions and orientation.

in a fragmentary condition. 170mm diameter, 62mm deep. The bowl was of a rounded form with flattened base, and had a narrow (7mm wide) out-turned beaded rim, with small raised bosses 2mm wide. This bowl type is regarded as imported from the Frankish continent, and is generally found in 6th-century contexts (Werner 1962: 312–5, Abb. 4–5; Evison 1987: 104). Examination of the bowl fill revealed 322 whole eel vertebrae, and fragments of 16 others, along with seven mandibular or maxillary halves, and humeri. These have been interpreted as representing the deposition of three whole European Eels (*Anguilles anguilles*) within the bowl at the time of burial (R Ballantyne pers comm; SF8).

2. Iron knife lying slightly above the left hip, point downwards. Broken off at tip, with 69mm in length remaining, of which 6mm was tang; thickness of blade back 4mm. The degree of corrosion makes the shape difficult to ascertain but there are indications that it had a straight base and curved back (SF3).

3. Worked stone spindle whorl, 30–32mm in diameter, with flattish base, domed top and large central hole (11mm diameter), lying between the thighs of the skeleton. This position may suggest suspension from a belt or girdle (SF9).

4. White circular bead or pendant, of chalk-like substance, surrounded by a decorated silver band, lying on the upper right chest of the skeleton. Diameter 22mm. Resembling a finger-ring, the band is indented top and bottom with small triangular stamps, and is scored roughly around its circumference with a shallow incised line. A groove in the chalk at one place may indicate that it had been suspended, and its position would support this (SF2).

Grave 2 ([008]; Fig. 5 & 24c) ?Female, aged 25–35 years
The skeleton is poorly preserved and the surfaces of the

surviving bones are extremely abraded. The head was in the west of the grave and the body was supine with legs extended and arms flexed at the elbows so that the left wrist rested on the right in the area of the sternum. Sub-rectangular grave, 1.80 x 0.70 x 0.35m. Again, this individual was aged solely on the pattern of dental wear. A large carious lesion was recorded on the left mandibular 3rd molar and, below this tooth, a deep abscess draining into the mouth has widened and deepened the socket so that the carious tooth is extremely loose. There are flecks of calculus on all of the surviving teeth and slightly defective enamel on the canines and 1st premolars.

Associated Finds

5. Copper alloy bracelet, max 60mm in diameter, found at the upper right thigh, possibly part of a bag assemblage. The bracelet is of D-section, max thickness 3.5mm, which widens, then tapers to points at the terminals, which overlap. From the point at which the ends of the bracelet widen, they are decorated with two central parallel grooves which run to the terminal points. These grooves were then themselves stamped with slightly irregularly-spaced dots. At the two widest points, the bracelet was further ornamented with outward-facing arcs at top and bottom, which may also have a stamped dot at the apex. This decoration serves to resemble a snakes-head. Johns (1996: 44) states that serpentiform jewellery reached Britain in the 1st century AD, with most datable examples tending to belong to the early and middle Empire. The bracelet found here, with its two snakes head terminals, would appear to fall into her class Bii (Johns 1997: 35), of which there are numerous bronze examples from Britain (*ibid* 37). Only one parallel find was noted by White (1988: 110) in his survey of Roman artefacts in Anglo-Saxon graves, however. Its location in association with the purse-ring, and

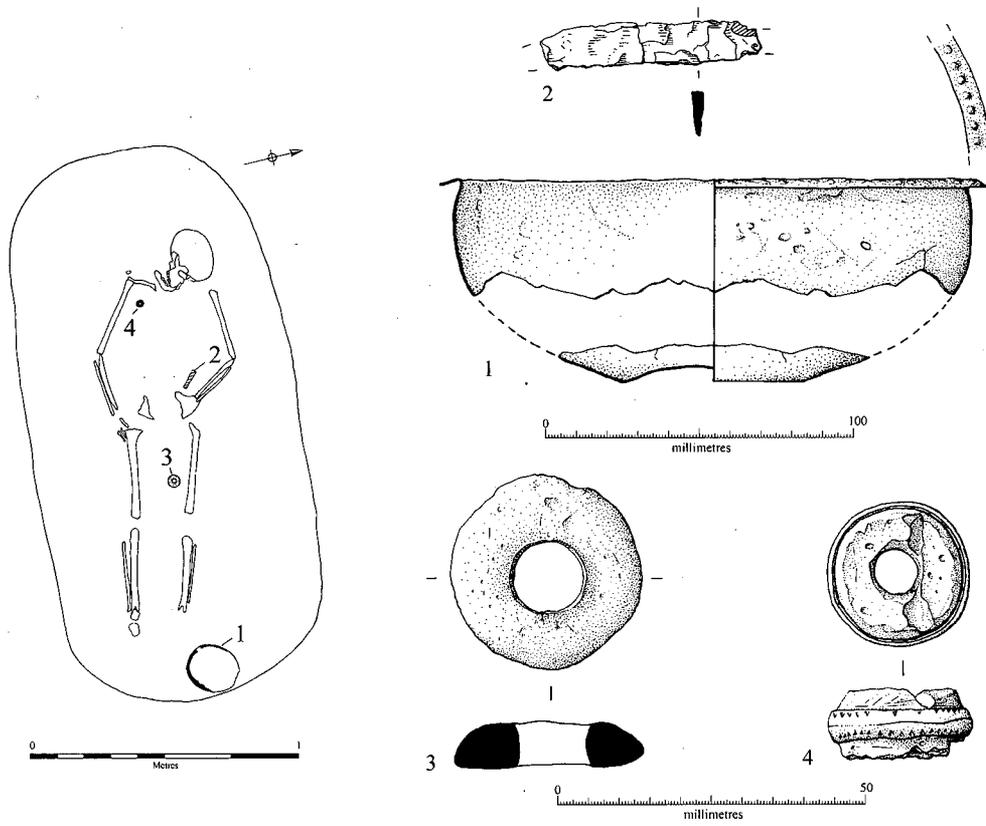


Figure 4. Grave 1 with associated grave goods.

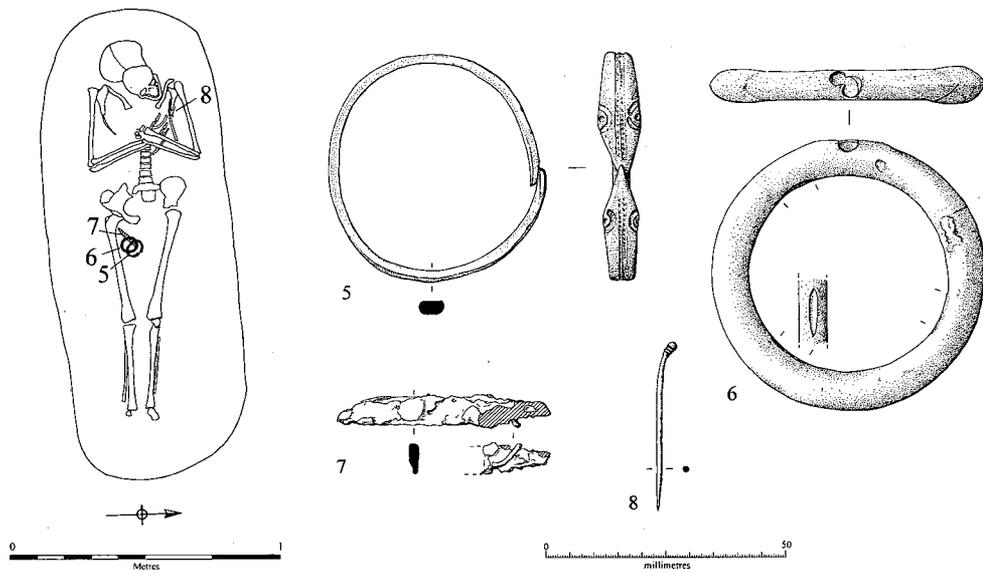


Figure 5. Grave 2 with associated grave goods.

not on a wrist, implies that it was contained within a bag suspended from the waist. This bracelet thus seems to represent a curated Roman item (SF4).

6. Copper alloy ring, 70–72mm in diameter, found at the upper right thigh, underlying the bracelet. The ring was undecorated, and of near-circular section, 8–10mm wide. Internal slots suggest its use as a purse-ring, an interpretation which is supported by its location just below the right hip, in conjunction with the bracelet, which it probably contained. Its diameter falls within the normal range for bag-rings (Geake 1997: 80–81; SF5).

7. Iron knife, 112mm in length, of which length of blade is 81mm, tang 31mm long and thickness of blade back 5mm, found at the upper right thigh, point upwards. The knife has a straight base and curved back, and the remains of an organic scabbard/sheath are visible, as are those of a small iron suspension ring at the handle end. The knife is complete, including the tip and tang, and the conservator recognised mineralised horn on the handle. Its location within the grave suggested suspension from the waist, as it lay underneath the purse-ring (SF6).

8. Copper alloy pin, 45mm in length, 1.5mm diameter, with a ridged terminal ending in a small dome, on the upper left ribs. The pin is slightly bent and thinned towards the terminal. Its position suggests its use as a dress fastening, perhaps for some form of head covering (Geake 1997: 67; SF1).

Grave 3 ([028]; Fig. 6) Male, aged over 45 years, ht: 1.83m Despite some slight machine damage this skeleton is well preserved. The head was in the NNW of the grave and the body was supine, legs extended but slightly flexed, right arm extended, left arm flexed at elbow, across abdomen with hand resting on right elbow. Long, narrow grave, 2.15 x 0.51 x 0.18m. Four teeth had been lost prior to death and a large caries was noted on a maxillary molar. Deposits of calculus were recorded on four of the surviving molars and enamel defects were observed on several of the surviving teeth, which were all heavily worn. Schmorl's nodes, increased porosity and marginal osteophytes, all changes characteristic of degenerative joint disease of the spine, were seen on the bodies of the lumbar vertebrae. The right clavicle of this tall, elderly man had fractured and was severely foreshortened in comparison to the left. The fracture would appear to be in an advanced stage of healing although the presence of a cloaca for draining pus may well be evidence of a secondary infection. The metopic suture on the front of the skull is still visible; this is a non-metric trait rather than pathological. No associated grave goods.

Grave 4 ([062]; Fig. 7) Infant, aged about 4 years

This immature skeleton is extremely poorly preserved and represented only by fragmentary skull and dentition, femur shafts, left humerus and scraps of ribs. The body was supine with its head in the WSW of the grave. Ovoid cut with gently sloping sides, 1.04 x 0.44 x 0.06m. No associated grave goods.

Grave 5 ([110]; Fig. 8) Infant, aged about 3 years

Poorly preserved infant, most of whose extremities are missing and whose epiphyses are either missing or damaged. The body, with its head in the NNW of the grave lay on its left side, flexed with the knees slightly bent and the arms flexed so that the hands (not present) would have rested close to the chin. Sub-rectangular grave, 1.15 x 0.52 x 0.17m. Lesions consistent with *cribra orbitalia* were present in the roof of the

surviving right orbit suggesting a period of iron-deficiency. No associated grave goods.

Grave 6 ([055/056]; Fig. 9) Juvenile, aged about 8 years and male, aged 25–35 years, ht: 1.76m

The juvenile [055] is poorly preserved with many elements missing or fragmentary. In contrast, the adult [056] is well preserved although many of the ribs and vertebrae are missing and the surfaces of the surviving elements are abraded. Both bodies had their heads in the NNW of the grave. The adult was supine, head facing the child who is on his left. The adult's left arm was extended (the child lies on the left humerus) with the hand resting on the hip and the right arm tight against the body, with the hand lying between the legs. The child was almost supine although the upper body is twisted so that he/she is lying slightly on their right side. The left arm is flexed at the elbow so that the lower arm touches the adult pelvis. Wide, sub-rectangular grave 1.70 x 0.65 x 0.33m. Prehistoric and Roman pottery were recovered from the fill. A large fragment of Roman tile rested over the head/shoulder of the child and a large white stone was found over the feet. The child's jawbones did not survive but the loose teeth were both deciduous and permanent and indicated an age at death of 8 years ± 24 months. Once again linear defects in the enamel were recorded on the crowns of the surviving permanent maxillary incisors and on the canines. Episodes of stress, similar to those experienced by the skeleton in Grave 1, affected the development of these teeth from about one year up to the completion of the canine crowns at six years. Enamel defects were also recorded on the adult dentition and these would have occurred in childhood between the ages of about one and seven years. Medium deposits of calculus, resulting from poor dental hygiene were recorded on several of the adult teeth. Neither of the right 3rd molars is present and it may be that they are congenitally absent or had yet to erupt. No associated grave goods.

Grave 7 ([078]; Fig 10) Female, aged over 45 years, ht: 1.59m

Preservation of the skeleton is excellent with only a few bones from the hands and feet missing. The head was in the north end of the grave and the body was supine with the legs extended and crossed below the knees. The arms were tight against the body with the left flexed so that the lower arm crossed the waist and the right flexed so that the hand rested on the right clavicle. Elongated, oval grave, 1.70 x 0.57 x 0.20m. An iron nail was recovered c. 50mm above the right knee. Changes characteristic of osteoarthritis — eburnation, osteophytes and porosity — were seen in the bones of the left wrist, in the cervical and lumbar vertebrae and in the sacrum. The 3rd and 4th cervical vertebrae have fused. Slight marginal osteophytes were recorded around the joint margins of both distal femora and around the head of the right humerus. Three large carious lesions were recorded on the mandibular dentition; one on each of the left molars at the crown/root junction and the alveolar bone below these teeth had resorbed. Medium to heavy deposits of calculus were recorded on all of the surviving teeth. A small septal aperture, a non-metric trait more commonly found in females than males, was noted on the right distal humerus. No associated grave goods.

Grave 8 ([059]; Fig. 11) ?Male, adult, ht: 1.74m

Only the legs and feet survive in situ; the rest of the body has been truncated by earlier ploughing. The head would have been in the SSE of the grave and from the position of the legs,

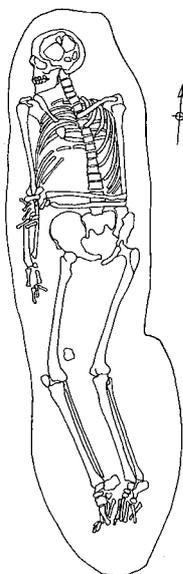


Figure 6. Grave 3

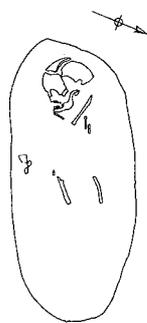


Figure 7. Grave 4

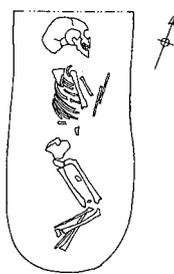


Figure 8. Grave 5

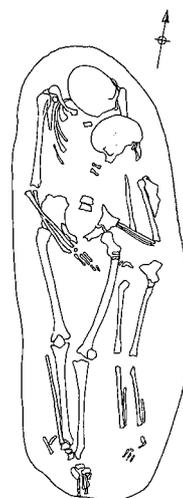


Figure 9. Grave 6



Scale for Figs. 6-13

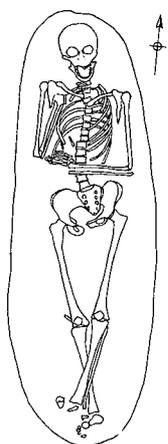


Figure 10. Grave 7

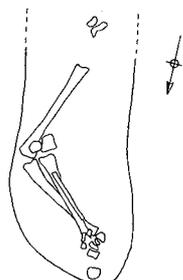


Figure 11. Grave 8

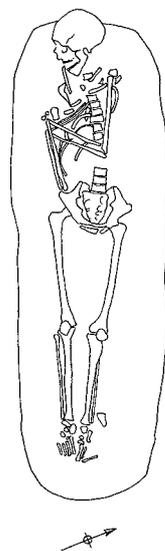


Figure 12. Grave 9

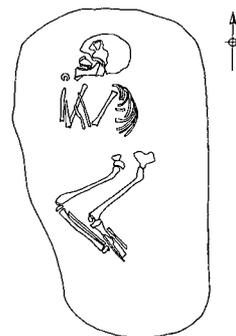


Figure 13. Grave 10

the body would have been lying on its right side or supine with the legs twisted. The legs are flexed at the knees with the left lying over the right and the lower legs and feet are higher than the rest of the surviving body. Sub-rectangular grave heavily truncated in the south, 1.30 x 0.50 x 0.13m. The sex of this individual was based solely on the bicondylar width of the femur. Extra and enlarged facets seen on the left talus and navicular suggest that the left foot may have been everted (twisted outwards). Enthesophytes (new bone formations at tendinous/ligament insertions) on the talus and porosity on the deformed joint surface of the navicular

may be associated with this deformity. Raised plaques of striated new bone characteristic of a non-specific infection were recorded on the distal third of the lower legs. No associated grave goods.

Grave 9 ([083]; Fig. 12) ?Male, aged 25-35 years, ht: 1.73m This skeleton is well preserved although the surfaces of many of the surviving bones were abraded. The head lay in the NW of the grave, the body was supine, legs fully extended and the arms flexed at the elbows so that both hands rested on the right shoulder. Sub-rectangular cut, 1.95

x 0.60 x 0.34m. Sherds of prehistoric and Saxon pottery, a Roman tile fragment and worked flint were recovered from the fill. The distal 100–200mm of the left fibula is completely deformed by an oblique lesion, which separates almost two-thirds of the anterior of the shaft at the epiphyseal line. There is evidence of a small abscess, from which pus would have drained on the medial aspect of the shaft and bone remodelling has thickened the shaft here. There is smooth, new bone formation on the distal tibia and a small spicule of new bone would have fused the lower leg bones. The lesions may be the result of a fracture to the distal fibula, with secondary infection or osteomyelitis. The infection, which was active at death, may have prevented the complete union of the fracture. Plaques of grey/brown woven new bone on four ribs may be evidence of a chest infection that was still active at death. Flecks of calculus were recorded on all of the surviving teeth. No associated grave goods.

Grave 10 ([103]; Fig. 13) Juvenile, aged about 8 years
Preservation is extremely poor; none of the long bones were complete, neither of the hands or feet survives and the only part of the spine that survives is the atlas. The surviving skeletal elements are fragmentary. The body was flexed and lay on its right side with its head in the north. Both arms were flexed at the elbows so that the hands (not present) would have lain below the mandible. Wide, sub-rectangular cut, 1.28 x 0.70 x 0.21m. Fortunately both jaws were well preserved and the presence of both adult and deciduous teeth enabled accurate ageing of the child. Once again linear defects in the enamel of several of the permanent tooth crowns, indicative of periods of stress, were noted. No associated grave goods.

Grave 11 ([107]; Fig. 14) Subadult, aged 12–16 years
The upper body (skull, shoulder girdle, humerii, and the cervical and thoracic vertebrae) is not present having been truncated by earlier ploughing. The head would have been in the west of the grave and the body was supine with legs flexed at knees (left over right), the right arm extended and the left crossing the stomach. Sub-rectangular cut, truncated in the west, 1.60 x 0.6 x 0.06m. The degree of epiphyseal fusion was used to estimate age. No associated grave goods.

Grave 12 ([072]; Fig. 15) Female, aged 35–45 years, ht: 1.61m
Preservation is excellent, although the feet and the right lower arm were damaged by machining. Supine with head at the north of the grave, legs extended, both arms flexed at the elbows and both hands resting on the right clavicle. Sub-rectangular cut, 1.70 x 0.50 x 0.12m. A cow's molar was recovered from the fill. Enthesophytes were present. These bony spurs are close to the insertions of the iliolumbar ligaments, which are often involved in postural lower back pain. Several of the muscle attachments on the humerii are enlarged, suggesting that this woman was involved in heavy work. Six teeth were lost prior to death and the remainder exhibit severe wear; the central maxillary incisors and left lateral incisor are only pegs/roots. Moderate deposits of calculus and two carious lesions were also noted. No associated grave goods.

Grave 13 ([125]; Fig. 16 & 24a & b) Juvenile, aged about 12 years
The skeleton is well preserved with only a few small hand and foot bones missing. The head was in the NNW of the grave and the body was prone with the head facing east and the chin resting on the grave base. The left arm lay extended

below the body, the right arm flexed so that the hand was beside the right shoulder, the legs were slightly flexed towards the east and the right femur crossed the left. Wide, ovoid cut, 1.60 x 0.70 x 0.20m. Flecks of calculus were recorded on a 1st molar and linear defects in the enamel were recorded on the mandibular canines indicating that episodes of dietary stress or illness occurred between the ages of about one and six years.

Associated Finds

9 & 10. Two knife blade fragments by the left foot. The fragments, which do not adjoin, comprise the tip of a blade (length 28mm) and a shaft fragment (length 54mm). The knife appears to have a straight base and curved back but it is difficult to be sure, given the degree of corrosion. No tang or handle remains. This is thus difficult to date, other than generally to the period of furnished burial. It is, however, in an unusual position, by the feet of this prone burial, and thus may not have formed part of the dress of the individual buried, but rather been deposited as a separate offering within the grave (SF15).

Grave 14 ([122]; Fig. 17 & 24a) Male, aged 35–45 years, ht: 1.76m

The skeleton was moderately preserved although the pubic symphysis is missing and the ends of the long bones are damaged, as are the vertebrae, ribs and digits. Head was at the WSW end of the grave and the body was supine and extended. The right hand rested on the inner thigh and the left leg was slightly flexed at the knee. Sub-rectangular cut, 1.90 x 0.50 x 0.30m. The pelvis and the sacrum had started to fuse on the right side prior to death; extra bone or enthesopathies were noted at the auricular surface and margin of the pelvis and sacrum. Changes indicative of degenerative joint disease in the spine (osteophytes, Schmorl's nodes and an increase in porosity) were recorded on the lower thoracic and upper lumbar vertebrae. A small erosive lesion was recorded in the right foot on the head of the talus, where it articulates with the navicular. The teeth are relatively unworn and slight deposits of calculus were noted on the surviving dentition.

Associated Finds

11. Large iron hafted spearhead, point downwards above the left knee. Length 370mm, width 40mm, max blade thickness 10mm. The spearhead is leaf-shaped, with a split circular haft, and would appear to be an example of Swanton's type C2. There are fragmentary remains still within the shaft, and these are presumably the remains of the wooden spear. The spearhead is intact, including the point. Swanton (1974: 10) gives the range of lengths of spearheads of type C2 as between 20cm and 35cm, so this would make this a large example, but it does not appear to fall into the larger type C3, as it does not have the smaller proportion of socket length to blade length of this type (SF13).

12. Iron seax, or large knife, at the left hip, with the point downwards. Length 192mm (of which 36mm is tang), width 28mm, maximum blade thickness 6mm, with a straight cutting edge and curving back. Heavily corroded, with possible traces of an organic handle, and the tip broken off (SF14a)

13. Iron knife, at the left hip, underneath the seax, with the point downwards. Length 120mm, width 13mm, maximum blade thickness 4mm, with relatively straight sides. Very badly corroded, broken at the tip, but with the tang (18mm long) remaining (SF14b)

Grave 15 ([119]; Fig. 18 & 24a) Juvenile, aged about 12 years
The skeleton is moderately preserved although many of the

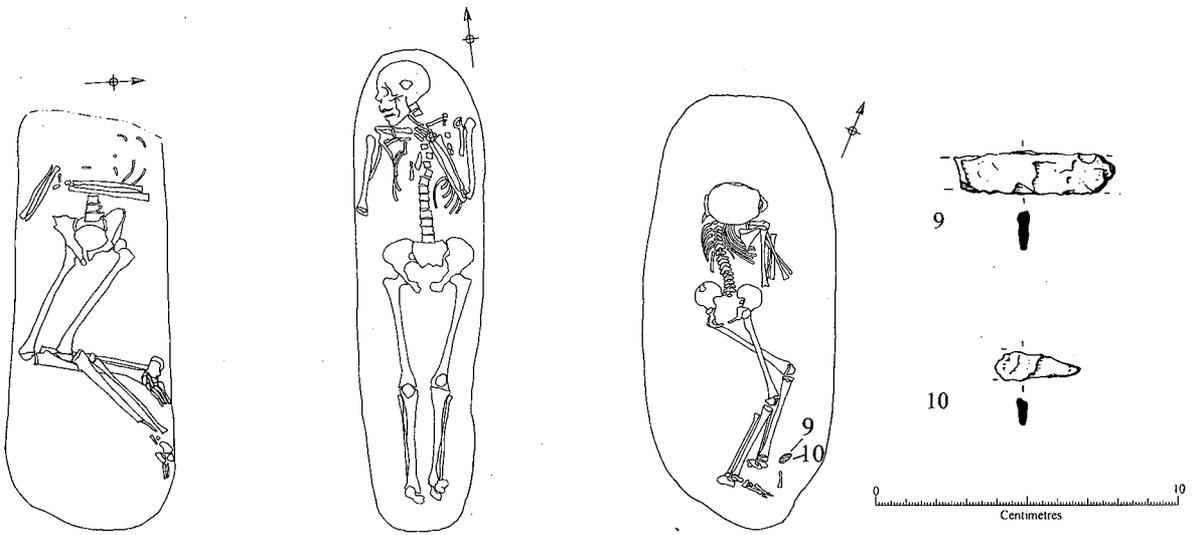


Figure 14. Grave 11

Figure 15. Grave 12

Figure 16. Grave 13 with associated grave goods.



Scale for skeletons
shown in Figs. 14–18

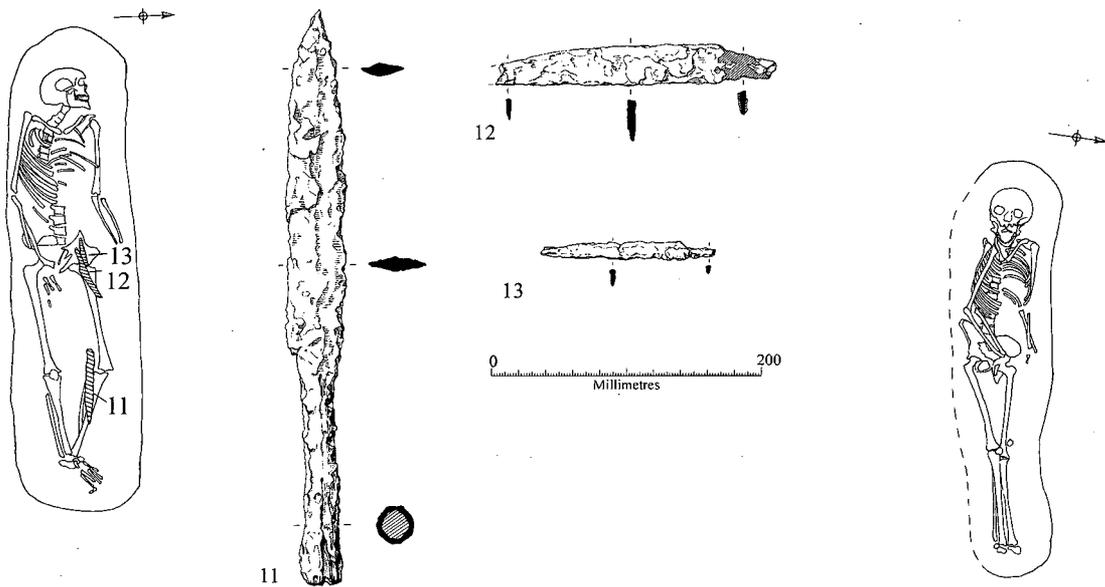


Figure 17. Grave 14 with associated grave goods.

Figure 18. Grave 15

hand and foot bones are missing. The skull is at the WSW of the grave and is supine and extended with the right hand on the left hip. Narrow, sub-rectangular cut with irregular edges, 1.65 x 0.40 x 0.13m. Once again linear defects in the enamel were recorded on several of the teeth, as were flecks of calculus. Despite his/her youth the teeth are heavily worn; the dentine is exposed on the surviving incisors. No associated grave goods.

Grave 16 ([113]; Fig. 19 & 24a & b) Female, aged over 45 years, ht: 1.66m

The skeleton is moderately preserved although most of the long bones are incomplete. The head was in the WSW of the grave and the body was supine and extended. The head and several of the cervical vertebrae had been displaced by earlier ploughing. Sub-rectangular cut, 1.50 x 0.50 x 0.22m. Degenerative changes, including an increase in porosity, osteophytes and eburnation were recorded throughout the vertebral column. Similar changes were observed on the superior processes of the sacrum and the costal facets of the ribs. During life 14 mandibular teeth had been lost and whilst the maxilla is missing only one loose molar with slight calculus on all sides, including the occlusal surface, was recovered.

Associated Finds

14. Small copper alloy buckle, single-tongued, length 31mm, width 19mm, found in the left chest area. The buckle has a D-shaped loop and a triangular plate with three rivets at the base and a lobed terminal. Some mineral-preserved fabric is visible around the tongue. The triangular plate is decorated with incised dots. Its position in the chest area suggested that it did not act as a belt-fastening, so it may have fastened a strap, or possibly a bag (or been contained within a bag; SF11).

15. Small copper alloy hook, length 21mm, found in the left chest area, with the remains of an iron rivet decayed in its hole, associated with a copper alloy rivet. The shaft of the hook is decorated with three incised bands at either end. Also in the same area were a piece of copper alloy plate and a fragment of unknown material. Exact parallels to the hook and rivet are known from the 7th-century cemetery at Burwell, in Cambridgeshire, in grave nos. 3, 6, 83 and 97 (Lethbridge 1931). While Lethbridge saw these as hook-fastenings for a wooden box or case (*ibid* 48), Geake argues that their association with perforated leather at Bekebourne and Painsthorpe Wold is evidence for their use with flexible bags or pouches (1997: 81). The position of the hook and rivet in the area of the left breast implies a bag was placed either on the chest of the deceased, or behind the back (SF16).

16. Large, flat-based bone spindlewhorl, 44mm in diameter, found underneath the head at the right shoulder. The spindlewhorl had a domed top and a circular hole (11mm in diameter) through the centre, but no noticeable decoration. Its position underneath the head is unusual, although it should be noted that the head of the skeleton had been disturbed prior to excavation. The whorl may, therefore, have once formed part of the bag-assembly (SF17).

17. Reused coin, dated to the 4th century AD (Valens, minted AD365–378), with a thin rectangular copper alloy plate attached to one side, forming a wide loop, presumably for suspension, found in the left chest area. On the other side there are the fragmentary remains of a further copper alloy rectangular plate, of uncertain function. This may have been a coin reused as a pendant, with a crude loop on the rear for suspension, although it is more common for such coins

to be pierced or have a loop around the rim instead (Geake 1997: 32). Corroded together with the coin was a fragmentary piece of iron, which was presumably once attached to the other corroded piece of iron found next to it, which had a central rod visible. The purpose/function of the iron artefact(s) is uncertain, but it does not appear to form part of the coin pendant, and the whole is not a brooch (SF12).

18. Long, slim, double-sided composite bone or antler comb, length 358mm, with almost all its teeth broken, found underneath the left shoulder. A row of nine iron rivets running along the centre of the comb served to fasten the three plates together. Faint cross-hatch decoration was apparent on both the front and rear attachment plates on one end only, suggesting that similar decoration may once have been present on the other end of the comb. Other decoration may also have once been present. Its position underneath the left shoulder may suggest either deliberate placement (rather than forming a part of the dress; Geake 1997: 63), or that it formed part of the bag-assembly, which may have been disturbed (SF10).

Grave 17 ([116]; Fig. 20 & 24a) Female, aged 35–45 years, ht: 1.61m

The skeleton is moderately preserved although the surfaces of the surviving bones are abraded. The head was in the WSW of the grave, the body was supine, the legs fully extended, the right arm bent so that the lower arm crosses the stomach region, the left arm flexed upwards so that the hand rested on the left shoulder. Sub-rectangular cut with concave sides 1.82 x 0.52 x 0.29m. Changes indicative of osteoarthritis were recorded in both hands at the 1st carpometacarpal joints. Degenerative changes were also noted on the cervical and lumbar vertebrae. Three wisdom teeth had not erupted and it may be that they were impacted or congenitally absent. In the mandible, a large external draining abscess was observed below the 2nd left mandibular premolar, which survives only as a rotten stub. Behind this, the 1st molar was lost ante mortem and its socket had begun to heal over but is still visible. A large caries was recorded on the 2nd right maxillary molar and slight to medium deposits of calculus were recorded on most of the surviving dentition. No associated grave goods.

Grave 18 ([069]; Fig. 21) Male, aged 25–35 years, ht: 1.71m

With the exception of the vertebrae and ribs the body is well preserved. The head lay in the WSW of the grave, the body was supine, hands resting on the thighs, legs extended, although the left is splayed slightly laterally. Oval cut with base sloping to west, 1.75 x 0.62 x 0.22m. A sherd of Roman pottery was recovered. Lesions characteristic of bone infection (osteomyelitis) were recorded on the left pelvis and left side of the sacrum. There are three cloacae with smooth remodelled edges on the pelvis in the area of the attachment for the muscle gluteus maximus, and within the bone these diverge into smaller abscesses. There is an area of new bone and another possible abscess on the sacrum. The left pelvis and sacrum would have been fused in life by small spicules of new bone at the sacro-iliac joint (unfortunately these broke as the skeleton was lifted). The lesions represent bone destruction, pus formation, and simultaneous bone repair. They may have been caused by the introduction of bacteria locally i.e. from an adjacent wound or infected soft tissue or via the bloodstream from an infection site elsewhere in the body. These lesions and the plaques of new bone around the margin of the acetabulum may help to account for the awk-

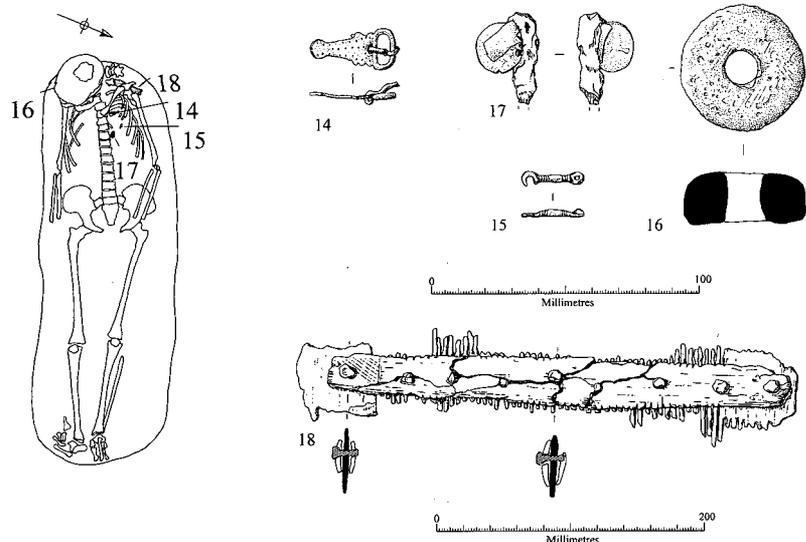


Figure 19. Grave 16 with associated grave goods.

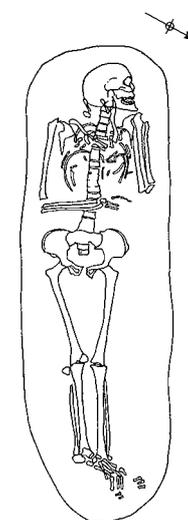


Figure 20. Grave 17

0 1
Metres
Scale for skeletons shown in Figs. 19–23

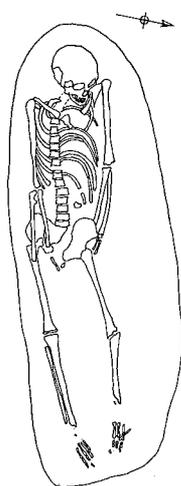


Figure 21. Grave 18

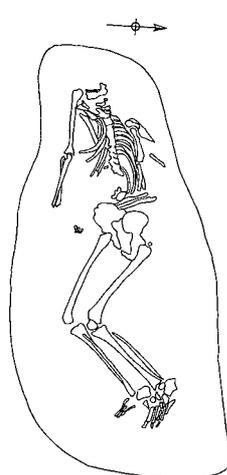


Figure 22. Grave 19

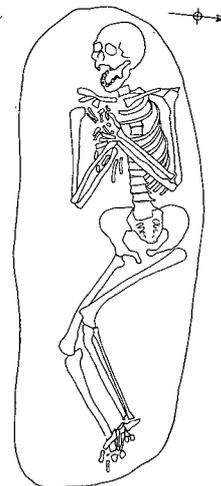


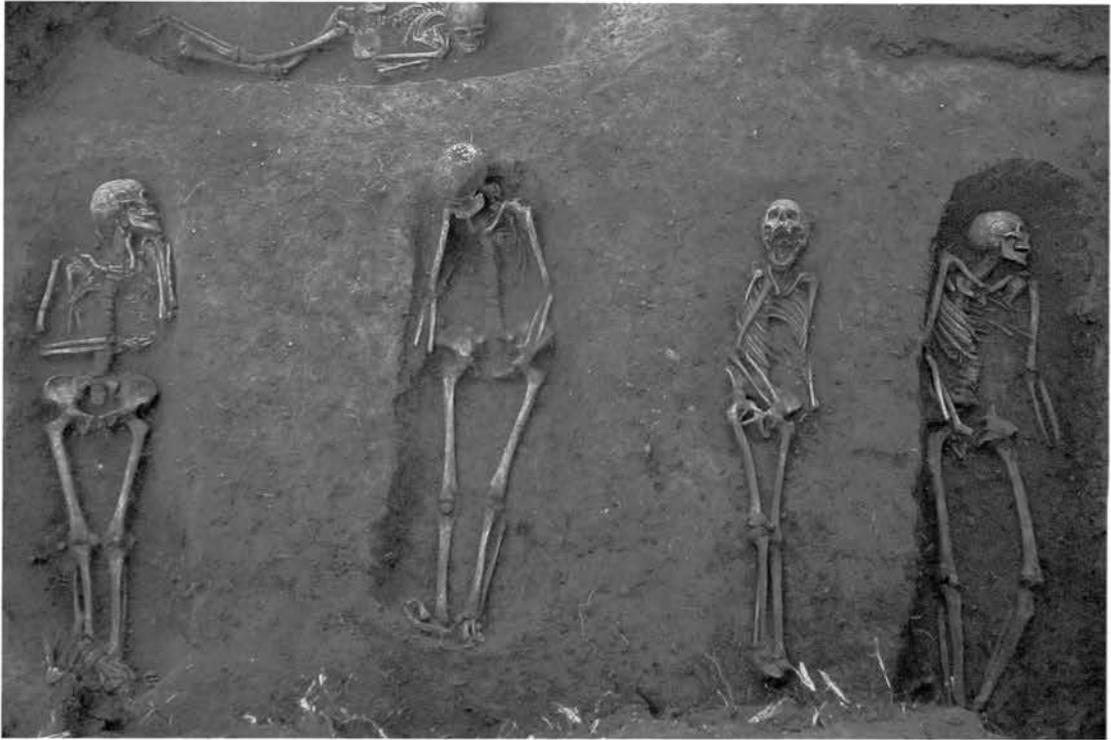
Figure 23. Grave 20

ward position of the left leg. There are degenerative changes in the ribs, particularly the right, on the body of the 5th lumbar vertebra and at the sternoclavicular joint. Although not pathological, many of the muscle attachments on the arms particularly on the right are enlarged. The dentine is exposed on all the incisors and canines but the molars are relatively unworn and flecks of calculus were recorded on all of the teeth. No associated grave goods.

Grave 19 ([051]; Fig. 22) Subadult aged 14–19 years
The skeleton is moderately preserved although there is some machine damage and many of the surviving bones are abraded. The head lay at the west of the grave, the body was

prone, the right arm tight against the body and flexed at the elbow so that the hand rests below the pelvis, while the left arm is again tight against the body but extended. The legs are slightly flexed at the knees towards the south/left. Wide but ill-defined cut, 0.90 x 0.90 x 0.18m. A sherd of Roman pottery was recovered from the fill. Enamel defects were recorded on the mandibular premolars and deposits of calculus ranging from slight to heavy were recorded on the surviving teeth. No associated grave goods.

Grave 20 ([075]; Fig. 23) Male aged over 45 years, ht: 1.74m
The skeleton is complete except for a few small hand and foot bones. The head was at the west of the grave and the



A



B



C

Figure 24. A) Looking west, Graves 14-17 (right to left) and 13 in background; B) foreground, Grave 16 showing displacement of skull through ploughing; C) Looking west, Grave 2.

body lay supine with the arms tight against the body, flexed at the elbows, right over left so that the hands cross the chest. Both legs were slightly bent over to the right and the left leg lay over the right. Sub-rectangular cut, 1.70 x 0.57 x 0.20m. Degenerative changes were recorded throughout the body. Marked changes were observed in the spinal column, particularly the right side, with osteophyte development, Schmorl's nodes and eburnation. Increased porosity on the joints and osteophytes around their margins affected both clavicles and bones in the left wrist/hand. The 4th and 5th lumbar vertebrae are fused, and the 5th lumbar vertebra shows a condition known as spondylolysis, where the vertebral arch is separated from the body. The cause can be genetic or the result of an injury to the lower spine in youth. The ossification and fusion of the xiphoid process, at the bottom of the breastbone, and the ossification of the thyroid and costal cartilage are all associated with increased age. A total of nine teeth, all from the maxilla, were lost prior to death. A lack of dental hygiene may have contributed to the tooth loss as heavy deposits of calculus survived on the remaining molars and premolars. A septal aperture, a non-metric trait more common in women than men, was recorded in the left humerus. No associated grave goods.

Discussion

The cemetery date

Five of the graves are furnished with goods, four of which can be discussed with respect to assigning a date to the cemetery (the knife fragments in Grave 13 cannot be dated more closely than 5th- to 7th-century). The pendant in Grave 1 is of extremely unusual form, and is possibly unique. If this is the case, then dating by parallels is obviously difficult, but the use of single pendants has been suggested to be characteristic of 7th-century Anglo-Saxon burial (Geake 1997: 41). There is also some suggestion that plano-convex spindle whorls such as that found in Grave 1 are 7th-century in date (*ibid* 59), but little comparative work has been done. The copper alloy bowl with beaded rim in Grave 1 belongs to a series manufactured on the continent, known as *Perlrandbecken* (Werner 1962, 312–5), apparently in the 6th century (Evison 1987: 104); the main distribution is seen in the Rhine and Meuse valleys, with a few found in Thuringia, France and England, where the type has a mainly eastern distribution, and is found mainly with richly-furnished females (*ibid*). This bowl could, of course, have been deposited many years after manufacture (its fragmentary state makes it difficult to discern its condition at burial), and other burials, generally of 7th-century date, have produced copper alloy bowls containing somewhat peculiar deposits (see below). On balance, although this burial may well date to the 7th century, an earlier date cannot be ruled out.

Dating of the bag-ring in Grave 2 is difficult, as bags are found in graves throughout the period of furnished burial, although their use as containers for small objects may be a 7th- or 8th-century feature (Geake 1997: 80–1). In relation to Grave 14, spearheads of type C2 are found in earlier Anglo-Saxon contexts, but most appear to date to the 7th century or later (*ibid*; Geake 1997: 70). A very close parallel is seen in Grave

XII in the 7th-century cemetery at Melbourn (Wilson 1956: 35, fig. 3). While knives on their own are hard to date accurately, the discovery of two knives, or a knife and seax, together with a spearhead strongly suggests a 7th-century date, as pairs of knives are more common in the 7th century than earlier.

Grave 16 offers more secure dating. The buckle in Grave 16, although a small and relatively plain example, is a characteristic 7th-century type (Geake 1997: 76–7), as is the hook and rivet (Lethbridge 1931: 48; Geake 1997: 81). The plano-convex form of the spindle-whorl in this grave may also suggest a 7th-century date (Geake 1997: 59), although this is far from clear. Reused Roman coins are sometimes found in 7th-century bag assemblages (*ibid*), although they are also found in earlier graves worn as pendants. While 7th-century inhumations are sometimes associated with single-sided, humped-back composite combs, the popularity of double-sided composite combs does not seem to decline between the 5th and the 7th centuries (*ibid* 63). This particular artefact is therefore difficult to date accurately. In sum, Grave 16, although disturbed in the head region, has produced clear evidence for a 7th-century bag or pouch deposit. Probably fastened by the hook and rivet, it presumably contained the reused coin, the unidentified iron which had corroded onto it, the piece of copper alloy plate associated with the hook, and possibly also the triangular buckle.

While only two of the five furnished graves can be assigned a date in the 7th century (G14 and G16), there seems to be little evidence from the cemetery as a whole which would point to an earlier date, especially if the bowl in G1 is regarded as an heirloom, or similar. There are no brooches, beads or weapons other than the seax and spearhead (G14), no use of cremation, and no goods aside from the bowl can be definitely assigned to the 5th or 6th centuries. Moreover, the scarcity of furnished graves is typical of these later cemeteries. We are thus probably dealing here with a relatively sparsely furnished cemetery of the 7th century, and perhaps later. Eighth-century and later graves are notoriously hard to date, given their characteristic scarcity of grave goods, and it is entirely possible that this cemetery, and others like it, carry on in use after the traditional cut-off point of AD700.

However, given that the datable graves are not concentrated into one area of the site, with Grave 1 on the western edge of the excavated area and Grave 14 and 16 on the eastern edge, it is possible that use of this cemetery was just restricted to the 7th century. This might be supported by the rather variable orientation of the graves, and the variations in body position which were observed. Flexed burials, and burials on their side tend to become rare after the 7th century (Lucy 1998), and orientation tends to become more uniform.

Skeletal remains

The degree of disturbance or truncation, the condition of the bone and, as importantly, which skeletal elements survive, not only affects the potential for

determining the age and sex of individuals but also for recognising pathological conditions. For many of the adults the pubic symphyses and the auricular surface of the pelvis were missing or damaged, meaning that the degree of dental attrition was used to estimate age. Although the assemblage was in relatively good condition, the surfaces of many of the bones were abraded and root damaged. This is likely to have led to an under-diagnosis of conditions such as periostitis. Similarly the damage/absence of many of the epiphyseal ends of long bones and the many missing extremities is likely to have affected the number of cases of joint disease recognised.

Of the 21 individuals examined, 13 adults (61.9%) and eight immature individuals were identified (Table 1). In a cemetery where the whole population was buried, a far higher proportion of infant deaths would be expected and, to a lesser extent, a higher proportion of mature individuals. While this is by no means unusual in an Anglo-Saxon cemetery population (Crawford 1991), it does imply that either the majority of the young and old burials took place outside the excavated area, or that a different burial rite was used for these age groups. Among the adult skeletons, five were anatomically sexed as female, and one as possibly female, while five were sexed as male and a further two as possibly male.

Stature, using a combined femur and tibia length could be calculated for nine of the adults. The adult average is 1.704m, ranging from 1.59–1.83m. The females (n=3) averaged 1.603m (5ft 3½ins) with a range of 1.59–1.61m. The males (n=6) averaged 1.755m (5ft 9ins) with a range of 1.71–1.83m. The intrinsic error in these stature estimates means that the males could be 35.5mm taller or shorter than their given height (29.9mm in the case of the females). The stature of a further two adults could be calculated using just the tibia and both fell within these ranges even when their maximum error was taken into account.

Arthritic changes involving the spine were recorded on five of the adult individuals. These were all middle or mature aged individuals and the degenerative changes would be a result of increased age and general wear and tear on the skeleton. Osteoarthritic changes were recorded on the hand(s) of the skeletons in Graves 7 and 17. Dental diseases were the most commonly recorded pathologies amongst this small group. The dentition of 19 individuals could be examined. Of these 17 (89.5%) displayed one or more dental pathologies. Calculus, caries, abscesses, ante-mortem tooth loss, periodontal disease and enamel hypoplasia were all recorded.

Eleven adult dentitions could be examined (the skeletons in G8 were truncated) and in these a total of 300 teeth were observed. A total of ten caries were

recorded (this includes teeth where the tooth was so rotten that only the root survived) and this gives a prevalence rate of 3.3%, which is in accordance with the norm for the period. At Barrington the prevalence rate of caries was almost identical at 3.2% (Duhig in Malim and Hines 1998: 172). Burials from the Anglo-Saxon period are an exception to the trend of increase in caries from Neolithic times to the present. The number of tooth positions observed amongst adults was 326 and the number of teeth lost ante mortem was 34, which gives a prevalence rate of 10.4%. This is slightly higher than that at Barrington where it was 7.1% (*ibid*) but within the norm for the period (Roberts and Manchester 1995: 57).

Dental hygiene was not a high priority amongst this group with even young individuals having heavy deposits of mineralised plaque on their teeth (eg the subadult in G19 has calculus almost entirely covering the crowns of its anterior teeth). Defects in the enamel, known as enamel hypoplasias, appear quite common; they were recorded on the teeth of eight individuals and are indicative of nutritional stresses or severe feverish illnesses during childhood. The degree of dental wear is quite severe and even several of the immature individuals have dentine exposed on the permanent dentition. This is not unusual in the Saxon period when diet and methods of food preparation are believed to have accelerated dental attrition. One slight concern is that this may have led to the over-aging of some individuals.

Cemetery rite and layout

Before starting any discussion of the cemetery rite and layout, it should be noted that the graves reported here are assumed to represent only a sample of the original buried population. While it is possible that the southern limit of the cemetery is revealed here, the northern, eastern and western limits have not been defined.

As can be seen from the plan (Fig. 3), the cemetery exhibits variable orientation of graves. While 7th-century cemeteries often have more regular orientation, generally with heads to the west, King's Garden Hostel does not stand out in a Cambridgeshire context: the contemporary cemeteries at Shudy Camps (Lethbridge 1936) and Burwell (Lethbridge 1931) show a similar range of orientation. Nor does the orientation seen here seem to relate to any obvious features of the burials; the direction of the head does not seem to relate to the age or sex of the person interred, although it should be noted that those with grave good assemblages (excepting the knife fragments in G13) all have the heads to west or WSW. While orientation is variable, the lack of intercutting of graves implies that some care was taken in the plac-

Table 1. The cemetery population

Immature			Adults						
Infant	Juvenile	Sub-adult	Juvenile/ Sub-adult	Young	Young/ Middle	Middle	Middle/ Mature	Mature	Adult
2	2	2	2	1	2	4	2	3	1

ing of burials, perhaps even indicating some degree of marking of graves (although no evidence for post-holes or small barrows was recovered). This care is especially evident in the placing of Graves 14–20 in an oriented row, all with heads to WSW, on the eastern side of the site (Fig. 24a), and in the cluster of graves 3 and 5–7, with heads all to NNW, on the western side.

Age does seem to have had an impact on burial position. Non-adults were more likely to be placed prone or lying on the side (although this could not be demonstrated statistically due to the small numbers involved). The single burial on its right side (G5) was an infant, two of the three on their left side (G6a and G10) were juveniles and the two prone burials (G13 and G19) were a juvenile and a subadult respectively. The majority of the non-adult burials also thus had a flexed posture, and the vast majority of the adults were in an extended position. The only exceptions to this were the unaged adult G8 and two of the three mature adults (G3 and G20, both male). It would thus seem that age, and perhaps sex, had an influence on burial position, but not location within the cemetery, for there appears to be no obvious patterning in terms of where burials of the different age and sex groups are located.

As might be expected, younger individuals tend to be buried in shorter and shallower graves, perhaps suggesting that graves were dug after the person had died, specifically for them. Graves were, on the whole, of adequate (sometimes generous) size. This is slightly unclear as regards the double burial Grave 6, which is only of medium width, despite containing two people. Double burials have recently come under discussion by Stoodley (2002), where he argues that these should not be always assumed to be blood relations; perhaps if a child died within a short time of an adult from the same community, it was thought appropriate that they be buried together. It is interesting that in this instance the juvenile is buried with an adult male. This perhaps reflects on the idea of the male as protector: the seemingly deliberate placement of a tile and a stone over the head and foot of the younger individual in this grave may also signal that they were in need of greater protection in death.

Grave goods

Four graves have assemblages worthy of further discussion (little more can be said about the knife fragments in G13). Grave 1, with its unique pendant and the highly unusual deposit of eels within an imported copper alloy bowl at the feet, is also one of the largest graves from the site. The inclusion of this food(?) offering within a bowl puts this grave into a group of similar finds. The hanging bowl accompanying the barrow burial at Ford, Laverstock in Wiltshire contained onions and crab apples, as well as string (Musty 1969), while the similar deposit from Banstead Down in Surrey contained textiles and what were thought to be crab apples (Barfoot and Price Williams 1976). Other bronze bowls containing nuts have been reported from Faversham (Roach Smith 1868: 144) and St Peter's Broadstairs (*Medieval Archaeology* 19

1975: 223), where they were also accompanied by fruit. The discovery of eels within such a vessel in a grave appears at the moment, however, to be unique. The only possible parallel, in symbolic terms, may be the unopened oysters which were found in a grave at Sarre, Kent (Smith 1908: 357–61).

There is very little evidence which can be used to reconstruct clothing. Only the pin in Grave 2 seemed to be acting as a dress, or perhaps head-dress, fastener. Otherwise, the only evidence is for items which would have been attached to a belt or girdle. Graves 2 and 16 have both produced evidence for bag assemblages; that in Grave 2 was secured by a purse-ring at the waist and appeared to contain a curated Roman bracelet, while that in Grave 16 may have been a purse of openwork leather or other organic material, secured by a hook and rivet (placed in the upper chest region, however). This latter purse may have contained a wider range of material, although the disturbance of the head region of this skeleton means that the comb, spindle whorl and buckle cannot be securely said to have been contained within it. The spindlewhorl perhaps deserves some further comment. Lethbridge (1931: 76) argued for their use as toggles, to fasten a girdle, rather than as spinning equipment, and in this case it may have acted as some form of dress fastening, although they are also found in boxes at Melbourn (Grave XIX; Wilson 1956: 36) and at Burwell (Graves 42, 76 and 121; Lethbridge 1931).

The Roman snakes-head bracelet in Grave 2 and the Roman coin, reused as a pendant in Grave 16 both seem to represent curation of Roman artefacts for amuletic purposes. Both were contained within bag or purse assemblages, rather than being worn, and were found with a 25–35 year old probable female and a female over 45 years respectively. These finds are in line with White's observation (1988: 165) that in the later 6th and 7th centuries such amuletic use of Roman artefacts was limited on the whole to women (and children) in inhumation cemeteries. The amuletic use may be argued to have developed in the Cambridge region, and perhaps more generally, from a practice of the curation of Roman material. Several of the 5th- and 6th-century cemeteries in the vicinity have produced Anglo-Saxon burials using Roman material. Fox (1923: 242) reports a Roman harp-shaped brooch on a female skeleton from St John's, and another Roman bow brooch on the shoulder of a skeleton from Girton (*ibid* 247). While the brooches in these earlier cemeteries were worn (where this was noted), the Roman finds from 7th-century cemeteries in the area tend to have been used differently. The Roman coin from Grave 7 at Burwell appeared to form part of a purse or bag assemblage at the left hip, although the two 4th-century coins in Grave 24 at the same site appeared to have been sewn onto a neckband as decoration (Lethbridge 1931: 50, although Lethbridge 1936: 5 states that these too were probably contained within a pouch). Grave 11 at Shudy Camps also contained a Roman coin in a pouch, found between the knees (Lethbridge 1936: 2–5). The graves from King's

Garden Hostel which contain Roman artefacts are thus in line with the general practice of keeping them in bags or pouches, of both the local vicinity, and also further afield (Geake 1997: 59).

The single weapon burial, Grave 14, from the site contains the characteristic 7th-century combination of type C2 spearhead, seax and knife. While the seax and knife appear to have been suspended from the waist in the normal position, points downwards (perhaps originally contained within the same scabbard?), the spearhead is placed more unusually, with the point by the left knee, also pointing toward the feet. Spearheads are more usually found by the head, point up, and this inversion may have some symbolic meaning. Alternatively, this spearhead orientation is commonly seen in graves in Frankish regions of the continent (Evison 1987: 28); together with the imported bowl from Grave 1, this may hint at wider influences than just the local. The overall context of the cemetery is discussed alongside the settlement below.

The settlement

Work in 2002 in advance of the new Institute of Criminology building consisted of an evaluation, shortly followed by a small open area excavation, 20m by 28m, which focused on the footprint of the new building (Figs. 25 & 26). The trial trenching had demonstrated that no horizontal strata survived subsequent plough-truncation and, accordingly, the site was stripped to the surface of the terrace gravels, *c.* 0.8m below the present ground surface, into which the archaeological features had been cut. Descriptions of the structures and other archaeological features are presented and discussed below.

Structure 1 (Fig. 27)

Structure 1 consisted of 41 post-holes arranged in a rectangular pattern, aligned approximately east to west. These make up the plan of an earth-fast post-hole timber building which measured 10m in length by 5m in width with an internal floor area of *c.* 50m²; the western end of the building appears to have been removed by the insertion of a later structure (Structure 3); its associated sunken feature occupies the internal area, and the same alignment, as the earlier post-hole building but was presumably constructed after the earlier building had been dismantled. The fact that the western end of the sunken feature projects beyond the end of the post-hole building indicates that they cannot be contemporary (ie the sunken feature as some manner of in-hall cellar), although absolute certainty is not possible due to the difficulty of trying to distinguish postholes cut into backfilled features.

The ground plan of Structure 1 consisted of single small post-holes, the majority of which measured *c.* 0.3–0.4m in diameter and 0.2–0.4m in depth, closely spaced *c.* 0.5–0.6m apart. There was no evidence of post-pipes, or post-packing, in any of the post-holes and there was no definite evidence of post replacement in the form of additional post-holes. A slightly wider gap of *c.* 0.8m between the post-holes midway along the southern side (post-holes [186] and [189]), marks the probable location of a doorway. Post-hole [189],

which marked the location of the eastern doorpost, was also the deepest post-hole of the building at 0.5m in depth. Unfortunately it was not possible to observe the arrangement on the northern side due to truncation by the trial trench; it is probable that there was a corresponding doorway given the uniformity of this type of building on settlements across early Anglo-Saxon England.

The building is typical in both size and construction of the early Anglo-Saxon period. In size, Structure 1 compares to Building 2 at West Stow, which measured 9.75 x 4.27m, although in construction it compares to the smaller Building 1 at West Stow, which was defined by single rather than double post-holes (West 1985). There was no evidence of external raking timbers or of internal supporting posts which, together, suggests that this was a wall-post building, with the thrust of the roof borne by the walls. It has been persuasively argued that the structural integrity of this type of wall-post building was maintained by the use of tie beams, which direct the thrust of the roof down the load-bearing walls (Dixon 2002; Day forthcoming). The tie beams could have been supported directly on the post tops, and some of the post-holes of Structure 1 might have been paired across the length of the building or, alternatively, placed above a wall plate, which is perhaps more likely in this case given the slight irregularities in the spacing and positioning of post-holes, and thus posts. There was little direct evidence for the type of wall cladding used in Structure 1. The general absence of daub points to the use of wood, presumably either horizontal or vertical planks.

There was no evidence for a beaten earth or trampled floor within Structure 1, and there was no evidence for internal features, such as a hearth, although this could be due to later truncation of deposits. No material culture was found within the internal area of the building, or within any of the post-holes. The disturbed remains of a dark buried soil were apparently preserved across the central area of the site but the date of this deposit was not established. This might suggest that the building had a raised floor, consisting of planks pegged and supported on joists and a sill beam above the ground. There was some slight evidence of a possible internal partition wall at the eastern end of the building, but there was no line of post-holes across the building. Instead, the partition is hinted at by the presence of an internal post-hole ([34]), 0.8m in length north-south, abutting post-hole [33] in the southern wall-line of the building. This would provide a subdivision *c.* 1.2m in width at the eastern end of the building. There were no associated finds.

Structure 2

Structure 2 consisted of a shallow irregular sub-rectangular shaped sunken feature, measuring *c.* 4.60m in length by 3.50m in width and 0.36m in depth and aligned ESE to WNW; it was initially defined in, and truncated up to 0.15m by, Evaluation Trench 3. The northern half of the pit had been cut away by a later ditch (F1), aligned east-west across the site. Therefore, the original shape of the pit was possibly more regular in shape. This sunken feature is interpreted as the remains of a structure. The pit is of average size in comparison to those excavated elsewhere, which show a strong central tendency for *c.* 4 x 3m (Tipper 2000: 74–6). The pit cut ([124]) possessed gradually sloping sides down to a roughly flat base; the base of the pit measured *c.* 3.90 x 2.75m in area. There was no evidence to show that the base had formed the occupation surface.

Five post-holes, measuring 0.20–0.50m in diameter and

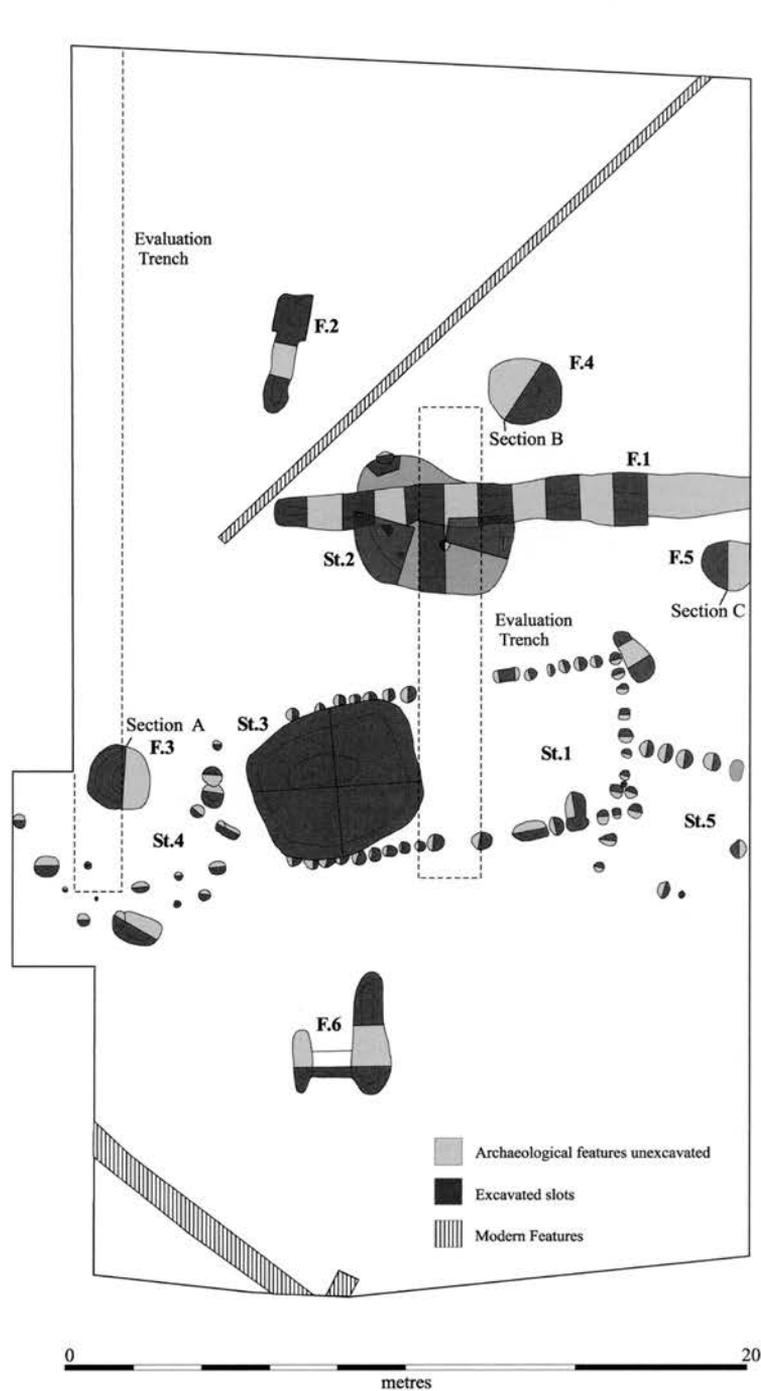
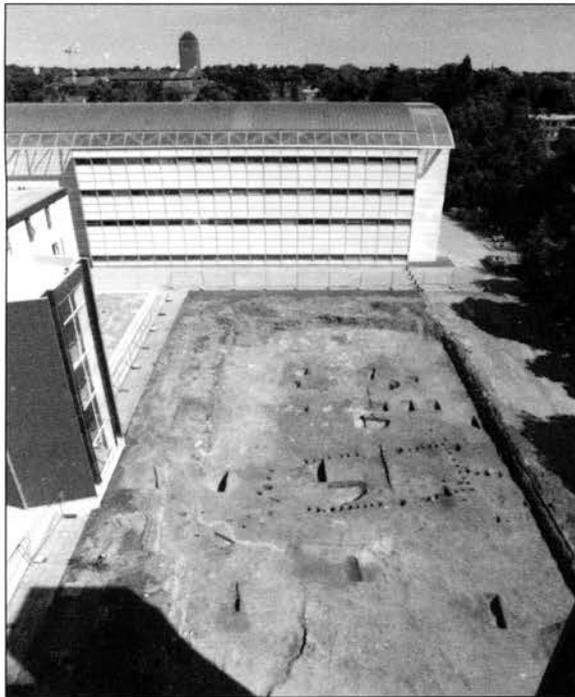


Figure 25. Settlement excavation

0.20–0.36m deep, were found in the base and sides of the pit. Post-hole [214], which straddled the upper edge of the pit in the northwest corner, was shown to be cut by the sunken feature, and none of the post-hole fills were defined through its fill. It is possible that none of the other post-holes related to this building, and they could relate to an earlier post-hole structure. However, none of the post-holes were particularly shallow in comparison to others on the site and would have been exceptionally deep had they been dug from the original ground surface; there were also no other post-holes defined in this part of the site. Therefore, it seems likely that they

related to Structure 2. Two post-holes were located along the short east and west sides and it seems possible that they could have held gable posts. The eastern post-hole ([212]) straddled the side of the pit while that on the western side ([206]) was set within the base of the pit, c. 0.8m from the upper edge of the pit; such an irregular arrangement, while unusual, is not unknown and a similar arrangement has been defined in similar structures on several other sites. The former measured 0.29m in depth and the latter 0.36 m. One small post-hole ([210]) was located roughly in the centre of the base, measuring 0.24m in depth. A further two post-holes



A



B

Figure 26. A) General view of the settlement site from south.

B) The excavated structures from the south.

were located in the north-west ([208]) and south-west ([204]) parts of the base and could feasibly mark the location of, albeit irregular, corner posts. No post-holes were defined in the opposite eastern corners of the pit.

A single fill ([123]) was defined in the pit, described as a mixed mid brown, yellow-grey red-orange silty sand. This fill contained a very small material culture assemblage in comparison to Structure 3 (see below), although the northern half of the pit was removed by a later ditch and the central part of the pit was truncated by machine. The finds comprised 57 fragments of animal bone (total 320g, from which seven were identified as cattle, five as sheep/goat, and one

each of pig and dog), three sherds of Anglo-Saxon pottery (131g) and one sherd of medieval pottery (6g), this presumably intrusive.

Structure 3 (Fig. 27)

Structure 3 also consisted of a sub-rectangular shaped sunken feature (cut [134]), with slightly bowed long sides, and was located c. 3.5m to the south-west of Structure 2 and on the same ENE/WSW alignment. Given the absence of horizontal stratigraphy and closely datable material, the relationship between Structures 2 and 3 could not be ascertained. However, Structure 3 cut through the western half of Structure 1, and was presumably constructed after the post-hole building had been dismantled, although how soon after could not be determined by excavation.

Structure 3 was slightly larger in area and depth compared to Structure 2, measuring c. 4.80m in length, 4.30m in width and 0.54m in depth. No post-holes were defined in association with this pit; this absence of post-holes is relatively uncommon on sites in East Anglia, where the majority of similar structures have two or six post-holes. However, a growing number without post-holes have been found on sites across the country. The absence of post-holes does not preclude the absence of posts, which could have stood directly on the base of the pit, but it does seem that gable posts were not essential in their construction (Tipper 2000: 90–3).

The pit had gently sloping sides down to an irregular, but roughly flat, base; the base of the pit measured c. 3.9 x 3.3m in area and was, therefore, considerably smaller than the stripped surface area. The interface between the cut and the lowest fill was sharp and there was no evidence of side-collapse, which indicates that the sides were originally cut on a slope. There was no evidence to suggest that the base of the pit had formed an occupation surface, either in the form of a made-up surface, accumulation and trampling of occupation material or of wear and erosion on the base of the pit. There was, however, a slight hollow or depression in the base, c. 2m in length, 0.5m in width and 0.05m in depth, which was aligned roughly parallel with, and to the north of, the central axis of the pit. This hollow is similar to one defined in the base of GH136 at Mucking, Essex (Hamerow 1993: 17 and fig. 66; Tipper 2000: 257–9 and in press). However, the hollow did not appear to have been the result of wear and the function, if indeed it had one, is not clear. On the basis of this evidence, the building is reconstructed with a suspended floor above the pit, following Stanley West's interpretation at West Stow (West 1985; Tipper 2000 and in press). There was, however, no evidence of associated structural remains outside the pit.

The fill of the pit was characterised by three distinct deposits: a tripartite fill sequence which is typical of sunken feature deposits on sites across the country (Tipper 2000: cf chap. 5 and in press). Immediately above the base of the cut, in the north-east part of the pit, there was a discrete deposit of unfired clay which formed an irregular line c. 1.05m in length by 0.2m in width, roughly parallel to the central axis of the pit. This deposit could possibly be the remains of loom weight material but it was not deposited in the pit as a neat group or row of loom weights. The clay deposit was sealed by the lower fill ([129/133]), extending across the entire base of the pit to a depth of 0.1m (max). This fill was described as grey-orange-brown fine sandy silt, with very occasional peat in the matrix. It was sealed by a deposit of mid-brown sandy gravel ([128/132]), containing frequent angular gravel. This deposit sloped down into the centre of the pit, possibly as a result of later compaction and stabilisation, 0.45m in

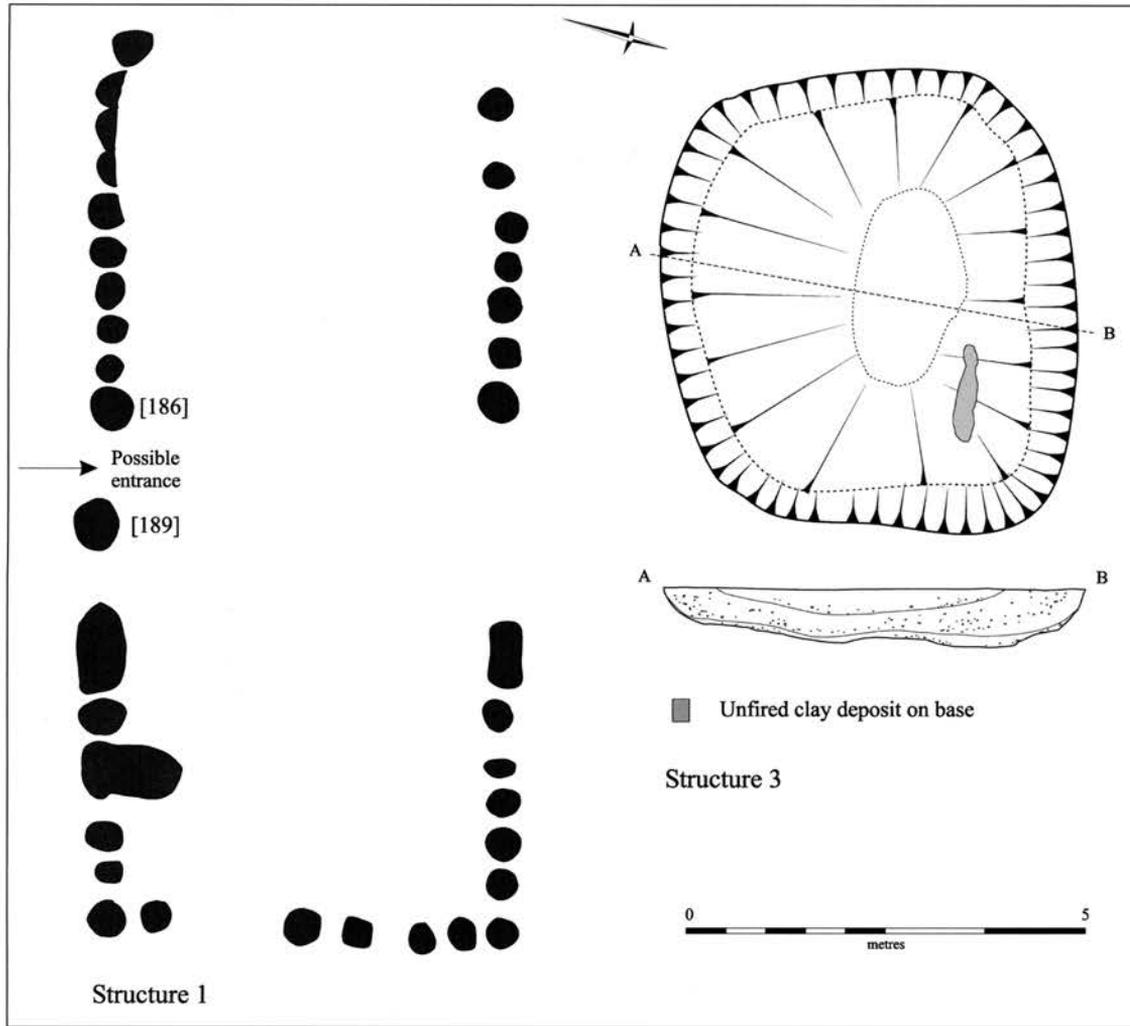


Figure 27. Post-built timber building Structure 1; plan and section of Structure 3.

depth (max). A discrete deposit of burnt stone, the result of a single dump, lay at the interface between this and the upper fill. The upper fill ([127/131]) was located within the hollow in the centre formed by the stabilisation of the previous fill, measuring c. 3.25m in length, 3.1m in width and 0.31m in depth (max). This final fill was described as light grey-brown

fine sandy silt, containing occasional angular gravel and pea grit.

It is suggested that these fills were deposited after the building was abandoned and the floor planks removed; they accumulated neither as occupation deposits on the base of a sunken floor nor below floorboards during the use of the

Table 2. Finds distribution within the fills of Structure 3's sunken feature (weight in g in brackets)

Material	Lower	Middle	Upper	Middle/Upper	Unknown
Animal bone	100 (2819)	163 (5259)	6 (53)	95 (2593)	
Burnt coal?			1 (20)		
Fired loomweight	23 (847)	8 (459)			
Glass			1 (8)		
Lava quernstone			1 (25)		
Fired clay/burnt daub	1 (11)	3 (79)			
Oyster shell		1 (92)			
Anglo-Saxon pottery	8 (206)	8 (72)	5 (51)		5 (41)
Roman pottery	1 (21)				
Post-medieval tile					1 (28)
Roman tile	2 (246)				
Unfired clay	1 (143)	? (86)			

building. However, given the absence of silting on the base and erosion of the sides, it would seem that the pit was not left open to fill in gradually. The pit contained a varied material culture assemblage distributed throughout the three fills, although the majority of material was concentrated in the lower and middle fills (Table 2). The assemblage included 26 sherds (370g) of Anglo-Saxon pottery, from 18 different vessels, and 364 fragments of animal bone (over 10kg, of which 94 were identified as cattle, 39 as sheep/goat, six as pig, seven as horse, six as bird and one as deer). That the pit was rapidly backfilled with occupation material and not left to silt up gradually might suggest that the disuse of this building does not mark the cessation of occupation on this site, but merely the abandonment of this area as built-space.

Two other less regular post-built structures were also identified but neither was clear-cut like Structure 1. Of more ambiguous character, the status of these post-hole arrangements as buildings is considered only as a possibility:

Structure 4 (Fig. 25)

Structure 4 consisted of an irregular cluster of 17 post-holes located along the western edge of, and possibly extending outside, the excavation and adjacent to Structure 1. No coherent pattern could be discerned from the post-holes, which all showed diverse fill characteristics and were of differing sizes, ranging from 0.11–0.65m in diameter and 0.1–0.4m in depth. They might relate to some manner of small shed-like structure or working area c. 5m (east-west) x c. 4m (north-south) in area. Its confused plan may be the result of rebuilding. There were no associated finds, with the exception of a single sheep axis from one of the post-holes.

Structure 5 (Fig. 25)

Structure 5 extended over c. 3.5m (east-west) x c. 4m (north-south) and consisted of a sub-rectangular arrangement of 15 or 16 post-holes. The west side of this building overlapped the southeastern corner of Structure 1 and continued east beyond the edge of excavation, on a slightly different alignment (ESE-WNW). The sequence of the two buildings could not be defined, although clearly they were not contemporary. The north and west walls of this structure were defined by rows of closely spaced post-holes, 0.16–0.61m in diameter and 0.08–0.5m in depth. The southern wall was less obvious and only two post settings were identified along its southern side. There were no associated finds.

There were three substantial pits on the site, all of which have been phased to the Anglo-Saxon period. The distribution of the three pits across the site might

indicate a direct relationship between them and the main buildings, although this may be more apparent than real given that these remains are clearly part of a settlement of unknown extent but which clearly had more than one phase of building. The function of these pits is not known, although given the low quantity of material within their fills it seems that they were not dug simply as rubbish pits:

Feature 3 (Fig. 28a)

Feature 3 was a large sub-circular shaped pit, measuring c. 2.0m in diameter and 0.9m in depth. The pit had steeply sloping sides down to a stepped concave base. The pit was located on the western edge of the site, and within the internal area of, although not necessarily contemporary with, Structure 4. The lower fill of this pit consisted of a mottled light orange-brown sandy silt ([14]) which extended up the sides of the pit, 0.15m in depth (max). This was sealed by a homogeneous mid grey-brown silt deposit c. 0.45m in depth ([13]). The upper fill of this pit was located within a small central hollow, c. 1m in diameter and 0.28m in depth, which had presumably formed as a result of the stabilisation of the lower fills. This upper fill consisted of mid grey-brown silt containing frequent flint inclusions.

The small quantity of finds from the fill of this pit, which was completely excavated, included a large fragment of lava quern stone 0.25m in length, 16 sherds (103g) of early Anglo-Saxon pottery and a single fragment of fired clay annular loom weight (Table 3). One of the fragments of lightly fired clay contained the remains of two wattle impressions. There were also 18 fragments of animal bone (271g, of which five were identified as cattle, two as sheep/goat and one as pig).

Feature 4 (Fig. 28b)

Feature 4 was a large sub-circular pit, measuring c. 2.2m diameter x 1.1m deep, which was located c. 2m to the north of Structure 2. The pit had sharp and steeply sloping sides down to a roughly flat base c. 0.5m in diameter.

The pit contained several fills and appeared to possess a later recut. The lowest fill ([74]) was mid red-brown sandy silt with frequent gravel inclusions, c. 0.28m in depth and sloping up the lower sides of the pit. This deposit was sealed by a mottled mid grey-brown sandy silt ([73]) which also contained frequent gravel inclusions, c. 0.8m in depth (max). The upper part of [73] appeared to be cut through by a small secondary pit ([72]). This recut measured c. 1.3m in diameter and 0.55m in diameter. It contained two fills, a lower deposit ([71]) consisting of mid-light grey silty sand with frequent gravel inclusions, c. 0.35m in depth, and an upper deposit of mid-light grey silty sand with a lower frequency of gravel inclusions, c. 0.2m in depth.

Table 3. Finds distribution within the fills of pit F3 (weight in g in brackets)

Material	Lower [14]	Middle [13]	Upper [12]	Cut [15]	Unknown
Animal bone		9 (60)	4 (86)	5 (125)	
Fired loomweight					1 (33)
Lava quernstone			1 (1664)		
Fired clay/burnt daub			9 (136)		
Anglo-Saxon pottery		6 (21)	10 (86)		
Roman tile		2 (436)			
Worked flint		1 (?)	1 (?)		

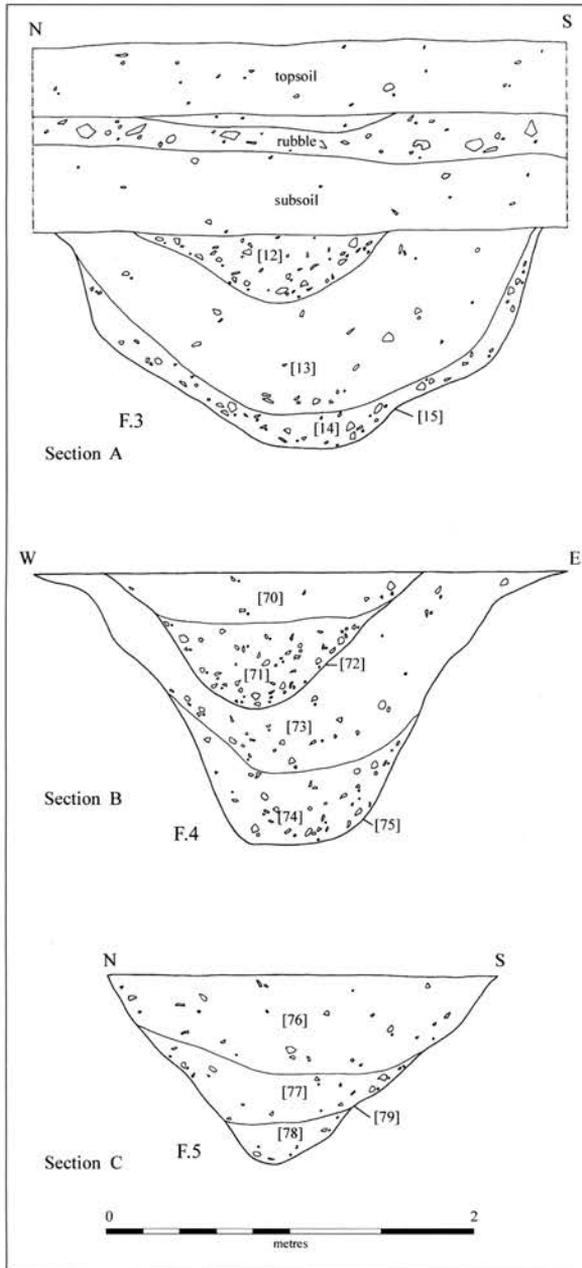


Figure 28. Sections of pits F3, F4 & F5

The small quantity of finds from the fill of this pit (Table 4), which was half-excavated, included seven sherds (44g) of early Anglo-Saxon pottery, three of which (29g) were from the probable secondary recut [72]. The fill of this later pit contained the fragment of stamped Anglo-Saxon pottery; it also contained a clay pipe stem (42mm long, weight 4g, pre-

sumably intrusive). The middle fill contained 18 fragments of animal bone (526g, of which five were identified as cattle and one each as sheep/goat and pig).

Feature 5 (Fig. 28c)

Feature 5 was a large sub-circular shaped pit, measuring 1.6m in length (north-south) and 0.77m in depth; the eastern edge extended outside the edge of the excavation. It had a steep V-shaped profile, and was located c. 3.5m to the north-east of Structure 1. The lowest fill of this pit ([78]) consisted of grey sandy silt c. 0.15m in depth. This was sealed by a band of mottled orange silty sand, with patches of grey sandy silt, c. 0.2m in depth. The remainder of the pit was filled with a homogeneous grey sandy silt c. 0.4m in depth.

A further two small pits were also defined on the site:

Feature 7 (Fig. 25)

Feature 7 was a small pit located along the southern side of Structure 4, but cut by post-hole [59] and therefore pre-dating the post-built structure. It was roughly ovoid in shape with sloping sides down to a flat base, measuring c. 1.1m in length by 0.9m in width and 0.20m in depth. The fill of this small pit ([60]) contained light grey silt, with a thin band of charcoal on the surface and displayed traces of burning, including burnt stones within its fill. It seems possible that this might be the remains of a fire pit but there was no evidence of burning to the sides or base of the pit. The small finds assemblage comprised eight fragments of animal bone (90g, four of which were identified as cattle), one oyster shell (7g) and two sherds of Anglo-Saxon pottery (5g).

Feature 8 (Fig. 25)

Feature 8 consisted of two small intercutting pits or post-holes (cuts [120] and [122]) located at the northeast corner of, but outside, Structure 1; the relationship between the two pits could not be determined. Pit cut [120] was sub-ovate in shape, measuring c. 1.0m in length by 0.8m in width and 0.3m in depth. This pit contained two fills, the lowest ([119]) consisting of light orange silty sand, 0.1m in depth. This was sealed by grey sandy silt ([118]), c. 0.25m in depth. Pit [120] intersected with a second pit ([122]) on its northern side. This second pit measured c. 0.7m in length by 0.5m in width and 0.2m in depth. The fill ([121]) consisted of grey sandy silt. There were no finds from the fill of either pit.

A single ditch was excavated, which is not thought to relate to the early Anglo-Saxon settlement features:

Feature 1 (Fig. 25)

Feature 1 was a V-shaped ditch aligned east to west across the site, c. 14.0m in length by 1.5m in width and 0.47m in depth (max). The western end of the ditch was marked by a butt-terminal, c. 6m from the western edge of the site; the

Table 4. Finds distribution within the fills of pit F4 (weight in g in brackets)

Material	Lower [74]	Middle [73]	Recut [70/71]	Unknown
Animal bone		18 (526)		
Clay pipe			1 (4)	
Anglo-Saxon pottery		3 (29)	3 (9)	1 (4)
Roman tile (fired clay)		1 (374)	1 (62)	
Roman tile (stone)		1 (90)		

eastern end continued beyond the limit of excavation. The fill of the ditch was dark grey-brown sandy clay. The ditch cut through the northern half of the (infilled) sunken feature of Structure 2.

No pottery was recovered from the fill of ditch F1, of which approximately 50% was excavated in 1m segments; an abraded sherd of medieval pottery (the only medieval pottery on the site) from the fill of Structure 2 could possibly derive from the ditch. A fragment of a bent perforated copper alloy strip (4g), possibly part of a set of tweezers, was recovered from segment [24], which cut through the northeast part of Structure 2. Therefore, this object may well be residual within the fill of a later field boundary. There were also 91 fragments of animal bone within the fill of this ditch (864g, of which 41 were identified as cattle, 11 as sheep/goat, and one each as pig, dog and cat), with some variation between segments. Most, or at least some, of this material is probably redeposited bone from earlier Anglo-Saxon contexts (particularly Structure 2) given the general paucity of later medieval material, or earlier Roman material on the site; the small unstratified scatter of abraded sherds of Roman pottery is thought to be the result of manuring rather than domestic activity as are two unstratified sherds of (possible) St Neots ware.

Two further features were defined, of a similar but uncertain nature. These are tentatively described as troughs, intercutting pits or possible irregular slots:

Feature 2 (Fig. 25)

Feature 2 was defined for *c.* 3.6m, 0.6m in width and 0.4m in depth, aligned north-south, and was the northernmost archaeological feature defined on the site. It possessed a steep-sided cut [153/154/156/157] with a rounded base and contained a pale grey silty sand. The fill contained two sherds of abraded Anglo-Saxon pottery (20g), one of which is a base sherd. It also contained a large base sherd of Romano-British red Hadham ware pottery (35g), 13 fragments of animal bone (44g, of which three were identified as cattle, and one each as pig and sheep/goat) and one worked flint (4g). Therefore, it would appear that this feature relates to the Anglo-Saxon occupation, although its function is unclear; it is possible that this feature is actually the remains of several small intercutting pits.

Feature 6 (Fig. 25)

Feature 6 was similar in character to Feature 2, located several metres to the south of Structures 2 and 3. This con-

sisted of three distinct features, possibly short slots, two of which were aligned north-south, *c.* 1m apart, with a short segment aligned east-west between and linking them. The north-south slot on the eastern side ([162] and [166]) measured *c.* 3.6m in length, 1.2m in width and 0.3m deep and is of a similar size as, and alignment to, Feature 2, *c.* 17m to the north. The other north-south slot [160] was slightly smaller, measuring *c.* 1.9m length, 0.5m in width and 0.3m in depth. Both of their fills consisted of orange-brown sandy silt. These features both appeared to cut a short east-west slot [164], *c.* 1m in length, 0.4m in width and 0.3m in depth, which contained a light grey-brown silty fill. None of their fills contained any material.

The Anglo-Saxon finds assemblage

Anglo-Saxon Pottery

Sixty-five handmade early Anglo-Saxon sherds weighing 835g, and representing a maximum of 53 vessels, have been recorded. There were two decorated sherds in the assemblage (25g). This pottery is considered to date between the 6th and 7th centuries AD based on similarities with other assemblages dating to this period and according to the established chronological framework for pottery of this period.

All except one of the sherds were stratified within the fills of sealed features. The fill of the sunken feature of Structure 3 contained 26 sherds weighing 370g and the fill of Pit F4 contained 16 sherds weighing 107g (65% of the assemblage by sherd count; Table 5).

A number of fabric groups have been identified macroscopically based on a rapid visual assessment of the qualitative differences in fabric and matrix. In total, 23 sherds weighing 330g (40% of the total by sherd weight) have been identified as organic-tempered, containing frequent carbonised organic matter or most frequently organic voids. Of these, three sherds (38g) also contained igneous(?) rock inclusions and coarse fragments of biotite. Nine sherds (214g) of organic-tempered pottery were from a single vessel, located within the fill of Structure 3. A survey of the evidence for organic-tempered pottery during the early Anglo-Saxon period has suggested that this technique spread from the south and east to other parts of the country, increasing in use, during the later

Table 5. Quantification of Anglo-Saxon pottery within the fills of features.

Context	Context type	Count	Weight (g)
F2	?Trough/slot fill	2	20
F3	Pit fill	16	107
F4	Pit fill	7	44
F7	Pit fill	2	5
Structure 2	Sunken feature fill	3	131
Structure 3	Sunken feature fill	26	370
Structure 4	Post-hole fill	2	8
Structure 5	Post-hole fill	1	2
[9]	Post-hole in Trench 1	3	27
[5]	Post-hole in Trench 3	1	4
Unstratified		2	117

6th and 7th centuries, with its use largely ceasing in the south and east by the middle of the 8th century (Hamerow *et al* 1994: 14–5).

Fifteen sherds (184g) have been identified as containing igneous(?) inclusions and large fragments of biotite (22% by sherd weight, excluding three sherds which also contained organic temper). Sixteen sherds (141g) were identified as sandstone-sand-tempered (17% by sherd weight). Six sherds (76g) were identified as calcitic-tempered, of which four (61g) also contained biotite and igneous(?) rock inclusions. The calcitic inclusions and voids could be the remains of calcite and/or possibly fossiliferous limestone. Four sherds (104g), from three vessels, appear to have contained frequent fine ooliths and oolitic voids.

The fabric identifications should not be seen as mutually exclusive and it is possible that further analysis will show that the small groups are simply variations within broader types and should be merged together; it is unclear how many of the inclusions have been added to the clay as temper or how many occur as background material within the clay which has been used to manufacture these vessels.

Four of these sherds were subject to thin section analysis (Vince 2003), and all were found to have used very different raw materials. One sherd (<67> from the lower fill of Structure 3's sunken feature) has a possible origin in south Leicestershire (*cf* Williams and Vince 1997), whereas the other three (<073> from Pit F4, <004> from post-hole [009] in an evaluation trench, and the unstratified <092>) appear to have more local origins (the latter two of which also had chaff deliberately added).

Most sherds in the assemblage were too small and indistinct to indicate the form of the vessel, as vessels were often represented by single sherds. There were no complete profiles in the assemblage, but there were three rim sherds (44g) from different vessels. None was large enough to establish the rim diameter. One rim (unstratified, 35g) was from a globular vessel with a short vertical rim (illustrated). There was also a small rim sherd with a vertical and slightly bulbous lip, from the fill of Structure 3's sunken feature, and a simple everted rim from post-hole [005] (Trench 3). There were two possible base sherds, from different vessels, in the assemblage (weighing 22g in total). Two of these derived from the fills of ?Trough F2 and Post-hole [009] (Trench 1). Both were simple flat-rounded bases.

There were two decorated sherds, weighing 15g, and from different vessels. These form 3% of the assemblage by sherd count, which is comparable to the proportion of decorated pottery at West Stow (*c.* 2%; West 1985: 128). Both decorated sherds are illustrated. There was one small stamped fragment in the assemblage (2g), from the upper fill [70/71] of Pit F4. The stamp motif has been identified as a Category N 1ai, according to the classification in the Archive of Anglo-Saxon Pottery Stamps (Briscoe 1983). This type of simple motif appears to have been made with three teeth of a comb; impressed comb-point decoration is common and found across the country. The stamp ap-

pears to be arranged in a row of diagonal impressions, although too little of the sherd survived to define the complete decorative scheme.

There was also one sherd (13g) with incised decoration, deriving from the lower fill [129/133], in the northwest quadrant of Structure 3's sunken feature. This sherd possessed diagonal incised lines forming a two-line chevron pattern, or possibly a pendant-triangle or swag. It is possible that this decoration could have occurred on a vessel in combination with stamped decoration given that only a small part of the decorative scheme can be identified from the single small sherd.

JNL Myres established a typological framework for early Anglo-Saxon pottery based on a study of decorative elements and their arrangement on certain distinctive vessel forms. He also put forward a broad chronological framework, which has generally been accepted, for particular types of decorated pottery. Myres suggested that zigzag comb-point decoration was possibly an imitation of rouletted ornament found on Frankish vessels, and as such might indicate a late 6th- or 7th-century date (Myres 1977: 26). Pottery with this type of decoration, in a chevron pattern, has been found in a number of cemeteries dating to the Conversion period (7th century AD), for example, in Grave 18 at Chamberlains Barn II, Leighton Buzzard, and in Grave G2 at Marina Drive, Dunstable, both in Bedfordshire (Hyslop 1963: fig. 11a; Matthews 1962: fig. 5.4). Myres suggested that stamped chevron pottery is generally attributable to the 6th century, with those in which the chevrons are empty more likely to be earlier than the more elaborately decorated vessels with the chevrons filled with stamps (Myres 1977: 51). However, the pottery of this period is difficult to date accurately and this should be used with caution as dating evidence in the absence of other datable material from the site.

Just over half the sherds in the assemblage have been smoothed or wiped with a cloth or by hand to produce a smooth surface finish, varying from a rough wipe to a smooth lustre. Twenty-seven sherds (weighing 348g) have burnished internal and/or external surfaces, varying from a light burnish to a very high gloss. Six sherds (weighing 122g) had evidence of carbonised organic residue adhering to their internal and/or external surfaces.

The pottery is all handmade and the majority of vessels were probably coil built and have been carefully finished, although the coils were not generally visible in section. The thickness of the 59 sherds with two intact surfaces varied between 4.5 and 13.5mm; 44 sherds had a thickness of between 7 and 11mm. The pottery was fired in a bonfire- or clamp-type kiln, resulting in the characteristic (reduced) dark grey-brown-black colour. Several of the sherds are lighter brown, indicating variations in the conditions of firing.

The pottery appeared, in general, to be in relatively good condition, although most vessels are represented by only single sherds. The mean sherd weight of the assemblage is 12.8g. This compares to a mean sherd

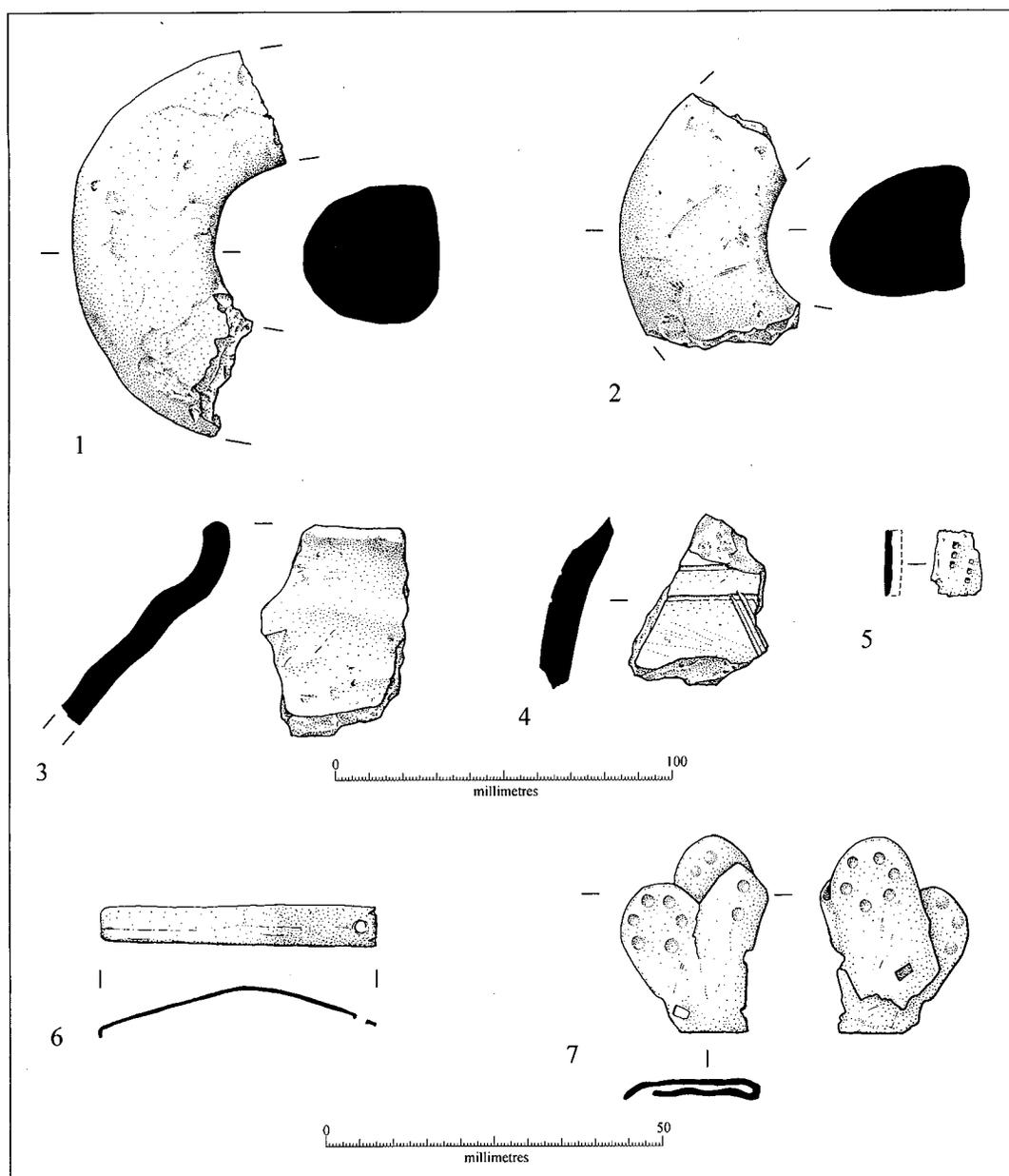


Figure 29. Finds from the settlement excavations.

weight of 9.8g in the fills of 20 sunken-featured buildings (c. 6000 sherds) examined in detail at West Stow (Tipper 2000 and in press). There is, however, considerable variation between features, varying from 2.5g in the fill of Pit F7 up to 43.7g in the fill of Structure 2's sunken feature (for features containing more than one sherd). Forty-one out of 65 sherds (63%) weighed less than 10g. In comparison, at West Stow 75% of the assemblage weighed less than 10g. Over three-quarters of the pottery from the Criminology Site (52 sherds) was under 50mm in size (max length). In comparison, 86% of the assemblage examined at West Stow was under 50mm in size.

Illustrated Anglo-Saxon pottery (Fig. 29.3–5)

<092> Unstratified

Rim sherd of a globular shaped vessel with a short vertical rim; Fabric Type: Millstone Grit Sandstone-sand; Rim diameter: not established; Rim percentage: not established; Vessel completeness: 5%; Weight: 35g; Wall thickness: 9mm; Smoothed surfaces; Colour: pale orange-pink, core and interior surface blotched grey; Context: Unstratified.

<067> [129]/[133] Structure 3

Decorated body sherd; Fabric type: Igneous?; Vessel completeness: <5%; Weight: 13g; Wall thickness: 10mm; decoration: two-line chevron or possibly two horizontal lines above a pendent-triangle or swag; Burnished exterior, completely abraded interior; Colour: dark grey, pale brown exterior surface; Context: 129/133. Lower fill of NW quadrant of Structure 3's sunken feature.

<035> [070]/[071] F4

Decorated body fragment; Fabric type: Oolitic limestone?; Vessel completeness: <5%; Weight: 2g; Wall thickness: >3.5mm; Incised decoration: row of impressed diagonal comb-point decoration, Briscoe stamp motif N 1ai; Burnished exterior, completely abraded interior; Colour: blotched grey and pale brown; Context: 70/71. Upper fill of Pit F4.

Metalwork

There were two fragments of copper alloy from the site. No ferrous metalwork was present.

<096> / [24] segment of Ditch F1, cutting through north-east corner of Structure 2 (Fig. 29.6)

Fragment of bent perforated copper alloy strip, 40mm in length by 6mm in width and weighing 4g. One end of the strip, closest to the break end, has been perforated with a hole 1.75mm in width. The broken end also has the remains of two ?decorative triangular nicks. The other end of the strip has been hooked over. Tweezers? Anglo-Saxon.

<097> Spoil — metal detector find (Fig. 29.7)

Fragment of decorated and perforated copper alloy sheeting with a central triangular lobe or panel bordered by curved lobes which are decorated with punched dot ornament, 34mm in length, 25mm in width, 0.75mm thick and weighing 4g. The sheet has been perforated in the two bottom corners; these edge holes were presumably for attachment, possibly for sewing. However, the sheet is very thin had it been fixed to textile for dress and it may have been stuck on to a more robust, flat surface. Folded over in half. Mount? Anglo-Saxon or possibly medieval (11th–12th century?).

Other finds

Aside from one large fragment of Mayen lava quernstone from the upper fill of Pit F3 (probably of original diameter *c.* 600mm, this fragment was 250mm in length and 40mm thick, weighing 1664g) and two further fragments (one from the same fill, 39g, and one from the upper fill of Structure 3's sunken feature, 25g), the rest of the artefactual finds from the settlement consisted of fired and unfired clay (see Armour *et al* 2003). The majority of this represented the remains of around 10 to 15 fired clay loomweights (weighing 1339g in total), of which all but one were recovered from the lower and middle fills of Structure 3's sunken feature (the remaining example came from the fill of Pit F3; see Fig 29.1–2). Where original size and form could be reconstructed, these were all annular, with D-shaped sections (indicative of the early Anglo-Saxon period; Hurst 1959: 23–4) and ranged from 110–125mm in diameter, 38–46mm thick, with central holes 45–47mm in diameter. On one fragment, a shallow groove made by the suspension cord was visible.

Three contexts contained lightly fired clay identifiable as burnt daub (13 fragments, 226g in total): the upper fill of Pit F3 (one of which possessed the remains of wattle impressions), and the middle and lower fills of Structure 3's sunken feature. There were also unfired clay fragments from the latter two contexts (229g in total), which may be the remains of

unfired clay loomweights.

Economic evidence

A total of 706 fragments of animal bone was recovered (15,072g, using a combination of careful hand collection and sieving) of which 286 fragments (41% were identifiable to species (see Swaysland in Armour *et al* 2003). In all features cattle and sheep/goat (where identifiable, these are all sheep) were the most commonly represented species. Also present were pig, horse, dog, cat and goose. The only non-domestic species represented was deer (the one roe deer metatarsal shaft possibly being indicative of hunting). The presence of almost all skeletal elements indicates that cattle were being raised and consumed on site. Most cattle were culled in late adolescence/early adulthood, on reaching maximum size and weight. A few older animals were kept for breeding and traction (suggested by one cattle distal tibia which showed signs of osteoarthritis). The absence of a large number of young animals would indicate that milk production was not a significant aspect of the economy, although this may have been influenced by carnivore action. The dominance of cattle is not a pattern replicated at some other early Anglo-Saxon sites in East Anglia, such as West Stow (Crabtree 1989: 10) and Bourn Bridge (Yannouli 1996), where sheep/goat form the largest species representation. The low representation of pigs here is also unusual, perhaps indicating a lack of suitable pannage in the area.

Four soil samples were subjected to environmental analysis (see Roberts in Armour *et al* 2003). Two contained large amounts of cereal grain, no chaff and only a very low amount of wild plant remains, which fits the pattern described by Greig (1991) for cereal cultivation in the early medieval period. There were only small amounts of wild plants found in these samples. The majority of these were typical arable weeds, such as clover, brome/oat and vetch/wild pea. However, there was also a single occurrence of stinking chamomile, which might suggest the cultivation of heavy (and sometimes damp) soils. The only wild plant remains of which there are more than two or three examples are those which might also be edible, or harder to remove from a cereal product such as vetch/wild pea, cabbage/mustard or brome/oat. It is possible that the large amount of charred cereal grain combined with the small amount of wild plant seeds — and the lack of chaff — represents a cleaned crop which was charred during cooking.

Discussion

The King's Garden Hostel cemetery and the Criminology Site settlement together add considerably to our knowledge of the West Cambridge area in the early Anglo-Saxon period. To date, remains of this period have been reported from Newnham, St John's College cricket field, Girton and Trumpington. Further to the east, isolated burials and/or finds suggestive of burials have been reported from Milton

Table 6. Results of environmental bulk sample analysis.

sample number	<1>	<3>	<4>	<5>
context	[10]	[66]	[60]	[123]
feature		str 4	F7	str 2
feature type	pic	posthole	pic	sw quad
sample volume/litres	7	1	2	4
flot fraction examined	1/1	1/1	1/1	1/1
naked <i>Hordeum vulgare sensu lato</i> grain			2	
<i>Hordeum vulgare sensu lato</i> grain			21	5
<i>Triticum</i> sp. grain		7	39	30
<i>Triticum/Hordeum</i> sp. grain	5	1	13	20
<i>Secale cereale</i> grain		1	4	
cereal grain indet.	4		4	
cereal fragments			++	+
<i>Chenopodium polyspermum</i>			3	
small <i>Chenopodium</i> sp.			2	3
<i>Fallopia convolvulus</i>				1
small <i>Rumex</i> sp.	1			
small <i>Brassica/Sinapis</i> spp. (c. 2mm)			5	
small <i>Vicia/Lathyrus</i> spp. (<2 mm)	1		1	6
small <i>Trifolium</i> spp. (<1mm)				2
small <i>Galium</i> spp. (<2mm)			1	1
<i>Anthemis cotula</i>				1
<i>Schoenoplectus cf lacrustis</i>			1	
<i>Bromus/Avena</i> spp.			6	4
small Poaceae indet. (c. 2mm)			2	
small seed indet.			7	2
small charcoal (<2mm)	+++	+++	+++	+++
medium charcoal (2-4mm)	+++	+	+++	+++
large charcoal (>4mm)	++	-	++	++

Road, Jesus Lane, Mill Road, Rose Crescent and possibly Coldham's Lane (Fox 1923: 244-5).

A number of isolated finds are known from the Newnham Croft area (TL 439 574; fig. 1b.3). Lethbridge (1938: 311) reports chance finds made since 1893 at the south end of Grange Road and on both sides of Barton Road, including several inhumations found 'recently' with spearheads, pottery vessels and wrist-clasps. He also reports cinerary urns from Newnham in the British Museum. In addition, Fox (1923: 244) cites the discovery of two interments at Newnham Croft in 1910, one of which was accompanied by wrist-clasps and a cruciform brooch, and the other by three cruciform brooches. A 5th-century equal-armed brooch also came from this site.

The cemetery reported by Fox (1923: 242) as being located mainly on the site of the racquets courts in St John's College cricket field was excavated in 1888 (TL 441 588; Fig. 1b.1). Fox details the discovery of at least 100 cinerary urns and other vessels, along with 30 skeletons (presumably inhumed) and 'a representative range of associated objects' as being present in the Cambridge Museum. Alongside the Anglo-Saxon material in the unsorted and unpublished collection were a number of Roman artefacts, and at least one Roman brooch was known to have accompanied an Anglo-Saxon furnished burial (*ibid*). The mate-

rial from the site included cruciform, square-headed, small-long, annular and applied brooches, along with wrist-clasps, iron keys and belt-plates (*ibid* 243). Fox saw the cemetery as dating from the mid 5th century through to the early 7th century, seemingly on the basis of a glass- or garnet-inlaid rectangular buckle chape and a pair of late applied brooches. This cemetery would thus seem to be predominantly of 5th- and 6th-century date, with burial perhaps continuing into the early years of the 7th century. Its extent is still unclear: Fox says that 'many hundred skeletons and urns were destroyed before investigation' (*ibid* 242) and Walker (1912) reports the discovery of an inhumation with a bone comb, amber and glass bead necklace and possibly a disc brooch, along with two Anglo-Saxon cremations and some Roman burials during the building of Saxmeadham, 71 Grange Road, less than 200 yards from the St John's racquets courts, suggesting that this cemetery was extremely extensive (fig. 1b.2). However, the more recent excavations by the CAU detailed in the introduction to this paper have produced no evidence for Anglo-Saxon burials in the surrounding areas. It would thus seem that the King's Garden Hostel site, along with the Newnham burials, each form discrete clusters of burial in West Cambridge, with the King's Garden Hostel burials largely post-dating those which were already known.

A large cemetery is known further to the north at Girton (TL 423 609) where excavations in 1881–2, 1886 and 1926 found nearly 100 inhumations and over 130 cremations with a wide range of grave goods in an area of extensive Roman buildings with associated burials of Roman date (Lethbridge 1938: 313; Fox 1923: 246–9; Hollingworth and O'Reilly 1925). Further to the south, three cruciform brooches (one very early), a spearhead and wrist-clasps found before 1854 at Dam Hill, Trumpington (TL 451 568) may also indicate an inhumation cemetery (Fox 1923: 249).

It would thus appear that there are at least four discrete clusters of burials on the west side of Cambridge: of these, the cemetery at St John's may continue into the early years of the 7th century, while the King's Garden Hostel site would appear to be a *de novo* foundation, predominantly dating to the 7th century, and possibly later. The establishment of new burial areas in the later 6th or 7th century, even close to pre-existing 6th-century sites, is a very common occurrence in central and eastern Britain, and may signal important social shifts at this time (Lucy 1998).

Further afield, similar cemeteries of 7th-century date are known from Burwell (Lethbridge 1931), Cherry Hinton (Kennett 1973: 102), Foxton (Lethbridge 1938: 312–3; Fox 1924: 37–46), Melbourn (Wilson 1956) and Shudy Camps (Lethbridge 1936), along with finds indicating an isolated burial from Quy (Kennett 1973: 102). The large cemetery at Barrington Edix Hill also continued into the 7th century (Malim and Hines 1998). The King's Garden Hostel site is less elaborately furnished than the majority of these. Grave goods recovered from Melbourn, for example, included iron-bound boxes, bag assemblages, double-sided bone combs, knives, bronze pins, wooden buckets, spearheads, a shield boss and various pendants and festoons, despite there only being 28 graves (including two double burials) excavated. The 139 graves excavated at Burwell and almost 150 graves at Shudy Camps produced an even wider range. Broadly, though, these sites are comparable, especially in terms of the variation in orientation seen, the variety of positions in which the dead were buried, and the curation of Roman artefacts.

While the full extent of the King's Garden Hostel cemetery cannot be known, the part seen here appears representative of a typical 7th-century Cambridgeshire cemetery with, however, unique characteristics in the eel bowl and silver and chalk pendant. While the date of the bowl's manufacture may place it back into the 6th century, its deposition may well have been later. The excavation of settlement remains just 300m to the south may help to place it in its more local context. Until now, Anglo-Saxon settlement evidence from the Cambridge area in the Anglo-Saxon period appeared to focus around Market and Peas Hill, Castle Hill and possibly also Newnham and Barnwell. In these areas characteristic Anglo-Saxon pottery and some evidence of structures has been found (Fox 1923: 245–6; Alexander and Pullinger 2000). The excavation under discussion here helps confirm this suspicion of such settlement on the gravel terraces west of Cambridge.

The excavation has uncovered the complete ground plan of one substantial post-hole building or hall, as well as the remains of two other probable post-hole structures, two buildings associated with sunken features, both of which have been interpreted with suspended floors, and three large pits within a relatively small excavation area of c. 560 m². The fills of the sunken features and pits have produced a small, but sealed, assemblage of material from the settlement. These have been dated to the early Anglo-Saxon period, possibly the 6th and/or 7th centuries AD, based on the similarity of the structural evidence and the material cultural assemblage to other settlement remains of this period.

The distribution of the settlement at this point was essentially linear and the buildings did not extend to the northern and southern margins of the excavation area; the east-west alignment and linear arrangements of buildings is common within larger settlements of the period, for example at West Stow and Bloodmoor Hill, both in Suffolk (West 1985; Dickens *et al* in press). Given the localised density of the Anglo-Saxon buildings within the excavation area, with the evidence for intercutting buildings, it seems likely that the settlement extended over a considerable area. In comparison, the core of the settlement on the knoll at West Stow occupied over 1.8ha. (West 1985). The settlement remains at Mucking extended across an area of c. 18ha. (over 900m from the north to the south end of the site) and Helena Hamerow interpreted it as groups of farmsteads that gradually shifted across the landscape between the 5th and 7th centuries AD (Hamerow 1993; although see Tipper 2000: appendix 1 and in press). It is possible that the Criminology site is part of a larger settlement complex, which was also the result of a gradual movement along the terrace edge. However, the stratigraphic relationship between Structure 1 and Structure 2 demonstrates that the settlement had more than one phase of occupation at the same location. This is in itself relatively unusual and intercutting buildings are generally few and far between. At West Heslerton, North Yorkshire, for example, few post-hole buildings had stratigraphic relationships with *Grubenhäuser*; furthermore, in every case where the relationship could be established it was shown that the *Grubenhäuser* was replaced by the post-hole building (Tipper 2000: 101).

Unfortunately, there is no way of establishing the total extent of the Criminology settlement with any certainty at this time. It seems reasonable to associate the findings from No. 5 West Road, lying c. 50–60m to the north, with this settlement (Mackay 2002). Although this site may not be directly associated with the King's Garden Hostel cemetery, when seen in relationship to it, to the St John's Playing Fields cemetery to the north and to the Newnham burials to the south, we need to consider whether this density of Cam-side Anglo-Saxon occupation is special, and somehow directly ancestral to the foundation of the later Saxon/medieval lower town, or whether it may be typical of riverside Anglo-Saxon settlement densities (and thus simply a factor of more intense investi-

gation along this part of the Cam). It can be noted that extensive investigations at Eriswell, RAF Lakenheath, by the Suffolk County Council Archaeology Service, have defined two or three early Anglo-Saxon cemeteries within *c.* 200m of each other, and in association with settlement remains (Martin *et al* 2002: 219–21). The evidence from Eriswell seems special only insofar as a large area of landscape has been intensively investigated, in comparison to most other small-scale excavations. Similarly, the density in Cambridge may simply be a reflection of more intense development, and consequently discovery, within the town in comparison to the rest of the Cam Valley. Developer-funded landscape excavation has also defined a high density of settlement remains along the Cam Valley in the south of Cambridgeshire with, for example, early/middle Anglo-Saxon settlements being found at Hinxton, Hinxton Hall and Bourn Bridge. At present, we do not know the density of Cam-side Anglo-Saxon settlements and cemeteries, but the evidence is beginning to suggest that it was considerable.

Acknowledgements

At the cemetery site, King's College generously supported the project throughout and we are grateful for the co-operation of its Domus Bursar, KA Hook. The fieldwork was greatly facilitated by B Open and N Ray of Nicholas Ray Associates, and it was monitored by S Kaner of Cambridgeshire County Council. The discovery of the settlement site was entirely unexpected and the success of the rapidly organized excavations was due to the co-operation of all parties involved: D Pilgrim of the University of Cambridge's Estate Management and Building Services (who commissioned and funded the work), J Lovell of Allies and Morrison, A Sawalhi of Waites, and J Parsons and A Thomas of Cambridgeshire County Council. Excavation was directed by N Armour. We are equally grateful for the advice (and visits) of C Hills, H Hurst and M Millett (the latter two being on-site neighbours in the Faculty of Classics). We would also like thank G Owen of the Cambridge University Museum of Archaeology and Anthropology for his photography of the settlement site. A Hall and M Brudenell produced the computer and line illustrations within this report, E Beadsmoore reported on the flint, R Ballantyne analysed the environmental and eel remains at the cemetery, while K Roberts analysed the environmental remains from the settlement, C Swaysland and A Clarke reported on the faunal remains and G Monteil, D Hall and M Knight respectively reported on the Roman, medieval and prehistoric pottery. Christopher Evans project-managed both excavations. We would also like to thank Martin Welch for helpful comments and additional references.

Cambridge Antiquarian Society is grateful to King's College and the University of Cambridge, Estates Management and Building Services, for a grant towards the publication of this article.

Endnotes

1. A substantial accumulation of medieval plough soil that sealed the cemetery was recorded in section. Its depth varied across the site from *c.* 0.40m in the south to *c.* 0.90m in the north and has been interpreted as a probable headland associated with the medieval ridge and furrow system. Its lower horizon is made up of the clods of the buried soil, which have been worked into the medieval layers above, and probably represents an early phase of ploughing possibly contemporary with the truncation of the cemetery. The interface between this and the dark greyish brown loam above it is irregular. The build up of soil contained sherds of prehistoric and Saxon pottery and had increasing amounts of gravel in its upper half. Although no medieval pottery was recovered from the sections, 13th-century sherds were identified in these layers during the evaluation. Both the medieval headland and the buried soil which the Saxon graves cut were sampled for pollen but none was recovered (R Scaife pers comm). This may be due to extensive modern root disturbance and also the slightly acidic soil. The soil micromorphology results can be found in the archive. Ravensdale and Hall's map of the West Fields is based on their work on the 'Corpus Terrier', a document listing all the titheable lands belonging to Corpus Christi in *c.* 1360. On this map the headland is shown as separating two furlongs in the Cam Field area. The development of the headland into a causeway/trackway through the West Fields can be seen on Loggan's plan of Cambridge of 1688 and Custance's plan of 1798. It is known that a bridge was built at the end of this causeway as early as 1472–3 soon after King's College was founded, whose grounds it leads into (Willis and Clark 1886: 567–8); its masonry was exposed during riverside shoring operations in 1991 (Evans 1991c).
2. This pit was oval and vertical-sided (F21, 1.27 x 0.97 x 0.40m); the lower fill contained 54 pottery sherds (several of which were decorated), which represents the remains of at least 10 separate vessels from a coherent assemblage of domestic wares, of both fine and coarse fabric, and can be assigned to the Post Deverel-Rimbury tradition, as defined by Barrett (1980; Knight in Dodwell 2001). Accompanying the sherds were burnt flint, animal bone (including antler) and charcoal.
3. In assessing the human osteology, general methods used are those of Bass (1992), Buikstra and Ubelaker (1994) and Steele and Bramblett (1988). An assessment of age was based on the stages of dental eruption and epiphyseal union, on the degree of dental attrition (Brothwell 1981) and, where possible, on changes to the pubic symphysis (Brooks and Suchey 1990) and the auricular surface. The following age categories are used:

Infant	0–4 years
Juvenile	5–12 years
Subadult	13–18 years
Young adult	19–25 years
Middle adult	26–44 years
Mature adult	45 years +

There may be overlaps between categories or a broad category, such as adult, may be used where insufficient evidence was present. Sex of the adults was ascertained where possible from sexually dimorphic traits on the pelvis and skull and from metrical data. No attempt was made to sex immature individuals.

4. Nine environmental samples from grave fills were analysed. The graves were found to contain occasional small fragments of charcoal, fragments of charred concretion and occasional charred grains of breadwheat and hulled barley; all probably surface debris from nearby burning events (not necessarily contemporary with burial), accidentally included during the infilling of the graves. Mollusc shells were not present in sufficient quantities for environmental reconstruction. Small fragments of animal bone (where recognisable, loose ovicaprid and cow molars and phalanges) were also found in four graves (G1, G12, G14, G17), but this appears to represent accidental inclusion, rather than the known Anglo-Saxon practice of interring either whole animals or food offerings with the deceased. Unless otherwise stated the grave cuts had near vertical sides and the fills were a mid grey brown sandy silt with occasional small stones, some with charcoal flecks. Despite the depth of the graves below the present ground surface all had been disturbed by roots and there was some evidence of animal disturbance. More detailed descriptions can be found in the original skeletal recording sheets and in the unpublished in-house excavation report (Dodwell 2001).
5. The single sherd of translucent pale blue glass, 4.5mm thick and weighing 8g, from the upper fill [131] was probably Roman in date. The oyster shell was a large and fresh example (92g) derived from the middle fill [128], southeast quadrant, and is probably residual Roman (as are the two other abraded fragments of oyster shell from the fill [60] of pit F7 (7g) and unstratified (11g).
6. There were seven fragments of tile weighing 1,003g in total, of which all except one (28g) was Roman in date. Several of the fragments were quite substantial (one weighed 374g) and none was greatly worn or abraded. There was also a single fragment of post-medieval tile in the fill of Structure 3 (28g).
7. The Roman tile fragment from this feature consisted of two joining fragments of burnt Collyweston tile, weighing 90g in total, from fill [73] in pit F4. Probably residual Roman given the presence of other Roman tile and general paucity of other later medieval material on the site.
8. This small Roman pottery assemblage consisted of 34 abraded sherds, dating from AD150 to the 4th century AD, and largely of local wares (see Monteil in Armour *et al* 2003).
9. This was one of eight worked flints recovered during the settlement excavation, reported on fully in Armour *et al* (2003).

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The Origins and Early Development of Chesterton

Craig Cessford with Alison Dickens
with a contribution by David Hall

Excavations by the Cambridge Archaeological Unit (CAU) at sites in the village of Chesterton (Figure 1) between 1998 and 2002 have shed new light on the origins and early development of Chesterton. Late Saxon Chesterton appears to have been a polyfocal settlement, whilst in the Post-Conquest period there is evidence for a planned settlement with intensive layout of property plots and a main axis perpendicular to the River Cam, probably relating to a ferry across the river. By the 13th century ditched divisions disappear, although continued occupation is apparent, mainly through the digging of pits. The settlement expanded in the 13th century, with the main axis shifting to become parallel to the river. Chesterton appears to decline in the 14th century, followed by partial recovery in the 15th and 16th centuries. The ceramic assemblage indicates that medieval and post-medieval pottery was probably obtained via Cambridge, whilst the cereals consumed were not being grown locally but were coming from an area with slightly damp, heavy soils. Occupation continues until the 17th century when there is a dramatic increase in activity. Although later truncation and the fact that no excavation areas included roadside zones mean that evidence is limited, these excavations represent the first substantial archaeological evidence for the history of Chesterton.

Historical background

Two useful recent discussions of Chesterton are the Victoria County History (Wright 1989) and Taylor (1999, 121–26). The earliest documentary reference to Chesterton is as *Cestretone* in Domesday Book, when it was a royal *vill* with 24 peasant families. Topographically it appears that the two ‘halves’ of the town fields of Cambridge, the eastern or Cambridge fields and the western or Barnwell fields, and the parish of Chesterton form a roughly circular area centred on the Roman town (Haslam 1983, figure 3). It seems likely that this was the extent of the original royal estate and that they were separated in the 8th century when the *burh* of Cambridge was formed (*ibid*). The name *Cestretone* (farm by the fortified place) suggests that the original centre of the *vill* lay elsewhere and it was probably only with its 8th century separation that the settlement on the site of the medieval vil-

lage was founded. Based on the street plan and the location of the church it is believed that the earliest settlement lay around St Andrew’s church and the manor house, north of a ferry crossing over the Cam leading from Suffolk and east Cambridgeshire to the King’s Highway, which linked Cambridge to the Isle of Ely. This early settlement probably occupied an oval area covering roughly the area currently enclosed by Church Lane (mentioned in 1327, now Church Street) and the western part of High Street (mentioned in 1293), perhaps extending further westwards. At a relatively early date the orientation of the village changed and was extended eastwards along High Street. Curving crofts on the enclosure map suggest properties in this area were laid out over open fields and extended northwards to a parallel road known as Back Lane (mentioned in c. 1600, now Scotland Road). This was linked to the west end of High Street by Mill Lane (mentioned in 1325, now Union Lane) and at the eastern end by Green End. There were probably also lanes running down to the river, although Water Street (mentioned in 1580), parallel to the High Street, may be a later development.

The *vill* remained in royal hands until 1194, when part of it was assigned to Saher de Quincy. The whole manor had passed to Barnwell Priory by 1200 and they retained it until the dissolution of the monasteries in the 1540s, when it passed into the hands of the Brakyn family. The rectory estate was given by the king to the papal legate Cardinal Gualo in 1218 and was appropriated by the abbey of St Andrew in Vercelli, Italy, in 1227. Although occasionally leased to or otherwise controlled by Barnwell Priory the estate remained in the control of St Andrew’s until the Dissolution and passed to King’s Hall, later Trinity College. A Carmelite monastery briefly occupied a site in Chesterton in the mid 13th century and some parcels of land that were let from the main landholdings became manors in their own right.

The Domesday population probably represents about 100 individuals and by 1225 around 190 persons paid tax. In 1279 there were around 80 resident landholders and at least 80 messuages and 5 cottages, whilst in 1327 almost 80 people paid the subsidy. The population fell during the 14th century,

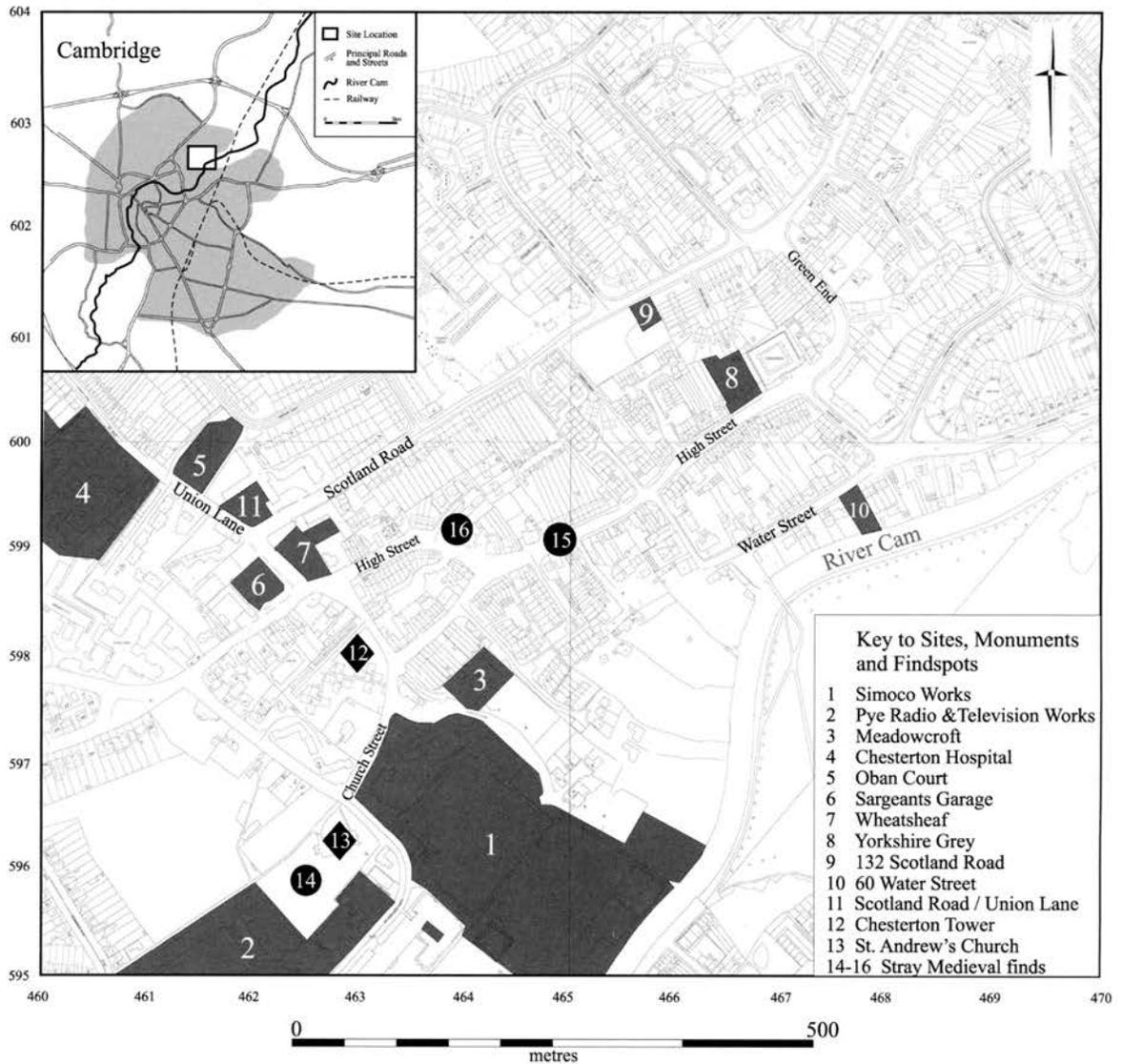


Figure 1. Plan of Chesterton.

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with 70 villagers dying during 1349, and in 1524 73 people were assessed for tax. In 1563 69 households were reported.

St Andrew's church (13) although mainly 14th century in date incorporates 13th-century elements whilst Chesterton Tower (12), probably the residence of the procurator of the abbot of Vercelli, is of 14th-century date (RCHM 1959, nos 60 and 305).

The excavations

Prior to the work reported here little archaeological investigation had been undertaken in Chesterton and medieval discoveries consisted of stray artefacts (14–16) (Browne 1974, map 16). Excavations have taken place at three main sites: Sargeants Garage (6) on the western side of the junction of High Street and Union Lane (Alexander 1998; Hall 1999), the

Wheatsheaf public house (7) on the eastern side of the same junction (Armour 2001b; Masser 2000) and the Yorkshire Grey public house (8) some 450m to the northeast on the northern side of the High Street (Mackay 2001a; 2001b). Additionally there is more limited evidence from the Chesterton Hospital site (4) on the western side of Union Lane, some 100m north of the Sargeants Garage and Wheatsheaf sites (Armour 2001a; Hatherley 2001; Mackay 2000a). Work at the former Pye Radio and Television Works (2) (Armour 2000; Berger and Dickens 2000), 'Meadowcroft' (3) (Mackay 2000b) and the Simoco Works site (1) (Armour 2002) to the south failed to reveal any medieval remains, although later truncation means that the absence of remains is inconclusive. Work to the north at 132 Scotland Road (9) (Patten 2003) revealed 18th and 19th century gravel extraction and earlier undated ditches. Excavations by the Hertfordshire Archaeological Trust at Oban Court (5)

(Fell 1999) and by Cambridgeshire County Council Archaeological Field Unit at Water Street (10) (Cooper 1999) failed to reveal medieval remains. As Oban Court lies between Sargeants Garage/the Wheatsheaf and Chesterton Hospital the lack of remains would be significant, were it not that their absence was probably due to modern disturbance (Fell 1999, 7). More recently work at the junction of Scotland Road and Union Lane (11) by Hertfordshire Archaeological Trust revealed some small undated features and two large irregular features containing 10th to 12th century pottery (Grant and Wilkins 2002). Further to the east work by Museum of London Archaeology Service at Nuffield Road Allotment Gardens revealed an Iron Age or Roman pit and post-medieval ditches but no medieval activity (Mackinder 1999). The Sargeants Garage, Wheatsheaf and Yorkshire Grey sites all lay within the putative medieval core of the village, whilst Chesterton Hospital lies outside it to the north.

Phase 1: Prehistoric and Romano-British

Residual prehistoric and Roman pottery was found at all three main sites and it is possible that some undated features may belong to these periods. The only convincing prehistoric feature was a pit at the Yorkshire Grey containing early to mid Bronze Age pottery (Figure 3). Although Romano-British pottery was found in residual contexts at some sites there are no convincing features, although it is possible that a buried ploughsoil of this date was present at the Chesterton Hospital site.

Phase 2: Late Saxon (Figures 2–3)

Small quantities of Middle Saxon pottery, including some Ipswich ware, were found at all three main sites, generally in residual contexts and no features of this date were identified. Although the pottery supports the idea of a Middle Saxon origin for Chesterton they indicate that this was located nearby, rather than at any of the excavated sites.

At the Wheatsheaf there were two phases of Late Saxon activity, the earlier represented by ditches running southeast to northwest parallel to Union Lane. The ditch appears to have been re-established at least five times, with indications of additional recuts, and was over 0.8m wide and 0.5m deep. They appear to have been cut from northeast to southwest, no trace of a bank survived but the putative sequence suggests that this would have been located to the northeast, outside the area of excavation. The later phase is indicated by another ditch, which follows roughly the same alignment as the earlier one, but then turns through 90 degrees and runs northeast to southwest across the site. This was between 1.5 and 1.2m wide and up to 0.5m deep. No finds of any type were recovered from these features, but cereals in the earlier ditches suggest a date no earlier than the early medieval period and it is likely that these ditches represent a relatively long-lived Late Saxon boundary running parallel to Union Street, which was modified in its final phase. As there is no evidence of Late Saxon activity at Sargeants Garage, apart from residual pot-

tery, this suggests that the other side of the enclosure was on the line of High Street. This would make the enclosure around 25m wide and if in its later phase it fronted onto Union Lane then it would be approximately 30m long. Alternatively the ditches could be one side of an earlier road running parallel to Union Lane, but located around 30m from it.

Late Saxon activity at the Yorkshire Grey is indicated by a pair of ditches 0.9 to 1.9m wide and 0.4 to 0.5m deep, in the northeast part of the site forming part of a square or rectangular enclosure. Although it lay largely outside the area of excavation the minimum area it can have enclosed must have been around 10 by 12m and it was probably substantially larger. The only other features were a spread of silty material containing much animal bone lying on the northwest side of the enclosure (probably a domestic midden) and two pits containing small amounts of pottery and animal bone within the enclosure, suggestive of domestic activity. Although found in a later context a relief-decorated strap-end (Figure 11) may well have come from the spread of material.

The evidence suggests that in the Late Saxon period the landscape of Chesterton contained large enclosed areas demarcated by ditches. These ditches are broadly comparable to other Late Saxon examples such as those at West Fen Road, Ely (Mortimer *et al* forthcoming). The size of the Chesterton ditches suggests that they are major enclosure boundaries and the relatively large areas enclosed are in contrast to the smaller plots of the later medieval period (*ibid*). The lack of other features and the low quantity of finds, even in residual contexts, suggests that the foci of domestic occupation was elsewhere, probably relatively close. The evidence suggests at least three separate areas of activity, two revealed by excavation at the Wheatsheaf and the Yorkshire Grey and the putative third around St Andrews church. More foci may well have existed, so it appears that in the Late Saxon period Chesterton consisted of small dispersed sites rather than a single core around St Andrews church. Such polyfocal Late Saxon origins are common both locally in South Cambridgeshire and elsewhere (cf Taylor, A 1997; 1998; Taylor, CC 1977; 1989). Alternatively they could all be parts of a single large settlement that was at least 500m long, but this seems less probable.

Phase 3: Late 11th and 12th centuries (Figures 3–4)

In the late 11th or early 12th centuries activity expands markedly at all sites. At both Sargeants Garage and the Wheatsheaf relatively intensive and extensive ditch systems were aligned on Union Lane and the High Street. The ditches were generally quite small, 0.5 to 0.9m wide and 0.25 to 0.4m deep. Such small ditches are common in this period and it has been argued that they were kept small so that they would not prevent the movement of people and livestock, but would provide demarcation of boundaries and some drainage (Hall and Hunter-Mann 2001, 807–09). This ditch system extended northwards along Union Lane as far as the Chesterton Hospital site, where

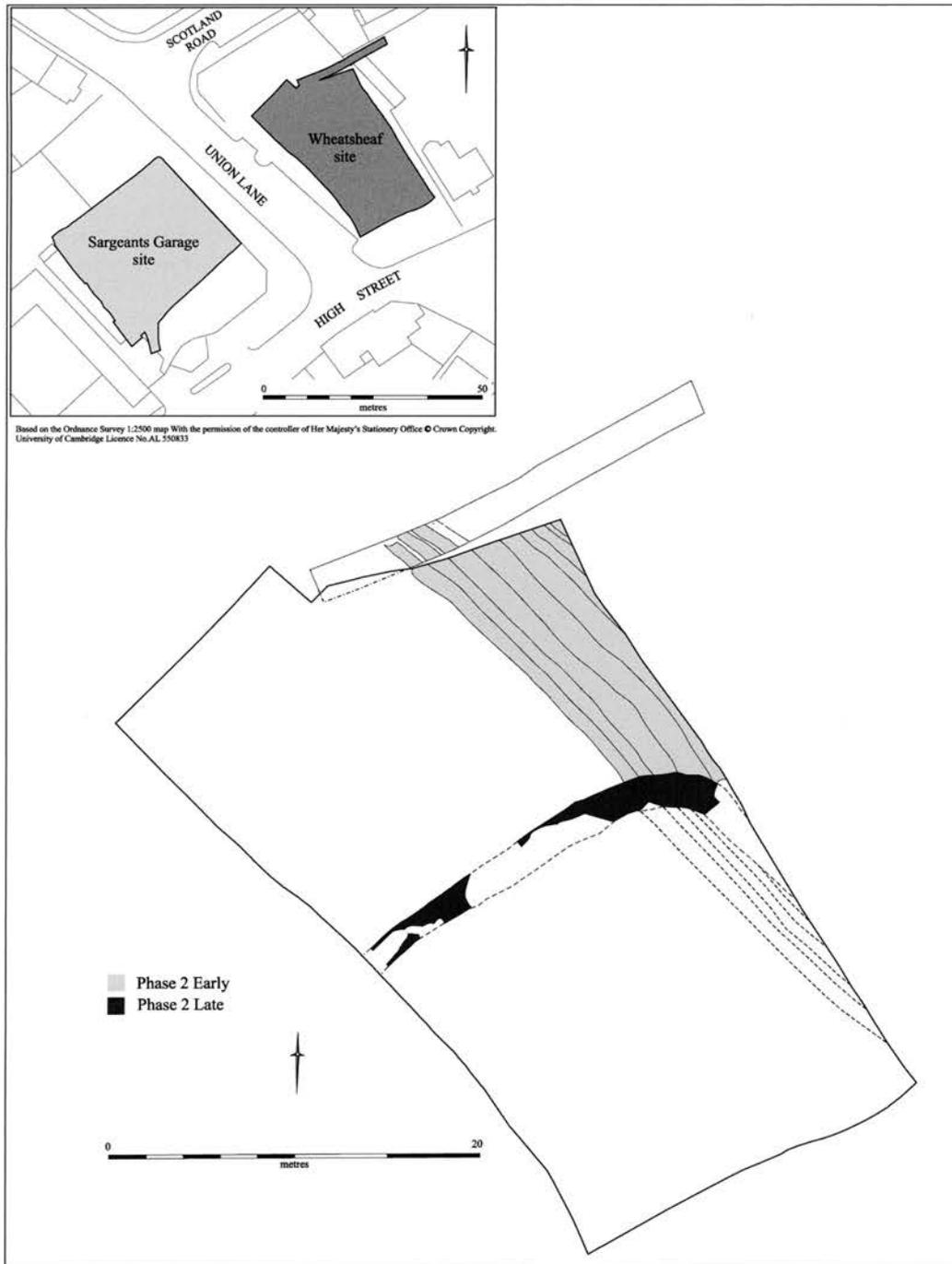


Figure 2. Phase 2 (Late Saxon) features at the Wheatsheaf.

there are ditches perpendicular to the road, although on a less intensive scale than those further south and probably not extending any great distance from Union Lane. The ditch systems at Sargeants Garage and the Wheatsheaf both went through several phases of modification and recutting, indicating a relatively prolonged period of use. It appears that initially a relatively large number of long and narrow regular property plots approximately 6m wide and 25m long were created, fronting onto both the High Street and Union Lane. These are towards the middle or lower

end of the size of medieval property plots which are generally 5 to 12m wide and 15 to 60m long. At Sargeants Garage the majority of the surviving ditches appear to represent properties fronting onto the High Street, with the two main ditches perpendicular to Union Lane probably being the rear of these properties. These showed evidence that the properties fronting onto the High Street were extended northwards by around 5m during this phase, making them about 30m long. It is only the two less substantial ditches perpendicular to Union Lane in the northern part of



Figure 3. Phases 2 (Late Saxon) and 3 (late 11th–12th centuries) features at the Yorkshire Grey.

the area that appear to relate to properties fronting onto Union Lane. Although these plots are less well defined they appear to be of roughly similar dimensions to those fronting onto the High Street. There are also a number of pits and a possible well. At least at Sargeants Garage the pits appear to be concentrated in one particular property plot perhaps suggesting that it was either more intensively occupied or alternatively that it was not occupied and was used by adjacent plot holders for digging pits in.

The generally low levels of finds suggest that the occupation was not intensive and it seems likely that not all the property plots were immediately occupied. The settlement seems only to have been gradually and incompletely occupied, leading to modifications of the original system. The situation at the Wheatsheaf although less clear appears to be similar with a ditch

on the same alignment to that which originally defined the rear of properties fronting onto the High Street at Sargeants Garage. The discovery of two large irregular features containing 10th to 12th century pottery at the junction of Scotland Road and Union Lane may relate to gravel quarrying (Grant and Wilkins 2002) to the north.

At the Yorkshire Grey activity continues in the northeastern part of the site, with a ditched enclosure located slightly to the southeast of the previous one. This enclosure then shifts around 10m to the southwest and the area between the old and the new ditches is the scene of intensive activity in the form of pits and postholes. The extent of these enclosures is unknown as they lie partly outside the area of excavation, but they are at least 20m long and are relatively large being around 1.7m wide by 0.7m deep. In size

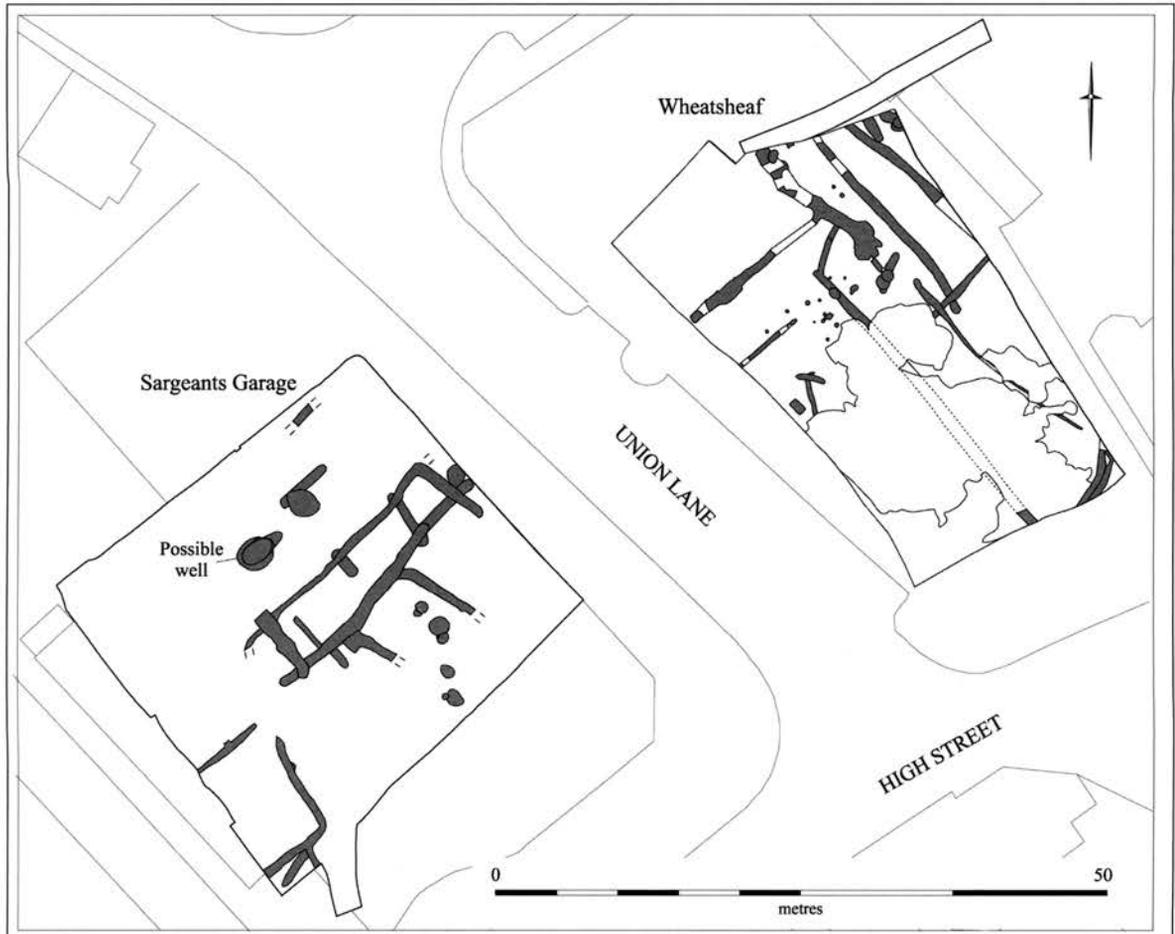


Figure 4. Phase 3 (late 11th–12th centuries) features at Sargeants Garage and the Wheatsheaf. Based on the Ordnance Survey 1:2500 map. With the permission of the controller of Her Majesty's Stationery Office © Crown Copyright. University of Cambridge Licence No. AL 550833

and nature they resemble more the Late Saxon ditches at the Yorkshire Grey and the Wheatsheaf rather than the contemporary ditches at Sargeants Garage and the Wheatsheaf. There was no evidence of activity near to the High Street. If the enclosed areas fronted onto either Green End or Scotland Road they would have been around 100m long, this seems unlikely and suggests that both the Late Saxon and late 11th to 12th century enclosures were not related to these.

Evidence from Phase 3 at Sargeants Garage and the Wheatsheaf is suggestive of a planned development rather than organic incremental growth. It seems that a number of property plots were laid out at the same time with an overall design in mind. This represents a northwestwards expansion along Union Lane from the area believed to constitute the Saxon core of Chesterton. The evidence from the Yorkshire Grey suggests that activity there continued to be based on the previous focus and that this was independent of the planned settlement. The planned settlement may well have been aligned on a southeast to northwest axis centred upon Union Lane, rather than the later dominant southwest to northeast axis along the High Street.

Phase 4: 13th and 14th centuries (Figures 5-6)

The ditch systems at Sargeants Garage and the Wheatsheaf lost their importance during the 13th century and became silted up. Activity mainly relates to a number of pits that appear to occur towards the rear of properties and close to boundaries, probably demarcated by some means that has not survived, such as gravel paths or fences. Some of these pits cut the earlier ditches but it appears that the overall layout of properties was maintained. At the Wheatsheaf, although individual features can not be confidently identified, the main area of activity appears to be a general zone of intercutting pits in the southern part of the site, relating to properties fronting onto the High Street. Further north there are a few features that appear to respect the earlier ditch system. The earlier ditch system was also abandoned at Chesterton Hospital, but some activity continued.

At the Yorkshire Grey there is the first evidence of activity on the area next to the High Street, with a large ditch composed of multiple recuts running parallel to the road. Behind this were a large number of postholes suggestive of structures of some kind, with at least two phases. Away from the High Street

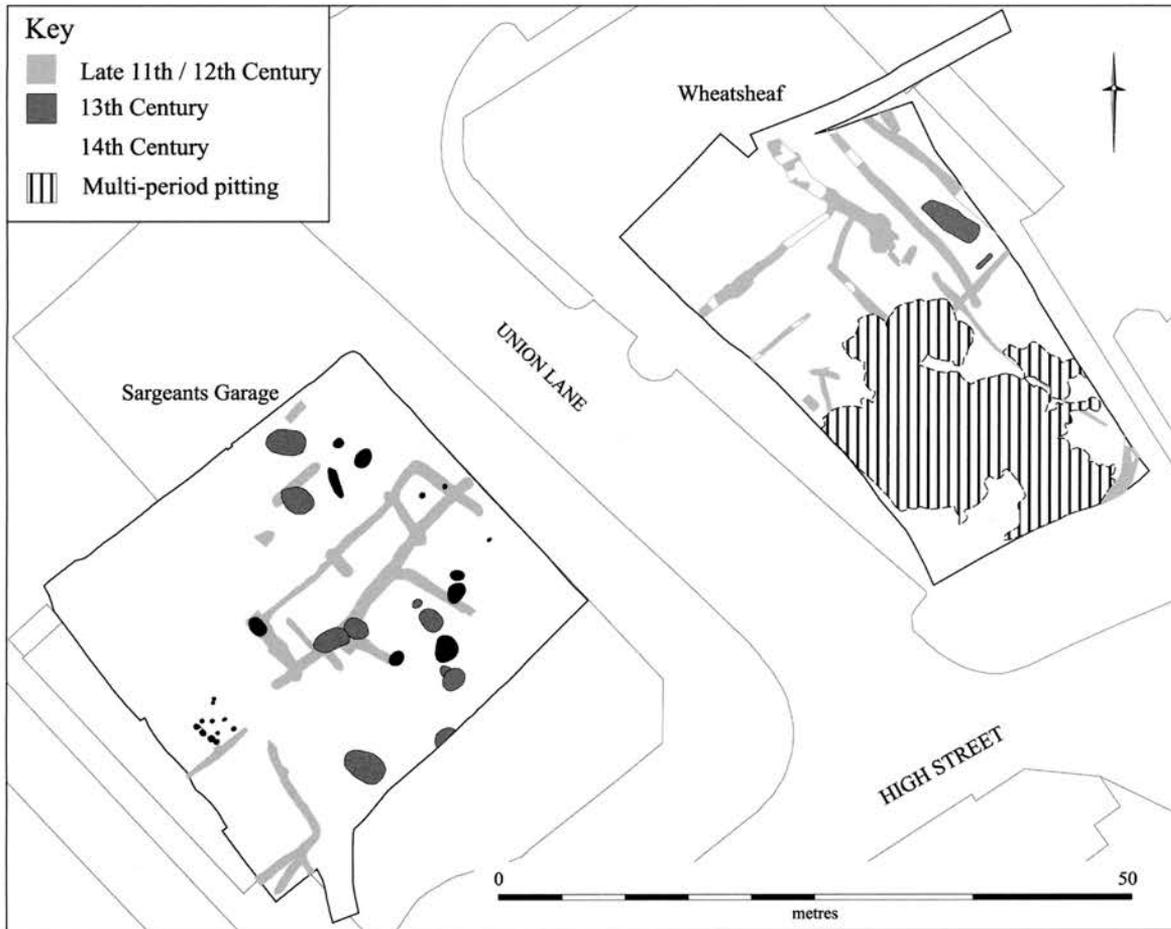


Figure 5. Phase 4 (13th–14th centuries) features at Sargeants Garage and the Wheatsheaf.

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the earlier focus in the northeast part of the site has disappeared, to be replaced by a dispersed scatter of pits and other features, which probably relate to properties fronting onto the High Street.

In the 14th century pit digging continues in broadly the same areas at Sargeants Garage and the Wheatsheaf, suggesting a general continuity, although apparently on a reduced scale. A group of postholes in the western part of Sargeants Garage suggest a flimsy structure of some kind behind the rear boundary of a property fronting onto the High Street. At the Yorkshire Grey activity appears to cease almost entirely, with the exception of a single large pit. It may also be at this time that activity ceases at Chesterton Hospital.

At Sargeants Garage and the Wheatsheaf the 13th century appears to represent a general continuity of occupation from the earlier period, albeit with a change in the method of demarcating property boundaries and some minor shifts in alignment. There is a strong impression that most activity relates to properties fronting onto the High Street rather than Union Lane and it also appears that overall there is more activity than in the preceding phase. At the

Yorkshire Grey the 13th century sees a major change with the High Street becoming the focus of activity and it appears likely that this was the period when the general medieval plan of the village as it survives in the present street layout was achieved. Taken together it appears that the 13th century witnessed a shift from the earlier planned settlement on a southeast to northwest axis centred upon Union Lane to a southwest to northeast axis along the High Street parallel to the River Cam, a shift observed at other villages in South Cambridgeshire (Taylor 1997; 1998). A shift from ditches to other forms of property demarcation has been identified at other settlements such as Ely during the 13th and 14th centuries (Alexander *et al* forthcoming) so the change at Chesterton may be part of a more general phenomenon, rather than reflecting a specific abandonment of the planned settlement layout at Chesterton. A change from ditches to gravel paths would have provided unobstructed access and suggests that boundaries become notional rather than physical (cf Hall and Hunter-Mann 2001, 807–09). The overall levels of 13th century activity are not particularly high, with less than one pit per decade per property plot. As these pits frequently either



Figure 6. Phases 4 (13th–14th centuries) and 5 (15th–16th centuries) features at the Yorkshire Grey.

intercut or cut earlier features they can not have been quarry pits. They did not produce particularly large finds assemblages so they are not for the disposal of material culture, however given the large amounts of organic waste produced by medieval households (cf Brothwell 1982) it is likely that they were for the disposal of this.

The 14th century sees continuity at Sargeants Garage and the Wheatsheaf, although on a reduced scale, and the areas of the Yorkshire Grey and Chesterton Hospital appear to have been almost abandoned. This decline presumably relates to the Black Death, although the increasing importance of Cambridge may also have played a role.

Phase 5: 15th and 16th centuries (Figures 6–7)

In the 15th century activity at Sargeants Garage and the Wheatsheaf continues broadly as before, although at an increased intensity compared to the 14th century, with the digging of pits in the same areas. A new focus of activity appears at Sargeants Garage in the south-west part of the site on what appears to be a property boundary with a large pit whose depth suggests it was a well. This was backfilled fairly rapidly to be replaced by a more substantial well (Fig. 8). A large 5m diameter circular hole was dug down nearly 2m to the underlying clay to provide space for the construction of the well structure. The sides of this hole were revetted with reused house timbers, suggesting that its construction might be linked to changes in the building at the front of the property. The timbers were generally

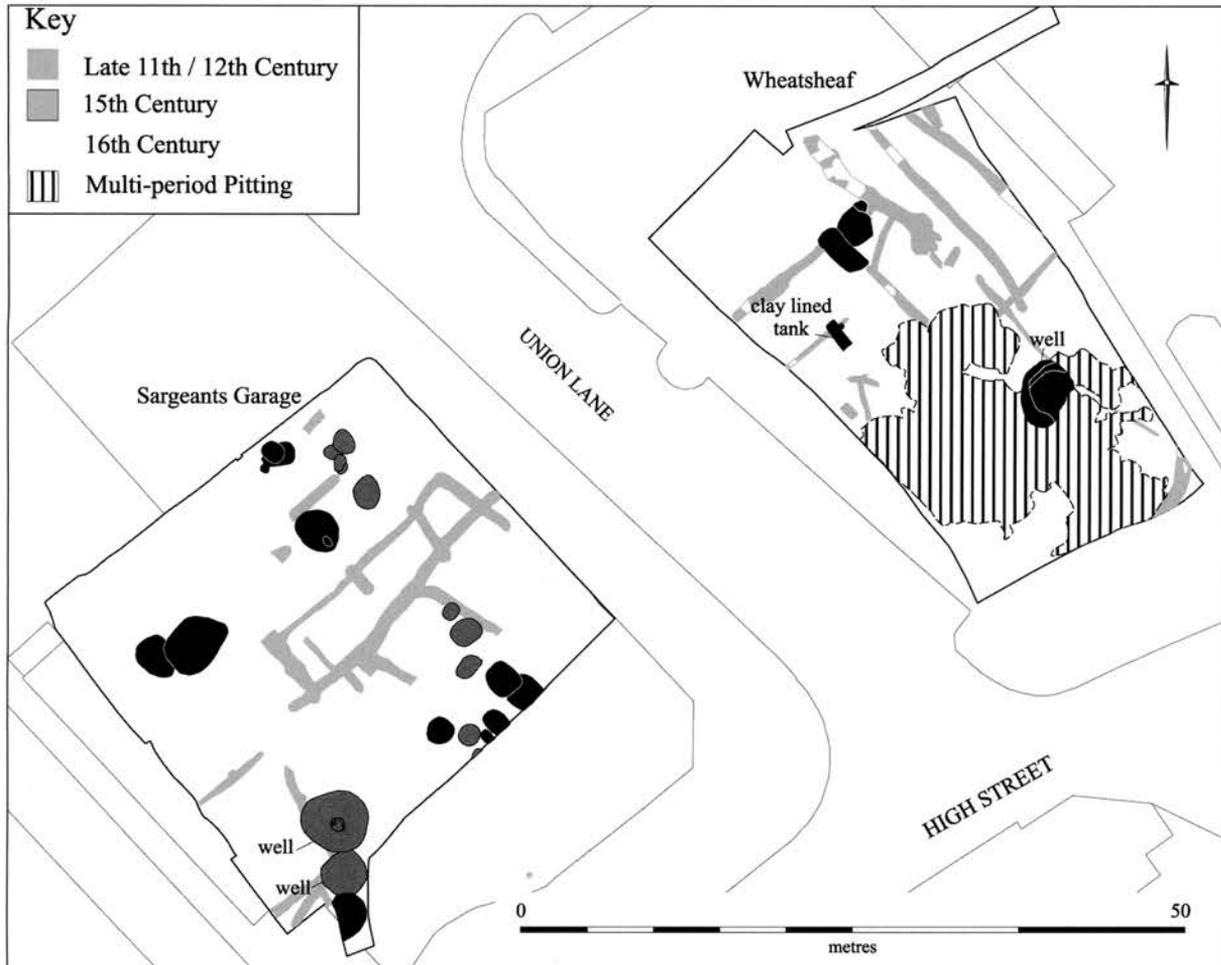


Figure 7. Phase 5 (15th–16th centuries) features at Sargeants Garage and the Wheatsheaf.

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lacking in diagnostic features apart from one joint which might be 13th or early 14th century. A course of sturdy undressed clunch blocks and a square timber frame served as a level and stable platform upon which the well structure of curving blocks of dressed and moulded white clunch was built, creating an even circular shaft around 1m in diameter. The base of the area between the structure and the sides of the hole was packed with clunch rubble and then backfilled. There was a 15th century 'Ave Maria Gra(c)ia' jeton in this backfill and the primary clay silts at the base of the well contained a silver groat of Henry V or VI, c. 1422–30 (Annulet issue from the London mint) (Fig. 9). At the Yorkshire Grey there continues to be little evidence of activity.

At Sargeants Garage the 16th century sees continued digging of pits in the same areas as the 15th century at about the same level of intensity, with the addition of some large gravel pits in the northwest of the area, just to the north of the properties fronting onto the High Street. The 15th century well was deliberately filled with clayey silt, above this were lumps of clunch from the well structure and brick

and tile, possibly from the well superstructure or a demolished building. To the southwest of this a gravel extraction pit was dug on the alignment of the wells. The 16th century pits contained more artefacts than the earlier pits, suggesting either increased levels of activity or material wealth. The pits closest to the High Street contained the highest quantities of material, supporting the idea that this boundary related to a property fronting onto that street. Three jetons were found, one of Hans Krauwinkel II, 1580–1635, a 16th century Nuremberg rose/orb and a Nuremberg orb of 1500–1580s. At the Wheatsheaf a number of inter-cutting pits were dug in the northern part of the site, suggesting increased activity on at least one property fronting onto Union Lane. These appear to be located in the rear corner of a property as they lie within an area delimited by the earlier ditches. Probably in the same plot is a pit containing a pair of clay lined tanks, these were presumably for some small-scale industrial process that required water, as the evidence of the clay lining is supported by the presence of bones of amphibians, rodents and birds that became trapped and died in the water. To the south of this it is likely

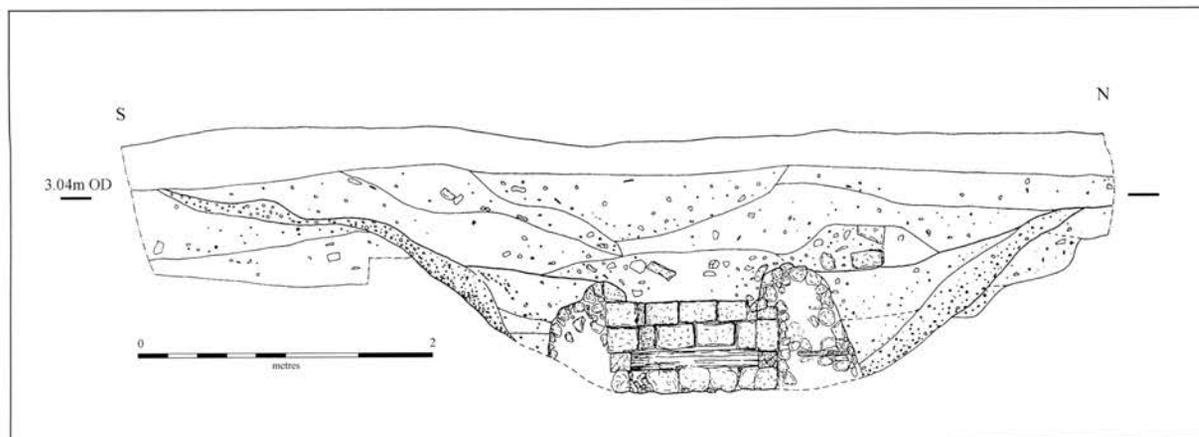


Figure 8. Section of 15th century well at Sargeants Garage.

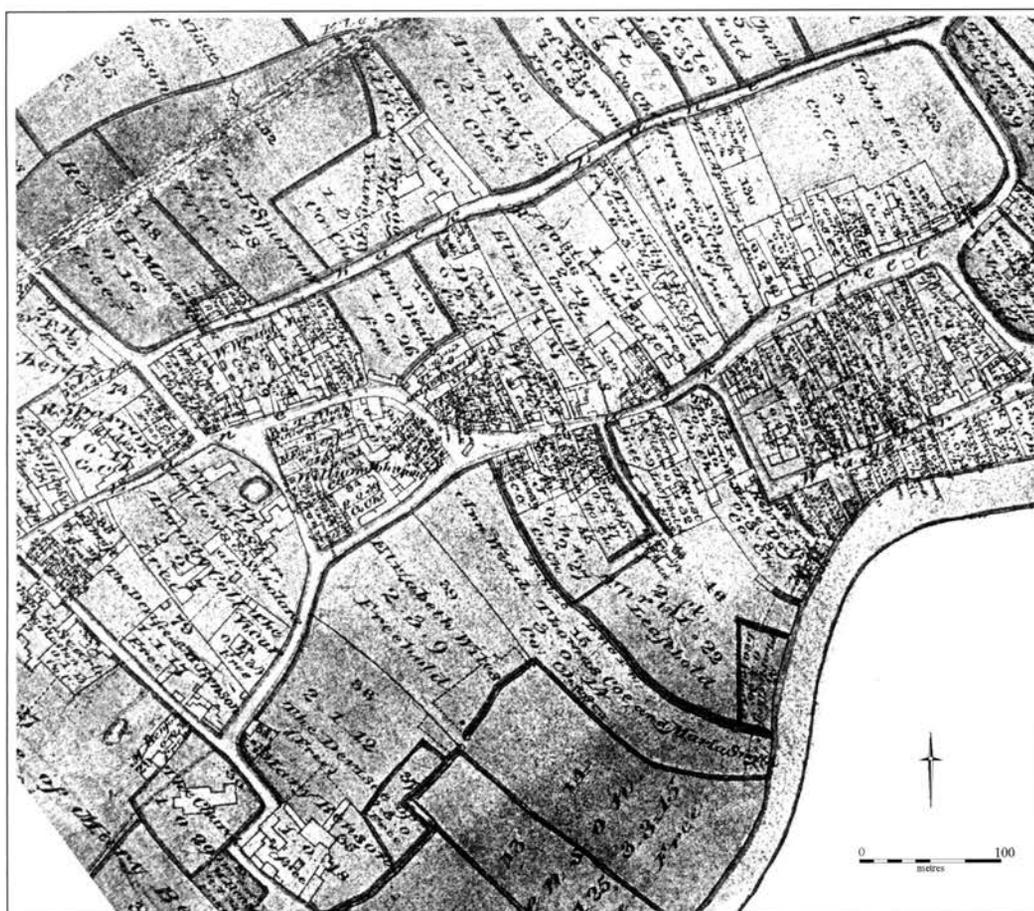


Figure 9. Part of draft inclosure plan of 1838 reoriented to north showing village before modern development, compare to figure 1 (CRO: Q/Rdc 59).

that the digging of pits continued, the only specific feature that can be identified is a well with a square shaft lined with reused blocks of faced Barnack stone set in thick blue clay. This is located about 20m from the High Street, approximately the same distance as the wells at Sargeants Garage. At the Yorkshire Grey a gravel extraction pit or well and a smaller pit indicate limited activity.

The 15th and 16th centuries generally represent continuity at all the sites, with an increase from the 14th century level of activity. Levels of pit digging appears to be broadly similar to the 13th century and are still less than one pit per decade per property plot. The 15th century well on the Sargeants Garage site suggests an increase in the wealth and prosperity of at least one property and the clay-lined tanks at the Wheatsheaf suggest the beginnings of small-scale industrial activity.

Phase 6: 17th century and later

From the 17th century onwards all three sites were the scene of relatively intense activity as Chesterton expanded and eventually became a suburb of Cambridge. Activity consisted mainly of the construction of substantial buildings of various types, including almshouses and public houses. These were usually adjacent to the street frontages and have generally removed all but the deepest earlier features from these areas. Away from the street frontages most of the areas were open spaces with garden soils, which were the scene of frequent digging of substantial features such as pits and wells. Details of the properties, buildings and their owners are provided by the draft inclosure plan of 1838 (CRO: Q/Rdc 59) (Figure 9) and tithe map of 1839–40 (CRO: R60/24/4/2). Although most of the actual structures depicted on the inclosure plan and tithe map lay outside the areas of excavation the broad patterns of post-medieval activity broadly correspond to the pattern revealed by the plan and map.

Two large blocks of oolitic limestone found at the Yorkshire Grey are lengths of the stringcourse of a large building of the 15th century or later. Although these come from late contexts they suggest the presence of an impressive structure in the vicinity.

Discussion

Excavations in Chesterton have revealed a complex pattern of development throughout the Late Saxon and medieval periods. There is evidence for multiple Late Saxon foci of activity. The main focus may have been a settlement around St Andrew's founded in the 8th century when a royal vill originally incorporating Cambridge was divided by the formation of the burh although this remains speculative. The evidence from the Wheatsheaf and the Yorkshire Grey, however, suggest that there were other enclosed settlements in the area. In the Post-Conquest period the settlement expanded markedly northwards along Union Lane with a substantial area of land being laid out into property

plots demarcated by ditches. This development displays none of the signs that might be expected of an organic development, but instead appears to be a relatively large-scale planned and deliberate expansion. Probably occurring in the late 11th or early 12th century this could conceivably be a royal development or related to Saher de Quincy but it appears more likely that it was an initiative of either Barnwell Priory or the abbey of St Andrew. This system of intensive land division remained in place for some time and went through several modifications. This planned development is typical of the Post-Conquest period fitting in with general Norman patterns of expansion and control (Aston 1992, 71–81). It appears that the dominant axis was a southeast to northwest line along Union Lane that was probably based upon a routeway relating to a ferry crossing over the Cam. This could be part of the same routeway recently identified at Church End, Cherry Hinton, which was in existence by the Middle Saxon period and may have a Roman origin (Mortimer forthcoming). Further east the area of the High Street was not part of this development and activity continued instead around a pre-existing focus at the Yorkshire Grey.

By the 13th century the ditch system had been largely abandoned although occupation continued and the overall system of earlier property boundaries appears to have had a continuing influence throughout the medieval period. The impression is of a more sparsely occupied and less ordered settlement than was originally envisaged, although the amount of activity overall increased and the settlement had expanded northeastwards along the length of the High Street. Much of the change appears to be due to a more general shift in the way that properties were demarcated from ditches to less archaeologically visible systems that can only be inferred from the distribution of related pits. The 13th century may have seen a shift in the main settlement axis, with the area of the Yorkshire Grey becoming part of Chesterton proper for the first time. This marks the establishment of the plan of Chesterton that can be recognised in later cartographic sources and suggests a shift in emphasis from its location from a road-side to a riverside settlement. The reasons for this shift are unclear, but may lie in the growing importance of Cambridge, as the Cam provided the easiest connection between Chesterton and Cambridge and was a major trade and communications route to King's Lynn. Cambridge charters of 1201 and 1207 and the migration of scholars from Oxford in 1209 all suggest that the late 12th and early 13th centuries were a crucial period of growth for Cambridge, which may have had an impact on Chesterton. The 13th century appears to represent an overall expansion in the area of the settlement.

The 14th century sees a decline in activity and the settlement shrunk, as there is little evidence for activity at the Yorkshire Grey or Chesterton Hospital. The 15th century sees a partial recovery and increase in levels of activity and there is the first evidence for properties of some grandeur. The well at Sargeants Garage with its dressed and moulded clunch structure indicates

a considerable degree of wealth, whilst the building timbers reused as revetting suggest that its construction may be linked to a major change in the building at the front of the property. This was also the only property to produce 15th and 16th century coins and jetons (Fig. 10) and it is surely not coincidental that the groat and one of the jetons were directly associated with the well. The date of this development appear to be rather late to be linked to the abbey of St Andrew, whose interest in Chesterton was fading by the 15th century, it may instead relate to either one of the individuals to whom St Andrew's underlet its holdings in the early 15th century, or to King's Hall, which took over in the 1440s. Activity continues to increase in the 16th century and there is some evidence for the beginnings of small-scale industrial activities. The degree of later truncation and location of the excavation areas makes precise reconstruction of individual properties almost impossible. The best represented example at Sargeants Garage suggests that medieval properties fronting onto the High Street were around 12m wide and 40m long.

One crucial question is the nature of the relationship between Chesterton and Cambridge. Chesterton's 13th century shift in axis and the overall lack of growth between the 13th and 16th centuries might relate to the growing power of Cambridge. The fact that Chesterton was largely under the control of Barnwell Priory and the abbey of St Andrew suggests that its links to Cambridge may have been less than otherwise anticipated. Its closest links were probably south across the river to Barnwell Priory and Stourbridge

Fair rather than with Cambridge itself. There are suggestions that ceramics reached the site via Cambridge rather than directly, with finewares from the north bypassing it but material from the south being available. The faunal and environmental evidence suggest normal domestic material, indicating that Chesterton did not have a particular relationship with Cambridge with regard to supplying agricultural products.

Conclusion

These excavations have established the broad picture of the origins and early development of Chesterton. From as yet poorly understood Middle and Late Saxon polyfocal origins around multiple foci it grew in the late 11th and 12th centuries as a planned settlement. In the 13th century the method of property demarcation changes and the dominant axis changes, but the settlement expands with increased levels of activity and expansion eastwards along the High Street. The 14th century sees a decline and contraction with a partial recovery in the 15th and 16th centuries in the core of the settlement, although it is not until the 17th century that the area at the eastern end of the High Street witnesses much activity and the northern area remains as open fields until the 19th century.

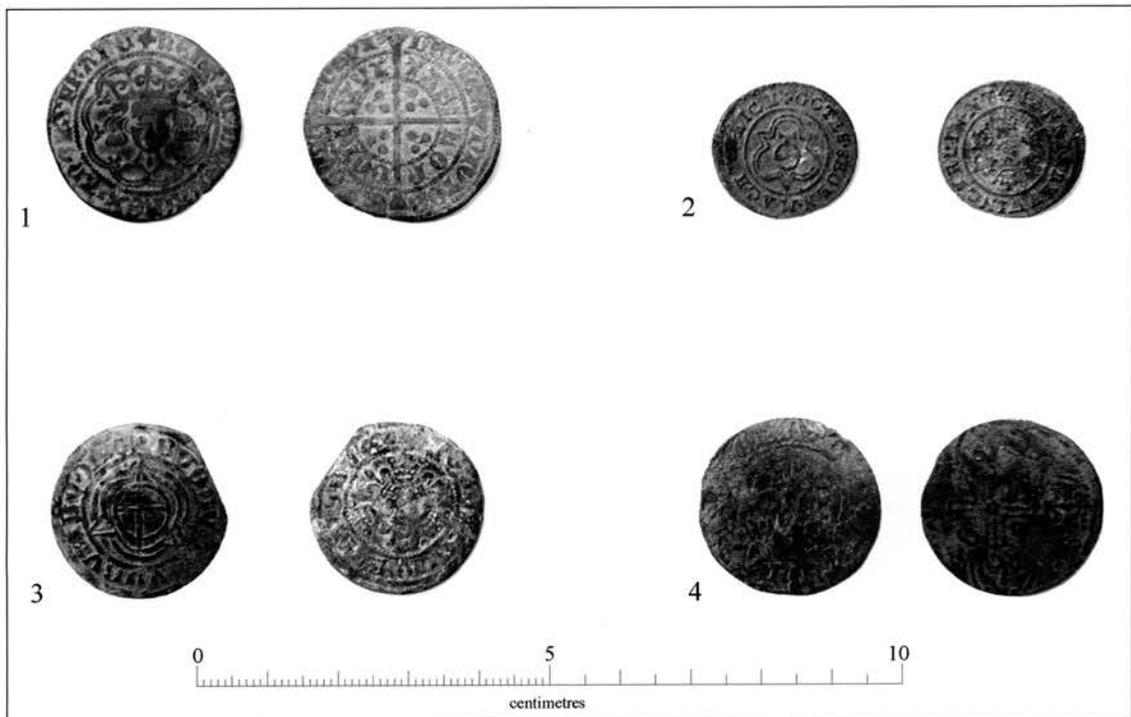


Figure 10: Coin and jetons from Sargeants Garage.
10.1. Silver groat of Henry V or VI, c1422–30
10.2. Jeton of Hans Krauwinkel II, 1580–1635

10.3. Nuremberg orb jeton, 1500–1580s
10.4. 15th century 'Ave Maria Gra(c)ia' jeton

Specialist reports

The main types of medieval material recovered were pottery, metalwork and animal bone, plus environmental evidence from samples. Only limited assemblages of other materials were recovered. There were noticeably low quantities of glass, the only interesting piece being some painted window glass from a Phase 4 context at the Wheatsheaf, worked stone (quern fragments) and some worked bone, including a virtually complete cigar-shaped pin beater used in textile manufacture from a Phase 5 context at Sargeants Garage.

Medieval pottery (Figure 11 and Table 1)

David Hall

Five sites at Chesterton produced 4445 sherds of pottery weighing 61.769kg. The majority came from Sargeants Garage, the Wheatsheaf and the Yorkshire Grey with smaller amounts from Chesterton Hospital and the Simoco Works.

Sargeants Garage

The excavation assemblage consists of 1847 sherds weighing 26kg, ranging in date from Late Saxon period to the 19th century. Of the 1047 sherds of pre-18th century date, Saxon and Saxo-Norman material accounted for 14% (148 sherds) of the total, other medieval wares 56% (584) and 16th–17th century wares 30% (315 sherds). The evaluation produced an additional 384 sherds weighing 7.8kg. One Saxon sherd occurred with a Thetford sherd and may indicate a 9th century date while others were also associated with Thetford sherds and one attributed to the 12th century. The Saxo-Norman wares were in the ratio of St Neots 27%, Thetford 72% and Stamford <1%.

Later medieval fine wares came from Grimston (Norfolk) (Jennings 1981; Leah 1994), Heddingham and Colchester (Essex) and Hertfordshire plus some material from Lyveden (Northants) found during the evaluation. A sgraffito sherd was found (Bushnell and Hurst 1953) and a sherd of white fabric with a blotchy green glaze is probably developed Stamford (Lincs) of the 14th century (Kilmurray 1980). The most abundant materials were Ely wares and grey and red fabrics of the 15th century. Early post-medieval fabrics were mainly Glazed Red Earthenwares of likely Ely provenance. Small amounts of 16th century Ely Babylon ware and Ely fine ware occurred. A few 17th century German stonewares from Frechen as well as probable Dutch Glazed Red Earthenwares and unsourced tin-glazed wares were recovered. The later sherds include English stonewares and fabrics from Staffordshire potteries. The site produced some independent dating evidence. A groat dated *c.* 1422–30 was found with 14 sherds of Essex red fabrics, a few with a grey reduced outside surface and one sherd with a thin patchy clear glaze. All sherds probably came from the same jug, that would be considered to be a 15th century fabric. A 15th century jeton was found with Ely fabric sherds, probably from the same jug, that contained at least three horizontal bands of incised decoration.

Wheatsheaf

The main excavation yielded 820 sherds, weighing 14.9kg with an additional 44 sherds from the evaluation. One pos-

sible Middle Saxon sherd occurred, but as it was mixed with St Neots and Ely fabrics, the context date would not be earlier than 12th century. The bulk of the pottery recovered, 60% (339 sherds), was standard Saxo-Norman wares, which occurred in the ratio St Neots 43%, Thetford 55% and Stamford 2%. Some sherds are probably Pre-Conquest, as adjudged by the small, early, vessel forms. All three fabrics were found together in several contexts. St Neots wares were found in many contexts, including a small bowl rim and a large hammerhead bowl rim. Thetford ware sherds from large storage jars were found some with decoration of thumbled applied strips. Jar rims occurred in several contexts and rouletted decoration was found on some sherds.

Other medieval pottery only accounted for 13% (71 sherds) of the total, the site having a paucity of material for the 13 to 15th centuries. Chief among them were coarse gritty wares that were produced at Ely (Hall forthcoming) from the 12th to the 15th centuries (30 sherds, 5%), some of which are likely to date from the 12th to 13th centuries. Among the remaining medieval sherds were two from Grimston (Norfolk), a single 13th century sherd of Lyveden (Northants) fabric and four 13th century fine wares from Hertfordshire. Fine red wares from Essex, mainly from Heddingham and Colchester (Huggins 1972; Cotter 2000), amounted to 3% (15 sherds). Three 15th century sherds from Bourne (Lincs), were found.

The other main component of the assemblage dated from the 16th century, being 27% of the total (153 sherds). Most common were plain red and Glazed Red Earthenware sherds (18%), most probably made at the Ely Broad Street kilns. Babylon iron glazed tygs accounted for 3% and two sherds of green-glazed, off-white fine ware from Ely were recovered. There were a few Staffordshire wares of the 17th century and seven sherds of German stonewares from Raeren and Frechen (Hurst *et al* 1986), dating the early 16th century were identified.

Yorkshire Grey

The pottery from the Yorkshire Grey yielded 1,280 post-Roman sherds from 142 contexts. Late Post-Medieval sherds of the 18th and 19th centuries amounted to 49% (498 sherds). In spite of this high percentage the late sherds were not an important component of the collection, a single context, contained 232 sherds or 11% of the total. A more useful analysis is achieved by disregarding the post 17th century fabrics, there being 787 Medieval and early post-medieval sherds.

Saxon and medieval sherds accounted for 62% (495 sherds) of the total, other medieval wares 19% (151) and 16th–17th century wares 18% (141 sherds). There were seven Saxon sherds (1%) of which three were Ipswich type ware (Hurst 1959) and the remainder were handmade dark, gritty sherds, many with igneous inclusions.

Most of the contexts produced Saxo-Norman sherds, St Neots (256 sherds, 33%), Thetford type wares (224, 29%), with eight Stamford sherds (1%). The percentages of each type out of the total of 488 Saxo-Norman sherds is 52%, 46% and 2%. One Stamford sherd was the lip of a jug. Some Thetford vessels were decorated, eg a body sherd had four horizontal rows of single triangular rouletting spaced 1cm apart; an inturned jar rim had rouletted decoration. Wavy decoration occurred on a body sherd and larger vessels had typical thumbing decoration. A Thetford jug handle was recovered. Some of the vessels (jars and bowls) were very small, consistent with a 10th or 11th century date. The Thetford and St Neots sherds associated with an Ipswich

Opposite: Figure 11. Pottery.

- 11.1. Thetford type ware, bowl with rouletted decoration. Hard grey fabric, darkened on the outer surface
- 11.2. Ely ware jar, buff with a few white quartzose grits. Coarse fabric containing sand
- 11.3. Ely ware, thumbled jug rim, same fabric as 11.2, darkened on the outside
- 11.4. Jug rim and strap handle with slight rib under the rim. Probably Ely fabric; pink-buff, slightly darkened surface
- 11.5. Jug with strap handle in buff grey fabric containing calcareous grits, source unknown
- 11.6. Dark greyware jar in sandy fabric. Similar to west Norfolk fabrics, 14th century?
- 11.7. Dark grey bowl in coarse sandy fabric with flanged rim, 15th century
- 11.8. Glazed red earthenware bowl, darkened on the outside, thin patchy clear glaze internally. Late 15th century, possibly from Ely Broad Street kilns
- 11.9. Glazed red earthenware basting dish; red orange fabric, thin patchy internal glaze. A few white grits, probably Ely Broad Street early kiln, late 15th century
- 11.10. Glazed red earthenware small pancheon with slightly green clear glaze; 16th century
- 11.11. Glazed red earthenware small pancheon rim with white slip decoration, dense internal glaze. Slip decoration has not been discovered at the Ely kilns
- 11.12. Glazed red earthenware pitcher with strap handle, red orange fabric with glaze on the body; 16th century
- 11.13. Complete tin glaze plain arborello, 16th–17th century
- 11.14–17. Tin glazes from flatwares with various types of decoration

Ware sherd may all be as early as the 9th century.

Two Phase 3 assemblages were of particular interest. The earlier ditch produced one handmade Saxon sherd, one Ipswich Ware, 29 Thetford, 40 St Neots, two 12th century sandy fabrics and one 16th century Glazed Red Earthenware of Ely type (probably intrusive). In view of the range of fabric, a date is difficult to assign. The small size of the St Neots ware jars is an indicator of an early Pre-Conquest date. As a whole, therefore, the collection would seem to be 10th to 11th century, making the assumption that the earlier are residual. The later ditch contained 11 Thetford and 29 St Neots sherds and nothing else. There were standard forms of bowls and jars and none of them particularly small. A 12th century date is therefore likely.

Sandy 12th and 13th century fabrics amounted to 4% (29 sherds), and there were 151 (12%) other medieval sherds. Among them were 19 medieval Ely ware pieces and six Grimston (Norfolk) sherds in fabrics likely to be 14th century, 10 fine red Essex types, and 29 greywares of 15th century fabric, one with a flanged rim. Among the Essex wares were Hedingham type fabrics, other fabrics present in small quantity were a single sherd each of Hertfordshire and Surrey fine ware, of likely 13th century date. Ely type wares (19 sherds) included a bowl rim with typical stabbed rim decoration.

Of the early post-medieval sherds, Glazed Red Earthenware occurred in quantity (135 sherds, 17%), mostly of the 16th or 17th centuries. Of particular interest were early red fabrics similar to material from Ely assigned to the late 15th century (a 'pre-Babylon phase', Hall in Alexander *et al* forthcoming). Other 16th or 17th century Glazed Red Earthenware sherds probably also have an Ely provenance, from the Broad Street area. Sherds of Babylon fabric were found along with a yellow slip decorated similar fabric that has not so far been proved to have an Ely origin. Only six sherds of German stoneware were found; from Langewehe (15th century), Frechen and Raeren (both 16th century). There was some red ware that may be Dutch rather than from Essex. A single sherd of Bourne (Lincs) type, 15th century, also occurred (Healey 1969). Sherds of 18th to 19th century date produced the usual wide range of fabrics. Of main interest was the large early 18th century collection (with a few earlier residual sherds) from a single context. Dating is given by the overlap of German and English salt glazes, and very fine quality delft, some with polychrome decoration.

Other sites

The medieval material from Chesterton Hospital dated from the 12th to 14th centuries. The earliest sherd was an upright rim from a St Neots Ware bowl. Thetford sherds were present, several from Ely and one from Grimston (Norfolk). The Simoco Works site contained only five medieval sherds. The earliest was a thin sandy dark sherd of 13th century date, three Ely fabrics of 14th century date were present and the fifth sherd was burnt, probably 15th century. The remaining 10 sherds included 16–17th century Glazed Red Earthenwares, one a skillet handle, and later material.

Summary

As a whole the Chesterton pottery shows the range used by a rural community lying close to Cambridge and sited near the River Cam, with traffic connecting to the port of King's Lynn. As might be expected it reflects what has been found at the county town. A few sherds of Ipswich and hand-made gritty wares point to Middle Saxon origins for the settlement, and large groups of Saxo-Norman material, some probably Pre-Conquest, attest to continuous occupation as the vill developed. The Saxo-Norman wares were St Neots, Thetford and Stamford, although the proportions vary. St Neots and Thetford type wares are the commonest and Stamford the least frequently found. This is the same pattern as found at Cambridge (Edwards and Hall 1997, 156), Ely (Mortimer *et al* forthcoming) and Cottenham (Hall in Mortimer 2000), where Thetford sherds are more frequently encountered than farther west and Stamford sherds form a low proportion. The markedly lower proportion of Thetford and corresponding higher proportion of St Neots at Sargeants Garage may reflect a temporal pattern, as access to Thetford ware may be earlier in this area (cf Hall in Mortimer 2000, 24 and 27) and there is no Phase 2 activity at Sargeants Garage.

The Saxo-Norman wares were superseded by sandy wares and gritty wares from Ely. Apart from Ely coarse fabrics, very few wares seem to have come via the fenland waterways. Grimston was only found in small quantities and there was no material from

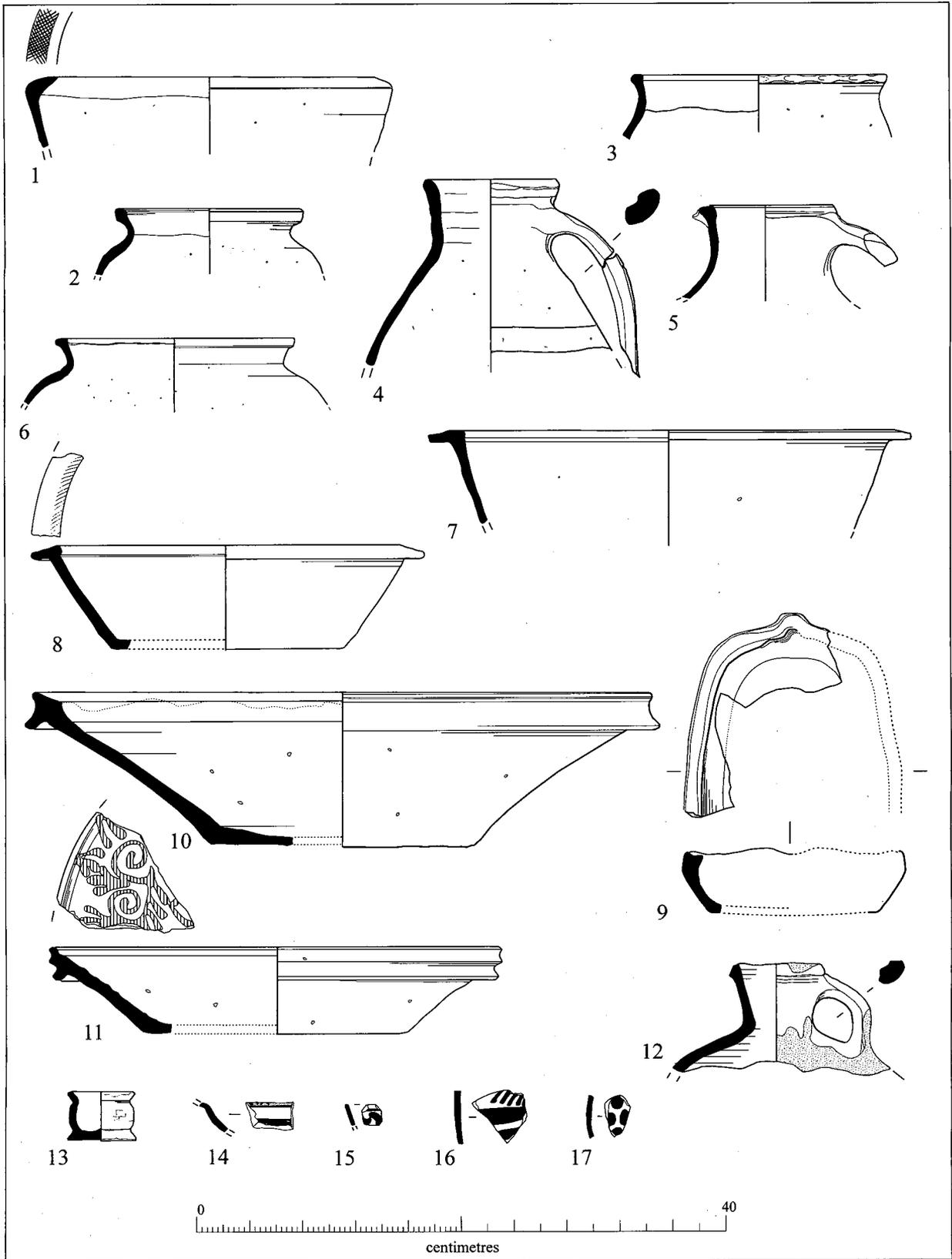


Table 1. Fabric profiles of main excavations (does not include evaluations and excludes 18th century and later material).

	Saxon	Thetford	St Neots	Stamford	12C sandy	13C	Ely	Grimston	Grey 15C	Essex red	Other red	Medieval plain	Stoneware	Glazed Red Earthenware	Babylon
Sargeants Garage	4 0.4%	39 3.7%	104 9.9%	1 0.1%	19 1.8%	0	254 24.3%	1 0.1%	235 22.4%	49 4.7%	26 2.5%	0	4 0.4%	311 29.7%	0
Wheatsheaf	1 0.2%	185 33.0%	147 26.1%	7 1.2%	0	14 2.5%	30 5.3%	2 0.4%	0	15 2.7%	10 1.8%	24 4.3%	8 1.4%	102 18.1%	19 3.4%
Yorkshire Grey	7 0.9%	224 29.0%	256 32.5%	8 1.0%	29 3.7%	0	19 2.0%	6 0.8%	29 3.7%	10 1.3%	58 7.4%	0	6 0.8%	135 17.2%	0

Yorkshire, which is a feature at Ely (Hall forthcoming) and King's Lynn (Clarke and Carter 1977). In contrast fine wares from Essex that are abundant in Cambridge and not common at Ely were found. Fine wares, apart from those from Essex, are limited to a few sherds from Lyveden (Northants), Surrey and Bourne (Lincs). It seems that fine wares from the north bypassed Chesterton and went straight to Cambridge, but pottery readily available in Cambridge from the south did reach Chesterton. The early post-medieval assemblage was dominated by products from the Ely Broad Street kilns, which may have arrived via Cambridge as they are common there (eg Hall in Hall 2002) and small quantities of German stonewares were present.

The three main sites all produced assemblages that had a predominance of Saxo-Norman, 16th century and 19th century material, with less from the high Middle Ages. Sargeants Garage produced the most medieval sherds and these were dominated by Ely fabrics in the earlier part of the period being replaced by Essex fabrics in the 15th century. The low amounts of 13th and 14th century material from the sites is likely to be an accident of preservation rather than indicating that there was any reduction in activity at Chesterton; the 15th century, a period when many villages suffered decline, is well represented.

Metalwork

The assemblage of medieval metalwork is relatively small, consisting mainly of iron plus some copper-alloy and a few unidentifiable pieces of lead. The majority of iron objects consisted of nails or unidentifiable fragments. Around twenty other items were found, mainly fragments of sheet/plate, small flat bars and knife blades from Phases 3 to 5, with the preponderance from Phase 5. The only other items were a hook, a fragment of a pair of shears, a notched ward plate from a lock and a key from Phase 5 deposits at Sargeants Garage. A hollow iron tube from a post-medieval context at the Wheatsheaf may be a cylindrical barrel padlock.

The earliest copper-alloy find is a relief-decorated

strap-end or chape (Figure 12) from a 13th century context at the Yorkshire Grey. It is 44mm long, 16mm wide and 5mm deep, with a flat top and pointed base. It is made of cast openwork with two flanged plates soldered to leave an open centre, presumably for the insertion of a strap. The centre has a symmetrical plant pattern with lobe-ended terminals growing from a central stem. The apex has two projections, perhaps intended to indicate an animal head, but surface corrosion has made this difficult to positively identify. It was found in the upper fill of a large 13th century pit at the northwestern end of the site. Although this feature contained some sherds of 13th century pottery (16%, Hertfordshire and Surrey finewares plus shelly ware) the majority of the pottery was Saxo-Norman Thetford ware and St Neots ware (82%), plus some Ipswich ware (2%). This feature had truncated the Late Saxon spread of material in this area and it appears that most of the material in the pit derived from this, rather than being of contemporary origin. The date range of the Saxo-Norman pottery is *c.* 850–1150 (Hurst 1956; 1957) and some of the

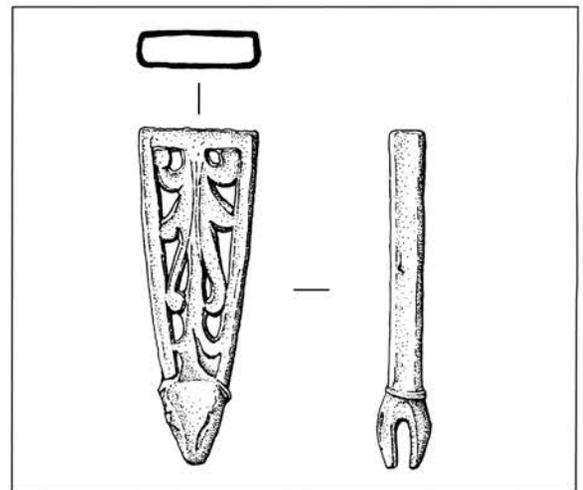


Figure 12. Relief-decorated strap-end or chape.

vessels were very small, consistent with a 10th or 11th century date. Although strap-ends are the commonest surviving forms of Late Saxon ornamental metalwork, including a number of casual finds from the southern fen edge (cf Graham-Campbell 1987; see also West 1998, 320–22 for Suffolk), this is an unusual piece. The only close parallel is a remarkably similar piece from Cathedral Green, Winchester (Hinton 1990, 500, fig. 125 and plate XLIV.a). This piece was found in a 14th century context, but assigned a 10th or 11th century date based mainly upon the plant decorations similarities to manuscript illustrations (cf Kendrick 1938). The find from the Yorkshire Grey although also apparently in a residual context provides support for a 10th or 11th century date.

The only other copper-alloy finds were from Phase 5 deposits at Sargeants Garage and consist of some offcuts, three pins, a large ring, a sheet object in a decorative, pierced cup-like shape and a possible buckle fragment. Possibly residual items in post-medieval contexts include what may be a decorated spoon handle from the Yorkshire Grey and a decorative fitting reminiscent of a Tudor Rose from a box or piece of furniture from context the Wheatsheaf.

Environmental

Spatially and temporally the sampled features at all the main sites contain a homogenous range of cultivated and wild taxa. The sites all have charred cereal remains, which show that cleaned grain products were commonly present here during the medieval period. Presumably charring occurred associated with the final preparation of the grain. The dominant cereal was free-threshing wheat, probably breadwheat, with some six-row hulled barley, rye and oats. Such an assemblage is characteristic of the medieval period and some of this compositional homogeneity may be due to reworking of charred remains into later contexts. Non-cereal foods, particularly Celtic bean were also present, but may have been less frequently exposed to charring than the cereal grains. Of interest is the apparent continuity in cereal types and associated wild flora during the medieval period. The cereal remains suggest that at all sites similar plants were of economic value, and were utilised in similar ways. In addition, the continuity in wild flora ('weeds' of the cereal crop) suggests that all the sites used grain that had grown on slightly damp, heavy soils that are not present locally, that might have originated from the same area. The lack of chaff, and limited range of mainly grain-sized weed seeds also suggests that cleaned grain is represented charred within the samples. Evidence of cess, dung, or rotting plant remains is provided by the range of mineralised seeds and millipede remains and occasional fish scales in some pits and ditches. The presence of shells of aquatic molluscs in some contexts shows that some pits and ditches were very wet, possibly flooded, at points during their infilling.

Faunal

The animal bone from the three main sites totalled around 3500 pieces, of which the majority came from Phase 6 and much was unidentifiable. As a result of the low number of identifiable bones from earlier contexts few conclusions can be drawn. Saxon contexts produced a small assemblage consisting of cattle, sheep/goat, horse and bird, suggesting waste from either primary or secondary butchery. The medieval assemblages are dominated by sheep/goat and cattle, with horse, pig and bird also present. Phase 4 sees the earliest occurrence of chicken, domestic goose, dog and fish. In Phase 5 cat, woodcock, duck, rabbit and roe deer appear. The assemblages appear to represent primary or secondary butchery and although the evidence is slight it suggests that a mixed economy was being practised, with the possibility of the animals being bred within the catchment area of the site.

Acknowledgements

Work at Sargeants Garage and the Wheatsheaf was undertaken on behalf of McCarthy and Stone (Developments) Ltd whilst the Yorkshire Grey excavations were undertaken on behalf of Laing Homes. Rob Bourne of CgMs Consultants was consultant for all three projects. Thanks are due to all the staff of the Cambridge Archaeological Unit, particularly the project manager Alison Dickens and those who ran the individual evaluations and excavations; Mary Alexander, Nick Armour, Cassian Hall, Duncan Mackay and Paul Masser. Lorraine Higbee studied the faunal remains from Sargeants Garage whilst Andy Clarke studied the Wheatsheaf and Yorkshire Grey material. Rachel Ballantyne studied the environmental remains from the Wheatsheaf and Yorkshire Grey whilst Christopher Stephens studied those from Sargeants Garage. Martin Allen examined the coin and jetons, Quita Mould commented on the chape and Tony Baggs looked at the timbers and structural stonework. The graphics were drawn by Andrew Hall and figure 9 is reproduced with the kind permission of the County Record Office Cambridge, whose staff were most helpful. Richard Mortimer and Alison Dickens made numerous helpful comments on an earlier draft of the text.

Cambridge Antiquarian Society is grateful to McCarthy Stone Ltd and Laing Homes Plc for a grant towards publication of this paper.

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A Late Seventeenth-century Garden at Babraham, Cambridgeshire

Christopher Taylor

This paper re-examines the artificial 'canal' in Babraham Park that carries the diverted water of the River Granta past the Hall and the parish church. It concludes that it is part of an elaborate formal garden created in the late 17th century by a member of the Bennet family.

Introduction

The Linton branch of the River Cam, or Granta, takes a typical meandering course for most of its length from its source on the watershed beyond the county boundary to its junction with the main branch of the Cam at Stapleford. Except at one point. Within Babraham Park, just west of the Hall, the river flows in a ruler-straight course for a distance of 460m. The VCH (1978, 14) describes this section as an 'ornamental canal' and notes that it was already in existence in 1735 when it was recorded by the antiquary William Cole. The purpose of this paper is to attempt to better explain this 'canal' and its associated features.

Setting (Figs 1 and 2)

The River Granta flows north-west across the southern part of Babraham parish towards the south-western end of the village. It passes beneath the main street through a 19th-century brick-arched bridge. Immediately beyond the bridge the river turns north-eastwards through ninety degrees and then, after only 80m, turns through another right angle towards the north-west. It then runs in a long straight course, to form the 'canal', separating the western part of Babraham Park from the gardens around the church and the Hall. The Hall itself lies some 140m north-east of the canal and the parish church is somewhat closer, only 40m away. Beyond the gardens the river turns sharply north and returns to a more natural meandering course.

That this canal is artificial is clear, not only because of its straight alignment but also because of two other pieces of evidence. The first is that the line of the earlier, and presumably original, course of the river still exists in places as a shallow ditched feature some 15m

to 20m across and less than 1m deep winding north-westwards across the park some 150m to 180m south-west of the canal. Although now much reduced by modern ploughing, this feature was still so obvious in the late 19th century that the surveyors of the first edition Ordnance Survey 1:2500 plan (OS 1886) depicted most of it as a hachured trench or ditch. It was shown in the same way on all subsequent editions of 1:2500 and 1:10560 maps and plans until recently (eg OS 1901, 1938).

This ditch begins close to the existing river on the north-western side of the bridge over the village street and then runs north-west as a sinuous depression in the centre of a narrow strip of land mapped as alluvium by the Geological Survey (1964). At its northern end this ditch turns north-eastwards to meet the southern corner of a small medieval moated site. Although the exact junction of this former course of the river and the moat has been destroyed, it is likely that the river formed the south-eastern side of the moat. The river, having filled the ditch on the other three sides of the moat, flowed out of its north-eastern corner and then northwards on or near the present course of the river. If this interpretation is correct, the canal must be later than the moat. The second piece of evidence that demonstrates the canal to be artificial is that it lies not on alluvium laid down by the present river but is cut through the adjacent terrace gravels deposited by an earlier river (Geological Survey 1964).

Description (Fig 2)

The canal, some 460m in length, is exactly straight and has a constant width of some 6m to 7m set within a cut 14m to 15m across and 1m deep. Its overall fall is little more than 1m and its channel is kept full and slow-moving by two weirs. One, some 150m from its southern end, is a modern concrete gauging station which has replaced an earlier structure. This was identical to the existing weir at the northern end of the canal which is a simple triple-stepped arrangement of 19th-century date (inf A Dockerill). Neither of these weirs were part of the original canal system.

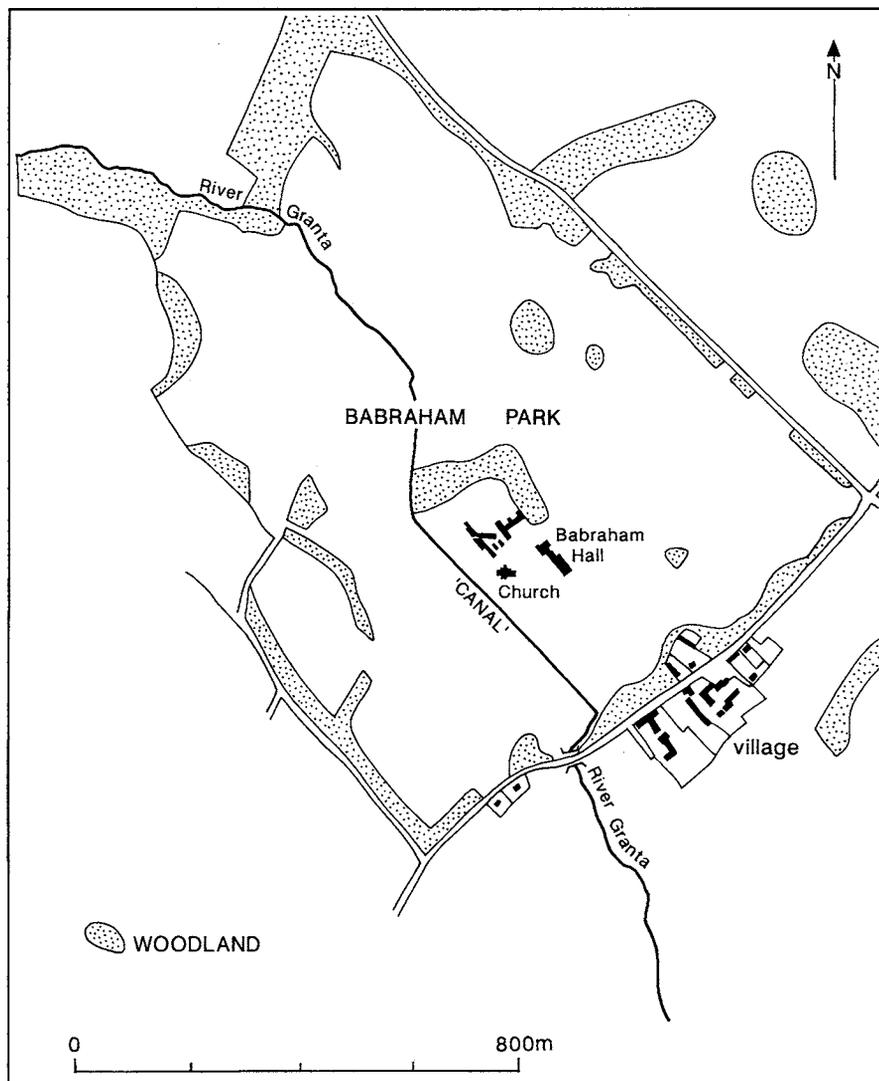


Figure 1. Babraham Park.

Both existed in 1886 (OS) but are not shown on the 1829 estate map of Babraham (CUL) which elsewhere shows water management features. These weirs were probably constructed in the mid 19th century by one of the Adeane family who owned Babraham from 1774 to 1973 (VCH 1978, 22, 26).

Apart from the moated site and the medieval parish church, every other feature in the vicinity of the canal is either contemporary with it or later. The now decayed parkland to the south-west of the river was laid out by the Adeanes between 1829 and 1886 (CUL; OS 1886). The more extensive parkland east of the river and east and north-east of the Hall is earlier and seems to have been created in about 1785, soon after the Adeanes acquired the estate (VCH 1978, 22; map of St John's College lands in Babraham 1785, CUL). The lawns and shrubberies south of the church and between the Hall and the canal are mostly 20th-century in date, but they contain in the southern corner the remains of an elaborate rockery built into a long raised terrace, close to and parallel

to the canal. During periods of drought the parchmarks of two stone-edged flower beds containing parts of elaborate scrollwork parterres are visible within the main lawn. These, as well as the terrace and rockery, all date from about 1864 when the present Hall was enlarged. Then a garden, allegedly of 16th-century form, was created here (Butcher 1954, 11-12; Cambridgeshire Gardens Trust 2000, 99). To the north-west of the Hall was a stable block and a small wooded pleasure garden, all apparently 19th-century in date and no longer in existence.

The most important features that can assist in establishing the date of the canal are, or rather were, four rectangular brick-walled compartments arranged alongside the canal, immediately north of the church (a-d on Figure 2). Now only the southernmost two of the compartments (c and d) survive in anywhere near a complete state. Only fragments of the two northernmost compartments (a and b) remain, their interiors now being largely covered by buildings of the Institute of Animal Physiology that

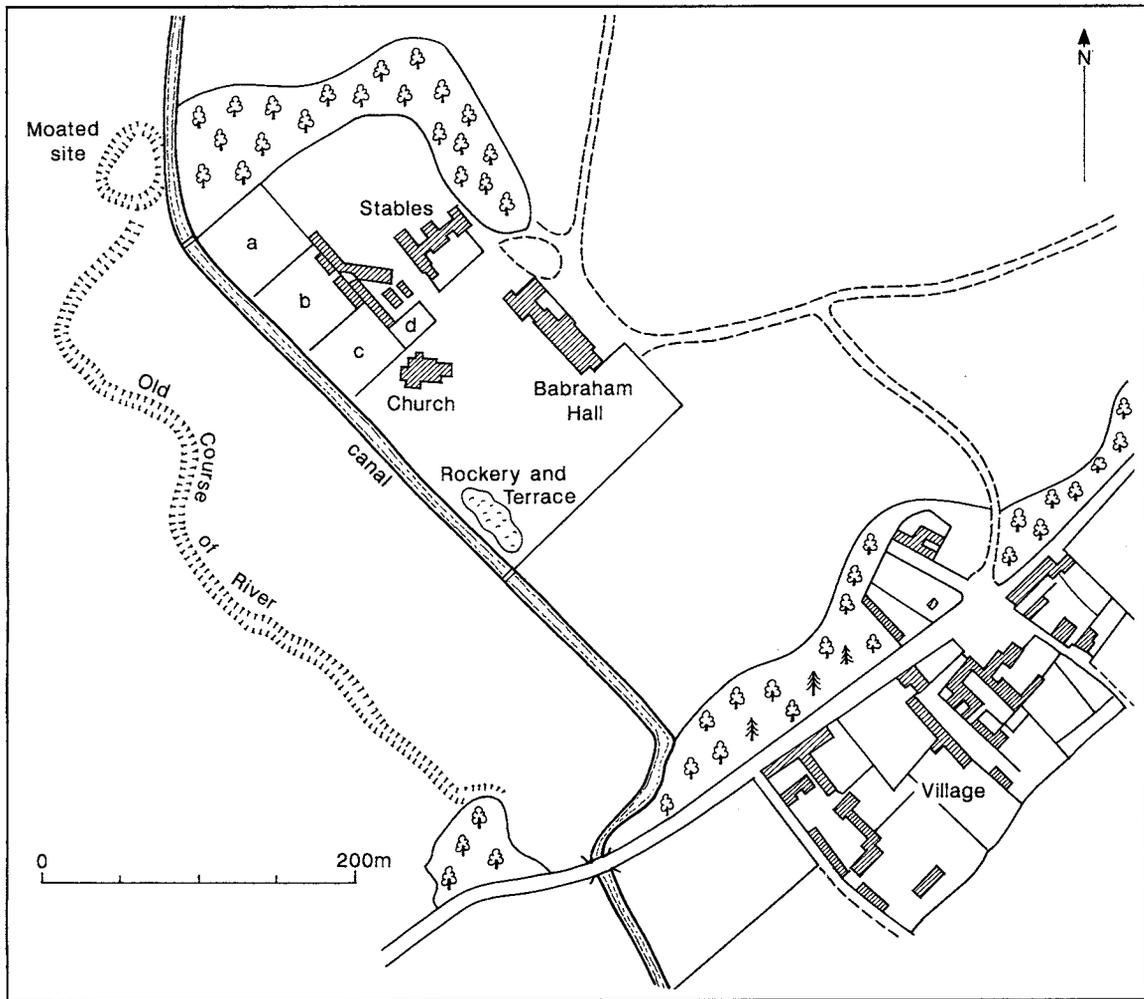


Figure 2. Babraham Hall and gardens as they were in about 1950.

now occupies Babraham Hall and park.

The three larger compartments were all rectangular, 48m to 55m across, arranged in a line parallel to the canal. They were bounded by brick walls 3.5m high except on their south-western sides which were open to the canal. The lateral walls all terminated 5m short of the edge of the canal, thus leaving space for a walkway or terrace alongside the canal, between it and the compartments. The walls, although now much repaired and rebuilt, were originally constructed of bricks that can probably be dated generally to the later 17th or early 18th century. The southernmost and the most completely surviving compartment has an entrance gap at the south end of its north-eastern side that leads into the smallest compartment (d). This gap is now flanked by elaborate stone piers, decorated with pairs of recessed panels, probably dateable to the second half of the 17th century. They have no value for dating the compartments for they are not in situ. The entrance that they flank did not exist in 1900 and Palmer records that originally they were at the main entrance to the park in Babraham village (Anon 1900, 581; Palmer 1935, caption to pl VI).

The small compartment (d on Figure 2), only 30m by 20m, is constructed of an entirely different type of brick from the other compartments, probably late 18th or early 19th-century in date. This compartment also sits awkwardly with the three larger ones. It is thus unlikely to have been part of the original arrangement that must have comprised just the three walled compartments lying alongside, set back from and opening on to a walkway edging the canal.

All four compartments existed in 1829, when they were called gardens. During the later 19th century they were much altered by the addition of various sheds, glasshouses, bothies and gazebos, most of which survived in use until the 1950s (inf A Dockerill). Some of the details are recorded on OS maps and on photographs taken in 1900 (OS 1886; Anon 1900, 581).

Function

It is clear from its shape and position that, as the VCH stated, the section of the River Granta under discussion here was indeed an ornamental canal.

Further, there can be no doubt that the three larger walled compartments are contemporary with it. Thus in its original form it would have been a long strip of slow-moving water with a walkway or terrace along its eastern side and possibly another on the west. The compartments must have been walled gardens opening on to the canal, with views across and along it. However, such a canal and compartments are unlikely to have stood alone. They must be the only surviving remnants of a more extensive garden, the date, creator and plan of which require further discussion.

Date

There is apparently no direct documentary evidence for the date of this part of this elaborate formal garden. All that is certain is that the canal and presumably the walled compartments were in existence in 1735 (VCH 1978, 19). Closer dating can be achieved by using various forms of archaeological and architectural evidence as well as by comparing it with dated gardens that are stylistically similar. Historical evidence relating to the ownership of Babraham is also useful.

The relationship of the canal to the medieval moated site at its northern end gives a crude indication that it is post-medieval in date. The original bricks of the walled compartments give a much closer date, perhaps between about 1650 and 1730. Comparing the garden with others of the same general period gives an even narrower date range. Long canals, as opposed to moats and ponds, were a feature of Western European gardens from at least the 15th century. Canals of various forms and in various relationships to their associated houses certainly existed in England by the late 16th century and even in the early 17th century were sometimes associated with walled compartments. That at Audley End, Essex, probably of 1614–18, is a good local example (Sutherill 1995, 19). However, it is not until the second half of the 17th century that formal gardens with walled or hedged compartments become common and those that are closest in style to Babraham are mainly of late 17th or early 18th-century date. They include those at Hall Barn, Buckinghamshire (1651–87), later altered, Moor Park, Surrey (1680s), Dyrham Park, Gloucestershire (1690s) and Westbury, Gloucestershire (1696–1705) (Survey of Hall Barn, NMR; Kip and Knyff 1707, pls 12, 16; Atkyns 1712, 414–15). After about 1710 canals increasingly were set within open areas of lawn, as at Eberston, Yorkshire (1718), and at Studley Royal, Yorkshire (1720) (Hussey 1967, 65–9, 132–9).

Closer parallels for Babraham, although on a much larger and more lavish scale, include the gardens at Longleat, Wiltshire, of the 1680s. There a long canal, set parallel to the house, was bounded on both sides for some three quarters of its length by large open rectangular parterres and lawns. But at the eastern end the canal passed between walled parterres that opened on to it (Kip and Knyff 1707, pl 40). Another

example was at Dawley, Middlesex, of 1695–1700. Although there was no canal, an elongated walled compartment, laid out with parterres, and overlooked by an orangery, opened out at one end on to a terraced walk with views across adjacent fields (Kip and Knyff 1707, pl 48).

However, there is a closer parallel for Babraham at Ickworth in Suffolk. On the south-western side of Ickworth Park are the remains of a formal canal, shorter and wider than the Babraham one, but with three walled garden compartments on its northern side. These compartments are set back some 5m from the canal edge on to which they open, thus providing a terrace walk. The compartments are almost identical to those at Babraham except that the side walls terminate in brick piers surmounted by balls and that in the back wall of the central compartment is a single-storey brick summerhouse or orangery of late 17th or early 18th-century date. This building and thus the compartments and the canal traditionally are said to have been built by John Hervey when he became Baron Hervey in 1703. The evidence on which this rests is a letter written by Vanbrugh to the Duke of Newcastle in 1703, reporting that Hervey had consulted William Talman about rebuilding the manor house at Ickworth (Jackson-Stops 1984, 40–42). This lay just north-east of the canal and its compartments in a position similar to the house at Babraham.

However, the date of the Ickworth compartments is less straightforward than this. The bricks of the summerhouse and of the piers are quite different from those of the walls of the compartments (Tipping 1925, figs 11 and 12). This might mean that the compartments are earlier than the summerhouse and piers and that although the latter may well be of about 1703, the walls are possibly of 1694 when John Hervey succeeded his father, Sir Thomas Hervey, at Ickworth. Further uncertainty is caused by a 1717 reference to the 'new canall at Spring Garden in ye Parke' (Tipping 1925, 674). This is perhaps referring to further modifications made here in about 1710 when Hervey finally demolished the old manor house in preparation for a new one on the same site, a scheme later abandoned. Thus, although the three compartments at Ickworth are very similar in form, size and perhaps date to those at Babraham, the canal is not necessarily of the same period. There is also a connection, albeit remote, between the Bennet family, who owned Babraham from 1631 to 1767, and the Herveys of Ickworth. The families were related through the female line to Sir Humphrey May (1573–1630) and certainly the Bennets and Mays remained close until at least the late 1650s (Taylor 2002, 104–5). It is perhaps unlikely that this relationship played a part in creating two similar gardens. The influence of contemporary fashion is more likely.

The status of the Bennet family

One other aspect of the site at Babraham that requires discussion, particularly in relation to its possible date,

is the changing status of the Bennet family. Increases in the wealth and changes in the status of the owners of houses and estates are often followed by major alterations to those houses and estates. It is thus well worth looking at the rise and fall of the Bennets to see if there were any periods when the creation of a new garden and canal might have taken place.

Thomas Bennet, who with his brother Richard purchased Babraham in 1631, was the first of his family to move into the landed gentry. His father and grandfather were London merchants, his great-grandfather a Berkshire farmer (Taylor 2002, 104–5). Thomas Bennet took over the house at Babraham that had been built in the 1580s by Robert Taylor and embellished between 1592 and 1600 by his successor Sir Horatio Palavicino (VCH 1978, 21–2). However, although he improved his estate in the 1650s, there is no evidence that Thomas Bennet altered the house even after he was created a baronet in 1660. Nor apparently did his son Sir Levinus Bennet who succeeded in 1667, despite being MP for Cambridgeshire from 1679 until his death in 1693 (VCH 1978, 21). Sir Levinus was succeeded by his son Richard, whose heir on his death in 1701 was a young daughter, Judith. When she died while still a minor in 1713, Babraham passed to the five daughters of Sir Levinus.

Until 1701 Babraham Hall was occupied by the Bennets. After 1701 the situation is not clear. The one unmarried daughter of Sir Levinus who died in 1724 may have lived there. But it was apparently unoccupied in the late 1720s when the young William Cole (1714–82) and his sister, who were themselves living in an old farmhouse adjoining the Hall, kept pets in the empty courtyard there (Palmer 1935, 1). It presumably remained empty until soon after 1735 when Bennet Alexander (d 1745), the son of another of Sir Levinus's daughters, moved to Babraham. He was succeeded by his son Richard Alexander Bennet, but by then the great days of the Bennets were over. Richard Bennet was forced to sell the estate to his brothers-in-law in 1765. It was finally purchased in 1767 by Robert Jones, a director of the East India Company, who built a new house there and bequeathed it to his grandson Robert Jones Adeane in 1774.

This history of the Bennets at Babraham may be of some value in helping to date the canal and the garden compartments. Given the minority of Richard Bennet's daughter, the division of the estate between the five co-heirs and the evidence of the hall being empty in the 1720s, it is very unlikely that the gardens were laid out after 1700. The three most likely times when changes in status of members of the family might have produced new gardens at Babraham are 1660, when Thomas Bennet was made a baronet, 1667 when Sir Levinus Bennet succeeded, and soon after 1693 when Sir Richard Bennet inherited. The bricks of the compartments and the stylistic parallels suggest that the whole site dates from the second half of the 17th century and nearer to 1700 rather than to 1650. This being so, it seems likely that the gardens were the work of either Sir Levinus Bennet at some time after 1667 or of Sir Richard after 1693.

However, there is one other piece of evidence that should be considered. As already noted, the Bennets were related to the May family, the best known member of which was the architect Hugh May (1622–86). May seems to have been particularly close to the Bennets, to the extent of helping Thomas Bennet with the construction of his water meadows in 1654 (Taylor 2002, 108). But, as well as being a distinguished architect, May was interested in garden design. He expressed strong views as to what gardens should look like to Samuel Pepys in 1666. He was involved, to a greater or lesser degree, in the laying out of the gardens and parks at at least two of the great houses he designed, Cornbury in Oxfordshire in 1663–4, and Cassiobury Park in Hertfordshire in 1674–80, and possibly at a third, Holme Lacy in Herefordshire in 1673. From 1670 one of his posts was inspector of French and English gardeners at Whitehall, St James's Palace, Greenwich and Hampton Court, although it is not known what this actually entailed (Thacker 1994, 145–7; Colvin 1995, 646–8). If May was indeed involved even marginally with the Babraham gardens, then a date of 1667 or soon after is most likely.



'The Terrace, Babraham Hall' in 1903, from the *Cambridgeshire Explorer* CD-ROM.

Garden layout (Fig 3)

So far this paper has been concerned with the date and function of the canal and associated walled compartments. The conclusion is that they are part of a late 17th-century garden. But can one go further than this? Is it possible to see how the existing remains might have fitted into the once larger garden that must have existed at Babraham Hall? Here the evidence is less firm and speculation more necessary. But the writer believes that such speculation is valid for, even if wrong, it will only be proved to be so by further research. And only in this way will the history of Babraham be advanced.

The first piece of evidence that can be used to reconstruct the wider possible garden setting is the relationship of the compartments to the canal. The canal is just over 460m long, the total length of the three compartments is nearly 155m. This means that the compartments occupy almost exactly one third of the length of the canal, which might suggest that the original garden to the north-east of the canal was

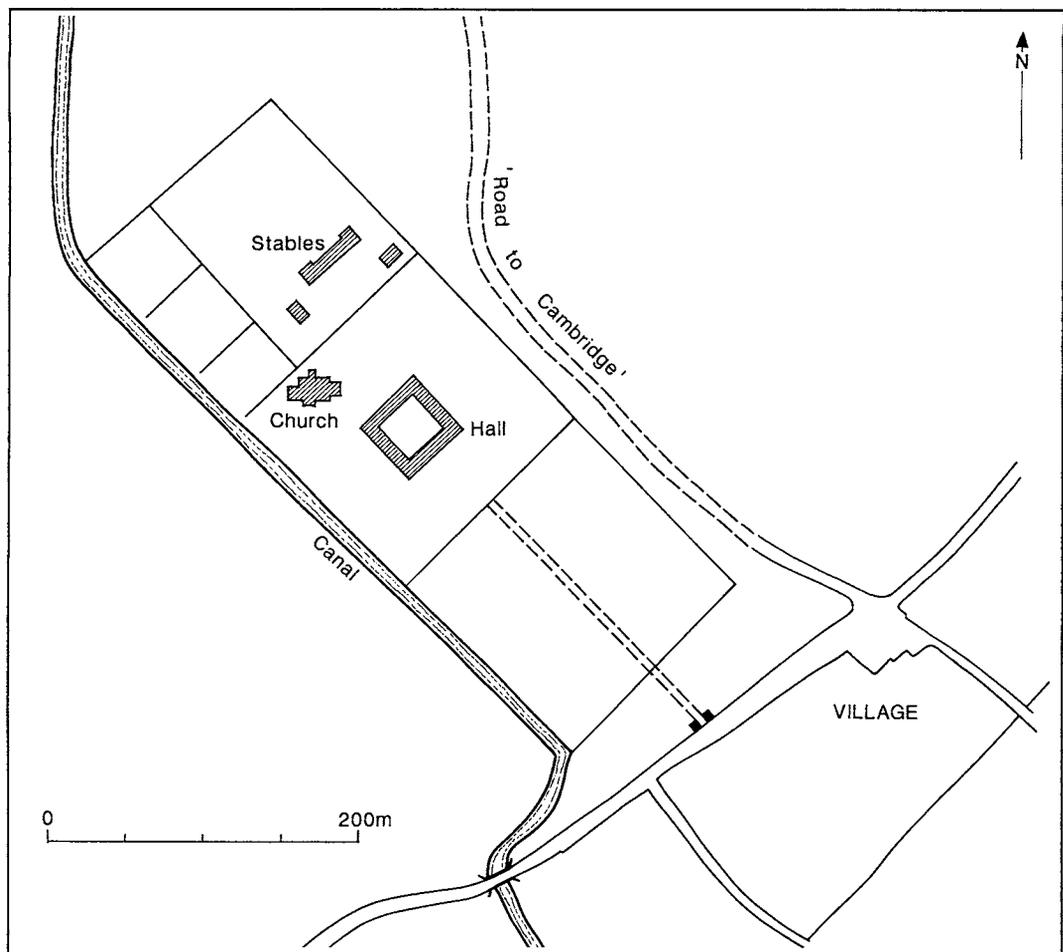


Figure 3. Reconstruction of the late 17th-century garden at Babraham.

once made up of three equal parts. One, including the compartments, in the north-west, a central one containing the Hall and church and a third to the south-east laid out to further gardens.

Such a mathematical division of gardens with their houses in the centre was a not uncommon arrangement in the late 17th century. These included simple tripartite layouts as is being suggested at Babraham, and more complex quadripartite or quinquepartite layouts. Thus the gardens at Ragley, Warwickshire, of the 1670s (Kip and Knyff 1707, pl 71) had five divisions, the house being positioned in the central one. Longleat, Wiltshire, of the 1680s (Kip and Knyff 1707, pl 40) had four parts with the house occupying one third of each of the central pair. Wimpole, Cambridgeshire (Kip and Knyff 1707, pl 32) had three parts, the house standing in the central one, while Dyrham Park, Gloucestershire, of the 1690s (Atkyns 1712, 414–15) had six divisions south of the house, the latter lying across the central two and the medieval church standing in an adjacent section. Similar examples are recorded from all over Western Europe (Jaques and van de Horst 1988; Adams 1979).

The hypothesis that two other sections existed at Babraham in addition to that containing the walled

compartments cannot be proved. But curiously, the south-eastern side of the Victorian garden south-east of the Hall and church is parallel to and 155m south-east of the south-eastern side of the walled compartments. Further, it extends just over 150m north-eastwards. At first sight this would suggest that there was indeed another area that contained the church and Hall exactly the same length as the one to the north-west. Such a division actually produces a possible third one to the south-east again, just over 150m long, terminating at the beginning of the canal. The south-eastern side of this section would have lain along the sinuous edge of the plantation that now forms the boundary of the later park here. However, as a result of modern development, no physical remains can be traced. The resulting narrow strip of land between the suggested south-eastern side of the garden and the village street beyond might have been occupied by houses and gardens removed by the later landscaping in the 18th century.

However, although the boundary of the Victorian garden was mapped in 1886 (OS), it is not shown on the 1829 Estate Map. Instead a pecked line is depicted which, while starting at exactly the same place on the canal side as the Victorian garden boundary

and following the same line for the first 40m, then curves northwards towards the Hall. It is not clear what this pecked line is meant to be. Elsewhere on the 1829 map, which is in effect a private Enclosure Map, pecked lines indicate intended field boundaries, not all of which were actually laid out. Here the line may be showing a projected garden boundary which was never constructed. Nevertheless there is no evidence that the Victorian boundary is any older than the 19th century except for the remarkable fact that it too forms the edge of an area almost 155m long. If this is more than a coincidence and the Victorian boundary is following an earlier one, then it is possible that the late 17th-century garden could indeed have been arranged in the form of a line of three large square areas, each around 150m long with the canal bounding their south-western sides. The northern one would have had the walled compartments in its south-western half. The central section would have held the church and Hall, as well as further parterres, while the southern section may also have contained lawns or parterres.

The principal argument against this neat reconstruction is the present position of the Hall. Its location in the northern corner of the presumed central section would be quite wrong for a house and associated garden of the late 17th century. It has always been assumed that the late 16th-century Hall occupied by the Bennets throughout most of the 17th century and demolished in 1766–7, and its replacement the “neat small seat” erected by Robert Jones in 1770, were on the same site. It was assumed too that the present house, built by Henry John Adeane in 1833–7 and enlarged in 1864, was also on this same site. That the 1833 house was erected in the same place as the 1770 house is clear from the 1829 map. But was the

earlier 16th-century house also in the same place? No uncontroversial proof exists, only one piece of rather unsatisfactory evidence to suggest that it was not.

This is William Cole’s description of the house, written in 1768 shortly after it was pulled down. Cole knew it well having lived next to it as a child and he had remained a friend of the Bennets until the family left. His account of the house shows it to have been a typical late 16th-century building set around a courtyard. Erected in about 1580, the main range contained a hall with a parlour beyond and with a long gallery above. The latter extended the entire length of the range and had bow windows at either end. The main elevation which apparently faced north-east and overlooked the then road to Cambridge also had “bow” windows, one over a central porticoed doorway, one seemingly lighting the hall and one the parlour (Palmer 1935, 83). All this suggests that the 1580s house at Babraham could have had two alternative arrangements. Either the principal range containing the hall and parlour faced directly north-east with the courtyard behind, or it formed the rear range with the courtyard in front of it. The latter is the most likely although the former is possible.

The crucial piece of information from Cole’s account is that he states that the parlour was nearer to the church than it was to the hall. If the house stood on the site of the present one and with the same orientation, this statement is nonsense. For no matter which of the two alternative plans outlined above existed, the parlour could not be described as being nearer to the church than was the hall. Both would have faced north-east while the church would have been, as it is now, at least 70m to 80m away out of sight to the west and to the rear.

However, if the 1770s house was not built on the



Babraham Hall, 1997 (Alison Taylor).

site of the earlier one but in a new position perhaps 50m to 60m to the north-east, Cole's statement becomes clear. Whichever range of the house the hall and parlour were in, if the former lay at the north end of the hall it would be nearer the church, as Cole said it was. More significantly for this paper, the position of the late 16th-century house would have been in almost the exact centre of the middle one of the postulated three major sections of the late 17th-century garden, that is to say arranged in precisely the same way as most contemporary houses and gardens.

If this interpretation is correct then the late 17th-century gardens at Babraham can be seen to have been in an entirely contemporary style with a canal, walled compartments and probably open parterres, lawns and orchards, bounded by hedges or fences but so arranged as to ensure that the existing house stood in its exact centre. Such an arrangement might also have meant that the stables, outbuildings and possibly the old farmhouse where William Cole lived were behind the walled compartments, where the later stables and estate buildings were situated.

One last piece of evidence to complete this speculative reconstruction is the original position of the gate piers, now reset in the eastern corner of the southernmost walled compartment (c). If Palmer (1935, pl VI) was correct, it is possible to identify the exact position on the ground today. This would place the 17th-century entrance to the Hall on the north-western side of the village street almost opposite the north-western corner of Home Farm. If a line from this point is projected north-westwards across the park, parallel to the canal, it meets the Victorian garden boundary exactly halfway along its length and somewhere close to the assumed centre of the south-eastern side of the 16th-century house. If this projected line was actually an approach drive, passing between scrollwork parterres, the Babraham gardens would have been even closer to some of its contemporaries (eg Strong 2000, pl 199).

Conclusion

Not for the first time the writer has descended into the wider realms of speculation. But at least some of his more extreme suggestions are capable of being proved or refuted. The lawns between the present Hall and the canal still remain open. Thus the assumed site of the 16th-century house is still available for excavation, if and when it becomes possible or necessary. Whether or not correct in every detail, this paper has, hopefully, further advanced the knowledge of the history of gardens in Cambridgeshire.

Acknowledgement

The writer would like to thank Arthur Dockerill for information on the layout of the gardens at Babraham in the 1950s.

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The Hearth Tax and the Country House in 'Old' Cambridgeshire

Tony Baggs

In 2000 the Cambridgeshire Record Society, in collaboration with the British Records Association, published the Cambridgeshire Hearth Tax lists for 1662/1664. In 2002 Cambridgeshire VCH X appeared and in an appendix included the final part of the tables compiled by CAF Meekings, which summarised the Hearth Tax returns for 1664, 1666 and 1674. Combining the information from these two sources it is possible to compile a table of country houses according to their assessments and compare it with what we know about their size in the later 17th century. It is intended that this will complement the work of Margaret Spufford on the smaller houses.

The Hearth Tax was a major source of government revenue between 1662 and 1689 and like the later Window Tax it was an attempt to tax people according to the size of their houses on the basis of something that had a relationship to wealth and could be counted relatively easily. The annotations in the 1662/1664 lists suggest that the counting was done conscientiously and from this study it would appear that the result is reasonably reliable. Where the assessment did not at first fit with what is known of the house further investigation of a surviving building has usually provided an explanation. Most often what is there now is only part of something once larger, as at Childerley and Haslingfield, but sometimes, the tax being on occupiers not buildings, the figures may refer to more than one property in the parish, as with John Byng at Grantchester.

Many of the houses no longer survive but most of those that do are pre-mid-17th century in origin. Two houses, Horseheath and Hatley, appear for the first time in 1674 which fits with their building history, whilst the figures for Wimpole record the first of many stages in its enlargement. Against that Grantchester and Steeple Morden appear to be in decline – or at least the estates of their owners do.

Great Abington

A thumb-nail drawing of the manor house at Great Abington on an estate map of 1640 shows it as having a central range with cross wings. It is unlikely to be a true representation of the house that was taxed.

Babraham

The Bennetts had bought Babraham in 1632 and Thomas, a Royalist, was granted a Restoration baronetcy in 1660. His descendant demolished the house in 1766–7 and the estate was sold to the ancestors of the Adeanes in 1770. According to William Cole it was a courtyard house with bay windows and a long gallery. There was a datestone for 1576. [VCH *Cambs* VI] (See Christopher Taylor, this volume)

Barham

Barham Hall at Linton (Plate 1) had belonged to the Millicents since the later 16th century when they appear to have adapted or rebuilt part of the buildings of the former convent of the Crutched Friars. It remained with their descendants until the 1830s when it passed to Pembroke College and soon after that most was demolished when it was reduced to a tenant farmhouse. [VCH *Cambs* VI; CAS Relhan, 337, 345]

Bourn

Bourn Hall occupied part of the site of the Norman castle of Picot the sheriff of Cambridge which was in its turn reusing a prehistoric earthwork. The 70' square house of the Haggars was built of brick in the early years of the 17th century and probably ranged round all four sides of the courtyard. One side appears to have been demolished when the courtyard was filled in during extensive alterations for the de la Warrs in 1817–19 (Plate 2). [VCH *Cambs* V; RCHM W *Cambs*, plan and photograph; CAS Relhan, 54]

Burrough Green

The Cages had bought Burrough Green in 1574. In the later 17th century their house, which incorporated older work, had a 140' long entrance front of brick which faced onto a walled north court beyond which there were formal gardens. When Sir Anthony Cage died in 1667 his estates were heavily mortgaged, a situation which had not improved at the death of his heir, his son in law, in 1690 and the building was partly demolished and reduced to the status of a tenant farm for the next two centuries. John Evelyn stayed there in 1670 and he described the house as 'ready to fall down with age'. [VCH *Cambs* X]

Castle Camps

The Castle Camps estate belonged to the London Charterhouse and was normally occupied by lessees. An engraving of the house (Fig. 2), which stood within the earthworks of the medieval castle, in about 1730 by S and N Buck shows it as a large gabled building with a tower at one side. Most of it fell down in 1738 and a small remaining portion was adapted as a farmhouse. [VCH Cambs VI]

Cheveley

Cheveley Park was begun by Sir John Cotton in the 1620s and bought by Henry Jermyn, later Lord Dover,

in 1671. A bird's-eye painting of 1681 by Jan Siberects shows it with a 120' main block facing east and a north wing, which later surveys describe as containing a hall, all within a regular layout of courts and gardens. It was said to have been damaged by a Jacobite mob in 1688 and it was remodelled in the 18th century. Demolition was in two stages, the first in the 1850s when it was reduced to a large farm house, the second in about 1890 prior to the building of a large new house in 18th-century style. That house was demolished after the estate was sold in 1920. [VCH Cambs X; Detailed plans of house and gardens in early and mid 18th century at Wiltshire Record Office; the bird's-eye

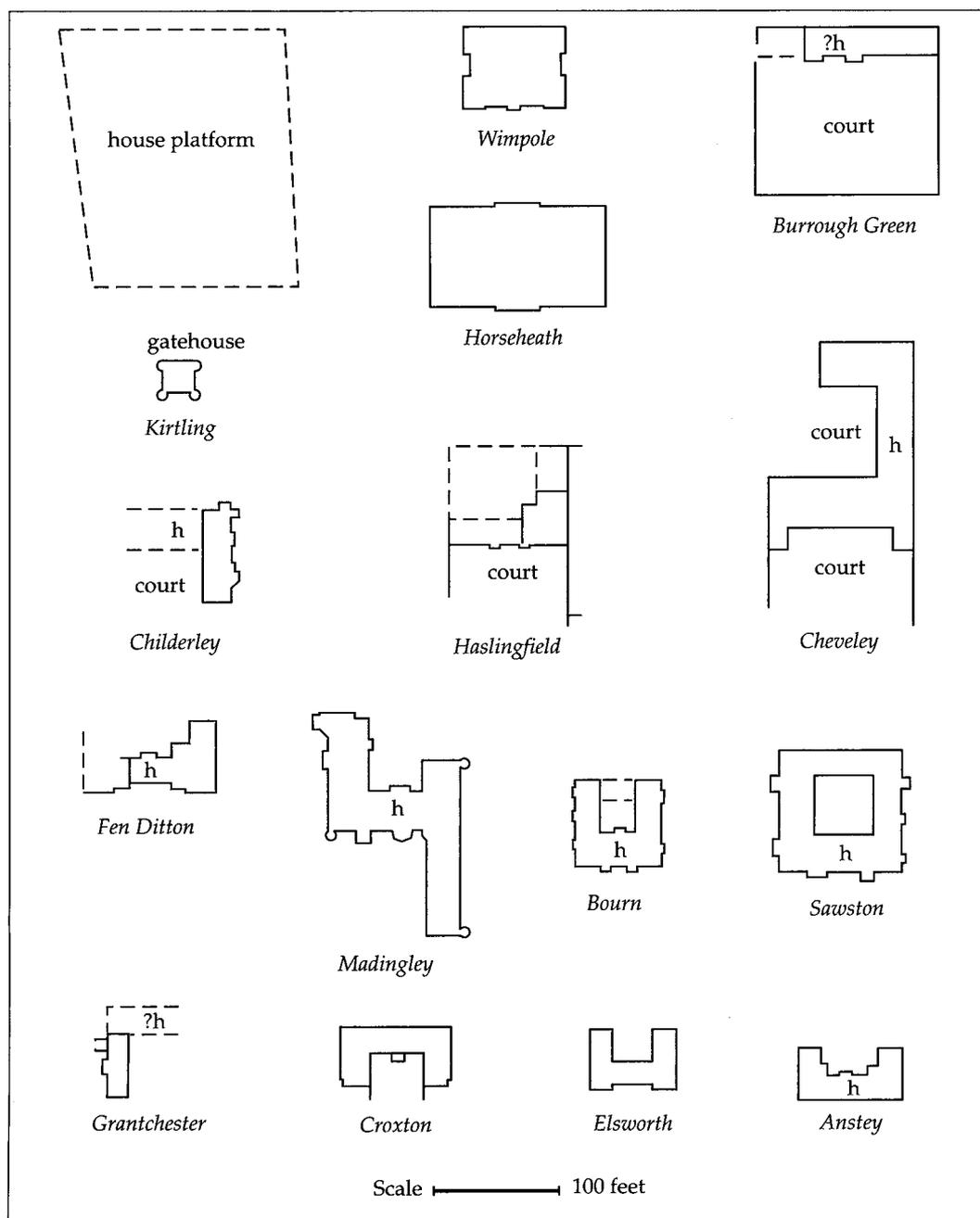


Figure 1. The relative sizes of some Cambridgeshire houses in the late 17th century.

view, now at Belvoir Castle, is reproduced in Harris, *The Artist and the Country House*]

Childerley

The Cutts family had bought Childerley (Plate 3) early in the 16th century. Only the 65' long parlour wing of their 17th century brick house survives and next to it there are the remains of a moated garden with raised terraces and a detached brick chapel. A probate inventory of 1670 lists about fifty rooms most of which would have been in hall and service ranges forming the other sides of a court which was open to the west and was probably bounded by a wall with a central gatehouse. [VCH *Cambs* IX; RCHM *W Cambs* plan]

Chippenham

Chippenham had been built or remodelled for Sir William Russell in the mid 17th century. An estate map of 1712 (Plate 4) shows it with a long entrance front with slightly projecting ends behind an entrance court to the northeast and with other ranges, which

may have incorporated older buildings, surrounding a back court which opened to the northwest. Only part of the service, west, ranges survived the demolition and rebuilding of the main house in the 19th century. [VCH *Cambs* X; description by Celia Fiennes in 1697]

Croxton

Croxton Park was built c. 1580 by Sir Edward Leeds and follows a plan which is common in Norfolk and Suffolk in the later 16th century. It had a 90' brick main range with a central porch and 50' flanking wings which surrounded a 40' by 30' walled courtyard. The house was remodelled and extended c.1760 and again in the 19th century but much of the original structural walling survives behind later decoration. [VCH *Cambs* V; RCHM *W Cambs*, plan and photograph of painting of c. 1700]

Table 1. Hearth tax assessments for south Cambridgeshire houses

Place	Family	1662	1664	1666	1674
Kirtling	North	57	54	60	60
Babraham	Bennett	43	40	40	40
Chippenham	Russell	34	34	34	34
Wimpole	Chicheley	33	40	40	47
Hatley St George	Cotton	-	-	-	27
Horseheath	Allington	-	-	-	26
Burrough Green	Cage	26	28	20	22
Isleham	Sparrowe	26	27	20	27
Childerley	Cutts	25	25	20	25
Little Shelford	Wigmore	25	25	20	25
Great Abington	Bennett	24	24	14	24
Landwade	Cotton	24	29	20	25
Haslingfield	Wendy	22	25	20	25
Whaddon	Pickering	22	22	19	19
Wendy	Lymerick/Wendy	22	22	20	25
Cheveley	Carlton/Jermyn	21	21	21	21
Fen Ditton	Willis	21	22	22	22
Steeple Morden	Duckett	20	19	14	11
Castle Camps	Keat	20	20	20	20
Madingley	Cotton	20	25	20	25
Oakington	Audley/Aiger	19	15	15	14
Linton, Barham	Millicent	19	18	18	19
Bourn	Haggar	18	18	18	18
Dry Drayton	Weld	18	18	18	18
Sawston	Huddleston	17	17	18	18
Impington	Pepys	17	17	17	17
Grantchester	Byng	27	27 ¹	-	15
<i>Some smaller houses</i>					
Croxton	Leeds	9	9	9	8
Elsworth	Disbrowe	9	9		
Trumpington/Anstey	Tompson	12	13 ²		

1. Five houses.

2. Two houses

Dry Drayton

The Cutts of Childerley bought Dry Drayton in 1652 and they leased it for a peppercorn rent to a distant relative Humphry Weld from Dorset who rebuilt the house in brick and sublet it to Joshua Sedgwick (Plate 5). It descended to the Dukes of Bedford, was a tenant farmhouse in the 18th century and had been demolished by the later 19th century. [VCH Cambs IX; PCAS 70; CAS Relhan, 149]

Elsworth

Elsworth was built by the Disbowes soon after they bought the estate in 1655. By the early 19th century it was a farmhouse and in the mid 20th century it had been divided into flats. [VCH Cambs IX; RCHM W Cambs plan]

Fen Ditton

Thomas Willis, who was created Baronet in 1641, had a few years earlier enlarged and encased in brick a

THE NORTH-EAST VIEW OF CAMP'S CASTLE, IN THE COUNTY OF CAMBRIDGE.

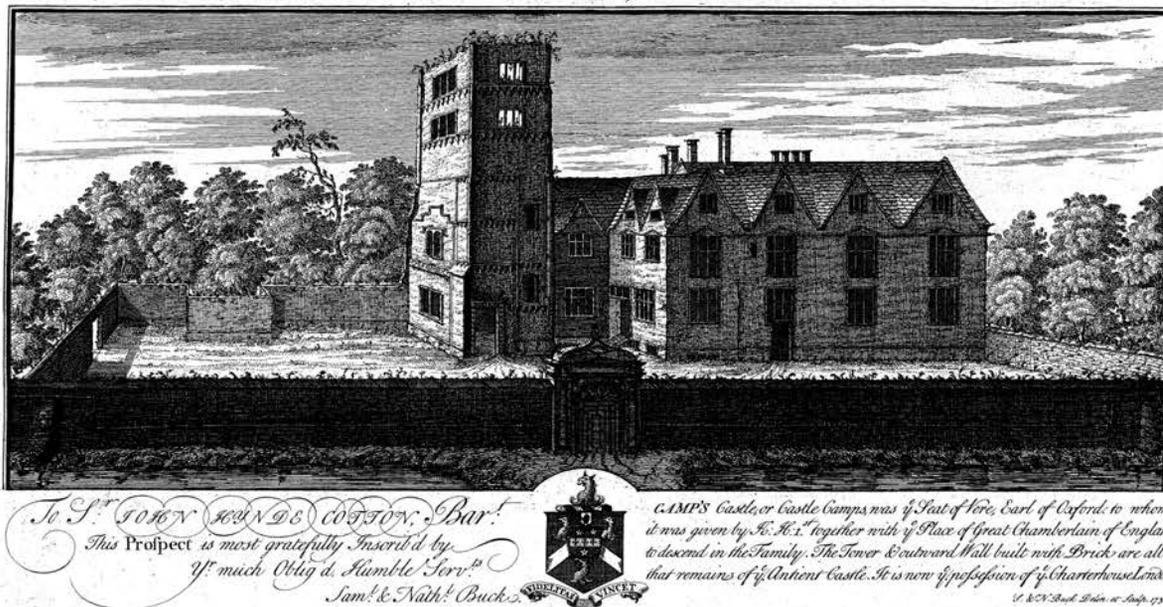


Figure 2. Castle Camps, from an engraving by S and N Buck, c. 1738.

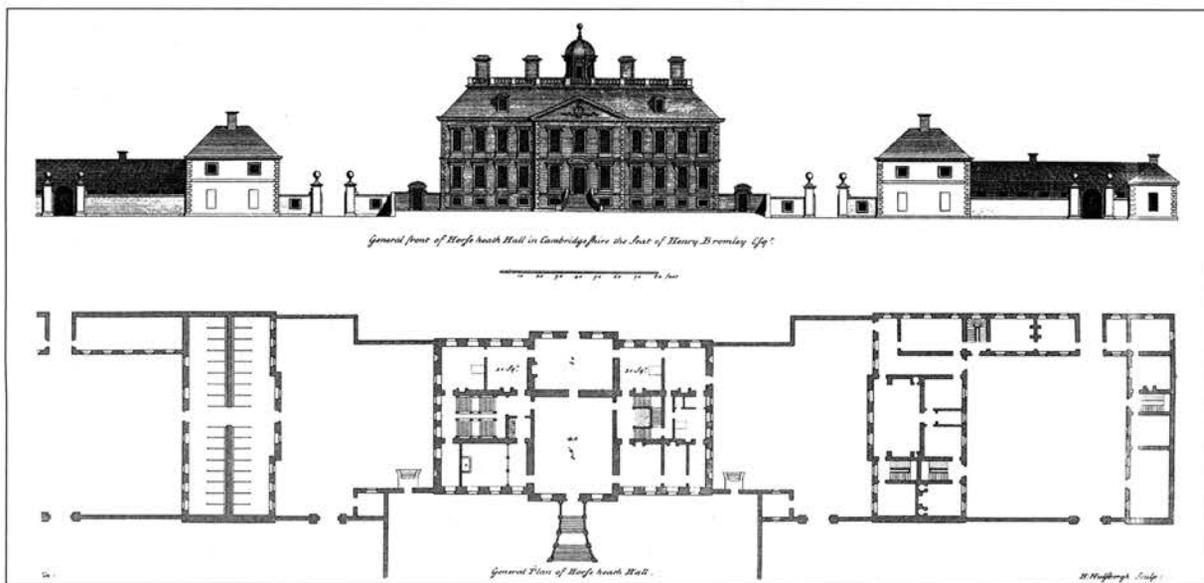


Figure 3. Horseheath Hall (Vitruvius Britannicus, 1725).

medieval manor house at Fen Ditton. His house had a 105' long main front to the southwest and walled enclosures to the north and to the east where the house had a loggia. The western end, which contained the service rooms, was demolished in the early 19th century when it was reduced to the status of a farm house. [VCH *Cambs* X; RCHM *NE Cambs*, plan and photograph; *Gents Mag* Dec 1801, engraving of house before reduction]

Grantchester

King's College bought Grantchester Manor estate in 1452. Records suggest that there was a house then, but whether it was on the site of the later Manor Farm or within the moat some distance to the southeast is uncertain. The oldest part of the present building is the timber-framed parlour wing of a substantial house of c. 1600 whose other ranges can be assumed from the surviving 17th century courtyard walls to the north and west. John Byng had bought leases from Kings

and other owners in the parish, but he went bankrupt in 1664 and late 17th and 18th century additions on the east side of the only surviving wing may replace much of the big house that was demolished soon after that. [VCH *Cambs* V; RCHM *W Cambs*; J Saltmarsh in *Economic History* III]

Haslingfield

Thomas Wendy bought the Haslingfield estate in 1541 and built a timber-framed house, which was probably approached from the west and had its hall on the east side, within a moat (Plate 6). Queen Elizabeth spent a night there in 1564 which suggests that it was then a house of considerable size and her visit may have been the reason for the heightening of the surviving southeast corner, where the first-floor room was traditionally known as Queen Elizabeth's. The third Thomas Wendy, who was a great collector, inherited in 1629 and he remodelled the south front, which was 93' long, in brick, built a new bridge over the moat on



Figure 4. Isleham Hall, from an engraving, 1792.



Figure 5. Kirtling, sketched shortly before it was demolished, published 1809.

that side and laid out the extensive walled gardens. The house was neglected in the 18th century and most of it was demolished early in the 19th century to leave only one corner as a farmhouse. [VCH *Cambs V*; RCHM *W Cambs*; CAS Relhan, 200–204]

Hatley

Layer, who died in 1641, says that at Hatley there was 'a pritty gentlemanlike seate now there built', presumably for Sir Henry St George, Garter King of Arms. The Cottons bought Hatley St George in 1658 and may have enlarged the new house soon after. It is shown in a Kip engraving of c. 1707 where it is double-pile and nine bays by at least five bays in the style of the later 17th century, but that may exaggerate its size for old walls incorporated in the present house suggest a rather smaller building. [VCH *Cambs V*; RCHM *W Cambs plan*]

Horseheath

Horseheath (Fig. 3) was built for Lord Allington in 1663–65 and demolished in 1777. His architect was Roger Pratt and its plan and elevation were published in volume III of Campbell's *Vitruvius Britannicus* (1725). The main double-pile block was 140' by 80' and there were link walls to symmetrical stable and service courts. [VCH *Cambs VI*]

Isleham

Isleham (Fig. 4) had belonged to the Peytons whose status can be judged by the fine monuments in the south chapel of the church. By 1637 Sir Edward Peyton was heavily in debt and he sold the estate to Sir John Maynard whose granddaughter's husband Francis Buller paid the tax in 1674. Thomas Sparrowe who paid tax in 1662 and 1664 was presumably a lessee. Much of the house was pulled down soon after 1800. What remains appears to be part of a brick hall range which is now the farm house and, detached as a consequence of the demolitions, a barn which was formerly a two-storied service range. [VCH *Cambs X*]

Kirtling

The Norths had acquired Kirtling (Fig. 5), which had belonged to the Earls of Warwick, in 1533. It must then have been a substantial house (it had been a royal estate with a park at Domesday and there is some evidence for a former motte) but they probably rebuilt or reconstructed it as the brick courtyard house within a large rectangular moat which is known from engravings. Queen Elizabeth was sumptuously entertained there over three days in 1578. Except for the detached gatehouse it was demolished early in the 19th century. The house platform is approximately 200' by 150' and the area enclosed by the moat is 400' by 380'. [VCH *Cambs X*]

Landwade

There is now no evidence for the appearance of the house at Landwade, which was ruinous by the 19th century.

Madingley

Madingley had been built by Sir John Hynde in about 1540 as a hunting lodge. The addition of the long north front, which contained many rooms including a long gallery above a loggia, in about 1590 made it into a substantial house which was engraved by Kip c. 1707 (Fig. 6). The hall range, which had the solar on the first floor, faced east and the service rooms were in the south wing. The east end of the north range was demolished in the later 19th century and recreated, although smaller, early in the 20th century. [VCH *Cambs IX*; RCHM *W Cambs, plan*]

Oakington

Oakington belonged to the Royalist Hattons in the first half of the 17th century but after Sir Robert went overseas in 1652 it was sold to the Audleys who paid the tax in 1662. In 1664 it was in the hands of Hattons' son in law and 4 hearths were 'puld downe'. By the 18th century it was a farmhouse. [VCH *Cambs IX*]

Sawston

Sawston Hall was burnt by a Protestant mob in 1553 and rebuilt in brick in 1557–8 by John Huddleston whose descendants continued to live in the house into the later 20th century. Externally 100' by 95' it is arranged round four sides of a courtyard and is one of the least altered houses in the county (Fig. 7). [VCH *Cambs VI*; *Country Life* 1954]

Little Shelford

Little Shelford was a brick house which had been built by Tobias Palavicino in the early 17th century. It faced eastwards onto an enclosed court and had a central feature and two-bay projecting ends. It was demolished in the mid 18th century when a few fragments were incorporated into the present house. [VCH *Cambs VIII* which reproduces a photograph of a watercolour copy of a painting, now missing.]

Steeple Morden

Steeple Morden was demolished in the mid 18th century. [VCH *Cambs VIII*]

Trumpington

Anstey Hall, Trumpington, had a central hall range and 42' wings framing a southern court, all timber-framed and probably built c. 1600. It was soon afterwards encased in brick and late in the 17th century the 83' north front was remodelled with sash windows and a one-bay central pediment on giant pilasters. [VCH *Cambs VIII*; RCHM *Cambridge*]

Whaddon

Early in the 17th century Whaddon, described by Layer as 'an ancient gentleman like howse' belonged to the Tempest family who sold it c. 1650 to Henry Pickering, a colonel in the new model army and MP for Cambridgeshire. In 1716 the estate was sold to Edward Harley of Wimpole and the house was downgraded to a farmhouse and demolished early in the 19th century. [VCH *Cambs VIII*]

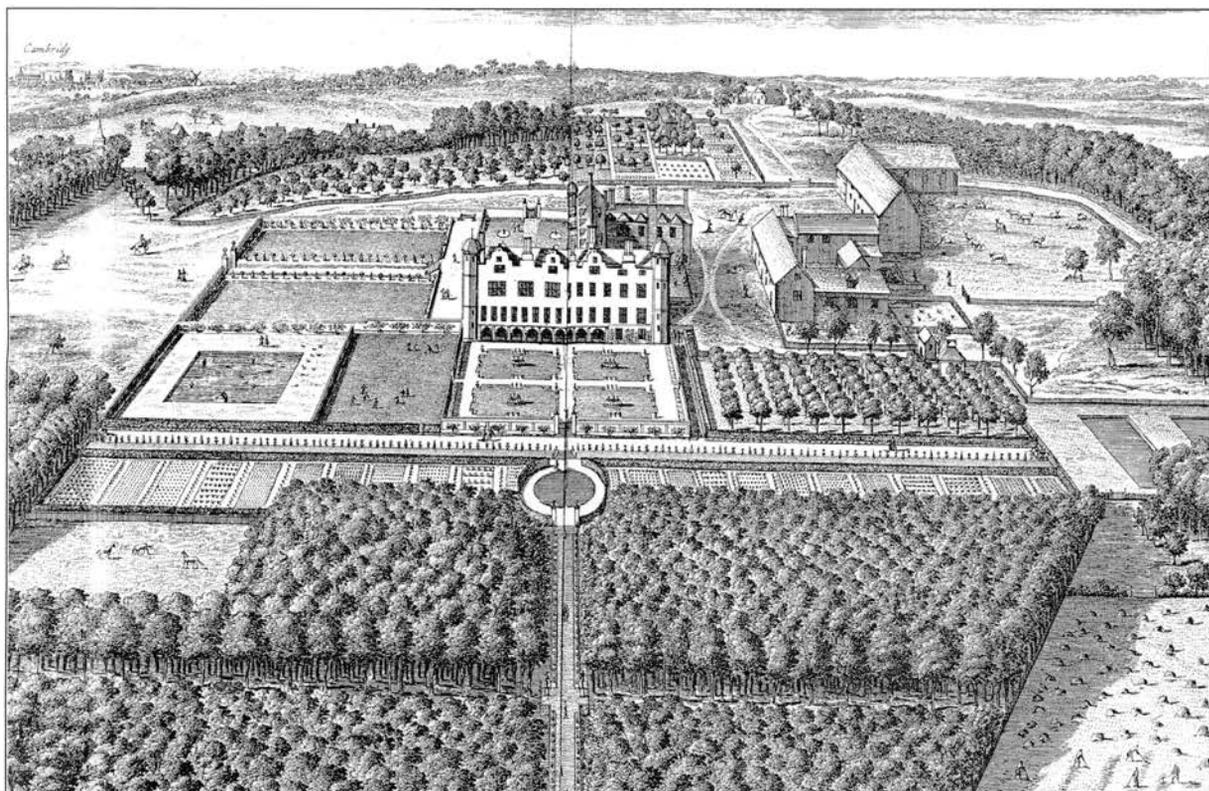


Figure 6. Madingley Hall, Kip view c. 1707.



Figure 7. Sawston Hall, sketched in 1844.

Wendy

Sir Thomas Wendy of Haslingfield had bought Wendy in 1655 from the Chicheleys of Wimpole. Thomas Lymerick who paid tax in 1662 and 1664 was presumably a lessee for his name does not appear as a manorial landowner. Lady Wendy paid on 10 hearths in 1674 and her house was being demolished in the late 18th century although a fragment may survive in the present Vine Farm. [VCH *Cambs* VIII; CAS Relhan, 328]

Wimpole

Sir Thomas Chicheley began building the new Wimpole Hall c. 1640 (Fig. 8). It had a double-pile plan, 84' by 67', which survives in the centre of the much enlarged house. The increase in the number of chimneys between 1662 and 1674 may reflect the addition of an additional floor. The engraved view by Kip (1707) probably represents an intended refacing, which has been attributed to William Talman, that was never carried out. A sketch by Vertue of 1733 (Fig. 9) and a survey by Henry Flitcroft of c. 1744 both show the south front in a 17th-century style with a prominent centrepiece and slightly projecting end bays. [VCH *Cambs* V; RCHM *W Cambs* plan; Walpole Society *Vertue Notebook* V]

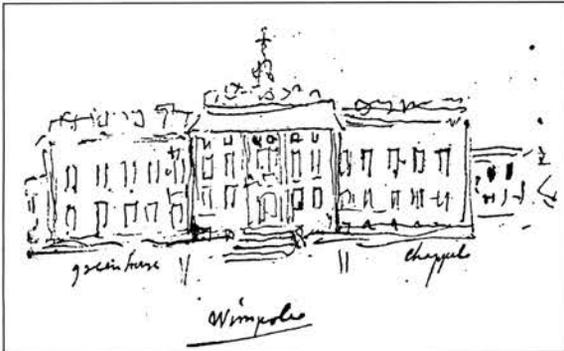


Figure 8. Wimpole Hall, a sketch by George Vertue, 1733.

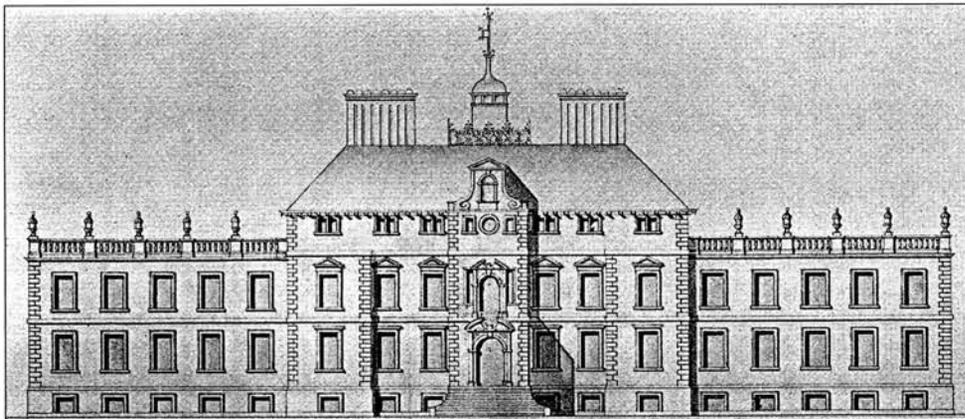


Figure 9. Wimpole Hall, south front including wings added after 1689, drawn by Henry Flitcroft before alterations, c. 1744.

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The descriptions of Burrough Green, Haslingfield, Grantchester and Anstey (Trumpington) are based on unpublished fieldwork.

The Cambridgeshire Local History Society Photographic Project 1992–2000

Gill Rushworth and John Pickles

In 1904 Cambridge Antiquarian Society embarked upon a new venture to record interesting features of the county that were being rapidly lost through decay, accident, and deliberate destruction. The first survey continued until disrupted by the war in 1914; it was resumed in 1925 during a period of accelerated change and the need to record ordinary aspects of local life. Photographers were again recommended to record cottages and colleges, farmsteads and barns, water-mills and dovecotes, sundials and stocks, customs and ceremonies, as well as agricultural implements and rural occupations. A Report in *PCAS* 32, 1932, 68–70 analysed the totals then in hand for various villages: in eighteen cases there were no photographs at all and there was a marked contrast between places that were well represented and those where totals were small. The project effectively lapsed during the second world war but not before almost 8000 images had been collected. These were transferred on loan in 1978 to the Cambridgeshire Collection of the Cambridge city library (see *PCAS* 69, 1979, ix–x).

In another period of rapid expansion in local villages, at the instigation of its President, Michael Petty, the Cambridgeshire Local History Society appealed to members who were interested in photography or the local history of their areas to help update the original survey, omitting the city of Cambridge itself. Gill Rushworth co-ordinated the project from 1992 until 2000, and the project ceased as no successor could be found. Volunteer photographers were given photocopies of the Antiquarian Society's old photographs together with a map and asked to take new shots from as near to the original viewpoint as possible. That was the easy part. Photographs then had to be matched with the originals, positions marked on the maps, and given an identity number, usually the negative number. Work in progress was exhibited from time to time, for example, at the conferences of local societies, in the Cambridge Central library, and at the local Parish Council Centenary Celebration held at Peterborough in July 1995.

By May 1996 some 43 village surveys were complete, and by the end of 1999 the figure had risen to 60 out of approximately 154 Cambridgeshire villages. Two villages already had their own collections

and another made its own, using the project as a starting-point. Three villages were also completed in Huntingdonshire. Although nine photographers failed to complete the project, several others managed more than one village. Despite appeals for further volunteers some parts of the county are only poorly represented in the final collection, notably in the south, on the Suffolk border, and in the Isle of Ely. About 2000 new pictures with their negatives, arranged by place, were added to the original survey, and deposited in the Cambridgeshire Collection. A second set is lodged in the County Record Office at Shire Hall.

The project was sponsored by the Eastern Arts Board, Photographic Archives; the Royal Commission on Historical Monuments; Robert Kiln Enterprises Ltd; the David Urwin Arts Award; and various Women's Institutes and parish councils. To all of them the Cambridgeshire Local History Society and the Cambridge Antiquarian Society are grateful. We have taken this opportunity to publish a small selection of the old and new photographs of this important collection, some showing sad losses and others surprising continuity of Cambridgeshire scenes.

Plates

7. Cherry Hinton. Smithy etc, back road to Cambridge foot-path.
8. Cherry Hinton. Old smithy, 1993. TL 4855 5638.
9. Grantchester Mill 'before the fire' in 1928.
10. Grantchester. The Old Mill, with a house built in 1930 to replace the burnt mill, 1997.
11. Harlton. May 1930.
12. Harlton. Dilleys Cottage (Armitage), looking towards Wheatsheaf, June 1995. Buildings on one side of the road have survived well, the others have suffered.
13. Swavesey before the fire of 1912. Every house with the exception of the last two back ones no longer stands. The postcard includes the message 'I have sent you a view of Swan Pond, Swavesey, the one in front of Mrs Mustell's house'.
14. Swavesey. Swan Pond, 1998.
15. Haddenham. Aldreth 1926, with imposing Dutch-style house.

16. Haddenham 1994, same view.
17. Lode. Old mill and kilns, June 1927.
18. Lode, same view of National Trust property, March 1993.
19. Swaffham Bulbeck. Original school, July 1928.
20. Swaffham Bulbeck. Village hall, 1992.
21. Swaffham Prior. Churches of St Mary, and St Cyriac and St Julitta, c. 1900.
22. Swaffham Prior. Same view in 1993, after restoration and tidying up work.
23. Teversham. Cottages on the green.
24. Teversham. Cottages looking little different in 1998.
25. Wicken. Village green 1929.
26. Wicken. Village green with play equipment, 1994.



A sad loss: Litlington. Old cottages near the church.



Litlington. The same corner of Church Street and Abington Road, 1994.

Surface scatters, rates of destruction and problems of ploughing and weathering in Cambridgeshire

Stephen G Upex

The results of twenty years monitoring of the destructive ploughing of archaeological sites in the middle Nene Valley are presented. Pottery sherd numbers, sherd distal length measurements, pottery movement within the soil and estimates of the 'volume' of destruction calculated by the increased weight of pottery within the soil are also analysed and discussed. Comment is also made on the effects of the applications of agriculture chemical fertilisers as a cause for the weathering of pottery within the soil. The results of this study indicate the deep ploughing continues to pose a major threat to the destruction of sites and that this destruction can be quantified.

Introduction

The destruction of archaeological sites by a range of agents is now well known but ploughing must still remain as the biggest single threat which is constantly eroding the upper layers of many sites (Macinnes 1993; Darvill & Wainwright 1994, 1995; Darvill & Fulton 1998, 1998a). Within the area of this study up to 80% of the total area of parishes is under cultivation (Foard 1979 fig 13). The national figures for England are much the same with the area of permanent grassland falling by 637,000 hectares between 1950 and 2001. This expansion of arable included an estimated 14,000 archaeological sites that came under the plough (English Heritage 2003). On some sites where deep ploughing has been periodically practised ploughing can extend 35–50cm into the soil and eat into the archaeological stratigraphy (CBA 2002). Farmers practise deep ploughing for many reasons. In some cases it can enrich soils with nutrients that have leached into the lower horizons of the soil profile; loosening soil to make a deep tilth for some crops is essential and on gravel soils farmers try to break 'iron panning' where iron minerals within the soil form a hard layer that can impede drainage.

This paper is a summary of work carried out on five sites from 1975 until 1996 in an attempt to quantify such destruction by sampling and quantifying pottery scatters within the topsoil. The project attempted to examine rates of site destruction in terms of the accumulations of sherds within the topsoil, pottery abra-

sion and degradation and movement of pottery within the topsoil horizons.

The locations of the sites mentioned in the text are shown in Figure 1. All sites are to the west of Peterborough, within the parishes of Elton, (Cambs), Haddon, (Cambs) and Fotheringhay, (Northants). Table 1 gives the sites' precise locations, and details related to geology, the length of time the sites were surveyed and bibliographic references.

All the sites have been monitored for rates of destruction of underlying Roman deposits and three sites have also been monitored for aspects of the destruction rates of Saxon material.

Methodology

At each site a 20m square was gridded in the same position each year from fixed points located in adjacent field boundaries. At Haddon (site A) the fixed points were left within the field next to the on-going excavation of the Roman and Saxon site (Upex 1993; 2002). Pottery was assessed within the square without being removed, as the monitoring progress was ongoing. There was no attempt to assess the type or dates of the pottery beyond the fact that it was Roman or Saxon, as these were the only categories that were being recorded.

Problems arose over the uniformity of the conditions under which assessments were carried out. The surfaces of the fields varied in evenness between years. In years when crops such as sugar beet or oil-seed rape were being grown the soil was worked to a fine tilth, making pottery recognition easy. In other years the soil was not broken down as finely and could have restricted or inhibited pottery identification. The same variability was recognised with rainfall and soil moisture. Assessments were made where possible after heavy and recent rain which washed soil from pottery and made recognition easier. However it was sometimes difficult to ensure a standardised approach. Light intensity and cloud cover were also variable and could have influenced the ability of field workers to record pottery uniformly. Lastly there was variability between people carrying out the work.

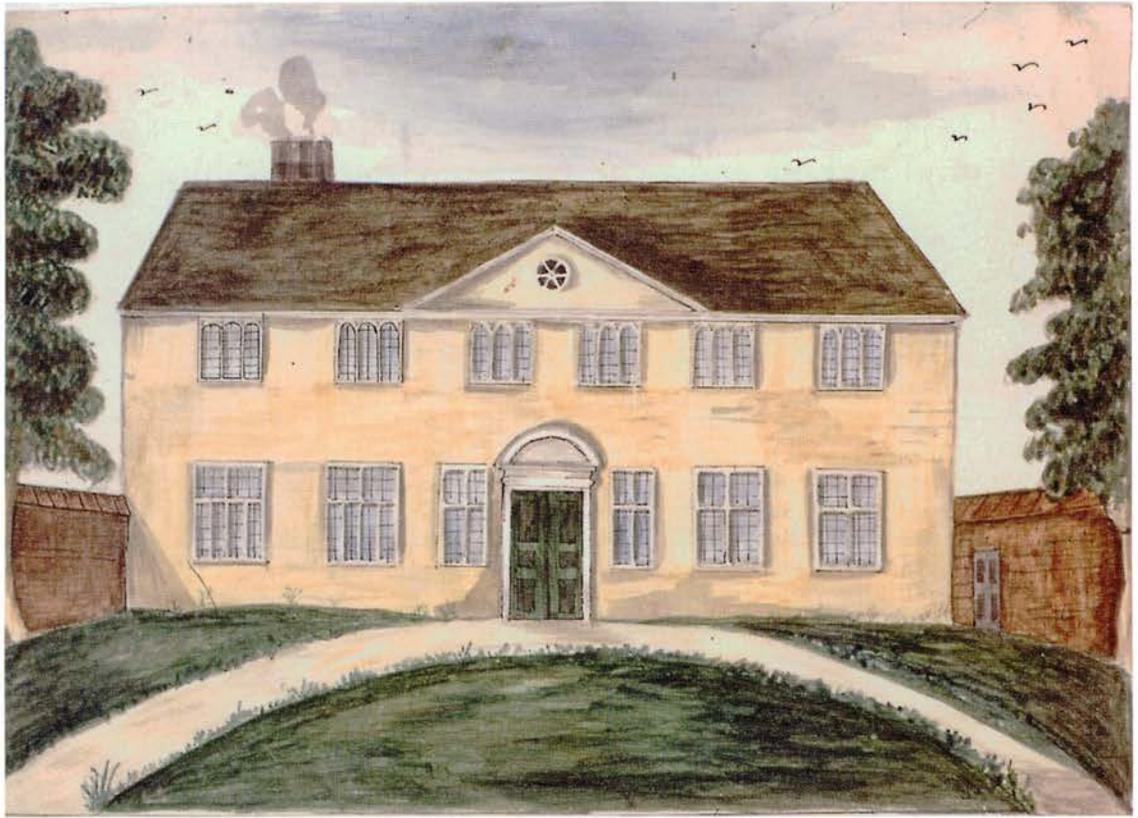


Plate 1. Barham Hall, Linton, drawn by R Relhan.



Plate 2. Bourn Hall, drawn by R Relhan (1819).



Plate 3. Childerley Hall, the parlour wing, drawn by R. Relhan (1808).

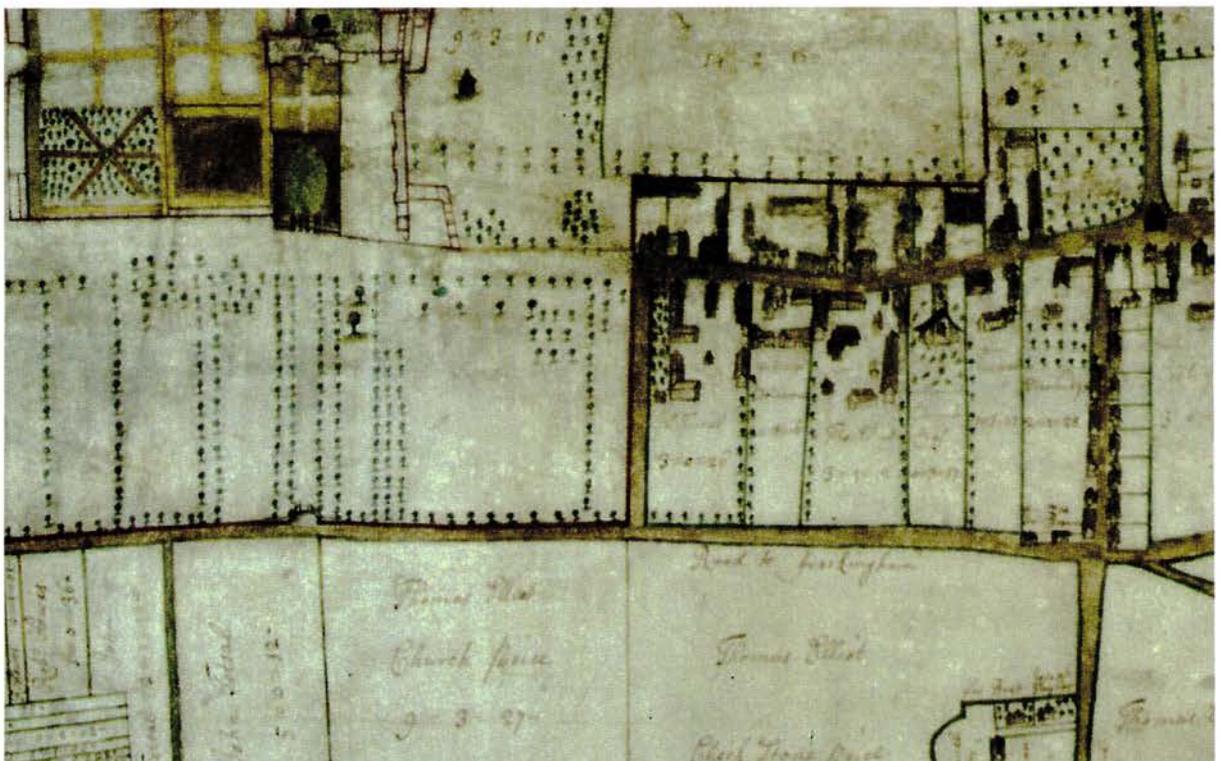


Plate 4. Chippenham: detail of 1712 map (CRO). (Hall: top left).

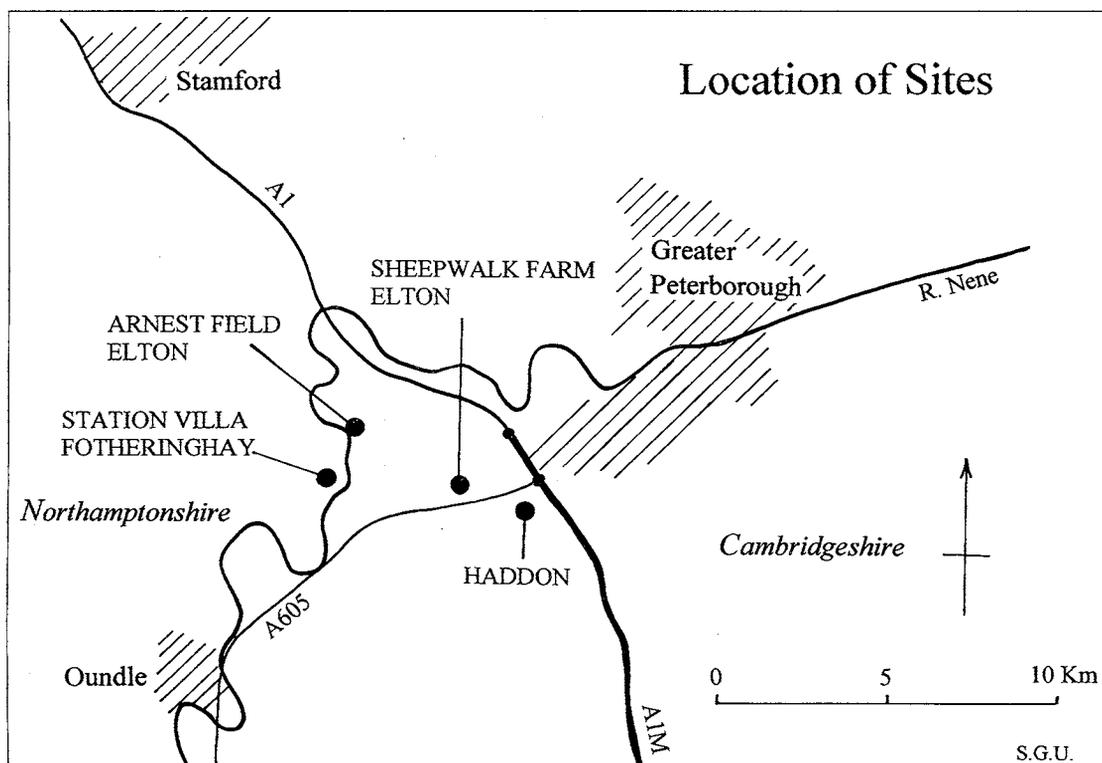


Figure 1. Location of sites.

Table 1. Details of sites referred to in the text.

Site	Period	Parish/county	Grid Ref.	Refs.	Geology	Survey period
Haddon (site A)	Roman Saxon	Haddon, Cambs	TL19119941	Upex 1993 & 2002	Oxford Clay	1990-1996
Haddon (site B)	Roman Saxon	Haddon, Cambs	TL 19135935	O'Brien 1990 & 1994	Oxford Clay	1990-1996
Sheepwalk Farm	Roman Saxon	Elton, Cambs	TL 19137931		Oxford Clay	1975-1996
Arnest Field	Roman	Elton, Cambs	TL 09079962		Second Terrace Gravels	1978-1991
Station Villa	Roman	Fotheringhay, Northants	TL 09079945	RCHM 1975 p 40, no 12, Fig 50	Second Terrace Gravels	1980-1996

Some were new to fieldwork techniques and this may have caused some differences. All these aspects of variability are further discussed by Woodward (1978, figs 3-5; see also Schofield 2000). The biggest concern however was the field-workers ability to recognise Saxon pottery when quantitative analysis was being carried out. To this end each group plotting this aspect of the work were given sample pottery to handle prior to survey work. However, there was no real way that the standardisation of all of the above aspects could

have been scientifically controlled.

Pottery sherd numbers and distal length measurements

The recovery of pottery sherd numbers took place at four sites, including monitoring of one site for over twenty years, starting in 1975. In all cases the same area within the fields was surveyed, and the sherds counted on the surface of the field. The results of this work are shown in Figures 2, 3, 4 & 5A.

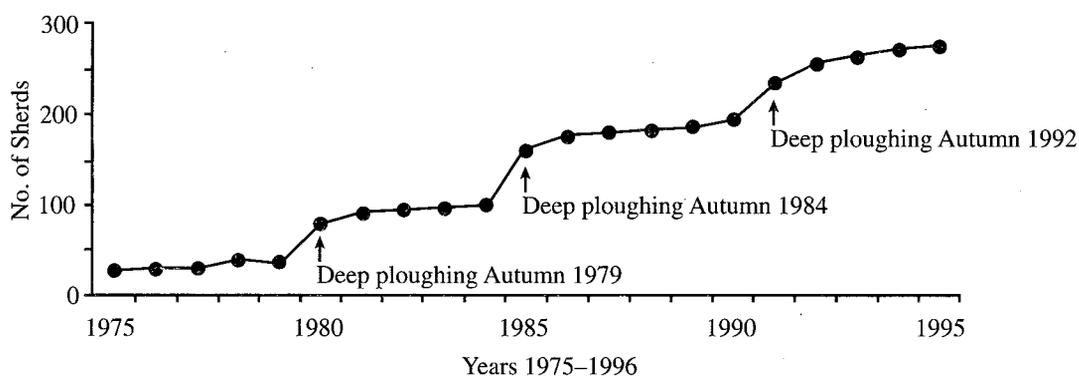


Figure 2. Roman pottery sherd numbers: Sheepwalk Farm, Elton.

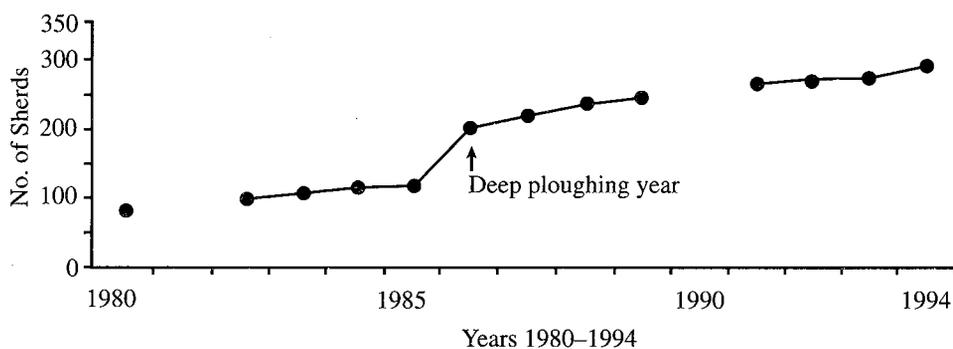


Figure 3. Roman pottery sherd numbers: Station Villa, Fotheringhay.

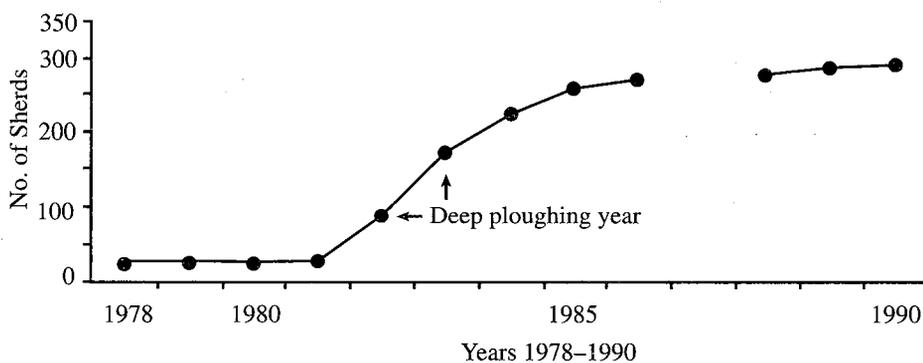


Figure 4. Roman pottery sherd numbers: Arnest Field, Elton.

Clearly the most significant result is the increase in the numbers of sherds after deep ploughing. At Sheepwalk Farm for example the results show three years of deep ploughing: 1979, 1984 and 1992. In each case the numbers of sherds shows a significant increase on the previous year. In 1984 there were 100 sherds within the monitored square but after deep ploughing in 1984 numbers rose to 164 in January 1985. Similar increases can be seen in Figures 3, 4 & 5A. In each incidence of deep ploughing the actual numbers of sherds on the surface area of the topsoil rose dramatically. At Arnest Field at Elton (Figure 4) deep ploughing occurred for two years in succession

in 1982 and again in 1983 and the number of sherds increased from 39 to 174. The largest rise in Roman sherd numbers after a single deep ploughing was at Haddon (site A) between 1992 and 1993 with a rise of 211 sherds, from 269 to 480.

Such findings simply reveal what one would expect when deep ploughing occurs: the plough has cut deeper into the underlying archaeological layers to bring more material to the surface. However the results do quantify to some extent the rates of destruction by ploughing that have been talked about in the literature (eg Hinchliffe & Schadla-Hall 1980; Boismier 1998). What is interesting from the statistics



Plate 5. Dry Drayton Hall, drawn by R Relhan (1809).

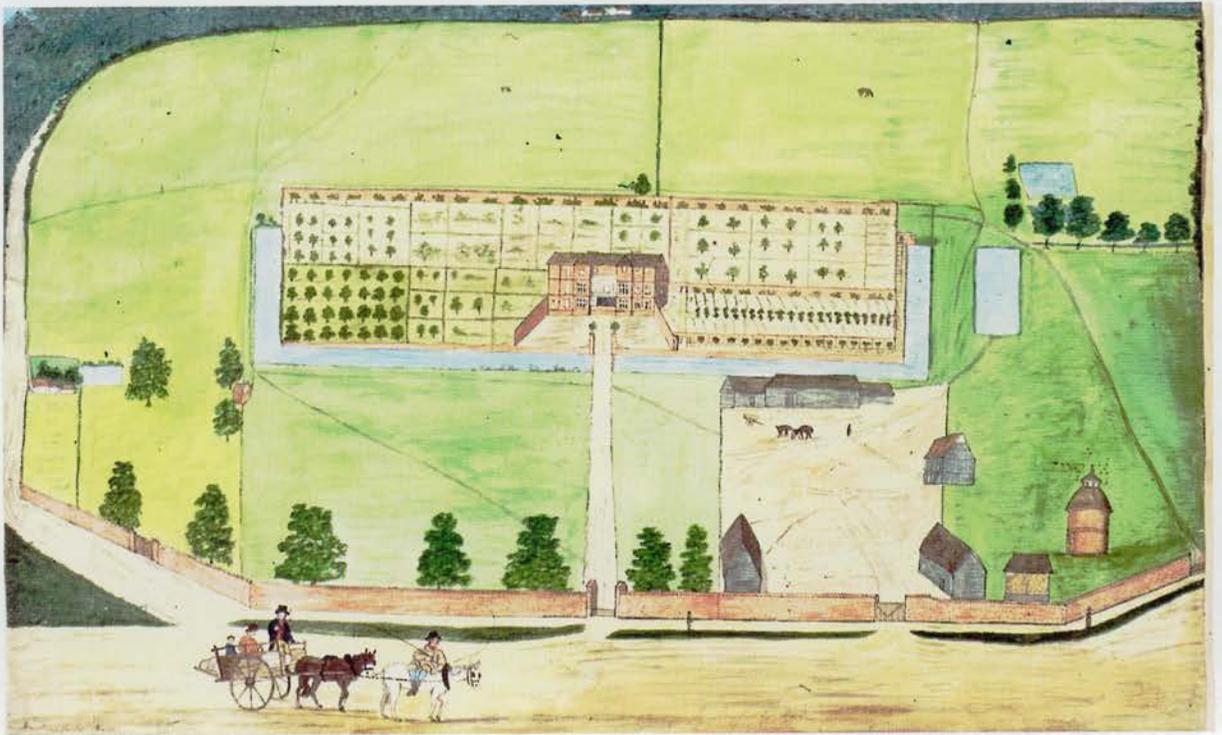


Plate 6. Haslingfield Hall, drawn by R Relhan (c. 1819).



Plate 7. Cherry Hinton. Smithy, etc, back road to Cambridge footpath.



Plate 8. Cherry Hinton. Old smithy, 1993. TL 4855 5638



Plate 9. Grantchester Mill 'before the fire' in 1928.



Plate 10. Grantchester. The Old Mill, with a house built in 1930 to replace the burnt mill, 1997.

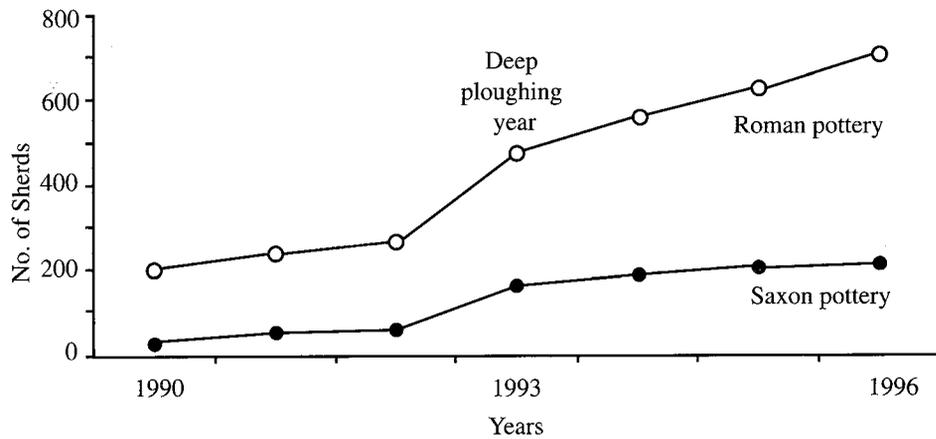


Figure 5A. Numbers of Roman and Saxon sherds at Haddon, (Site A).

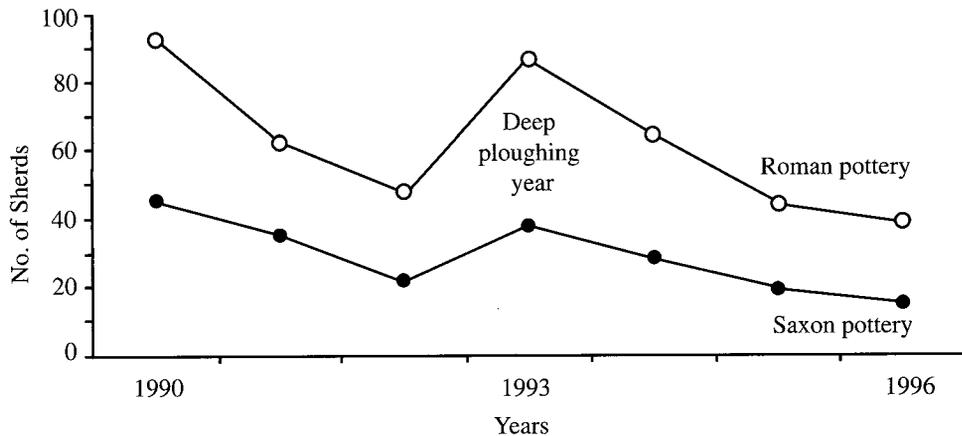


Figure 5B. Distal length of Roman and Saxon sherds at Haddon, (Site A).

is that the numbers of sherds continues to increase in subsequent years. This aspect can be seen in all four sites and probably reflects the breakdown of larger into smaller sherds by abrasion caused by farm machinery, frost action and general weathering. This breakdown or reduction in sherd size is best seen in Figures 5B and 6B. These two graphs show the distal lengths of both Roman and Saxon pottery for Haddon (site A) and Roman pottery at Sheepwalk Farm, Elton. For comparative purposes the numbers of sherds have also been plotted as Figures 5A and 6A. As the graphs show, at both sites the sherd size increases as deep ploughing occurs and new material is lifted out of a stratified context and mixed within the topsoil horizon. Sherd distal length is then reduced in subsequent years as sherd abrasion within the soil occurs.

Haddon (site A) was the only place where assessment was made of the numbers of sherds and breakdown of early Saxon pottery. Figure 5A clearly shows a reduced number of Saxon compared with Roman sherds. This is what one might expect but it also shows that sherds abrade within the soil to smaller fragments.

Volume of destruction

The volume or rate of destruction is on many arable sites simply just a comment related to a visual impression, unless there has been an excavation where a quantifiable comment can be made. Even here however there is little comparative data regarding the rate of destruction between years.

An attempt at Haddon (site A) to quantify destruction was made over a period of deep ploughing by measuring the weight of pottery present within the topsoil the years before, during and after the ploughing. On this site there was an average soil depth of 36cm, which covered the archaeological deposits. Within the 20m square being monitored at Haddon, pottery was collected within each square metre and weighed (this square was also being monitored for pottery size and sherd numbers so the pottery after weighing was left for future quantification). The overall weight of pottery for the whole square was calculated in the 1992 season as 8.43kg. Weight measurements were also made for 1993 after deep ploughing and again for 1994, figures shown in Table 2.

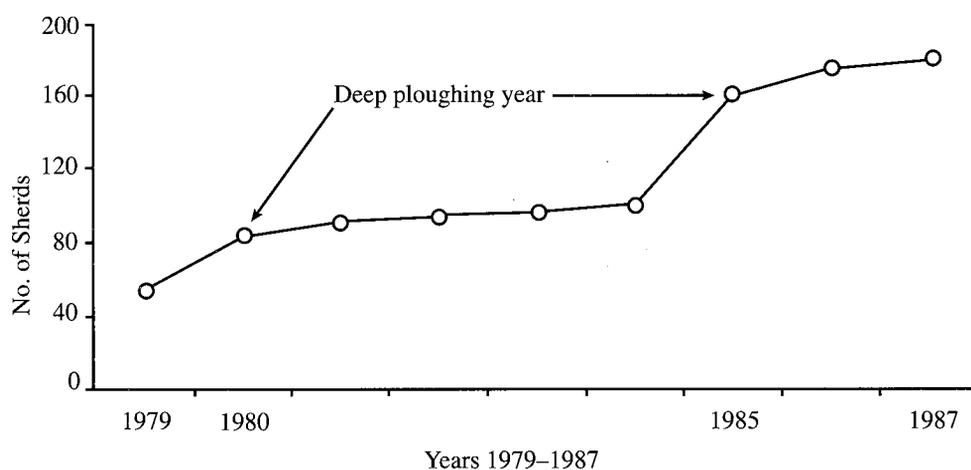


Figure 6A. Sheepwalk farm Elton: Roman sherd numbers.

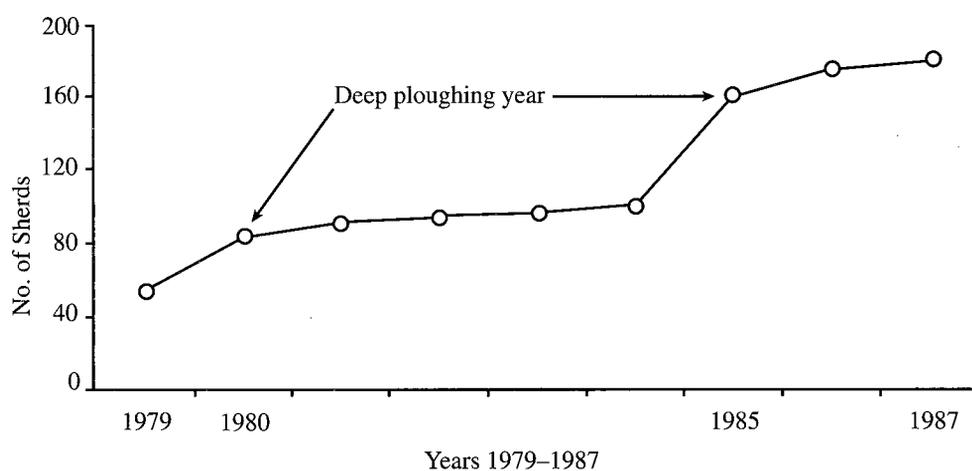


Figure 6B. Sheepwalk farm Elton: Roman pottery: distal lengths.

Table 2. Sherd and weight analysis from 1992 to 1994 for one 20m square at Haddon (site A).

Year	1992	1993	1994
Sherd nos.	269	480	567
Sherd increase		211	87
Weight	8.43kg	19.24kg	19.40kg
Weight increase		10.81kg	0.16kg
Average sherd weight	0.0313	0.0400	0.0342

The weight analysis at Haddon shows that between 1992 and 1993 there was an increase in the number of sherds from 269 to 480 with a corresponding increase in weight from 8.43 to 19.24kg. The ploughing of 1994, although not deep ploughing, still increased the actual numbers of sherds on the surface. It was estimated that this increase was more to do with sherds being abraded within the soil and broken down rather than new sherds being ploughed out of an archaeological context and brought to the surface. This idea is further substantiated by analysis of the weights of

pottery present. From 1992 to 1993 the weight increase was 10.81kg but between 1993 and 1994 an increase of only 0.16kg was recorded, implying that pottery was being broken down as the sherd count increased from 480 to 567.

To expand this line of argument further it ought to be possible to calculate the total amount of pottery and its weight within the topsoil for the rest of the site, which covered twelve (20m by 20m) squares. Clearly one ought to expect differential pottery volume across a site, reflecting archaeological 'hotspots'. In the following calculations such 'hotspots' were allowed for by the fact that the sample square was set over an area visually assessed to be representative of the whole site. This ought to work out for the 1993 figures as

$$\begin{aligned} \text{monitored square} &= 480 \text{ sherds} \times 12 = 5760 \text{ sherds} \\ \text{monitored square} &= 19.24\text{kg} \times 12 = 230.88\text{kg} \end{aligned}$$

Soil unevenness made it difficult to calculate a depth or 'zone' within the soil from which the pottery was recorded on the surface but it was estimated that this was a zone that was approximately 6cm deep. This

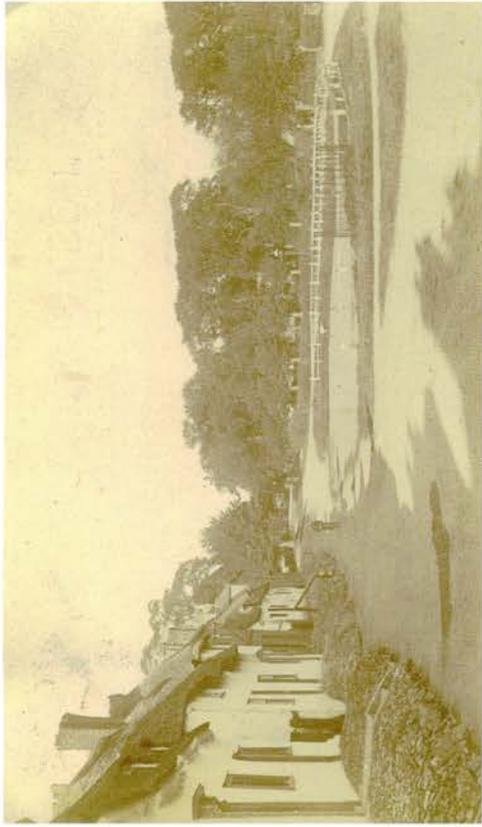


Plate 13. Swavesey before the fire of 1912. Every house with the exception of the last two back ones no longer stands. The postcard includes the message 'I have sent you a view of Swan Pond, Swavesey, the one in front of Mrs Mustell's house'.



Plate 14. Swavesey, Swan Pond, 1998.



Plate 11. Harlton. May 1930.

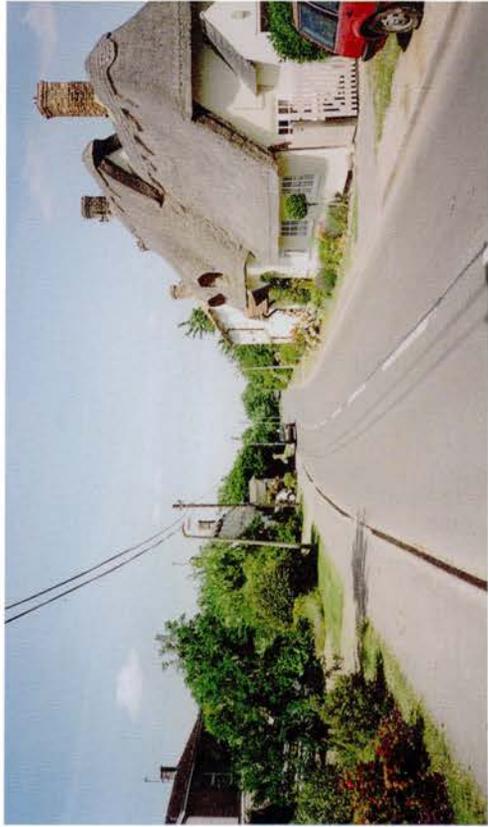


Plate 12. Harlton. Dilley's Cottage (Armitage), looking towards Wheatshenf, June 1995. Buildings on one side of the road have survived well, the others have suffered.

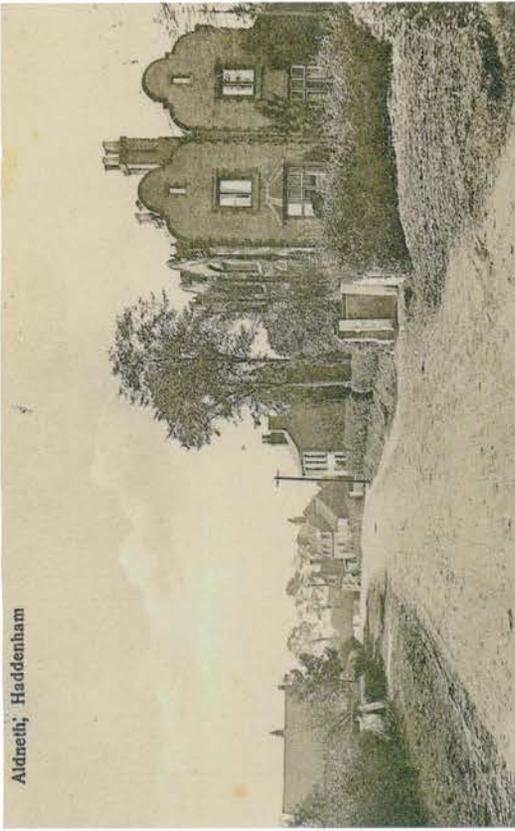


Plate 15. Haddenham. Aldreth 1926, with imposing Dutch-style house.



Plate 17. Lode. Old mill and kilns, June 1927.



Plate 16. Haddenham 1994, same view.



Plate 18. Lode. Same view of National Trust property, March 1993.

estimate would be especially true for the year 1992 because the farmer at the Haddon site had worked the soil into a very fine even tilth to plant oilseed rape. If the estimate for the 'pottery recovery zone' were to be set at 6cms and the average depth of the soil horizon at Haddon was 36cms (straight on top of the archaeological deposit) then it is possible to calculate the weight and the numbers of sherds within the total soil mass of the site. These calculations are shown in Table 3, which gives an overall weight of pottery in 1993 of 1385.28kg and a total sherd estimate of 34,560.

What is also possible from these estimates is to calculate the approximate overall rate of 'new' pottery in the topsoil between 1992 and 1993, considering that 1993 was a year of deep ploughing (see Fig 5A and Table 3).

The increase in pottery sherds 1992-3 for the monitored square was 211 and the weight increase 10.81kg. If these figures are multiplied by 12 (estimated to make up the core of the site) then the actual increase in surface (top 6cm) material works out to be 2532 sherds with an estimated increase in weight of 129.77kg. Again if these figures are multiplied by the estimated depth of the topsoil (36cm) the sherd count increase 1992-3 works out at 15,192 and the weight increase at 778.32kg. Such figures, although beset with problems linked to the accuracy of original calculations and problems related to the even distribution of sherds throughout the soils vertical horizon, do give an estimate of the rate of destruction during a single year of deep ploughing. It points to the general picture that .75 metric tonne of pottery could well have been ploughed out of an undisturbed archaeological context! This fact becomes even more worrying when Haddon proved to have very late occupation layers that reached into the 5th and 6th centuries: one of our best chances of unraveling these 'dark age' centuries is by excavation of the top stratigraphic layers.

Pottery movement within topsoil

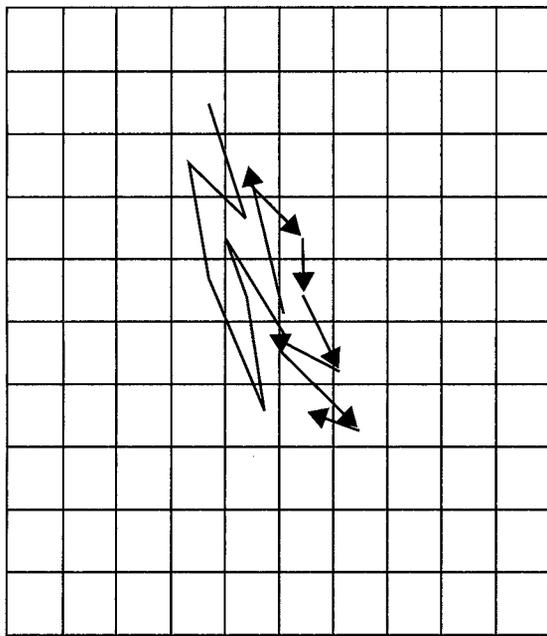
The site at Haddon also gave the opportunity to carry out research into the movement of pottery sherds within topsoil. Ploughing, harrowing and drilling not only break into the top layers of archaeological sites and then reduce sherd size by abrasion but it is assumed that once pottery is within the topsoil it ought to be possible to drag and move it from its original position. This would be significant if the surface plots of material are used to indicate underlying archaeological features. At Haddon (site A) over a seven year period the horizontal movement of pottery within the topsoil was monitored to calculate actual distances which pottery could be moved. Six large sherds (distal length 10cm) and six small sherds (distal length 5cm) were introduced into a monitored square which could be re-surveyed and fixed every year. The pottery was placed within the centre and recovered the following year, when the new positions were plotted. Each sherd was placed back into the new 'moved' position and re-plotted again the following year. To overcome the problem of pottery retrieval within a vertical soil depth of up to 36cm, each sherd was drilled and tagged with a reference number. The metal tag also acted as a 'recovery' agent allowing it to be pinpointed with a metal detector each year.

Plots of the overall movement of both sets of sherds showed that there was general movement as ploughing and harrowing shifted the original positions. Figure 7 shows a plot of two typical sherds for each of the large and small sizes that were monitored. This shows that in some years the sherds were moved one way and in following years were dragged back again. The average movement away from the original point was for the small sherds only 23cm and for the large sherds 35cm. Both figures therefore show little horizontal movement (see also Taylor, 1979, 99; Reynolds 1989).

The downslope movement of pottery was tested between 1990 and 1993 in a similar exercise where

Table 3. Figures and estimates for Haddon (site A) showing the calculations for the whole site (based on 12 squares) extrapolated from Table 2.

Depth of soil	Total weight of pottery 1993	Total no of sherds 1993	Increase in weight 1992-3	Increase in sherd nos 1992-3	
6cms	230.88kg	5760	129.77kg	2532	ACTUAL
12cms	461.76kg	11,520	259.44kg	5064	ESTIMATE
18cms	692.64kg	17,280	389.16kg	7596	ESTIMATE
24cms	923.52kg	23,040	518.88kg	10,128	ESTIMATE
30cms	1,154.44kg	28,800	648.60kg	12,660	ESTIMATE
36cms	1,385.28kg	34,560 sherds	778.32kg	15,192 sherds	Estimated Totals



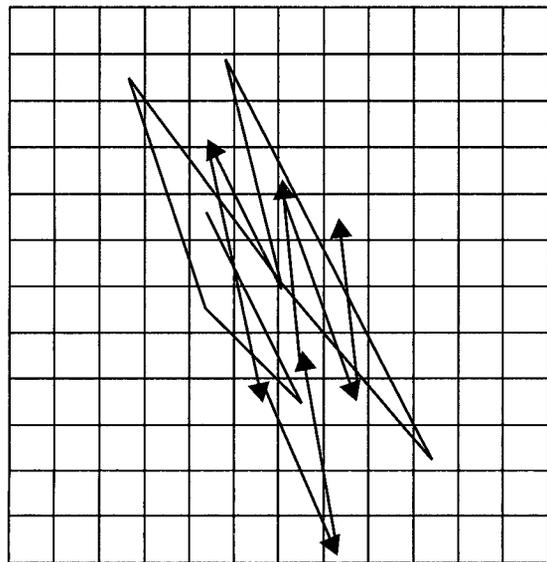
1m

10m

Figure 7a.
Small Sized Pottery Sherd Movement
(distal length 5cm) Within the Topsoil
at Haddon, Cambs (Two sherds plotted)
1990–1996.

↑
Site/grid north

↘
Direction of
Modern Ploughing



1m

12m

Figure 7b.
Large Sized Pottery Sherd Movement
(distal length 10cm) Within the Topsoil
at Haddon, Cambs (Two sherds plotted)
1990–1996.

seven pottery sherds (distal length 10cm) were introduced into a sample square at Haddon (site B), on a slope of 12 degrees. The control mechanisms were the same as for Haddon site A, which was on level ground. Here there was a marked movement of material down slope, aided by the fact that the farmer ploughed this particular field up and down the slope. Had the site been 'contour ploughed' the results may have been different. The 'averaged' results of both the exercise on the flat and the sloping site are shown in Figure 8. In Figure 8A the average deviation of the seven sample sherds from their original position is shown for the site on the flat ground (Haddon site A). This shows for example that for 1991 there was move-

ment of all seven sherds that averaged 1.34m in one direction and 1.56m in the other. The right hand column in Figure 8A shows the average over the whole four-year period, indicating little movement.

Figure 8B shows a similar plot but this time for the sloping site (Haddon site B). The averaged figures show that there was general movement downslope. In 1991 for example this was 59cms, but the average for all four years was 27cm.

Thus it is possible that on sloping ground (12 degrees) sherds could migrate at an average annual rate of 27cm.

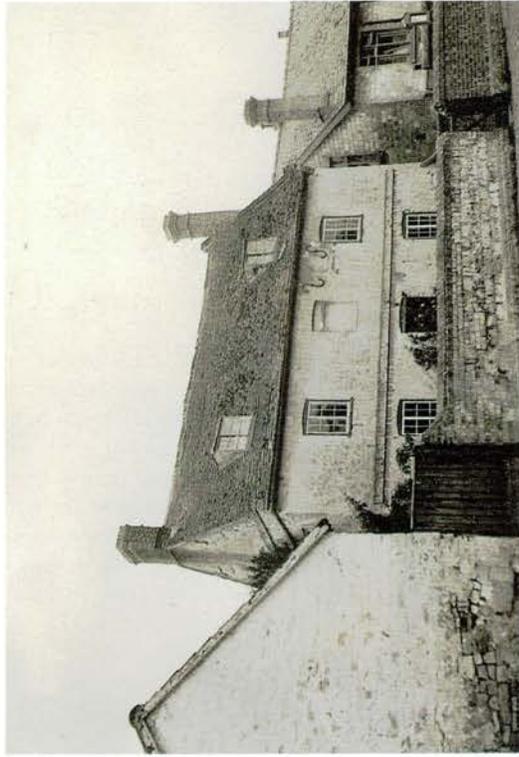


Plate 19. Swaffham Bulbeck. Original school, July 1928.



Plate 21. Swaffham Prior. Churches of St Mary, and St Cyriac and St Julitta c. 1900.



Plate 20. Swaffham Bulbeck. Village hall, 1992.

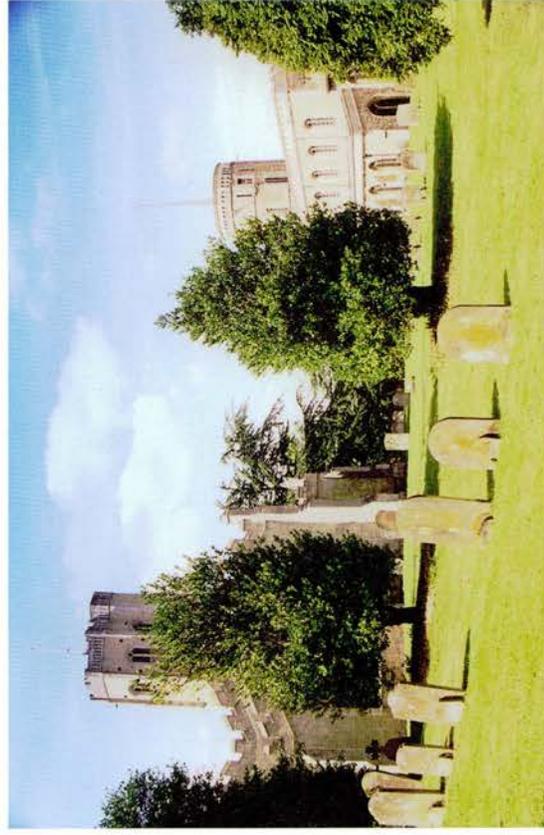


Plate 22. Swaffham Prior. Same view after restoration and tidying up, 1993.

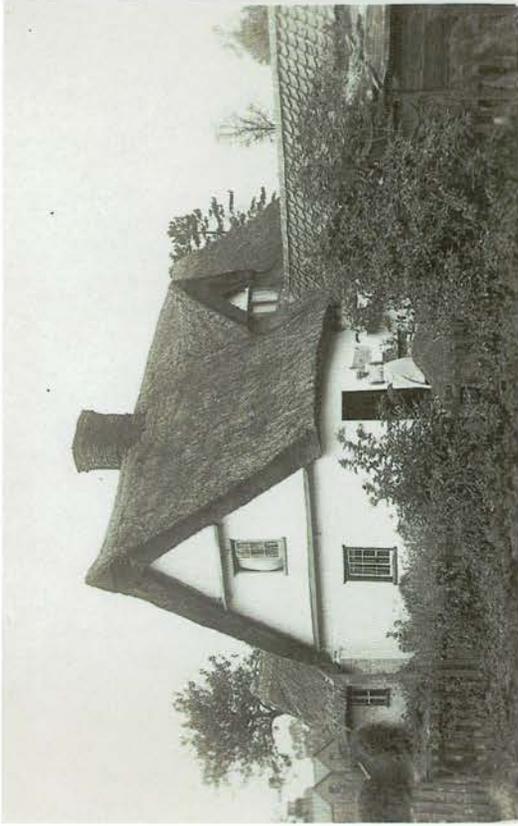


Plate 23. Teversham. Cottages on the green.

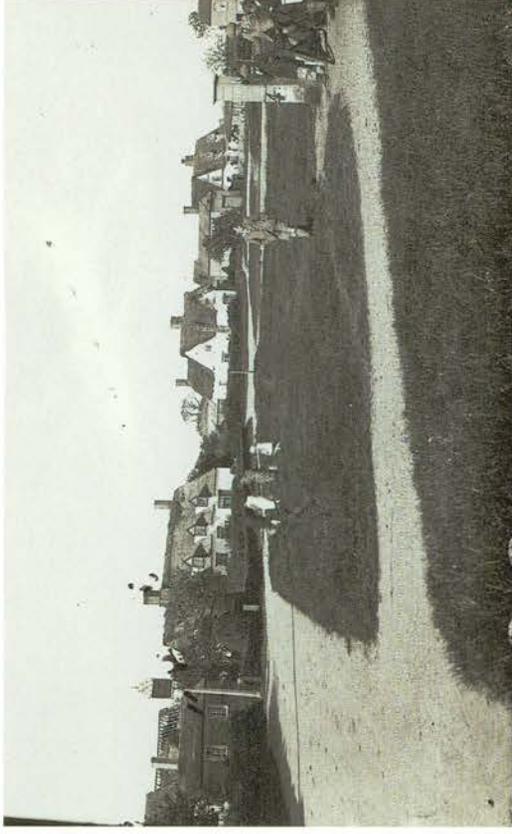


Plate 25. Wicken. Village green 1929.



Plate 24. Teversham. Cottages looking little different, 1998.



Plate 26. Wicken. Village green with play equipment, 1994.

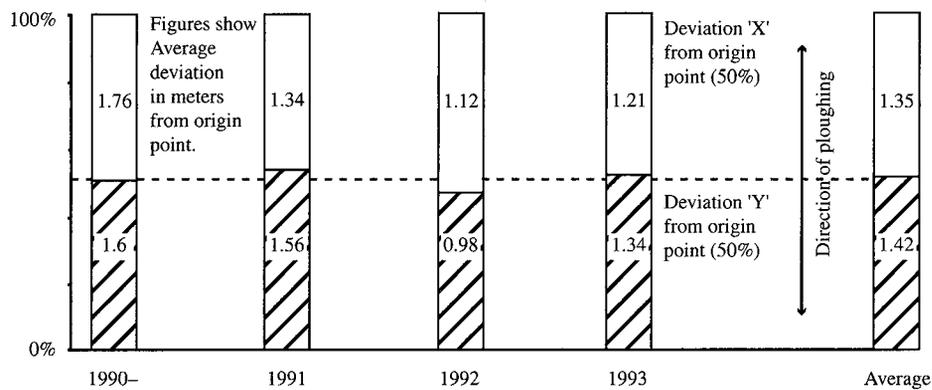


Figure 8A. Small sized pottery sherd movement within the topsoil, Haddon (Site A), (flat surface).

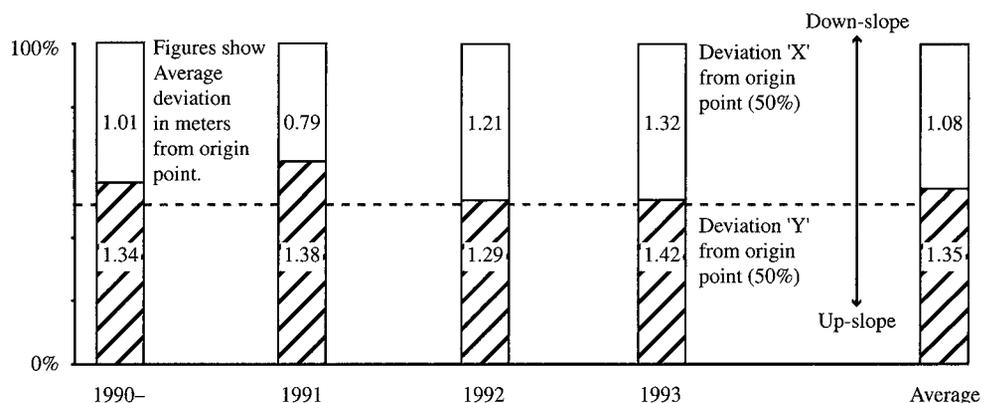


Figure 8B. Small sized pottery sherd movement within the topsoil, Haddon (Site B), (12 degree slope).

Weathering of pottery within the soil

In addition to abrasion the influence of weathering on pottery, especially friable prehistoric and Saxon ceramics, must also be a cause of concern. Roman pottery is fairly 'tough' stuff, but even so its abrasion into smaller sherd sizes has been well illustrated in Figures 5A & 6A. Saxon pottery was abraded down to a distal mean length at Haddon (site A) of 15mm. Such eroded sherds look like small pebbles and become almost invisible except to the most experienced field worker.

Both mechanical and chemical weathering agents may be responsible for the breakdown of archaeological material in the soil (Lambert 1987, 33-47; Pollard & Heron 1996, 187). Apart from agricultural practices, chief among the mechanical agents would be frost action, using a basic freeze thaw mechanism, which through time would be especially destructive to pottery with highly porous fabrics, which most prehistoric and Saxon wares tend to have. In addition to frost, seasonal and diurnal temperature ranges could also cause the development of stress fractures within the fabrics of ceramic material, causing them to abrade. Sunlight and the effects of U/V light may also cause stress to material exposed for long periods on the surfaces of fields. Little is known about how pottery would react to such conditions but it could speed up the process of abrasion (Desmond Brown, pers comm). The effects of sun, temperature and frost

would be especially true for surface material but would presumably decrease the deeper the material was buried.

As for the problems caused by chemical weathering, acid rain may be a growing problem here. This already has caused weathering to most parent rock surfaces beneath the soil (Knapp 1982, 108-113). However, potentially more worrying are the agricultural fertilisers and dressings which are repeatedly added to crops and which may be responsible for pottery being 'dissolved' chemically by weak acids. Typical among these are fertilisers (used for example in the growing of cereals and potatoes) which contain approximately 8% nitrogen (NO_3 = nitrates group), 13% phosphorous (PO_3 = phosphates group), and 17% potassium. Taken into solution with acidic rain-water this would provide an acid base for increased chemical weathering. Most farm crops prefer slightly acid soil conditions. Potatoes grow best when the soil is around a Ph value of 6.0 while barley and wheat prefer a Ph of 6.7 (Warn, 1985, 20). Even more threatening are the dressings applied to grassland, which is best suited to a Ph value of around 5.0. Long term applications of fertilisers and dressing would leech into all horizons of the soil, potentially increasing acidity.

Implications for the corrosion of ceramic material can be extended to metals. The coin evidence from the bathhouse site at Haddon (site A) has been examined

by Adrian Challands, who commented that the coins showed little sign of wear but that they were all very heavily corroded. Such corrosion may well be increasing with continued applications of fertilisers.

The threat to ceramic materials within soil horizons from both natural and chemical weathering is therefore serious and worrying. Research carried out at the University of Brunei indicates that at the current rate of decay caused by chemical weathering alone, the chemical cocktail within most modern plough soils in the English Midlands could be responsible for the disappearance of most of the Saxon pottery currently within the topsoil horizons within the next ten years. Clearly this rate of destruction would be dependent on the size of sherd/ friability of the fabric/depth within the soil horizon etc. However, when the average sized sherds from the site at Haddon (site A) were subjected to testing, a model was produced that suggested that they had a life expectancy of around ten years before they totally dissolved. Similar results could be expected for pottery from other periods (especially prehistoric material) which have similarly absorbent and friable fabrics.

With the continuous leaching of agriculturally applied chemicals through the soils horizons chemical weathering ought to penetrate even the lower stratified layers on some archaeological sites. The model of chemical weathering indicates that, through time, it might only be those layers which are either very deep and/or waterlogged and therefore excluding air which escape the effects of agricultural chemical applications.

Conclusions

The methodological problems inherent in research of this nature have been partly outlined already. Aspects of geology and differing soil types, and of the somewhat crude way in which quantitative calculations of sherd numbers and their weights have been made could all be questioned and refined. However, whatever the methodological problems there is clear evidence of the sheer destructive capability of ploughing, especially deep ploughing, and its ability to abrade archaeological sites with devastating loss of evidence. Sites such as Haddon (site A), where it has been possible to calculate not just the crude numbers of sherds within the topsoil but more importantly to estimate the total weight of new material ploughed into the topsoil from the underlying deposits, suggests large scale destruction. Such destruction is even more worrying when one considers that the site at Haddon has (or had?) the potential to link late Roman with early Saxon deposits. With continuous ploughing all that may be left to show this transition may be deeply stratified deposits in pits and wells, forming isolated areas between ploughed out surfaces.

Perhaps, with this in mind, research ought to be launched to assess the remaining potential of the evidence. This may take the form of fieldwalking followed by selective excavation to assess damage

and preservation levels. A similar argument was put forward by Jeffrey (1978) in an attempt to 'manage' the agricultural destruction in Hertfordshire. The campaign launched in July 2003 by English Heritage to encourage farmers to 'protect and not plough' will hopefully draw greater attention to the problems of deep ploughing (English Heritage 2003a). However destructive ploughing is, equally worrying is the policy of putting sites down to grassland management to preserve them from the effects of ploughing. Research contained within this paper suggests that even on such 'preserved' grassland sites the application of chemical fertilisers is potentially destructive.

Acknowledgements

The majority of monitoring work was carried out by students at Peterborough Regional College and the results have been prepared for publication with the support of the University of Brunei.

Over the years that research has taken place many people have given generously of their time and effort. Chief among these have been Min Braynt, Robert Coffey, Polly Davis, Robert Davis, Ben Davis, Ian Dawson, Chris Everett, David Fleet, Annelliey Greg, Jack Greenleas, Eileen and John Hammond, Rita Healands, Danny Holmes, Paul Middleton, Ray North, Mike O'Brien, Sue Peace, Derek Roberts, Stacey Roe, Ron Rolands, Stephanie Rushton, Ian Russell, and Shirley Walsh. Farmers have generously allowed access to their land and thanks have to be made to Fotheringhay Estate Co, Elton Estate Co, Robert Fray, Richard Hankins and George Martin.

Dr Desmond Brown (Dept of Mathematics) and Dr Miroslav Radojevic (Dept of Chemistry) at the University of Brunei provided useful ideas, comments and analysis relating to the chemical weathering of material in the soil and Adrian Challands provided comments on the corrosion of metalwork and coins at Haddon. Support, help and advice on earlier drafts of this paper have also been given by John Hadman, Dr JP Wild, GB Dannell and the late Alex Main; all errors however remain my own.

Cambridge Antiquarian Society is grateful to the Council for British Archaeology for a grant towards the publication of this article.

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Fieldwork in Cambridgeshire 2003

Alison Dickens, Alexandra Grassam, Elizabeth Popescu and Sarah Poppy

The work outlined below has been conducted for a variety of reasons, including development control derived projects, emergency recording and research. All reports cited are available in the County Sites and Monuments Record, Cambridge for public consultation.

Abbreviations:

AFU	Cambridgeshire County Council Archaeological Field Unit
BUFAU	Birmingham University Field Archaeology Unit
AS	Archaeological Solutions, previously Hertfordshire Archaeological Trust
CAU	Cambridge Archaeological Unit
NAU	Northampton Archaeological Unit

Babraham, Babraham Research Campus, Babraham Park

TL 51305040 (CAU Report 597)

J Wills

Evidence for continuous activity on the site dating from the Roman period up until the modern day was recovered. A single early Anglo-Saxon sunken-featured building was discovered. The use of the river as a mode of transport in the 10th/11th centuries was suggested by the discovery of a possible 'hard'. Numerous ditches and gullies forming part of the medieval field system were excavated, the preservation of which can be seen in the field systems within the modern landscape around Babraham. Activities associated with the construction of the 16th century Hall were identified in the form of ditches and possible flood defences. The latest phase of activity recorded dated to the 19th century, creation of formal gardens.

Bottisham, Beechwood Avenue

TL54446064 (AFU Report A229)

R Atkins

Evaluation revealed a few Saxo-Norman features, comprising a possible well and rubbish pit. No later medieval features were found, and the site has been considerably disturbed in recent times.

Bottisham, Tunbridge Hall Farm

TL54616092 (CAU Report 552)

J Wills

The investigation recorded stone-footed buildings and painted wall plaster, indicating a high status Roman settlement. The remains appear to belong to the later Roman period (c. 200–450) although sequential superimposed fields indicate a settlement spanning the broader Roman period. Industrial activities were indicated by quantities of slag.

Boxworth Big Dig at Boxworth

TL34966446

I Taylor

Following a series of surface finds, a test pit revealed mid Iron Age-Roman pottery and other finds, indicating domestic occupation in the vicinity.

Buckden, Margetts Farm

TL21006670 (Albion Archaeology Report 2004/11)

JM Oetgen and D Ingham

Sparse archaeological features comprised ditches, pits and an isolated posthole. Two features contained Roman pottery.

Buckden, St Mary's Church

TL19266766 (Hertfordshire Archaeological Trust Report 1267)

NA Crank and J Grant

An auger survey and test pits revealed a deep redeposited natural material, possibly representing moat infill or upcast, which could equally be interpreted as a construction deposit for the church. Finds within this deposit included abraded 12th–14th century sherds.

Burwell, 9 Mandeville

TL 58936600 (AFU Report A225)

G Bailey

Evaluation revealed a quarry for clunch extraction which contained sherds of possible medieval pottery. The quarry was located adjacent to Church Lane and may relate to development associated with St Mary's church.

Cambourne, Little Common Farm

TL33115918 (Wessex Archaeology Report 45973.2)

D Godden

Evidence was found for two phases of field systems, dating from the Roman to Saxon periods. Medieval ridge and furrow was observed.

Cambourne, Monk Field Farm

TL32485919 (Wessex Archaeology Report 45973.2)

D Godden

Evidence of a Middle-Late Iron Age settlement was recovered, consisting of a D shaped enclosure with internal divisions and structures. The enclosure was abandoned in the Late Iron Age, and the settlement restructured. A number of pits date to this period. The settlement was surrounded by an Iron Age/Roman field system. Medieval ridge and furrow was observed.

Cambourne

TL33095927 (Wessex Archaeology Report 45976.13)

R Every

Large-scale evaluation revealed an Early/Middle Iron Age settlement and field system on one site and a Roman cremation and ditches on another. Two further field systems were recorded, probably dating to the Roman period. A possible palaeochannel was identified, and traces of ridge and furrow were evident in most trenches.

Cambridge, Addenbrooke's Hospital

TL46255499 (CAU Report 578)

J Tipper

Evaluation revealed archaeological features containing mid-Roman pottery. Elsewhere the extent of truncation caused by construction of Addenbrooke's Hospital was shown to be limited.

Cambridge, Brooklands Avenue

TL 4553 5655 (CAU Report 608)

D Mackay and A Cooper for CAU

Two phases of undated ditches were revealed, a later Bronze Age pit and traces of medieval ridge and furrow. There was also significant disturbance from later activity, especially in the southern end of the investigation area.

Cambridge Queens' College

TL44715813 (CAU Report 589)

J Tipper

Monitoring during replacement of the floor at Old Hall revealed vaulted cellars and a sequence of deposits relating to construction and alteration of the hall.

Cambridge, Cherry Hinton, Land Adjacent to 63 Church End

TL 48655762 (CAU Report 607)

C Cessford and R Mortimer

Excavations revealed a major early medieval settlement founded in the late 9th century and in use until the early 12th century. Occupation continued after this point, but on a much reduced scale, until the early

14th century, when activity declined even further. The main phase of late 9th to early 12th century occupation probably represents part of a manorial complex, while the later activity is interpreted as a peripheral area of the medieval village. Small amounts of prehistoric, Roman and Middle Saxon material indicate that the area was intermittently utilised for agriculture prior to the late 9th century.

Cambridge, Cherry Hinton, Rosemary Lane

TL48545765 (CAU Report 561)

R Mortimer

Further late Saxon settlement evidence was recovered, suggested to be part of a major manorial centre.

Cambridge, Cherry Hinton, Spring Head

TL48555625 (Active8 Report)

G Clarke and M Bullivant

Small scale excavation at the site of Spring Head revealed medieval and post-medieval finds. An earthwork mound was found to be the result of modern landscaping

Cambridge, Chesterton, 132 Scotland Road

TL46576011 (CAU Report 549)

R Patten

Evaluation revealed 18th–19th century gravel extraction and undated ditches.

Cambridge, Corpus Christi College

TL44825825 (CAU Report 605)

C Cessford

Evaluation demonstrated survival of medieval and post-medieval features and deposits, indicating intensive activity to the rear parts of properties fronting onto to Bene't Street and Trumpington Street.

Cambridge, Cow and Castle

TL44405916

CAU (no named author)

An evaluation found 1st century Roman pits and cess pits, and late medieval quarry pits containing waste from iron smithing. Archaeological deposits had been truncated by quarrying activity.

Cambridge, Fitzwilliam College Library

TL44015950 (CAU Report 539)

A Cooper

A single substantial ditch is likely to be associated with later prehistoric/Roman settlement to the east.

Cambridge, Jesus College

TL45115906 (CAU Report 569)

C Hattersley and C Evans

Evaluation revealed four linear features, including one probable ditch terminus. Two were post-medieval, the other two Iron Age.

Cambridge, 13–18 King's Parade

TL44835839 (CAU Report 568)

A Hall and M Brudenell

A watching brief was carried out during refurbishment and redevelopment. Cellaring and services had disturbed much of the earlier archaeology, but where intact the results demonstrated deposits dating from the 12th century. Evidence for large scale pitting (possibly gravel extraction), refuse pits, floors, yard surface and some structural traces was observed.

Cambridge, New Milton Primary and Lady Adrian Schools

TL45306006 (AFU Report A232)

S Hickling

Trenches revealed extensive late 19th/20th century gravel extraction. Elsewhere a Bronze Age ditch was identified.

Cambridge, Selwyn College

TL44055808 (CAU Report 533)

R Regan

The site produced evidence of a Roman field/boundary ditch, also revealing two extant plough soils. The lower of these probably dates from the Roman period, while the upper plough soil dates from the 17th century. Evidence of late 18th century gravel quarrying was revealed. A further ditch was thought to be part of the field system.

Cambridge, Selwyn Gardens, Tyndale House

TL43895775 (CAU Report 563)

J Wills

A large Iron Age/early Roman ditch was discovered during evaluation.

Cambridge, Thompson's Lane Spiritualist Church

TL 44825893 (AFU Report A223)

T Baker and S Kenney

Evaluation revealed generally undisturbed horizontal layers dating from the medieval to modern periods and possibly earlier. The foundation trenches exposed post-medieval foundations, some of which were stone-built.

Cambridge, 17–21 Victoria Avenue

TL 45345940 (AFU Report A227)

Steve Hickling

Evaluation revealed a large modern pit, medieval gully and two undated, but probably early, pits.

Cambridge, Histon, Impington, Longstanton, Over, Swavesey Guided busway evaluations

TL40146782 (CAU Report 591)

C Cessford and D Mackay

Eighteen areas were evaluated. The most significant were a mid-late Roman settlement at Addenbrooke's link, medieval activity and waterlogged deposits near Swavesey priory, a medieval burial and well at Histon Stable Access, and Late Bronze Age/Early Iron Age ditches at the balancing pond 4 site in Histon.

Cambridge, Hutchison Site, Addenbrooke's

TL46225535 (CAU Report 609)

C Evans, D Mackay and L Webley

Remains recorded include Late Bronze Age/Early Iron Age settlement evidence, a Late Iron Age/Conquest period settlement, a later 1st century AD cemetery and eleven Conquest period pottery kilns. In the late 1st to early 2nd century the site returned to agricultural use before being total abandoned in the later Roman period. Middle Saxon remains were also encountered, consisting of wells and post-hole structures, before reverting to agriculture in the medieval period.

Chatteris, Cox's Lane/Chapel Lane

TL39028677 (Hertfordshire Archaeological Trust Report 1326)

D Britchfield NA Crank, and I Rowlandson

Evaluation revealed deeply stratified late medieval and post-medieval soil horizons, with sporadic alluvial encroachment from the adjacent Slade Lode.

Duxford, Moorfield Road

TL47824685 (CAU Report 532)

M Redding

Evaluation identified ditches of probable Roman date. A 16th–18th century garden feature (parterre), was located within a probable *temenos* (boundary around a Roman temple). It is possible that the parterre was built on Roman earthworks, perhaps the temple itself. The parterre may indicate a building under the Volvo depot.

Eltisley, Newton County Primary School

TL 27245951 (AFU Reports A223 & 239)

R Atkins, S Hickling and R Mortimer

Evaluation exposed at least two phases of archaeological activity. The earliest features consisted of a ditch running north to south and a pit which contained a fragment of human hip bone. A large medieval pit, dating to the 13th century, cut both these features and was backfilled with large amounts of charred cereal grains. An adjacent ditch may be contemporary with this pit and together these features may represent back plots to houses either fronting the roadway to Caxton or the route to the moated manor to the east. Subsequent excavation produced evidence for a possible Roman field system and Late Saxon occupation consisting of ditches and pits. Occupation appears to have ceased by the 12th to 13th centuries when the area reverted to arable agriculture. Earlier features were eventually sealed by ridge and furrow, which was itself removed when the school was built.

Ely, Community College

TL 53728110 (AFU Report A236)

G Bailey

Evaluation revealed two phases of medieval or post-medieval agricultural activity. The earlier phase comprised relatively small ditches, part of a small enclosure which was masked by a later phase of post-medieval ridge and furrow. Pottery indicates a date

range of mid 11th to early 15th century for the agricultural enclosure. Finds from the topsoil date from the 15th to the 18th centuries. It is clear that the site has been used primarily for agriculture from the medieval period until the construction of the Community College in the 20th century.

Ely, 2 Ship Lane

TL54447992 (CAU Report 540)

J Tipper

Evaluation revealed medieval waterlogged deposits, the result of periodic flooding. A steep sided feature may be a ditch, or alternatively part of a massive clay lined tank, comparable to examples from Jewson's Yard. A large number of horn cores indicate industrial activity, such as tanning or horn working, but there is no evidence of pottery production. No buildings were found, and the only structural remains were an isolated posthole and possible post pad.

Fen Drayton, Wilderspin Garage

TL33786819 (CAU Report 577)

J Wills

Evaluation revealed evidence for a Roman field system on the same alignment to those identified from cropmarks. Two possible farmyard ponds, one medieval, provided evidence for excellent organic preservation.

Foxton, West Hill Road

TL40804770

Thriplow Landscape Research Group

A resistivity survey in an area of cropmarks recorded part of a ring shaped anomaly about 27m in diameter with possible internal features.

Fulbourn, Park Field Training Excavation

A Connor

A training excavation on this cropmark site sought evidence for a medieval moat, Colvilles' Manor, one of more than five manors in Fulbourn. It tested whether the rectangular building identified from cropmarks could be the documented manorial chapel. The building proved to have been constructed on a platform above natural peat and was initially a single roomed structure, floored with compacted chalk. A pit filled with chalk rubble was cut into the centre of the floor and may have held a post, cross, font or pulpit. The building was later extended; the insertion of deeper foundations may imply that a second storey was added or that additional consolidation was required. Although no floor associated with this phase survived, a few fragments of plain floor tiles were found. Stone foundations found at the east end of the building could be the base of an altar. The building was later extended again to almost three times its original width. Remains of a chalk rubble sub-floor were found.

Godmanchester, Roman Way

TL 25206995 (AFU Reports A235 & 217)

T Fletcher, J Bolderson and R Atkins

Aerial photographs indicate that this site lay within the medieval field system around Godmanchester. Evaluation revealed Roman and prehistoric pits, as well as ditches of Roman and later date. Subsequent work identified Bronze Age enclosure ditches dating to c. 2350–700BC. A 'working hollow' contained a spread of worked flints and pottery fragments. A second phase of possible Bronze Age ditches may have formed another enclosure. Three cremations and a number of rubbish pits were also found.

Haddenham, land at West End

TL 4613 7552 (AS Report No. 1400)

NA Crank and L O'Brien

Excavations revealed 2nd to 4th century ditches, probably part of a field system on the periphery of a Roman settlement based closer to the fen edge. Before the field system was constructed, a linear ditch was excavated. A row of over eleven articulated horses and cattle were deposited along its base before it was backfilled. This linear feature extended beyond the limits of excavation and yielded sparse Roman pottery.

Haslingfield, Haslingfield Manor

TL40535232 (CAU Report 570)

D Mackay

Evaluation demonstrated that the ground plan of the Elizabethan manor and associated features may still be preserved in part. Below this were found deep medieval deposits, indicating high status domestic occupation from the 12th century onwards.

Hemingford Abbots, Village Hall

TL28277101 (AFU Report A250)

S Hickling

Three features were all likely to be of late 19th century date or later.

Huntingdon, 4 Chequers Court

TL23957181

K Gdaniec

Emergency recording identified a feature containing shoe leather and horn cores, interpreted as a tanning pit.

Huntingdon, Hartford Road

TL24127169 (CAU Report 572)

J Wills

One trench revealed settlement evidence dated to the 11th–13th centuries, comprising structural remains, and redeposited dumped layers. The site reverted to agricultural use in the later medieval period.

Huntingdon, Huntingdon Probation Service

TL23807189

Q Carroll

Three burials were identified, indicating a larger cemetery, suggested to be that of the medieval hospital of St John.

Huntingdon, Glendower, 5 Mill Common

TL 23717130 (AFU Report A220)

S Cooper

Significant Roman riverside activity may be related to a Roman villa less than 100m to the west, at Whitehills. A large channel, or a series of channels containing Roman building material was found.

Huntingdon, Watersmeet, Mill Common

TL 241175

D Hounsell and K Nicholson for AS

Excavation found evidence for activity from the early Roman period to the 10th to 12th century, but concentrated in the late Roman period. An early Roman enclosure occupied an area which became a late Roman inhumation cemetery, yielding 68 skeletons most of which were buried on a west to east alignment and in an extended supine position. Four skeletons were found buried outside of the cemetery in the eastern part of the site, which was dominated by a system of late Roman field ditches. In Saxo-Norman times large pits were dug to the south of the Roman cemetery.

Kennett, Kennett Hall Farm

TL69696912 (CAU Report 530)

M Redding

Evaluation revealed a range of remains, including ditches and well of possible prehistoric/Roman date, medieval and post-medieval ditches and occupation evidence, and a Bronze Age posthole.

Landbeach, New Farm

TL47836646 (AFU Report A237)

R Casa Hatton

Evaluation revealed remains associated with Akeman Street. The road itself had been severely truncated by modern farming activities, causing almost complete obliteration of the agger. The roadside ditches were preserved beneath rubble from the recent demolition of farm buildings. Their proportions were consistent with other excavated sections of Akeman Street. Also identified were two undated/post-Roman shallow features, maybe remains of small quarry pits, and remains of a 20th century post built structure.

Longstanton

TL39176706 (BUFAU Report)

R Cuttler and M Duncan

Evaluation to the west of Longstanton revealed Saxon and medieval remains comprising field boundaries and possible ridge and furrow. Features relating to Late Saxon and medieval settlement were found close to Over Road, and may relate to the former medieval settlement at Green End.

March, Cedar Close

TL 42179732 (AFU Report A234)

S Hickling

Evaluation uncovered evidence for activity associated with salt making. This consisted of pits, postholes and ditches, as well as an extensive, but irregular layer of briquetage and ash. The southern part of the site was covered by inundation layers and a layer of peat suggesting fen formation. Associated with this wetland were a number of drainage ditches. Dating was problematic, although the briquetage deposit was dated by a small fragment of Roman pottery.

March, Creek Road

TL 42209765 (AFU Report A224)

S Kenney

Evaluation revealed ditches and two pits. No dateable finds were recovered. An alluvial sequence interrupted by a peat formation episode was observed.

March, Longhill Road

TL 41509940 (AFU Report A226)

R Atkins

Evaluation uncovered evidence for a regionally important early Roman salt making area and associated domestic occupation dating to the 1st and 2nd centuries AD. Archaeological remains were extensive and well preserved. In the salt making area stratified deposits survived to more than 1.30m thick with up to seven phases of activity. Structural evidence consisted of post- and stakeholes, as well as industrial features including a kiln with flue and surrounding postholes. A trackway ran north to south, associated with a plethora of ditches including large water channels, pits including some possible quarry pits for clay as well as levelling layers. A mass of briquetage, salt making objects and fragments were backfilled into features of all phases. Environmental evidence suggests that grass and reeds were being used as fuel. The domestic occupation areas included enclosure ditches, posthole and possible slot structures, wells, pits and other features. The pottery and bone assemblage indicates domestic occupation of average status with kitchenware dominating. Unusual items from the animal bone assemblage include beaver bones. Crops were evidently being processed in the vicinity.

March, 23-33 Wimblington Road

TL 41529494 (AFU Reports A218 & PXA 43)

R Atkins and S Cooper

Aerial photography had revealed possible remains of Roman settlement (a villa?) immediately west of this development area. Evaluation encountered a large number of enclosure ditches and gullies, rubbish pits and postholes which may be linked to this. Pottery suggests that occupation spanned the Late Iron Age to c.2nd century AD. Human bones were recovered. Subsequent excavation located important evidence for occupation from the 1st century BC to the early 3rd century AD, with evidence for pastoral farming, salt and pottery production and limited metalworking. Finds indicate a domestic settlement with some

access to high status goods. The settlement was positioned on low land c. 3.5m OD. It lay in largely open although damp grassland which was used intermittently for cereal production.

Maxey, Willowbrook Farmyard

TF 12910846 (AFU Report A228)

S Hickling

Evaluation exposed archaeological remains close to the street frontage. These represent domestic medieval occupation, probably beginning in the 10th or 11th century, perhaps continuing into the 16th century. Surfaces, walls, ditches, postholes and a hearth were encountered.

Mepal, Meadlands, Block Fen

TL 4430 8400 (AS Report Nos. 1378 and 1436)

L O'Brien, S Turner, I Turner, M Sutherland and B Roberts

Previous archaeological investigations had revealed Neolithic/early Bronze Age field systems and at least eight barrows close to the former fen edge to the south and north east of the site. Area 4 revealed two linear ditches and possible tree boles. Two early Bronze Age possible satellite cremations were excavated. Although both had been truncated by ploughing, one contained a cremation in a collared urn, as well as an intact possible 'food offering'. Area 2 was situated in an area where aerial photography and geophysics had suggested a barrow. No trace was found, though a possible cremation was recorded. Although the cremations do not appear to have any spatial association with the barrows, they appear to be on the same axis as both the NW/SE field system to the northwest, and with barrows 1104 (SAM 42) and SAM41 to the southeast. Area 5 revealed a large number of small pits, larger shallow silty features of probable natural origin, probable tree hollows, and parallel drainage ditches of modern origin. The latter respected the existing field boundaries. Finds were sparse, but included small quantities of Early Bronze Age pottery, struck flints of generally contemporary (Neolithic/Bronze Age) date, and animal bone.

Milton, Stage 1 evaluation, Cambridge Rowing Lake

TL48436231 (Oxford Archaeology Report)

A Simmonds

Twenty one evaluation trenches were excavated at the southern end of the proposed rowing lake site, together with geoarchaeological recording of the alluvial sequence of the river Cam. A pit and posthole containing Bronze Age pottery were discovered at the northern end. A Middle Iron Age and two Roman pits were recorded. Roman linear ditches across the floodplain were noted, probably constructed for drainage and as access to the river. Palaeoenvironmental evidence indicated the northern half of the site may have existed as a swamp, while the southern half was damp grassland. A layer of peat formed during or after the Roman period when fen conditions developed.

Offord Cluny, 177 High Street

TL22006721 (AFU Report 215)

S Whitehead

A group of prehistoric flint tools were recovered, together with a small number of residual Roman artefacts. Saxo-Norman-medieval features were identified, interpreted as quarry pits and property boundaries.

Orton Waterville, East of England Showground

TL 14209604 (AFU Report 702)

S Whitehead

The earliest evidence of human activity was an undiagnostic residual Bronze Age flint flake. Prehistoric activity was also indicated by pottery deposited in a large pit and a curving irregular Iron Age ditch which crossed the site: the latter contained Middle to Late Iron Age shell tempered pottery, charred prehistoric wheat varieties and remnants of a possible cremation. The Romans appeared to have used the existing Iron Age boundary in creating new boundaries/field systems. The two Roman ditches contained varied assemblages of standard Roman kitchen and tablewares as well as storage vessels and roof tile. Such finds may indicate a substantial building in the vicinity, presumably a farmstead. Later activity was also based around agriculture, represented by post-medieval field drains in both stone and ceramic pipe as well as plough furrows. More recent plough scars were also visible.

Parson Drove, Land south of the Butchers Arms, Main Road

TF 3744 0846 (AS Report No. 1276)

NA Crank and J Grant

Evaluation revealed medieval and post-medieval features. In addition a quantity of residual Roman, Saxon and Saxo-Norman pottery was also recovered from contexts containing medieval ceramics, indicative of long-term activity in the area. It is possible that some of the features initially date to the Saxon period. The excavated evidence comprises pits as well as enclosure ditches of generally co-axial but varying alignment, indicative of more than one phase of activity.

Peterborough, British Sugar Factory

TL 17929751 (CAU Report 536)

R Pattern for CAU

Excavation failed to throw any more light upon the prehistoric landscape but did reveal a possible Saxon structure within an area of known Saxon activity.

Peterborough, Fengate, Flag Fen Sewage Works

TL 218987 (CAU Report 555)

R Pattern

Within the majority of the excavated test pits a series of fenland deposits were recorded consisting of peat formations and alluvial clays. In one test pit a layer of wood indicated possible Bronze Age worked timbers.

Peterborough, Fengate, Fengate Sewage Treatment Works

TL 204981 (CAU Report 573)

M Knight and C Swaysland for CAU

An auger survey confirmed the gravel terrace to be restricted to the northern quarter of the field and confirmed the level of organic preservation to be both extensive and well stratified.

Peterborough, Fengate, Storeys Bar Road

TL 22189924 (CAU Report 584)

A Cooper for CAU

Findings indicated that the land within the PDA was low lying (between 0.04 and 0.07m OD) and would have stood in an increasingly wet, Fen environment during the later prehistoric and Roman periods; no trace of the mainland gravel terrace was uncovered within the test pits.

Peterborough, Marshall's Garage, Oundle Road

TL 19009795 (AFU Report A219)

B Hatton

A second phase of evaluation revealed a pit, ditch and possible natural channel. Circumstantial evidence suggests that the pit may be prehistoric.

Peterborough, South Bank

TL 51952980 (AFU Report 704)

A Hatton

Evaluation exposed post-medieval drainage channels, leading towards the River Nene.

Ramsey, 30 Great Whyte

TL 28678517 (AFU Report A213)

S Cooper

Evaluation revealed a medieval ditch containing pottery and bone, heading in the direction of the Great Whyte.

St Ives, Former Permanex site, Ramsey Road

TL 310887154 (Hertfordshire Archaeological Trust Report 1174)

B Wilkins, B Roberts and K Nicholson

Archaeological excavation revealed evidence for activity at the site during the medieval, post-medieval and modern periods, with a hiatus during the 15th and 16th centuries. Significant features at the site included 13th to 14th century plot boundary ditches, a 17th century cockfighting ring (identified by excavation and documentary references) and an 18th century well.

St Neots, Loves Farm

TL52012606 (AFU Report 700)

M Hinman

Large-scale evaluation revealed occupation from the Neolithic onwards. The most intensive activity, probably the settlement core, lay to the southwest and primarily consisted of Late Iron Age and Roman occupation, although traces of Bronze Age, Iron Age and Early Saxon activity were also found. Iron Age and Roman activity was revealed on high ground and

consisted of a series of substantial enclosures.

Sawston, Dernford Farm

TL 46905110 (AS Report No. 1491)

P Weston and J Grant

Fieldwalking revealed a general scatter of struck flint, with no apparent concentrations. The flints comprised notched flakes, blades and scrapers, and include a pyramid micro blade core of Mesolithic/early Neolithic date and a partially polished, flaked chert axe of Neolithic date. Iron Age sherds were recovered in the northern half of the site, in addition to a single Romano-British sherd.

Sawston, Police Station

TL48544985 (CAU Report 596)

C Cessford and R Mortimer

Evaluation and a watching brief revealed two ditched enclosures, which may be Roman military camps, and a subsequent road junction, both probably dating to the 1st century AD. Additional evidence of Neolithic and Late Bronze Age/Early Iron Age activity and a medieval agricultural headland were identified. The discovery of the road junction enables a better understanding of the route of Ashwell Street/Street Way in the 1st century AD, and provides evidence of a Cam valley route.

Soham, St Andrews House

TL 59307305

R Atkins

Investigations located a small concentration of Early Iron Age features including possible postholes and a few pits. The area was reoccupied from the 10th century AD and boundary ditches and domestic pits were found. During the 13th and 14th centuries further boundary ditches and rubbish pits were present, with a dense concentration of chalk quarry pits in one area. Activity declined in late medieval times. The period after c. 1600 saw a large increase in activity when most of the development area formed part of the vicarage. Some of the features on the site have been related to maps of the area, including the coach house shown on a map of 1832. Such structures went out of use in the 19th century when parts of the site were raised by up to a metre and the area was landscaped with trees.

Somersham, Knobbs Farm

TL 365790 (CAU Report 616)

J Wills for CAU

Evaluation revealed a relatively low status, Romano-British rural site, with pottery dating from the 1st to the 3rd centuries AD, seemingly without a gap.

The Stukeleys, Hinchbrook, Bob's Wood

TL 52202722

M Hinman

Extensive excavation revealed Middle to Late Iron Age (c. 200–50BC) boundary ditches and a settlement, which developed into a system of irregular fields linked by droeways and tracks. Widespread iron

production later began, with iron-rich stone being imported. Large enclosures were added in the Late Iron Age, with the associated traces of eleven round houses. Livestock specialisation seems to have reached its peak at around the time of the Roman Conquest and it is notable that the site overlooks Ermine Street, built in AD42–43. By the late 1st century smaller paddocks were in use and an aisled building was constructed, supplied by water cisterns. A small cemetery, possibly used by a single family, was laid out opposite the aisled building. The late 2nd to 3rd centuries saw a reversion to large ditched enclosures, while a substantial pond and other water management features were established. A 2nd-century timber-framed building had a stone front porch. The earlier cemetery continued in use although there was a change in burial practice from cremation to inhumation.

Sutton, 31 High Street

TL44617877 (CAU Report 588)

J Wills

Evaluation revealed ditches, pits, postholes and gullies. The majority of features dated to the 13th century. No clear evidence for structures was recorded and the remains are thought to represent backyard activities.

Thorney, Abbey Fields

TF 2810 0400

S Macaulay

As elements of an ongoing project, AFU undertook a desk-based assessment, aerial photographic, geophysical and earthwork surveys and an archaeological restoration plan. Investigations have already revealed the original outer precinct boundary, identified more fish ponds and medieval house platforms and suggested earlier Iron Age and Roman field systems. Future plans include a local community project to carry out selective excavations and to display and interpret material from the site.

Thorney, A47 Bypass

TF 271041 – TF 320044 (CAU Report 546)

A Cooper

An archaeological evaluation was undertaken along the route of the proposed A47 Thorney Bypass. No archaeological features were encountered although a sequence of marine, alluvial and peat deposits was revealed, probably dating from the Mesolithic period onwards. This evidence provides an insight into the fluid and shifting character of prehistoric landscapes around Thorney.

Thriplow

TL44364682

Thriplow Landscape Research Group

A resistivity survey was carried out to determine the condition of a barrow, showing the ditch preserved in the most part. Metal detecting recovered four Roman coins.

Whittlesey, Burdett Nurseries, Eastrea Road,

TL 283969 (CAU Report Forthcoming)

S Williams for CAU

Traces of Iron Age and Romano-British settlement activity were recorded. Features included posthole clusters, gullies, ditches enclosures and field boundaries. Medieval activity was evident in the form of plough furrows.

Willingham, 76 High Street

TL 40167005 (AFU Report B118)

G Bailey

16th century or later pottery, a horse jaw and three late 15th to 16th century horseshoes were found in make-up deposits. Sealed beneath modern overburden were layers of silt. The earliest feature was a possible palaeochannel, perhaps responsible for the accumulation of subsequent layers of silt as flood material.

Willingham, High Street

TL 40267026 (AS Report No. 1420)

J Grant, W Keir, B Roberts and P Weston

Medieval and post-medieval features fronted the western side of the High Street. The features comprised postholes and pits including part of a large probable cess pit. A recent evaluation at nearby Over Road and the High Street revealed a single ditch which contained Late Iron Age pottery

Woodhurst, Fullards Farm

TL 31557594 (AFU Report A222)

A Rudge

Roman and post-Roman ditches and rubbish pits were revealed during evaluation. Heavy truncation had removed traces of early activity.

The following investigations produced little or no archaeological evidence.

Bourn Bourn Hall Clinic

TL32265618 (CAU Report 554)

Burwell, Early Learner's Centre

TL 58896697 (AFU Report B113)

Land adjoining 68 Castle Street, Cambridge

TL 44445930 (AS Report No. 1338)

Cambridge, 193 Huntingdon Road

TL 54322601 (AFU Report B122)

Cambridge, Trumpington, King George V Sports Field

TL 44835486 (AFU Report B120)

Cambridge University Botanic Garden

TL45615729 (CAU Report 575)

Chatteris 48–56 New Road

TL39758622 (NAU Report)

Earith New Mooring, River Great Ouse

TL38227465 (CAU Report 538)

Great Abington, 111–121 High Street
TL53204860 (AS Report 1258)

Hardwick, Redbrick Farm Barns
TL37405854 (Archaeological Services and Consultancy
Report HRF02/3)

Hemingford Abbots, Village Hall
TL 28287130 (AFU Report A250)

Impington, Cambridge Regional College
TL45616193 (CAU Report 543)

Littleport, behind Wisbech Road
TL56048721 (Archaeological Project Services Report
138/03)

March, Stags Holt
TL45549987 (Archaeological Project Services Report
84/03, Air Photo Services Ltd Report 2002/16)

Maxey, Mill Road, Castle Farmhouse
TF 128087 (CAU Report 544)

Milton, Penfold Farm Golf Course
TL 4845 6365 (AFU Report B121)

Peterborough, Fengate
TL 2162 9865 (AFU Report A238)

St Neots, Eynesbury Primary School
TL 18275989 (AFU Report B114)

Snailwell, British Racing School
TL 64876584 (AFU Report B115)

Soham, 54–56 Fordham Road
TL 60087228 (AS Report No. 1485)

Waterbeach, Bank Farm
TL 51106810 (AFU Report B116)

Whittlesey, Alderman Jacobs Primary School
TL27669758 (AFU Report B117)

Reviews

Alison Taylor

Cambridge in the 1830s: the letters of Alexander Chisholm Gooden, 1831–1841

The History of the University of Cambridge: texts and studies Vol 5

Ed Jonathan Smith and Christopher Stray 2003

The Boydell Press and Cambridge University Library
226 pp hb £50

'If I had been asked my opinion on the first night after my arrival, I should have described Cambridge as a dull and shabby town'. Alexander Gooden to his mother, 1836

These letters were principally written home by a serious and, it must be said, self-important youth who studied Classics at Trinity in the years before reforms widened the curriculum beyond eternal translations of Greek and Latin texts. A few letters are those he received, but the majority are those kept by his adoring mother after his early death. In themselves they are tedious (it is certainly to be hoped that they are not a reflection of his everyday life rather than what would please ambitious parents) but the occasional glimpses of Cambridge life at this time make it worth getting through his heavy prose.

His first impressions of the town are fun reading for a local: the shops small and shabby, not a single private gentleman's residence, and streets and pavements narrow and crowded. The countryside is monotonous but not unpleasing. Once he started work lectures were declared poor, and his complaints are many. Some are reasonable (no fires in the Senate House during exams in snowy weather for example) though it is hard to feel much sympathy for his cocooned life, 'unjust' treatment in his struggles for academic awards, the hardships of lodging five minutes walk from Trinity.

The picture of intensive but very limited study for an undergraduate and post-graduate at this period comes through clearly, as does the claustrophobic college atmosphere. Sadly little of the outside world intruded, though some of the climatic data is interesting (hurricanes uprooted trees in College gardens on 5 Dec 1836, winters were evidently harsh, with snow on the ground for long periods, and fires were commonly

needed in July and August). In 1837 he was troubled by a contested election in the town which made Cambridge a bit more lively, and also in 1837 he witnessed the foundation ceremony for the Fitzwilliam Museum ('It was a very dull affair ... and the Latin was not of Augustan purity'). Otherwise, what was fit for his mother makes rather dull reading compared to contemporaries such as Joseph Romilly.

A Late Iron Age farmstead and Romano-British site at Haddon, Peterborough

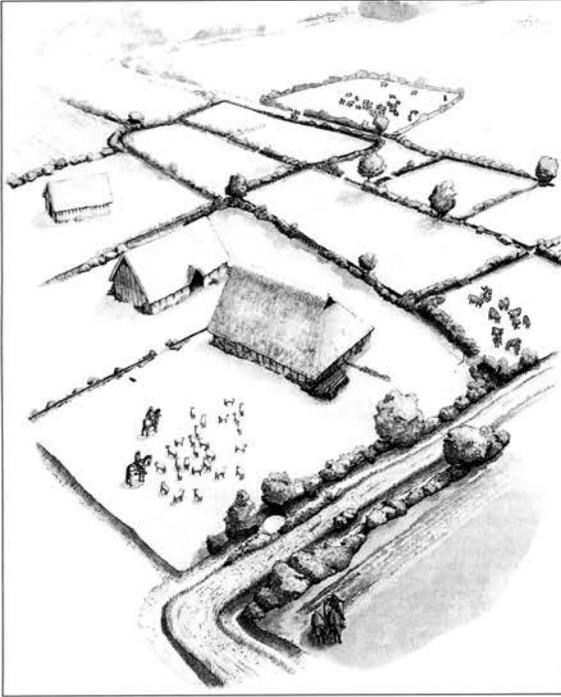
Mark Hinman

BAR 358 and AFU monograph number two 2003.
140pp+ appendices, pb, £15 (from AFU)

This is an exhaustive excavation report of a small farmstead linked by a trackway to nearby Ermine Street, previously examined in 1989. The settlement, which was established before 20AD, expanded during the 1st century, when pottery was made on the site (a well-preserved kiln with its furniture and pots was excavated). 'Placed deposits' in ditch terminals marked the end of this phase. Emphasis on animal husbandry for meat followed reorganisation at the end of the 1st century. Aisled barns, water cisterns fed by aqueducts, individual paddocks, evidence for cattle breeding (with consumption elsewhere) and many horse bones (one complete animal was carefully buried here) point to specialised agriculture for the benefit of people who lived elsewhere. People only returned to live here in the 3rd and 4th centuries. Horse bones, always a significant part of the bone assemblage, became still more common at this time. The site was abandoned c. 360–370.

This well-illustrated report (reconstruction drawings are in full colour) is a welcome addition to the small number of fully published excavations of recent years. Tougher editing should have consigned much detail, most notably context lists though there is other data that would not be missed, to an accessible archive. Conversely, it would have been interesting to have more wide ranging discussion, in particular taking account of Imperial, especially Hadrianic, plans for the Fens and major highways, for which this site

provides important evidence. I would suggest for example that the presence of a bath house nearby, with ranch-style farming and numerous horse bones, places it in an unusual category that should presumably be placed somewhere within the *cursus publicus* rather than a normal farmstead.



Period 3: A reconstruction of the site looking northeast towards Ermine Street.

Power and island communities: Excavations at the Wardy Hill ringwork, Coveney, Ely

Christopher Evans, Cambridge Archaeological Unit 2003, East Anglian Archaeology 103 294pp pb £26

Though apparently of similar format to the Haddon report (above) this publication takes a different approach and gives (almost annoyingly) little data but extensive discussions on possible significances, mostly of a ritual nature or relating to social hierarchies, surrounding the site. The excavation itself was of an Iron Age 'occupied bivallate ringwork' that would normally be classified as a small and low-lying hill fort, that made use of a local high point in the fenland bay of Coveney, strategically located to command a causeway. It had previously seen considerable Bronze Age occupation, possibly protected by banks and ditches, and occupation continued until the late 1st century AD.

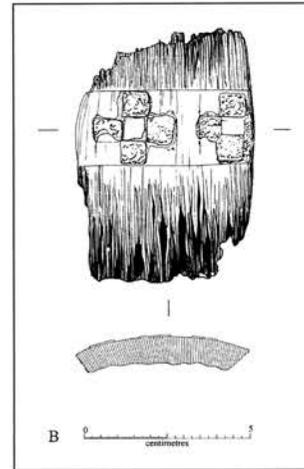
The report includes considerable environmental and palaeo-economic analysis that is of great interest to anyone involved in the Fens. The monument itself survived as a substantial earthwork until the early 20th century, but when excavated was highly degraded. The enclosure was found to have surrounded six roundhouses and ancillary buildings, and small pits.



Iron Age pot sherd found at Wardy Hill.

Finds were not outstanding, but included quantities of Iron Age pottery, analysed and illustrated here in detail, a wooden stave from a small bucket or tankard decorated with copper alloy fittings, metal-working debris, imported quernstones and other domestic items. Animal bones were mostly the usual domestic species but with small samples of hare, fox, badger, cat, duck and other birds (including swan and buzzard), pike and otter. Disarticulated human bones (probably from one individual) were spread through three adjoining features.

The report also includes useful summaries of other recent excavations by CAU in the surrounding area.



A fragment of stave with copper alloy fittings found at Wardy Hill.

A different sort of publication is a series of three attractive and colourful booklets published by Cambridge Preservation Society.

The Godolphin Arabian

Wendy Clark 2003 22pp £3 plus 50p p&p

This is an entertaining account of the history (real and as improved in popular fiction) of the fabled horse now said to be buried at Wandlebury. The Arab stallion, an unwanted gift from the Bey of Tunis to Louis XV of France, was brought to England in 1731 and soon came to the Godolphin stables on Wandlebury. He never ran a race but was a stud for twenty years, fathering numerous race-winners and permanently improving the bloodstock of British race horses.



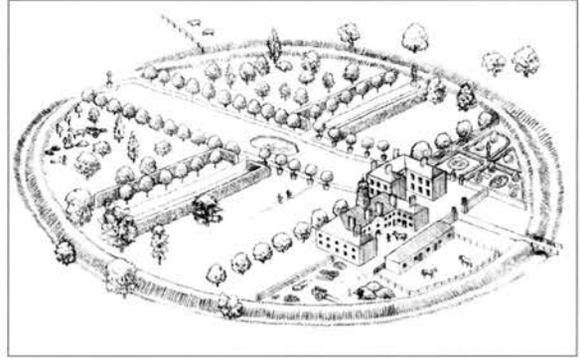
'The Godolphin barb' (with a cat who became part of the legend), from *Practical Farriery*

The Lost Gardens of Wandlebury

Twigs Way 2003 20pp £3 plus 50p p&p

A scholarly as well as informative background to the evolving decorative and highly artificial landscape within the ring at Wandlebury, this booklet traces the gardens from their creation in the 18th century (designed around the stable blocks that were put up c. 1685). These first gardens were in the latest landscape style with just a few exotic introductions, and the banks and one ditch of the Iron Age fort were levelled. In the later 18th century a formal walled garden was added, though most was kept 'wild'. After a short period of neglect a Cambridge MP lived here 1800-1850, and the gardens were well-planted and tended throughout that century. Studies of sale particulars provide more detail for Wandlebury's changing fortunes, especially in the 20th century, which started with immensely elaborate planting schemes and use of hot houses, run by an army of gardeners. The story effectively ends in the 1960s, when CPS had to revert

to far simpler management. What would have been good, and might still be done, is to record the work of Bill Clark in the later 20th century as he turned the gardens into a valuable nature reserve and public recreation area, again much in the fashion of the times.



The eighteenth century garden at Wandlebury (reconstruction)

Stourbridge Leper Chapel, Barnwell, Cambridge

Barry Pearce 2003 18pp £2.50 plus 50p p&p

The tiny Norman building, isolated next to a railway line and Newmarket Road on the route out of Cambridge, was the chapel for a leper hospital in the 12th century, an institution that became wealthy after it was granted the rights to Stourbridge Fair by King John and before these were taken over by the Corporation of Cambridge in 1289. The Fair famously flourished through to the 20th century but the chapel had a sad history, mostly as a storehouse, with periods of reuse and restoration in the 19th century until the University, which had ended up with responsibility for its maintenance, managed to pass it to CPS. Mercifully, largely due to the lack of funds for improvements since its foundation, its value as a simple Norman structure is now greater than many more lavish parish churches.



Stourbridge Leper Chapel by R Relhan (CAS Collection)

The Victoria History of the Counties of England: A history of Cambridgeshire and the Isle of Ely Vol X AJ Fletcher (Ed) 2002 The University of London Institute of Historical Research. 625 pp, hb, £90

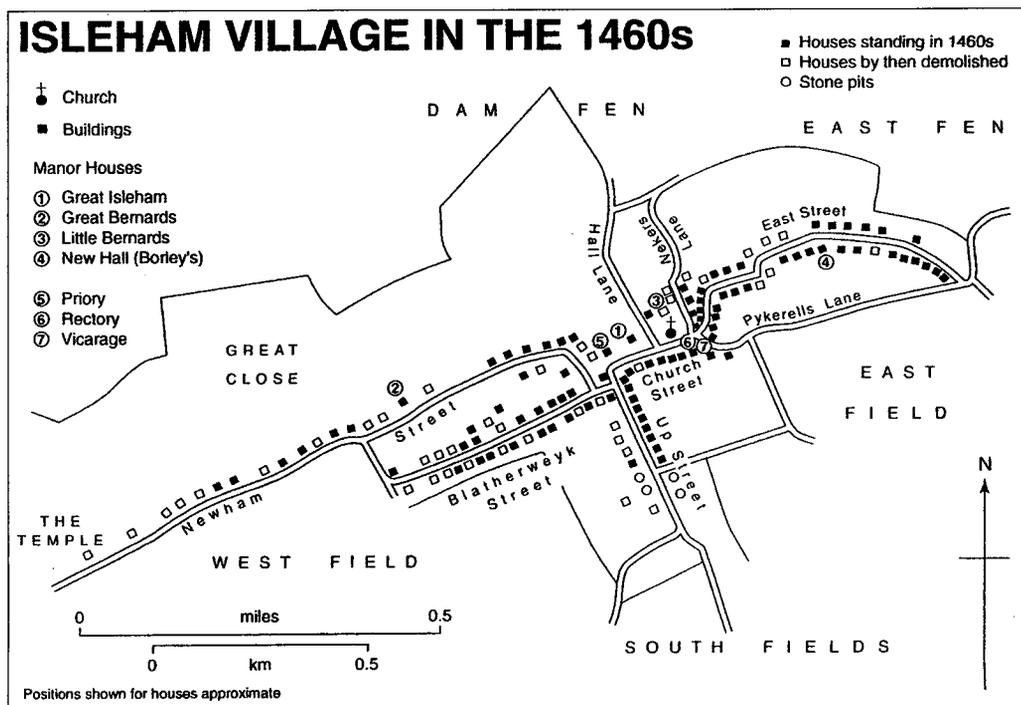
This is the tenth and final volume of VCH for Cambridgeshire, the only county to be completed since the 1960s, and all archaeologists and historians working in the county should be deeply grateful for it. Its massive volume does not belie the weight of its scholarly content, which is a miracle of compression when considering the sheer quantity of facts it lays before us. If only we could have had all this twenty years ago!

Arranged by their hundreds in the traditional way, the villages covered are Ashley cum Silverley, Bottisham, Burwell, Cheveley, Chippenham, Fen Ditton, Fordham, Fulbourn, Horningsea, Isleham, Kennet, Kirtling, Landwade, Reach, Snailwell, Soham, Teversham, Wicken, Great and Little Wilbraham, Wicken and Woodditton. For each of these villages we are given a brief physical description and background history from the Norman Conquest up to the 1990s, details of changing population figures since 1086, accounts of all that can be derived from historical documents for the various manors and other estates, an economic history that includes particular crops and farming practices and any industries from the middle ages to the present day. These are followed by sections on the parish church, Nonconformity and other religious institutions, education, local government, charities, and any particular historical aspects the parish can boast. Exceptionally useful are the schematic

maps for each parish, usually compiled to show the landscape and buildings existing about 1800, ie just before the ravages of Inclosure. There are also miserly mentions of archaeological remains, but it is perhaps polite to gloss over these.

It is particularly helpful to have unusual institutions that occur in some villages put into context. Examples include the activities of the Knights Hospitallers in Ashley, medieval and later aristocratic developments at Kirtling Hall, with its castle, landscaped grounds and elaborate water features, stud farms at Cheveley, and the long history of the community of Austin canons and a subsequent estate that we know as Anglesey Abbey. Activities of Ramsey and Ely abbeys in Reach, the battles of Swaffham Prior and Burwell over their precise boundary along Devils Dyke (incidentally, not so named until the late 16th century), the industries of Burwell that go so far to explain its strange settlement patterns from the middle ages to twenty-first century, the lime kilns of Isleham that were worked until 1938, the 12th century origins of a causeway from Soham to Ely, and Soham's holding of the bones of St Felix until they were spirited away by Ramsey in the nefarious fashion of the times are other gems that grab attention. Under Wicken we learn of the activities of nineteenth-century entomologists which led to the creation of the National Trust's holdings at Wicken Fen.

It is good too to see modern local life immortalised alongside medieval history. With Cherry Hinton for example we get the Cambridge Folk Festival and the Junction. Such entries will become increasingly useful as the years proceed. The concluding section sets out the Hearth Tax returns for 1662, 1666 and 1674.



Isleham village in the 1460s, based on a survey made c. 1465 by Thomas Peyton. From the Victoria County History of Cambridgeshire, Vol. X.

The volume is naturally expensive (and takes up a fair bit of shelf space) so individuals will think twice about purchasing it, but for enthusiasts it will be an essential reference tool for generations to come. All heritage organisations in Cambridgeshire will need it, and every local library should be urged to have a copy on its shelves.

The Cambridgeshire Explorer CD-ROM

Hugo Brown 2002 £22

Published by the author, in association with the Cambridgeshire Collection. Ash House, Prickwillow Road, Queen Adelaide, Ely CB7 4TZ

For something completely different, this is a CD containing Kelly's Directory of Cambridgeshire (old county) for 1904. It also contains about 1000 photographs of the county taken between 1860 to the 1960s, with another 687 from between 1980 and 2002. Every village in the county is included, each illustrated with several photographs. In addition to the Directory (which is indexed) there are alphabetical listings for advertisements, businesses, house names (with the name and occupation of the occupier) and public houses (with the name of the publican). Each can be linked back to the Directory entry with a click. Personally, I can only read the Directory itself online with difficulty, but when printed out it is clear, the indexes are easy to read and follow, and the photographs are good quality and fascinating. Information with them is minimal, but adding grid references and annotations would be another major task. Selected photographs have also been collected into useful categories so these can be viewed or browsed to-



Residents of an Arrington almshouse. From the Cambridgeshire Explorer CD-ROM.

gether. It is particularly helpful to be able to look at a sequence of old photographs of most churches in Cambridgeshire, and also the major houses, but others will make use of the railway stations, mills, post offices etc. The whole compilation of course will be another invaluable tool for the local historian.

A History of Ely Cathedral

Peter Meadows and Nigel Ramsey (Ed) 2003

The Boydell Press 434pp £29.95

This is the most substantial work on the history of the Cathedral for over 200 years, and packs a huge amount of detailed scholarship. The work is divided into the four main eras of Ely's history: the Saxon abbey to 1107, the Priory to its Dissolution in 1539, the Dean and Chapter to 1836 and the modern history of the Cathedral.

Early history is described in a single sweep, using a wide range of documents to supplement early chronicles and to distinguish pious myth from attestable fact. While there will always be regret for what does not survive, there is enough here to recount the changing and on the whole improving fortunes of Æthelthryth's foundation. A large cast of Saxon royalty, nobility and religious are identified for their part in preserving the Saint's memory and cult. The straightforward chronology of this chapter brings the Ely history to the point where the see is created and the great new Norman church becomes a cathedral.

Thereafter, four main themes are covered in each period: the community, the buildings, the library and archives, liturgy and music. Together they create a picture of the life and work of men who created (but occasionally neglected) the ever-amazing fabric of the cathedral and religious service within it. As subsidiary themes, the relationships of the community (whether monks or canons) with the people of Ely and with the University of Cambridge also find a place.

Level of detail and the comprehensive footnotes make this a work for reference rather than leisurely reading. Many illustrations (plans, and photographs both black and white and colour) give valuable and illuminating support to the text, but architectural descriptions in particular require specialist knowledge of terminology. That said, the general reader may feel inspired to look more closely at the fine detail of arcades and mouldings that reveal the problems and the genius of the medieval builders and craftsmen.

The difficulty of specialist vocabulary is not so great in the other sections, though the organisation of the medieval church and monastery is described in its own terms. Still, there are fascinating details of life in a great abbey, complexity of the administration and the functions of various officers as revealed by their accounts. Most immediate perhaps is the list of items the novice monk was required to bring with him to the monastery – the sort of list familiar to any parent who has packed off a child to school, college or camp.

While there is reasonable biographical detail of

many of the priors, deans and canons, (particularly enlightening in the case of Robert Steward the last Prior and first Dean) there is little about the Bishops whose existence gives the cathedral its title. Many of them spent much of their time elsewhere, and on business not connected with the Cathedral, but some outline of the relationship between the bishop and the abbey/chapter would have been illuminating, even if the wider concerns of the see fall outside the terms of this book.

This History is both less and more than that. As there is no single chronological account between 1107 and 1836, the newcomer to the Ely story will have to work hard to combine references from the separate strands to form an overall history. On the other hand, the depth of analysis may stand for the next two hundred years as the definitive and defining account of the properties of a great cathedral.

Honor Ridout

Index

Jane Carr

Illustrations are indicated by numbers in *italics* or by *illus* where figures are scattered throughout the text.

- Active8, fieldwork, 180
Addenbrookes, Iron Age and Roman site, 19, 62
Albion Archaeology, fieldwork, 179
Akeman Street, 95, 183
ALEXANDER, MA *Roman cemetery in Jesus Lane, Cambridge*, 67–94
 see also Dodwell, N and Evans, C; Hall, A, and Monteil, G
Anglian Ice sheet, 5–8
antler, worked, 41
Arbury camp, 17, 19, 53, 62–2
Archaeological Solutions, fieldwork, 182, 183, 184, 185, 186
ard ploughing, 49
arrowheads, 13
Audley End, Essex, 146
axes, tranchet, 9–12, 9, 10, 11, 12, 13, 25
- Babraham, garden at, 143–150, 179
 Adeane family, 146–7, 149, 151
 Bennett family, 146–7, 149, 151
 May family, 146–7
 Hearth tax, 151
 Fieldwork, 179
bag assemblage, Anglo-Saxon, 95, 97, 104, 107, 109, 121
BAGGS, T, *The Hearth Tax and the Country House in 'Old' Cambridgeshire*, 151–158
Bailey, G, *Fieldwork 2003*, 179, 181, 186
Baker, T, *Fieldwork 2003*, 181
 see also Kenney, S
Baldock, Herts, 83
Ballantyne, R, in *Wandlebury Ringwork*, 15–66
 see also French, C *et al*
Bansted Down, Surrey, 109
Barham Hall, Linton, 151, *plate 1*
Barnack stone, 135
Barnwell priory, 125, 135, 136
 Leper hospital, 190
barrel padlock, 140
Barrington Anglo-Saxon cemetery, 108, 121
barrows
 Mepal, 184
 Thriplow, 186
beads, Anglo-Saxon, 120
Bekesbourne, 104
Belsar's Hill, Willingham, 17
Belvoir castle, 153
belt fitting, 87, 88
bio-archaeological remains, 31, 33
blades, Mesolithic, 9
Bloodmoor Hill, Suffolk, 121
- Bolderson, R, *Fieldwork 2003* 182
 see also Fletcher, T; Atkins, R
bone, animal
 Cambridge, 68, 69, 112, 113–116, 119
 Chesterton, 141: Haddenham, 182
 dog skeletons, 46, 47, 60
 horse remains, 46
 Wandlebury, 19, 25, 26, 28, 33, 37, 43–47, 57, 61
bone plaque, 15, 60
BOREHAM, S, *The Structure and Formation of the Wandlebury Area*, 5–8, *illus*
Borough Fen, Peakirk, 17
Borough Hill, Sawston, 59, 61
boss, iron, 74, 88, 89
Bottisham, fieldwork, 179
boundary ditches, 95, 127, 128, 129
Bourn Bridge, 119, 122
Bourn Hall, 151, 152, *plate 2*, 186
bowl, copper alloy, 95, 97–8, 99, 107, 109, 121
boxes, 121
Boxworth, fieldwork, 179
bracelet, copper alloy, 67, 72, 78, 87, 88, 95, 98, 99, 109
Britchfield, D, *Fieldwork 2003*, 181
 see also Crank, N; Rowlandson, I
British Museum, 120
British Records Association, 151
Broadstairs, St Peters, 109
brooches,
 Iron Age, 41
 Roman, 109, 120
 Anglo-Saxon, 120
BROWN, H, *Reviews 'The Cambridgeshire Explorer CD-ROM'*, 193
Brudenell, M, *Fieldwork 2003*, 181
 see also Hall, A
Buckden, fieldwork, 179
buckets, wooden, 121
Buckland, Kent, 12
buckle, copper alloy, 104, 105, 107, 109
Bullivant, M, *Fieldwork 2003*, 180
 see also Clarke, G
burh, Cambridge, 125, 135
burials,
 Iron Age, 19, 30, 37, 41, 46, 57–9, 60, 95
 Roman, 67–94, *illus*, 120, 183
 Anglo-Saxon, 95–124,
 medieval, 183
Burrough Green, 151, 152

Burwell

- Anglo-Saxon cemetery, 104, 108, 109, 121
- coin, Roman, 109
- fieldwork, 179, 186
- Rock, 7

Butser farm, 57

button scraper, 11

Cam, river, 8, 15, 61, 95, 121–2, 125, 131, 135, 143, 184, 185

Cambourne, fieldwork, 180

Cambridge, 5–8, 12, 15, 61, 67, 91–2, 95, 119–122, 125, 144, 151

- Antiquarian Society, 159

- Archaeological Unit (CAU), 15, 17, 67, 95, 125, *Fieldwork 2003*, 179–187

- The Backs, 95–124

- Jesus Lane, 67–94, *illus*

- Preservation Trust, 17, 19, 62

- University Museum of Archaeology and Anthropology, 37, 42, 91, 92, 120

- Archaeological Field Unit (AFU), 13, 127, *Fieldwork 2003*, 179, 181–7

Cambridgeshire,

- Collection, 159

- Hearth Tax Lists, 151–8

- Local History Society, 159

- Record Society, 151, 159

canal, Babraham park, 143–150

Carroll, Q, *Fieldwork 2003*, 183

Casa Hatton, R, *Fieldwork 2003*, 183

Cassiobury Park, Herts, 147

Castle Camps, 152, 154

Cat's Water, Fengate, 53

Caxton, fieldwork, 181

cemetery,

- Anglo-Saxon, 9, 95–110 *illus*, 119–123, 183, 186

- Roman, 67–94 *illus*, 183, 186

- medieval, 183

CESSFORD, C, *The Origins and Early Development of Chesterton*, 125–142

- see also, Dickens, A; Hall, D

- Fieldwork 2003*, 180, 181, 185

- see also Mackay, D; Mortimer, R

chalk figures, 15, 17, 18

charred grain,

- prehistoric, 184

- Iron Age, 27, 28, 48, 49–56, 60

- Roman, 89

- medieval, 141, 181

Chatteris, fieldwork, 181, 186

Cherry Hinton, 7, 121, 135, 159, *plates 7, 8*

Chesterton, 125–142

Cheveley, 152

Childerley, 151, 152, 153, *plate 3*

Chippenham, 153, *plate 4*

cinerary urns, 120

Clarke, G, *Fieldwork 2003*, 180

- see also Bullivant, M

cockfighting ring, 185

coffin nails, 67, 72, 74, 75, 76, 78, 79, 88, 89

Cole, William, 143, 147, 149–150, 151

coins,

- Roman, 19, 68, 87, 95, 104, 107, 176–7, 186

- medieval, 133, 136

Colchester, Butt Rd, 87

Colne Valley, 13

comb, antler, 41, 104, 105, 107, 109, 120

Connor, A, *Fieldwork 2003*, 182

- Cooper, A, *Fieldwork 2003*, 180, 183, 186
see also Mackay, D
- Cooper, S, *Fieldwork 2003*, 183, 184
see also Atkins, R
- Copley Hill, 5
- copper alloy objects, 141
- Cornbury, Oxon, 147
- Corpus terrier, 122
- Corrado, A, in *Wandlebury Ringwork* 15–66
see also French, C, *et al*
- Cottenham, 138
- Crank, NA, *Fieldwork 2003*, 179, 181, 182, 184
see also Grant, J; Britchfield, D; Rowlandson, I;
O'Brien, L
- cremations
Cambridge, 92
Cambourne 180
Girton, 121
Godmanchester, 182,
Mepal, 184
Wandlebury, 30
- cropmarks, 182
- Croxton, 152, 153
- CRUMMY, N, 'Pebble hammer', 12–13, in *Prehistoric Lithics, Gamlingay*
see also, Murray, J; McDonald, T
- CUCAP, 18
- Custance, 122
- Cuttler, R, *Fieldwork 2003*, 183
see also Duncan, M
- Cyganowski, C, in *Wandlebury Ringwork*, 15–66
see also French, C *et al*
- Danebury, 16, 46, 49, 51, 53, 55, 56, 60, 61
- Dawley, Middx, 146
- decapitation,
Roman burials, 74–5, 77, 79, 84, 89, 90, 93
- DICKENS, A, *The Origins and Early Development of Chesterton*, 125–142, *illus*
see also Cessford, C; Hall, D;
Fieldwork 2003, 179–187
see also Grassam, A; Popescu, E; Poppy, S
- discoidal knife, 13
- DODWELL, N, *Anglo-Saxons on the Cambridge Backs*, 95–124;
in *Wandlebury Ringwork*, 15–66
see also Lucy, S; Tipper, J; French, C *et al*
- Domesday Book, 125
- Dover, 12
- dowsing, 18
- Dry Drayton, 154, *plate 5*
- Duckworth Collection, 91
- Duke of Newcastle, 146
- Duncan, M, *Fieldwork 2003*, 183
see also Cuttler, R
- Dunstable, Beds, 93, 117
- Duxford, fieldwork, 181
- Dyrham Park, Gloucs, 146, 148
- Earl Godolphin, 19
- Earith, 93,
fieldwork, 186
- earthworks, Iron Age, 17
- Eberston, Yorks, 146
- Ecclesiastical Commissioners, 18
- eels 95, 98, 109
- Elsworth, 152, 154
- Eltisley, fieldwork, 181
- Elton, 161–178
- Ely, 18, 125, 127, 131, 138–9
fieldwork, 181–2; 193–4
- Enclosure, wooden, 15
- English Heritage, 17, 177
- Eriswell, Suffolk, 122
- Ermine St, 186
- EVANS, C, *Reviews*; 'Power and island communities: Excavations at the Wardy Hill ringwork, Coveney, Ely', 190; in *Wandlebury Ringwork*, 15–66; *Fieldwork 2003*, 180, 181
see also Hattersley, C; Manley, D; Webley, L; French, C *et al*
- Every, R, *Fieldwork 2003*, 180
- fabricators, flint, 11
- faunal remains; see bones
- Faversham, Kent, 109
- Fen Ditton, 12, 152, 154–5
- Fen Drayton, fieldwork, 181
- Fenland, 8
- field systems
prehistoric, 184
Iron Age, 22, 30, 60, 180, 186
Roman, 95, 180, 181, 182, 184, 186
medieval, 182, 184
- Fletcher, T, *Fieldwork 2003*, 182
see also Bolderson, J; Atkins, R
- flint
prehistoric, 184, 185
Mesolithic, 9–12, *illus*, 25, 61
Bronze Age, 9, 25, 59, 61, 184
- Fotheringhay, Northants, 161–178
- Foxton, 82, 93, 121
- FRENCH, C, *Evaluation Survey and Excavations at Wandlebury Ringwork*, 1994–7, 15–66, *illus*
see also: Ballantyne, R; Corrado, A; Cyganowski, C; Dodwell, N; Evans, C; Gdaniec, K; Hanks, B; Hill, JD; Lewis, H; Preston, M; Oswald, A; Pattison, P; Shell, C
- Friends Meeting House, 91–2, 92
- Fulbourn, fieldwork, 182
- Gamlingay, 9–14
- garden, Babraham, 143–150
- GDANIEC, K; *Fieldwork 2003*, 182; in *Wandlebury Ringwork*, 15–66
see also French, C *et al*
- Geological Survey, 143
- Geophysical survey, Wandlebury, 17, 20–24, 34, 60
- Girton, 8
- glass, Roman, 123
- Godden, D, *Fieldwork 2003*, 180
- Godmanchester, fieldwork, 182
- CLARKE, W, *Reviews*, 'The Godolphin Arabian', 191
- Gog Magog Hills, 5, 7, 15, 18, 19
- Grant, J, *Fieldwork 2003*, 179, 184, 185, 186
see also Crank, NA; Weston, P
- Granta, river, 5, 143, 145
- Grantchester, 151, 152, 155, 159, *plates 9, 10*
- GRASSAM, A, *Fieldwork in Cambridgeshire*, 2003, 179–187
see also Dickens, A; Popescu, E; Poppy, S
- Great Abington, 151, 187
- Great Bealings, Suffolk, 12
- Great Chesterford, 93
- Great Shelford, 7
- Greenland, mummies in, 84
- Greenwich, 147
- grubenhäuser*, see sunken featured building
- Gwithian, Cornwall, 49

- Haddenham, 159, *plates 15, 16*,
fieldwork, 182
- Haddon, 161–178
- Hall, A, *Fieldwork 2003*, 181
see also Brudenell, M
- Hall Barn, Bucks, 146
- Hampton Court, 147
- hanging bowl, 109
- Hanks, B, in *Wandlebury Ringwork*, 15–66
see also French, C *et al*
- Harlton, 159, *plates 11, 12*
- Hardwick, fieldwork, 187
- Haslingfield, 151, 152, 155, *plate 6*,
fieldwork, 182
- Hatley, 151, 156
- Hattersley, C, *Fieldwork 2003*, 180
see also Evans, C
- Hatton, B, *Fieldwork*, 2003, 184
- Hemingford Abbots, fieldwork, 182, 187
- Hengistbury Head, 49
- Hertfordshire Archaeological Trust, 9, 13, 126–7
Fieldwork 2003, 179, 181, 185
- Hickling, S, *Fieldwork 2003*, 181, 182, 183, 184
see also Atkins, R; Mortimer, R
- HILL, JD, 'Pottery' 37–43, *illus.*, in *Wandlebury Ringwork*
see also French, C *et al*
- HINMAN, M, *Fieldwork 2003*, 185
Reviews: 'A Late Iron Age farmstead and Romano-British Site at Haddon, Peterborough', 189–90
- Hinxton Quarry, 13, 122
- Histon, fieldwork, 181
Historia Eliensis, 18
- hobnails, Roman, 67, 72, 74, 77, 87, 79, 90
- Holme Lacy, Hereford, 147
- hook, copper alloy, 104, 105, 107, 109
- horn-working, 92, 182
- Horseheath Hall, 151, 152, 154, 156
- Hounsell, D, *Fieldwork 2003*, 183
see also Nicholson, K
- Huntingdon, fieldwork 182–3
- Ickworth, Suffolk, 146
- Impington, 187
- inclosure plan, 134, 135
- Ingham, D, *Fieldwork 2003*, 179
see also Oetgen, J M
- inhumation, *Wandlebury*, 30, 37, 57–9
- iron objects, 41, 87, 89, 140
- Isleham Hall, 155, 156;
Village, 192
- Ivel valley, 13
- Jesus College, 92
Lane, Roman cemetery, 67–94, *illus*
jetons, 133, 136
- Keir, W, *Fieldwork 2003*, 186
see also Roberts, B; Weston, P; Grant, J
- Kempston, Beds, 93
- Kennett, fieldwork, 183
- Kennedy, S, *Fieldwork 2003*, 181, 183
see also Baker, T
- King's Lynn, 135, 137–8
- Kirtling, 152, 153, 156
- Knight, M, *Fieldwork 2003*, 184
see also Swaysland, C
- knives, iron,
Iron Age, 41
Anglo-Saxon, 95, 98, 99, 100, 102, 103, 107, 110, 121
medieval, 140
- Landbeach, fieldwork 183
- landscapes, prehistoric, 16
- Landwade, 156
- Laverstock, Wilts, 109
- Lea Valley, 13
- lead rod, 87, 88
- Leighton Buzzard, Beds, 117
- Lejre Historisk-Arkaeologisk Forsogscenter, Denmark, 49
- Lewis, H, in *Wandlebury Ringwork*, 15–66
see also French, C, *et al*
- Linton, 5, 160
- Littleport, 187
- Little Shelford, 156
- Lode, 160, *plate 17, 18*
- Loggan, plan of Cambridge, 96, 122
- Longstanton, fieldwork, 183
- Long Wittenham, Oxon, 38
- Longleat, Wilts, 146, 148
- loomweight, 51, 112, 113, 114, 118, 119
- Macaulay, S, *Fieldwork 2003*, 185
- Mackay, D, *Fieldwork 2003*, 180, 181, 182
see also Cooper, A; Cessford, C; Evans, C; Webley, C
- Madingley, 152, 156, 157
- March, fieldwork 183, 187
- Maxey, 16
- McDONALD, T, in *Prehistoric Lithics from Gamlingay*, 9–12
see also Crummy, N; Murray, J
- MEADOWES, P, *et al*, *Reviews*: 'A History of Ely Cathedral',
193
- Meggs Hill, 5
- Melbourn
Anglo-Saxon cemetery, 107, 109, 121
Rock, 7
- Mepal, fieldwork, 184
- Merton College, Oxford, 13
- microliths, 9–13
- military camps, Roman, 185
- Millbridge Brook, 9, 10, 13
- Milton, fieldwork 184, 187
- Miracle, P, in *Wandlebury Ringwork*, 15–66
see also French, C *et al*
- moats, medieval, 143, 146, 147
- Moor Park, Surrey, 146
- Mortimer, R, *Fieldwork 2003*, 180, 181, 185
see also Cessford, C; Hickling, S; Atkins, R
- mount, copper alloy, 118, 119
- Mucking, Essex, 12, 112, 121
- MURRAY, J, *Prehistoric Lithics from Station Rd, Gamlingay, Cambs*, 9–14
see also, Crummy, N; McDonald, T
- Museum of London Archaeology Service, 127
- nails
Roman, 88, 89, 100
medieval, 140
- needles,
bone, 41
bronze, 41
- Nene Valley, 161
- Newnham Croft, 120
- Nicholson, K, *Fieldwork 2003*, 183, 185
see also Hounsell, D; Wilkins, B; Roberts, B

- Nine Wells, 7
- Oakington, 156
- O'Brien, L, *Fieldwork 2003*, 182, 184
see also Crank, NA; Turner, I; Turner, S; Sutherland, M; Roberts, B
- Oetgen, JM, *Fieldwork 2003*, 179
see also Inghams, D
- Offord Cluny, fieldwork, 184
- Orton Waterville, fieldwork, 184
- Oswald, A, in *Wandlebury Ringwork*, 15–66
see also French, C
- Ouse valley, 16
- Oxford Archaeology, 185
- Painsthorpe Wold, 104
- Parsons Drove, fieldwork, 184
- Patten, R, *Fieldwork 2003*, 180, 184
- Pattison, P, in *Wandlebury Ringwork*, 15–66
see also French, C, *et al*
- Peacock's farm, 10
- PEARCE, B, *Reviews*; 'Stourbridge Leper Chapel, Barnwell, Cambridge', 191
- pebble-hammer, 9, 12
- pendant, Anglo-Saxon, 95, 97, 99, 107, 109, 121
- Pennines, 7, 13
- Pepys, Samuel, 147
- pertrandbecker*, 95, 107, 109
- Peterborough, 159, 161, 184–5, 187
- PICKLES, J, *The Cambridgeshire Local History Society Photographic project, 1992–2000*, 159–60
see also Rushworth, G
- pin, copper alloy, 99, 100, 109, 121
- pin-beater, bone, 137
- pits
prehistoric, 97, 180, 182, 184
Iron Age, 15, 26–30, 32, 33, 37, 40, 49–57, 59, 60, 127
Roman, 67, 68, 127, 180, 182, 184
medieval, 130–5, 181, 185, 186
- plant macro-remains, 54–7
- ploughing, effects on archaeology, 161–178
- POPESCU, E, *Fieldwork in Cambridgeshire 2003*, 179–187
see also Dickens, A; Grassam, A; Poppy, S
- POPPY, S, *Fieldwork in Cambridgeshire 2003*, 179–187
see also Dickens, A; Grassam, A; Popescu, E
- Pottery
prehistoric, Gamlingay, 9
Beaker, Wandlebury, 25
Early-Mid Bronze Age, Chesterton, 127; Mepal, 184
Iron Age, Wandlebury, 25, 26, 28, 37–43, 60, 62; 92, 183, 184
Roman, 26, 28, 33, 40, 42, 60, 67, 76, 91, 127, 163–178, 179, 180, 183–4, 185
by type
Black-Burnished wares, 85
Colchester ware, 85, 86
fine grey wares, 85, 86
general coarse sandy wares, 86
Hadham ware, 85, 87, 93, 116
Horningsea ware, 85–6, 93
Nene valley wares, 33, 67, 72, 74, 84, 85, 86, 89, 93
samian, 33, 85, 92
Terra Nigra, 84, 85
Verulamium ware, 85
Anglo-Saxon, 112, 113–119, *illus*, 121, 127, 163–178
by type
Ipswich ware, 127, 137–7
medieval, 116, 125, 129, 137–140, *illus*, 163–78, 184
by type
Bourne, 137–140
Ely wares, 137, 138
Grimston ware, 137–8
Hedingham ware, 137–8
Lyveden ware, 137, 139
St Neots ware, 116, 137, 138
Stamford ware, 137–8
Thetford ware, 137–8
post-medieval
by type
Ely, 138–140
English stonewares, 137
German stonewares, 138, 140
pottery kilns, Roman, 181
Prehistoric Ceramics Research Group, 37
property plots, medieval, 127–130, *illus*, 135
purse ring, 95, 97, 98, 99, 100, 107, 109
- Quy, 121
- quernstone, 113, 114, 119, 137
- RCHME, 17, 19, 33
- Ramsey, Abbey, 18; fieldwork, 185
- RAMSEY, N, *Reviews*: 'A History of Ely Cathedral', 193
see also, Meadows, P
- Ragley, Warwicks, 148
- Redding, M, *Fieldwork 2003*, 181, 183
- Regan, R, *Fieldwork 2003*, 181
- ridge and furrow, 122, 180, 181, 183, 186
- ring ditch, 13
- rings, copper alloy, 67, 72, 75, 87, 88
- ringwork, Wandlebury, 15–66
- Roberts, B, *Fieldwork 2003*, 184, 185, 186
see also, O'Brien, L; Turner, I; Turner, S; Sutherland, M; Wilkins, B; Nicholson, K;
- Round Church, 92
- Rowlandson, I, *Fieldwork 2003*, 181
see also Britchfield, D; Crank, NA
- Royston, Therfield Heath, 7
- Rudge, A, *Fieldwork 2003*, 186
- RUSHWORTH, G, *The Cambridgeshire Local History Society Photographic Project, 1992–2000*, 159–160
see also Pickles, J
- St Ives, fieldwork, 185
- St James palace, 147
- St Neots, fieldwork, 185, 187
- salt-making site, March, 183
- Sarre, Kent, 109
- Sawston, 152, 156, 157, fieldwork, 185
- Schmorl's Nodes, 57, 75, 76, 78, 79, 80, 81, 100, 102, 107
- seax, 102, 103, 107, 110
- settlement
Bronze Age, Wandlebury, 19
Iron Age, Wandlebury, 15; Addenbrookes, 19; 181
Cambridge, 180
Roman, Addenbrookes, 181; Bottisham, 179,
Cambridge, Jesus Lane, 67, 68; Wandlebury, 15
Anglo-Saxon, Cambridge Backs, 110–123
medieval, Cherry Hinton, 180
- shears, 140
- Shell, C, in *Wandlebury Ringwork*, 15–66
see also French, C *et al*
- shield boss, 121
- Shudy Camps, 108, 109, 121
- Siberects, Jan, 152

- sickle, flint, 11
 Silsoe, Beds, 49
 Simmonds A, *Fieldwork*, 2003, 184
 SMITH, J, ed, *et al*, *Reviews*: 'Cambridge in the 1830s', 189
 Snailwell, *Fieldwork* 187
 Soham, fieldwork, 185, 187
 soil micromorphology, 48, 49, 53–7
 Somersham, fieldwork, 185
 spades, double paddle, 49
 spade-marks, 48–9, 50, 53, 54, 57
 spear-head, Anglo-Saxon, 95, 102, 110, 120, 121
 spindle whorl
 bone, 15, 60, 104, 105, 107, 109
 stone, 98, 99, 107
 Stalham, Norfolk, 12
 Stansted, Essex, 38
 Stapleford, 15, 18, 143
 Steeple Morden, 151, 156
 Sternes Manor, 18–9
 Stevenage, Herts, 8
 Stonea camp, 17, 53
 Stonehenge Environs project, 16
 Stourbridge Fair, 136
 strap end, 127, 140, 141
 STRAY, C, ed, *et al*, *Reviews*: 'Cambridge in the 1830s', 189
 see also Smith, J
 structures
 Iron Age, 26, 30–1, 53, 60
 Roman, 121, 183, 186
 Anglo-Saxon, 9, 95, 110–116, 121, 184
 medieval, 130–1, 186
 post-medieval, 134–5
 The Stukeleys, fieldwork, 185–6
 Studeley Royal, Yorks, 146
 Suffolk County Council Archaeological Service, 122
 sunken featured buildings, 9, 12, 95, 110–114, 121, 179
 Sutherland, M, *Fieldwork* 2003, 184
 see also O'Brien, L; Turner, I; Turner, S; Roberts, B
 Sutton, fieldwork, 186
 Swaffham Bulbeck, 160, *plates* 199–22
 Swavesey, 159, *plates*, 13, 14, priory, 181
 Swaysland, C, *Fieldwork* 2003, 184
 see also Knight, M
 sword marks, 67, 75, 84
- TAYLOR, A, *Reviews*, 189–194
 TAYLOR, C, *A Late Seventeenth-century Garden at Babraham, Cambs*, 143–150
 Taylor, I, *Fieldwork* 2003, 179
 temple, Roman, 181
 Teversham, 160, *plates* 23, 24
 Thorney, fieldwork, 186
 Thriplow, fieldwork, 186
 Landscape Research Group, 182, 186
 tile, Roman, 100, 101, 113, 123
 Tipper, J, *Fieldwork* 2003, 180, 182
 tithe map, Chesterton, 135
 tree-hollows, prehistoric, 9, 13
 Trumpington, 121; Anstey Hall, 152, 156
 Turner, I, *Fieldwork* 2003, 184
 see also Turner, T; Sutherland, M; Roberts, B; O'Brien, L
 Turner, T, *Fieldwork* 2003, 184
 see also turner, I; O'Brien, L; Sutherland, M; Roberts, B
 tweezers, copper alloy, 116, 118, 119
- University of Brunei, 177
 UPEX, SG, *Surface scatters, rates of destruction and problems of ploughing and weathering in Cambridgeshire*, 161–178
- Vanbrugh, 146
 Vercelli, Italy, 125, 126
 Verulamium, 87
Via Devana, 92
 Vicar's Farm, Cambridge, 84, 86–7, 90, 92
 Victoria County History, 12, 125, 145, 151
 vill, Chesterton, 125, 135
 villa, March, 183–4; Huntingdon, 183
Vitruvius Britannicus, 156
- wall-plaster, painted, 179
 Wandlebury, 5–8, *illus*, ringwork, 15–66, *illus*, 191
 War Ditches, 59, 61
 Wardy Hill, Coveney, 17, 53, 61, 187, 190
 Waterbeach, fieldwork, 187
 WAY, T, *Reviews: the Lost Gardens of Wandlebury*, 191
 weathering, effects on archaeology, 161–178
 Webley, L, *Fieldwork* 2003, 181
 see also Evans, C; Mackay, D
 Wendy, 158
 Wessex Archaeology, *Fieldwork* 2003, 180
 West Heslerton, N Yorks, 121
 West Stow, Suffolk, 12, 110, 117, 118, 119, 121
 Westbury, Gloucs, 146
 Weston, P, *Fieldwork* 2003, 185, 186
 see also Grant J
 Whaddon, 156
 Whin Sill, Northumberland, 7
 White, O, 7
 Whitehead, S, *Fieldwork* 2003, 184
 Whittlesey, fieldwork, 186, 187
 Whittlesford station, 8
 Whitehall, 147
 Wicken, 160, *plates* 25, 26
 Wilkins, B, *Fieldwork* 2003, 185
 see also Roberts, B; Nicholson, K
 Williams, S, *Fieldwork* 2003, 186
 Willingham, fieldwork, 186
 Wills, J, *Fieldwork* 2003, 179, 181, 182, 185, 186
 Wimpole, 87, 148, 152, 158
 Winchester Cathedral Green, 141
 window glass, painted, 137
 Window Tax, 151
 Woodhurst, fieldwork, 186
 The Woodland Trust, 22–5, 60, 62
 wrist-clasps, 120, 121
- Zennor, Cornwall, 12

Abbreviations

AFU	Archaeological Field Unit, Cambridgeshire County Council
<i>Ant.</i>	<i>Antiquity</i>
<i>Antiq. J.</i>	<i>Antiquarians Journal</i>
<i>Arch. J.</i>	<i>Archaeological Journal</i>
BAR	British Archaeological Reports
BUFAU	Birmingham University Archaeological Field Unit
CAU	Cambridge Archaeological Unit
CBA	Council for British Archaeology
CCC Rpt	Cambridgeshire County Council Report by the Archaeological Field Unit
CRO	County Record Office, Cambridge
CUCAP	Cambridge University Committee for Aerial Photography
CUL	Cambridge University Library
CUP	Cambridge University Press
EAA	East Anglian Archaeology
HMSO	Her Majesty's Stationery Office
HRO	County Record Office, Huntingdon
NMR	National Monuments Record, Swindon
OUP	Oxford University Press
PCAS	<i>Proceedings of the Cambridge Antiquarian Society</i>
PPS	<i>Proceedings of the Prehistoric Society</i>
PRO	Public Record Office
RCHME	Royal Commission on Historic Monuments (England)
SMR	Cambridgeshire Sites and Monuments Record
VCH	Victoria County History

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Cambridge Antiquarian Society is grateful to Cambridgeshire Libraries for a grant towards publication of this article.

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13 March 2004, Law Faculty, Cambridge

Recovering Cambridgeshire's Past

Derek Booth

Cambridge Archaeologists and Antiquarians

Cambridge as a university has produced many of the country's (and the world's) leading archaeologists for more than fifty years, most of whom have gone on to make their name elsewhere, and it has also attracted famous names to work within it, a few of whom have been tempted to explore their own locality alongside more grandiose projects. And alongside the Dept of Archaeology there are other departments that have housed people I would like to claim as archaeologists even if that isn't strictly their profession (eg Clifford Darby) and even whole sections such as Quaternary Research and, above all, the Cambridge University Collection of Aerial Photographs, created and run for many years by Prof St Joseph and then by David Wilson, which is actually part of Geography. The Cambridge University Museum of Archaeology and Anthropology is also world famous, and is responsible for both attracting fine archaeologists to work within it and training others to go and run the world.

Then we are fortunate in having a branch of RCHM and their expert fieldworkers here in Cambridge (still here as part of English Heritage) giving us for example Chris Taylor (below). Since 1974 (when I was appointed) local government has also become involved in local archaeology, leading to English Heritage funding work such as the Fenland Project (David Hall). With the growth of developer-funded archaeology in the 1990s we have attracted a large group of professional archaeologists who are now the principal force in local fieldwork. We are especially lucky that we have two highly respected units based in Cambridge, Cambridge Archaeological Unit (Chris Evans) linked to the University and the County's Archaeological Field Unit (set up by Tim Malim and now run by Paul Spoerry), so we get the best of those worlds.

Then, too, Cambridge has always been very lucky with what one has to call amateurs, though the quality of their work is anything but. In the past we have had the traditional clergy (eg John Layer, William Cole, Evelyn-White, Rev Webb), occasional aristocrats such as Richard Neville (Lord Braybrooke), at least one apothecary (Richard Relhan) and one family doctor

(William Palmer), not to mention Tom Lethbridge, who had enough private means to do as he wished, which happened to mean running some outstanding excavations. We have also had a 'housewife/superstar' in Joyce Pullinger. This tradition continues, and is fostered by CAS. The PCAS volume on Roman Cambridge for example was almost entirely the result of thirty years of voluntary work.

The selection of personalities for this talk was limited to those now dead. It included:

John Layer, the 17th century rector of Shepreth (where he also lived and held the manor), raided deed boxes of his County friends, visited every parish church and made notes (mostly on memorials). He is especially valuable for information on ruined churches which have since disappeared eg Malton, and records of villages, eg Childerley, which were transformed in his century.

William Cole, the 18th century curate of Waterbeach, lived at Milton, transcribed vast reams of historical documents and memorials, and sketched parish churches and other antiquities prolifically (see T Cocks, below).



William Cole

Richard Relhan was an early 19th century apothecary who made watercolour drawings of many Cambridgeshire churches and antiquities which are now owned by CAS (see illustrations to T Baggs article in this *Proceedings*).

Richard Neville, 3rd Lord Braybrooke of Audley End, excavated and recorded monuments in south Cambridgeshire during their destruction by ploughing, following enclosure of sheep walks on previous heathland. He is particularly known for work on Bronze Age burial mounds around Melbourn, excavation of Mutlow Hill, and work on Roman villas such as Ickleton, Bartlow and Linton (Hadstock), and Anglo-Saxon cemeteries, eg Little Wilbraham and Linton. Results were published as *Antiqua Explorata* 1847, and *Sepulchra Exposita* 1848.

Thomas McKenny Hughes was a professor of Geography. He had been Acting Consul in Rome when Garibaldi marched on the city, but returned to England to join the Geological Survey in 1861. His archaeological work included discoveries made during coprolite mining (eg the Anglo-Saxon cemetery at Hauxton), he was present when the railway first cut through Devil's Dyke in 1883, he cut sections through Arbury Camp, War Ditches and the villa at Landwade, and he observed aspects of the medieval town exposed during developments within central Cambridge.



Thomas McKenny Hughes

William Palmer was a country doctor who lived at Linton and worked extensively with Cyril Fox (whose work he also financed) and Tom Lethbridge. His primary interest was probably medieval and local history however, and he published a huge range of books and papers on historical, architectural and archaeological topics (a biography of William Cole for example, making his material accessible for the first time). In the 1920s he was a leading figure in the CAS photographic record project (see this volume).



William Palmer

Tom Lethbridge came up to Cambridge to study Natural Sciences but, deciding this was boring, enlivened field trips to study plants in the Brecklands in 1921 by discovering flint tools, starting a passionate fascination with archaeology that private means enabled him to enjoy. Drawing artefacts in the Cambridge University Museum of Archaeology and Ethnology (now Anthropology) (CUMAE), he got to know the curator Louis Clark, who invited him to dig as a volunteer. He also worked with Fox on Devil's Dyke, was CAS Director of Excavations 1925-57, and became Honorary Keeper of Anglo-Saxon Antiquities. He undertook (and promptly published) many excavations, in particular Anglo-Saxon cemeteries, for example Shudy Camps, Burwell, Holywell Row and Lackford, and developed particular insight into 7th century burials. In his garden at Waterbeach he excavated Anglo-Saxon huts. He hated the more professionalised post-War Cambridge, quarrelled violently with Graham Clark over the notorious chalk-cut Iron Age 'figures' he claimed to find on Wandlebury, and moved to Devon in 1957.



Tom Lethbridge at Burwell.

Cyril Fox was Assistant Curator at CUMAE, and the first CAS Director of Excavations. He undertook pioneering excavations, particularly on the Dykes, but is best known for his outstanding reference volume, the *Archaeology of the Cambridge Region* (1923). He went on to have a distinguished career as an excavator and as Director of the National Museum of Wales.

Gordon Fowler was a Gunner Major in the first world war, then ran a Brixton trawler until he came to Ely to organise water transport for beet factories. Tom Lethbridge described him as an 'enthusiastic collector of objects', and he was responsible for many artefacts in CUMAE thanks to all the times he called Lethbridge out to dig up or collect significant discoveries. Another of his important contributions was working out the system of old and extinct waterways (mainly Roman and prehistoric) from the Fenland roddons that he mapped and interpreted.

Grahame Clark was a professor of international fame, whose interests and contributions were in sorting out prehistory on a world scale. As a young man he excavated Car Dyke, worked in the field with Harry Godwin on the development of the Fens, and was a leading member of the Fenland Research Committee.

Harry Godwin was a professor of Botany whose study of vegetation at Wicken Fen and excavations with Clark were vital to Fenland studies. His work on peat in Scandinavia and Europe as well as in Cambridgeshire made him realise he needed to work with archaeologists. He set up the Sub-department of Quaternary Research, incorporating an early radiocarbon dating facility, and published *The History of the British Flora*.

Clifford Darby, like Clark and Godwin was an international figure, this time a professor of Geography, but is perhaps best known to historians for his work on Domesday Book and to us for his *Drainage of the Fens*.

Kenneth St Joseph took aerial photographs (often of archaeological sites) during the second world war, and just carried on doing it. He had a Department of Aerial photography specially set up for him in 1962 (with a personal Chair), which held 750,000 aerial photographs when he retired in 1980 and was a place of pilgrimage for archaeologists all over Britain. He was particularly expert on Roman military sites, on which he wrote extensively and sometimes excavated (eg at Longthorpe, near Peterborough). He also worked in Europe, and was starting new projects in Eastern Europe when he died at the age of 80.

Joan Liversidge was Honorary Keeper of the Roman collections in CUMAE for 33 years, and was well-known as an expert on Roman Britain, especially domestic aspects such as wall plaster and furniture. Her many publications, such as *Britain in the Roman Empire* and *Everyday life in the Roman Empire*, were an important antidote to militaristic Roman studies

that predominated at the time. From CAS she has immense gratitude for her role as our Secretary from 1955 to 1981.

Joyce Pullinger was another CAS Director of Excavations, working entirely on a voluntary basis. Her principal work was excavating Roman Cambridge in partnership with John Alexander in advance of rapid development of the area, but she also discovered and dug Roman pottery kilns at Harston (before destruction by the M11) and a villa at Teversham, and played a leading role in the Roman Pottery Research Group. She ran her own CAS Research Group, a valuable addition to our activities.

Tim Potter, one of our very few archaeologists to die sadly young, grew up in March and as a school boy excavated immensely important Roman sites in the Fens in the early 1960s, just before destruction by ploughing. He left Cambridgeshire for a distinguished academic career, then curatorship in the British Museum, but returned for regular summer seasons of excavation at Stonea Camp and the adjoining Roman town.

Alison Taylor
40 Hertford Street
Cambridge CB4 3AG

William Cole in the context of English Antiquarianism

Thomas Cocke began with a reminder that the urge to record the past had ironically been prompted by the two great disasters to threaten the nation's heritage, the Dissolution and Reformation in the mid-16th century and the Civil War a century later. He suggested that the message of desolation and loss evoked by the ruin of the monasteries might have been especially strong in the flat East Anglian landscape which they had dominated, as Ely Cathedral does to this day. Though little afflicted by battle and siege in the 1640s and 1650s, the region did witness the diligent attempts of William Dowsing to purge churches and chapels from surviving 'idolatry' in their fittings and furnishings.

The losses resulting from iconoclasm or conflict prompted the preservation of great buildings and their monuments through recording on paper. Though the drawings made by Drydale and Sedgwick of monuments and glass at Ely immediately before the Civil War have not come down to us, King's illustration of the cathedral for the *Monasticon Anglicanum* is one of the earliest depictions of its architecture to survive. This process of collection and collation of the county's topographical evidence continued, to culminate in the great volumes of William Cole.

Cole dominates any discussion of Cambridge antiquaries, through the bulk of his manuscript collections, now in the British Library, which he could



St Peter's, Cambridge drawn by William Cole.

describe without irony as his wife and children. The material reflects the man. Cole was passionately interested in every detail of the places and people he knew and yet had wide horizons. His social position allowed him to be as intimate with Horace Walpole, youngest son of the Prime Minister, and Lord Mountford of Horseheath Hall as with his sister in Hackney and his churchwarden and labourer in Bletchley. He was sensitive to the subtle qualities of place, and recorded the plan of his Bletchley parsonage and its garden in almost Pooterish detail.

He can truly be said to have catholic sympathies, both in the denominational sense of allegiance to a Catholic view of the Church, verging on Popery, and in the general sense of being able to relate to a wide variety of situations and individuals. His French diary includes an unsentimental vignette of his generosity towards a beggar boy in a tavern who stuffed the chicken Cole gave him into his jacket to conceal it from the landlord and turned out the next morning to speed his benefactor on his way.

Through Cole, Cambridge antiquarianism was linked with the nationally-known names of Horace Walpole and Thomas Gray, whose years in Cambridge were spent as much on antiquarian studies as literary, and the local figure of James Essex, architect and antiquary of Cambridge. Coming from a non-university, artisan background, his perspective was different from that of gentleman scholars. His great contribution was that he wanted to understand how medieval buildings were constructed, indeed how they stood up, to analyse how mouldings or tracery was laid out, not simply to comment on the aesthetics of the design.

The great works at Ely Cathedral from the 1740s to the 1780s bring all these elements together. Major restorations of the structure by James Essex, especially of the lantern and the presbytery, and a major reordering of the choir, upon which Walpole was consulted,

were accompanied by a major book, the History of the Cathedral, eventually published by the minor canon, James Bentham in 1771. Bentham combined the traditional fasti, listing officeholders, with a continuous history of the institution and an exposition of its buildings in artful engravings as well as in the text. These works at Ely represent a first flowering of scholarly understanding of a great medieval building and of a sensitive stewardship and presentation of it. The young Turner's watercolour looking across the light-filled Octagon imbues both the recent contribution by Essex in the choir screen and lantern and the elaborate 14th-century architecture with a common sense of wonder.

Thomas Cocke
The National Association of
Decorative Fine Arts Societies
NADFAS House, 8 Guildford Street
London WC1N 1DA

Engravers and photographers

When Richard Lyne was commissioned to illustrate John Caius' history of Cambridge in 1574 he produced an elevated view, with details such as a fisherman and his catch. The following year his work was copied and redrawn; the same fisherman now seen from the rear – something the new artist could imagine – but he had no guide as to the western elevation of King's College chapel so he made it up. Any subsequent views must be treated with equal caution. David Logan has a reputation for accuracy in his *Cantabrigia Illustrata* of 1690. But of his view of St Catharine's he wrote 'the remains and ruins of the old college buildings were a sight too ugly to appear as a picture among the other colleges', so he drew only the most recent buildings as well as those actually planned but not then finished.

Amongst published books of views are Ackermann's *History of the University of Cambridge, its Colleges, Halls and Public Buildings* of 1815. It featured 64 topographical views in colour by Augustus Pugin, Frederick Mackenzie and William Westall, the finest exponents of their art. Cambridge artists such as the Harradens and Storers could not match them in their own volumes. But Richard Newby combined architectural draughtsmanship with the engraving skill of John Le Keux and had the backing of William Wilkins for his *Memorials of Cambridge* of 1841.

There were a number of individual prints produced, the principal in Cambridge University Almanac, issued annually from 1801 to 1855. Robert Willis and John Willis Clark included a list of these and other views in their *Architectural History of the University of Cambridge* vol 1, 1886 but there are many others. These include *The Cambridge Portfolio*, 1838, by JJ Smith and scores of engravings produced by Rock & Co from 1851 onwards. Two Cambridge artists, William Beales Redfarn and Robert Farren produced volumes depicting town buildings threatened with

demolition, while a number of national illustrated journals featured Cambridge.

Photography arrived in Cambridge in 1844 when the first studio opened at Great St Mary's Passage. Arthur Nicholls opened a new photographic studio in Post Office Terrace by 1865 and took views of Cambridge streets which have been reproduced ever since. Various photographers succeeded to the premises including Ramsey & Muspratt whose negatives, together with many thousand old glass plates taken by their predecessors, are deposited in the Cambridgeshire Collection. Amongst other prominent photographers were Thomas Stearn, Hills & Saunders and Scott & Wilkinson.

The advent of the picture postcard sees an explosion of images produced by national firms such as Valentine, Judge and Frith or locals such as Ted Mott. In 1904 CAS launched its Photographic Survey with members being encouraged to buy postcards and take their own photographs.

By the 1920s newspapers were increasingly featuring photographs. While they largely deal with the minutiae of change the overall picture is being captured by the photographer in the air – the University Collections of Aerial Photography, looking down on the scene as Lyne did in his imagination over 500 years ago.

The principal source for Cambridge illustrations is the Cambridgeshire Collection. Other depositories include the University Library map room, Fitzwilliam Museum, Cambridge and County Folk Museum and Cambridgeshire County Record Office.

Mike Petty

The Pound, 1 Ely Road, Stretham CB6 3JH

The Victoria County History in Cambridgeshire: a hundred-year history finished at last

The VCH volumes which cover modern Cambridgeshire have been a massive undertaking, the work of 133 authors over a century of intermittent work, and running to perhaps three million words. Their value can best be appreciated if they are set in the changing times in which they were written and produced. Even while maintaining the appearance of stability in the format of the big red books, the VCH has undergone extraordinary changes in its ownership, in the arrangements for funding and staffing, and in the huge expansion of topics and sources covered in the parish histories. All the different phases of the VCH as a research project and intellectual undertaking are illuminated by its largely untapped archives in London: the foundation as a memorial to Queen Victoria's Diamond Jubilee of 1897; the financial crisis of 1908 which halted work on Huntingdonshire and Cambridgeshire; the General Editor William Page's removal of 14 tons of research materials to a garden hut in Bognor Regis in 1922 to carry on the work almost single-handed; his partnership with the boundlessly

enthusiastic Huntingdonshire landed gentleman Granville Proby from 1924; the revival of work on Cambridgeshire proper in 1935 after the University of London acquired ownership; and the long drawn-out work on Cambridgeshire at the VCH's central office which finally saw the last words published in 2002.

Chris Lewis

The value of the work of the Royal Commission on the Historical Monuments of England to the history of Cambridgeshire

The value of the RCHME to Cambridgeshire history lies mainly in its five publications. But these are merely one of many sources for that history and like all such sources must not be taken at face value but examined, assessed and critically analysed before use. If this is done it becomes evident that these publications were produced at different times, to different standards, by different people, some competent, some not, under different pressures, in varying social and political climates and within a rapidly changing academic world. It is only by taking account of these factors that the value of the various RCHME publications can be assessed.

Amongst the problems that the Commission faced and that affect the value of its work was the changing definition of an historical monument. At first it was all sites before 1700, then 1714, later 1850. Thus the earliest volume, Huntingdonshire, contains no building later than 1714 and later books covered nothing after 1850. Likewise, Huntingdonshire has very few archaeological sites in it, but North-East Cambridgeshire lists all that were then known. Continuous advances in scholarship and the often extended publication process also meant that Commission volumes were always going to be out of date. On the other hand, one of the achievements of the later volumes was that they began to take on board the new ideas on landscape history, particularly in North-East Cambridgeshire, which included a landscape history of Swaffham Fen. The material in the Commission volumes can be used for many different kinds of history. At one level merely to know the date of a house or the various periods of the building of a church can be of use. At another level, the knowledge that there was a standard house type in the 17th century that is recognisable in Cambridgeshire and all over East Anglia and beyond can lead on to an understanding of social conditions hardly documented in any other way.

Commission volumes are therefore where anyone can find information. But the history that can be written using that information also needs considerable input from present-day historians.

Christopher Taylor
11 High Street, Pampisford
Cambridge CB2 4ES

East Anglian Film Archive

Stewart Orr, of the East Anglian Film Archive, the East of England's public regional moving image archive, presented a selection of films including the earliest film made in the region, sailing trawlers leaving Yarmouth harbour in the summer of 1896 taken by pioneer film maker, Birt Acres. This was followed by a film by George Cunningham, the Cambridge dentist, made in 1912 about preventive dentistry, which he was advocating at the time. A film of pea picking at Sawston in the mid 1920s showed villagers picking their free peas, a local annual custom, and then skating on Lingay fen in 1927 from a cinema newsreel of the time. An early sound film of Cambridge, simply called *Cambridge* followed. This was made by Stuart Legg in 1931 and showed the life of students, Cambridge streets, and sports facilities. The 'synchronised' sound was of sound effects and music only. Stuart Legg was a student at the time, and went on to be a respected film maker.

Milton Road School showed a day in the life of the school in 1935, and this was followed by *Horse Sense*, a road safety film made in the streets of Cambridge by Mr H0 King, in 1950. Finally Sir Winston Churchill was seen planting a tree at Churchill College in 1958.

Stewart Orr and David Cleveland
East Anglian Film Archive
The Archive Centre
Martineau Lane
Norwich NR1 2DQ

THE CONDUIT

Local History and Archaeology Organisations, Societies and Events

Once again, the Society is pleased to publish *Conduit* as a supplement to the *Proceedings*. It has been gratifying to hear from so many people that it is a valued part of our activities, not least as a directory of who is active on the 'lecture circuit' each year!

Readers should note that societies' programmes only include those lectures and other events that will take place after the publication of this issue (September 2004). In some cases, 2005 programmes are still to be finalised: please contact the Secretaries concerned for details.

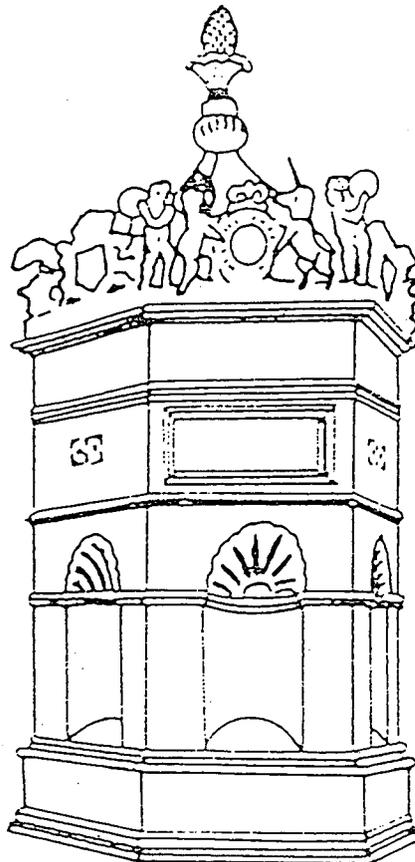
Local history and archaeology are in good health in our area. Societies' programmes cover a vast range of topics, from the prehistory of South Cambridgeshire to the re-birth of Whitemoor marshalling yard in May 2004. In this context, it is pleasing to see how many are now turning their attention towards the 20th century, for so long a neglected field in local and regional history.

On the debit side, it is sad to learn that at least one society may have to fold, after a long and successful existence, through the inability to find anyone to take on the task of organisation. We can ill-afford to lose any group devoted to recording our past at a time when Cambridgeshire, Huntingdonshire and Peterborough face unprecedented economic, social and landscape change. Since the last edition of *Conduit*, we have seen the publication of the government's proposals for the expansion of Stansted Airport and the 'M11 corridor'. The implications of these, in terms of the expansion of our villages, market towns and cities, the creation of new settlements and the upgrading of the transport infrastructure are immense and dwarf in scale the 'London overspill' of the 1960s that transformed Haverhill, Huntingdon and Peterborough.

It is essential that we remember and celebrate the past. It is equally important that we record the present landscape.

We may not have it for very much longer.

Tony Kirby
President, CAS
Acting Editor, Conduit



CAMBRIDGE ANTIQUARIAN SOCIETY

21 High Street, West Wickham, Cambridge CB1 6RY

www.camant.soc.org

President Dr Nicholas James
Secretary Janet Morris; 01223 290863
jmmorris@jmmorris.plus.com

The Society was founded in 1840 to promote both the study of history, architectural history and archaeology and the conservation of relevant features and objects, within the county of Cambridge particularly. Members are entitled to free access to our lectures (to which university undergraduates and members' guests are welcome), reduced fees for our conferences, a free copy of PCAS and access to a specialist archaeological library. Excursions are also arranged.

Our monthly lectures are normally held in the Runcie Lecture Theatre in the Divinity Faculty, Cambridge University Sidgwick Site, except for the meetings in January and April (which will be held in the Little Hall nearby), the conferences and the joint meeting with the Cambridgeshire Local History Society. There is plentiful free parking.

Lectures start at 5.50 pm and last for about an hour, with the opportunity for questions and discussion afterwards.

- 11 Oct Helen Geake *Anglo-Saxon England and the Portable Antiquity Scheme*
- 1 Nov Martin Allen *The 14th Century Treasure from Chesterton Lane, Cambridge*
- 20 Nov CONFERENCE: *Recent Archaeological Work in Cambridgeshire*
- 6 Dec Cathy Tuck *Landscapes and Desire: Uncovering Britain's Sexually-inspired Sites*
- 10 Jan Michael Fulford *Silchester: Iron Age to Roman. The making of the town in the light of continuing excavations* (In association with the Society for the Promotion of Roman Studies)
- 5 Feb Malcolm Dodson *The path of the natural roof: a history of thatching* (Joint meeting with the Cambs Local History Society 2.00 pm, St John's Church Hall, Blinco Grove, Cambridge)
- 12 Mar CONFERENCE: *Garden History and Archaeology in East Anglia*
- 14 Mar Marilyn Palmer *Comfort and Convenience in the English Country House* (Joint meeting with the Cambs Local History Society, preceded by CAS AGM at 5.35. p.m)
- 4 Apr Lucilla Burn *Antiquarianism and the modern museum: irreconcilable opposites?*
- 9 May *To be confirmed*
- 6 Jun Paul Pattison *The River Guardian: a fresh look at Tilbury Fort*



BUCKDEN LOCAL HISTORY SOCIETY

www.buckden-village.co.uk

Chairman Robin Gibson
Secretary Les Button, 13 Vineyard Way, Buckden, Huntingdon, Cambs PE19 5SR; 01480 811323

The Society aims to promote the study and knowledge of local history in the widest sense, primarily through talks, and will be pleased to promote individual or group research into local history projects.

Meetings are usually held on the first Wednesday of each month (not August) in the Conference Room at Buckden Towers commencing 7.30 pm.

- 1 Sep Nita Luxford *Gettin' a Livin' from the Great Ouse*
- 6 Oct Michael Knight *Milestones and Similar Things*
- 3 Nov David Cozens *Magic Lantern Slides of Local Interest*

- 1 Dec Ron & Janet Ingarmells *A Glimpse of the Life, Times, Poetry and Songs of John Clare, Poet of Helpston*
- 5 Jan Peter Ibbett *On the Road in 1910*
- 2 Feb Bernard O'Connor *Tempsford Airfield: Now the secret can be told*
- 2 Mar Sue Edgington *Huntingdon 800*
- 6 Apr Sue Wynn *A WREN at Bletchley Park*
- 4 May Lynn Hopwood *Fashion between the Wars*
- 1 Jun David Thomas *Horses in History* (and AGM)
- July VISIT *to be confirmed*



BURWELL HISTORY SOCIETY

Chair Jane Bulleid; 01638 743517

Secretary Carolyn Marshall, 8 Buntings Crescent, Burwell, Cambs CB5 0EU; 01638 741654

The Society meets at Burwell Village College, usually on the third Wednesday in the month at 7.30 pm. Membership is £12 per annum, payable at the first meeting in September. Visitors are welcome to attend meetings at £2 per visit. This can be deducted from the full membership fee if, subsequently, they should decide to join the Society

- 15 Sep Bill Wittering *King's Cross to Cambridge*
- 20 Oct Bob Merrett *The Suffolk Sandlings: the Cradle of the Kingdom of East*
- 17 Nov Alan Stripp *The Man Who Never Was and Operation Fortitude*
- 15 Dec CHRISTMAS CELEBRATIONS
- 19 Jan Stuart Bowell *Looking at Old Advertisements*
- 23 Feb Michael Gates *The Cambridge to Mildenhall Railway*
- 16 Mar Alan Eade *History of the English Timber-framed House*
- 20 Apr AGM (and local speaker)
- 18 May Alison Dickens *Broad Street, Ely, Excavations*



CAMBRIDGE ARCHAEOLOGY FIELD GROUP

President Dr John Alexander

Chairman Barrie Fuller

Secretary Susan May, 94 High Street, Great Shelford, Cambridge CB2 5EH.
susanrogermay@ntlworld.com

The Group was formed to enjoy practical archaeology and works both with the County Archaeological Field Unit and on its own projects. It works within about 15 miles of Cambridge and carries out field-walking, surveying and some excavation (usually on Sunday mornings).

Lecture meetings are held at the Department of Archaeology, University of Cambridge, Downing Street, Cambridge on the first Wednesday of each month at 7.30 pm Other (processing) meetings are at the Community Centre, Haggis Gap, Fulbourn from 7.45 pm.

Lectures will start on 6 October, but the programme is not yet finalised. Fieldwalking will start in September/October.

Subscriptions are £6 (individual), £9 (family).

CAMBRIDGESHIRE LOCAL HISTORY SOCIETY

President Mike Petty
Chairman Michael Farrar
Secretary Mrs Gill Rushworth, 1a Archers Close, Swaffham Bulbeck, Cambridge CB5 ONG;
 01223 811703

The Society was founded in 1951 to encourage and support the study of local history within the old counties of Cambridgeshire and the Isle of Ely. Monthly meetings are held from October to May, with visits to places of interest during the summer months.

Meetings are held at St John's Hall, Blinco Grove (off Hills Road), Cambridge, at 2.15 pm on Saturdays. An annual Review and bi-annual Newsletter are issued to members.

The annual subscription is £8 (individual) or £10 (joint).

- 2 Oct Barbara Lovejoy *The Lace Pillow: a Cottage Industry*
- 6 Nov Alan Elliott *Far East Prisoners of War: Reflections Sixty Years On*
- 4 Dec David Hufford *Cambridge Colleges and their Gardens*
- 8 Jan Dr Ian Calder *Forensic Medicine*
- 5 Feb Malcolm Dodson *The Path of the Natural Roof: a History of Thatching* (Joint Meeting with the Cambridge Antiquarian Society)
- 5 Mar Christopher Jackson *Catholics in Cambridge from Penal Times to Toleration*
- 14 Mar Marilyn Palmer *Comfort and Convenience in the English Country House* (Joint meeting with the Cambridge Antiquarian Society, Runcie Lecture Theatre, Divinity School, West Road, Cambridge, 5.50 pm)
- 2 Apr Janet Jeacock *Wicca: Witchcraft: a Pagan Religion*
- 7 May AGM *venue/speaker to be confirmed*



CHERRY HINTON LOCAL HISTORY SOCIETY

Chair Mrs Win Webber, 35 Cow Lane, Fulbourn, Cambridge CB1 5HB
Secretary P Turkentine

Meetings are held at the Church Centre, St Andrew's Church, Cherry Hinton.
 Membership costs £7 per annum.

Mrs Webber writes: I became Chairman for one year only when the Rev Chris Boulton left the parish in December 2003. No-one has yet come forward to run the Society and it looks likely that it will thus fold at the end of 2004. In view of this, there is no programme for 2004-5.



CHESTERFORD LOCAL HISTORY AND ARCHAEOLOGY SOCIETY

Chair Ian Deaker
Secretary Elizabeth Marshall, Greenmeadows, High Street, Great Chesterford, Saffron Walden, Essex CB10 1PL; 01799 530265.
jandemarshall@waitrose.com
Treasurer Edward Jackson

The Society aims to foster interest in local history and archaeology and to that end holds four meetings a year and an AGM with speakers on relevant topics. It records memories of older residents and obtains photographic and other records. It publishes a series of interim reports.

Meetings are held (on varying days) at 8.00 pm at either the Congregational Chapel, Carmel Street,

Great Chesterford or the Chesterfords Community Centre, Newmarket Road, Great Chesterford. Non-members are welcome to attend any meetings on payment of £1.50 on each occasion.

Annual subscriptions are £5 (individual), £9 (household). Fifty years' residence in the Chesterfords or other 'Cam Gap' villages qualifies for a reduced rate of £2.50; sixty-five years residence brings free membership. Benefits of membership include a thrice-yearly Newsletter.

The programme for 2004/5 has not yet been arranged. Please contact the Secretary for up-to-date information.



COTTENHAM VILLAGE SOCIETY

www.cottenhamvillagesociety.ukfamily.com

President Mac Dowdy
Chairman Mrs Margaret Brierley
Treasurer Miss Anne Wright
Secretary Mrs Maire Collins, 52 Lambs Lane, Cottenham, Cambs CB4 8TA 01954 200873
mmc24@cam.ac.uk

The aim of the Society is to encourage awareness and participation in the village community and its history. Monthly meetings are held from September to April to hear speakers on a variety of subjects. December sees the Christmas party, and in May to July members enjoy a guided walk, an outing and a barbecue.

Meetings take place at Cottenham Primary School, Lambs Lane, Cottenham, at 7.45 pm. The annual subscription for 2004–2005 is £3. Visitors are welcome. (£1 each).

10 Sep Jasper Kay *Birdwatch in Cottenham* (preceded by AGM)
8 Oct Kevin James *Wicken Fen*
12 Nov Bernard O'Connor *Digging Dinosaurs in the Cambridgeshire Fens*
Dec CHRISTMAS PARTY *date to be arranged*
14 Jan Mr Snelson *The Fen Reeve: our Community Wood*
11 Feb *To be arranged*
11 Mar Kevin Drake *Round Trafalgar Square*
8 Apr Mr Muncaster *Calvin Coolidge: President of the USA: descendant of local boy makes good!*
May GUIDED WALK *date to be arranged*
June SUMMER OUTING *date and venue to be arranged*
July BARBECUE *date to be arranged*



DUXFORD HISTORY GROUP

Contact Jim Longstaff, 8b St John's Street, Duxford, Cambridge CB2 4RA; 01223 83200

The Group has been in existence for some 15 years and what started as a working group, to try and uncover the village's past has now become a winter programme of some 12 speakers. The Group meets at Lacey's Way Community Centre at 7.30 pm on the second and fourth Tuesdays of the month: entry is £1.50 per lecture.

The Group has done some research on schooling in Duxford and is now looking for someone who can put this together in book form. It already has one publication, *Duxford Remembered*, a series of memories and anecdotes from the last century.

The owner of the Group's photographic collection is leaving the village and so, sadly, are the

photographs. The group thus finds itself in the position of having to replace most of them and would be very grateful to hear from anyone who has any photographs, slides or post cards of the village that they would be willing to donate, lend, or allow to be copied to disk.

- 14 Sep Bernard O'Connor *East Anglian Dinosaur Hunters*
- 28 Sep Ken Drake *Covent Garden to Trafalgar Square*
- 12 Oct Geoff Hales *The Pepys Diaries* (costumed!)
- 26 Oct Derek Stubbings *Four Lamps to Leper Chapel*
- 9 Nov Ian Valentine *SOE at Audley End*
- 23 Nov Scott Kenny *Archaeology on the Genome Site*
- 11 Jan Dr Anthony Cooper *The Cambridge Preservation Society*
- 25 Jan Robert Smith *College Farm and Family*
- 8 Feb Paul Hawes *The Cambridge Tile and Brick Company*
- 22 Feb Robin Driver *Aircraft Archaeology in Russia*
- 8 Mar Michael Gates *Transport of Delight*
- 22 Mar Chris Jakes *The Cambridgeshire Collection*



ELTISLEY HISTORY SOCIETY

Chairman Michael Sawyer, 19 The Green, Eltisley, St Neots, Cambs PE19 6TG; 01480 880019
Secretary Mary Flinders, Heylock, Caxton End, Eltisley, St Neots, Cambs PE19 6TJ;
 01480 880268
maryflinders@waitrose.com

Meetings take place at the Cade Memorial Hall, The Green, Eltisley on the fourth Wednesday of the month, 7.45 for 8.00 pm. The annual subscription is £15 for individuals, £25 joint or family (concessionary rates available).

The Society aims to research and record family and local history. Monthly meetings are held with a variety of speakers. Current research is ongoing into Eltisley's World War I soldiers and a project to sound-record and film elderly residents and children about their memories and hopes.

- 22 Sep Tom Doig *Old Photos, their care and conservation*
- 27 Oct Mike Petty *Ghosts and Witches of Cambridgeshire*
- 24 Nov David Rudd *Local Saxons*
- 26 Jan David Bushby *Antique Maps*
- 23 Feb David Short *What People had in their Houses, 1600-1700*
- 23 Mar Peter Walker *Gamlingay Wood, its History, Wildlife and Management*



FULBOURN VILLAGE HISTORY SOCIETY

President Richard Townley, The Manor, Manor Walk, Fulbourn
Chairman Peter Halton, 6 Cambridge Road, Fulbourn, CB1 5HO; 01223 880465
Secretary Glynis Arber, 28 The Haven, Fulbourn, CB1 5BG; 01223 570887
g.arber@ntl.world.com

The Society celebrates its fifth Anniversary in 2004 and continues to fulfil its objective to research, keep and maintain records of all aspects of the village's social and historical development. This

information is available for consultation by members and the general public. Volunteers are currently digitising archive material, as well as participating in a research project into the medieval settlement patterns of Fulbourn, following an award in 2002 from the Local Heritage Initiative and the Nationwide Building Society. (The LHI is a partnership between the Heritage Lottery Fund, the Nationwide BS and the Countryside Agency).

Meetings are held at the Six Bells PH, at 7.45 for 8.00 pm on the third Thursday of the month (October to May inclusive). Annual Membership costs £7.50 (individuals), £12 (joint) and £3 (junior). Non-members are very welcome to attend lectures: entry is £2 on each occasion.

- 21 Oct Maureen James *The History of Witchcraft*
- 21 Nov Michael Bowyer *Cambridgeshire at War*
- 9 Dec 5TH ANNIVERSARY CELEBRATION *Musical Mayhem at the Manor* (Venue: Fulbourn Manor)
- 20 Jan Honor Ridout *Stourbridge Fair*
- 17 Feb Mark Hinman *Recent Archaeology in our Area*
- 17 Mar John Sutton *Return of the Sword: the Second Civil War in Cambridgeshire*
- 21 Apr HJK Jenkins *Fenland Lighters and Regional development during the 1700s*



HUNTINGDONSHIRE LOCAL HISTORY SOCIETY

3 The Lanes, Houghton, Huntingdon PE28 2BW

www.huntslocalhistory.org.uk

President Dr Simon Thurley

Chairman David Cozens MBE

Secretary Mary Hopper, 3 The Lanes, Houghton, Huntingdon PE28 2BW

The Society aims to encourage research into Huntingdonshire history. Meetings are held in Pathfinder House, St Mary's Street, Huntingdon at 7.30 pm, with the exception of the Christmas Social (in the Town Hall). During the summer months, coach excursions to places of interest in the county and beyond are arranged.

The Society's Goodliff Awards Scheme was launched in 1996. Since then, 70 awards have been made supporting history projects in 30 towns and villages in Huntingdonshire. Details on how to apply for grants can be obtained from Ken Sneath (01480 450686) or from the Society's website.

The annual subscription of £7 (individual) or £12 (joint) includes a copy of *The Records of Huntingdon* and two Newsletters.

- 22 Oct Simon Thurley *Hampton Court: a Secret History* (preceded by presentation of awards)
- 25 Nov Alan Akeroyd and Jo March *A2A and the County Record Office, Huntingdon*
- 10 Dec Ramsey Choral Society *Seasonal Music* (NB: this is a Friday)
- 20 Jan Cambs Archaeological Field Unit *Recent Local Archaeology*
- 17 Feb Sue Edgington *Huntingdon Charters*
- 19 Feb DAY CONFERENCE at Huntingdonshire Regional College *Huntingdon 800*
- 17 Mar Philip Saunders *Benjamin Hutchinson: a Forgotten Historian of Huntingdonshire*
- 14 Apr Brian Jones *Elton Hall*



THE ISLEHAM SOCIETY

Chairman Roynon Howes
Secretary Beryl Powys, 5 Church Lane, Isleham CB7 5SQ; 01638 780519
powys169@enterprise.net

The Society is a group of people interested in preserving what is good and of historical interest in the village and promoting good and well-planned ideas for the future. To that end, it organises a programme of events that will stimulate ideas and promote knowledge, where possible of local interest.

Meetings are held at Isleham Village Hall at 8.00 pm on the third Thursday of the month. The annual subscription is £10.

- 23 Sep David Chambers Namaste Nepal
21 Oct Robin Page Factory Farm or Countryside?
19 Nov John King Waterways of England
20 Jan Sue Oosthuizen A 14th Century Manor House
24 Feb David Billings English Coinage
17 Mar John Drake Historic Gardens of Cambridgeshire



KIMBOLTON LOCAL HISTORY SOCIETY

Chairman Nora Butler
Secretary V Shorer-Nixon, 3 The Lane, Stow Longa, Huntingdon PE28 0TP; 01480 860325

The aim of the Society is to promote and sustain interest in local history, to carry out research and transcribe documents, etc.

Meetings are held monthly on Wednesdays at 8.00 pm in Kimbolton Castle. The annual subscription is £6 (individual), £10 (joint).

- 22 Sep Ken Sneath Huntingdonshire in the 17th Century
13 Oct Alison Neil 'Yours truly, CB' (A one-woman play about the life of Charlotte Bronte; the Lewis Hall, Kimbolton Castle)
10 Nov Alan Akeroyd Our Local Records Office
8 Dec A HISTORICAL-BASED QUIZ plus seasonal refreshments



LANDSCAPE AND LOCAL HISTORY GROUP

Co-ordinator Lyn Boothman, 18 York Street, Cambridge CB1 2PY; 01223 323042
annys@boothman27.fsnet.co.uk

An informally-run group. Members are (or have been/will be) active in research for personal and/or academic interest. LLHG gives members a chance to present their research to interested colleagues and benefit from exchanges of ideas. The research interests of members are geographically-diverse and not necessarily local.

Most meetings are held at Shire Hall, Cambridge, usually four times a year at 7.30 pm on a Monday, Wednesday or Thursday. An occasional charge of £2 is made when necessary.

Please contact the Co-ordinator for details of the programme. A meeting is planned for September, to be followed by others later in the year.

LINTON AND DISTRICT HISTORICAL SOCIETY

Chairman Garth Collard

Secretary Pat Genochio, 44 Finchams Close, Linton, Cambridge CB1 6NE; 01223 890494
ethelwynpat@waitrose.com

Meetings are held at Linton Village College, Coles Lane, Linton at 7.30 pm on the third Tuesday of the month from September to May inclusive. The annual subscription is £8.

- 21 Sep Mary Goddin *Cambridge Colleges: Past, Present and Future*
- 19 Oct Neil Lanham *My Life as an Auctioneer*
- 16 Nov SV Schneider *The History of Britain's Waterways: Life on the Cut*
- 21 Dec Garth Collard *Businesses in Linton High Street: the Market Place to Green Hill*
- 18 Jan Mike Thurlow *The Victorian Kitchen Garden, through the diaries and eyes of William Cresswell*
- 15 Feb Chris Jakes *Cambridge in Old Photographs*
- 15 Mar Rosemary Wheeler *Lavenham: Personal memories of this Historic Town*
- 19 Apr Brian Sutton *The Marie Rose*
- 17 May Garth Collard *Changes in Linton over the last 25 years: Buildings, Shops and the Landscape*



MARCH AND DISTRICT MUSEUM SOCIETY

Chairman Peter Hewitt

Vice-Chairman Richard Munns, 101 Elwyn Road, March, Cambs PE15 9DB
richard-joan@munns22.fsnet.co.uk

The Society exists to manage and maintain the March Museum, located in a former 19th Century school, which contains collections of artefacts and documents relating to local social history, and to organise a series of associated lectures on subjects of historical interest.

Meetings are held at St Peter's Church Hall (opposite the Museum) on Fridays at 7.30 pm The annual subscription is £3, but meetings are open to all (members £1.50, others £2.50, children free).

- 10 Sep Andrew Watson *Peterborough Cathedral: Rising from the Ashes*
- 1 Oct Peter Heubeck *Redevelopment of Whitmoor Marshalling Yard*
- 8 Oct David Grimes *The Great British Fair*
- 12 Nov Brian Cookman *Midwinter Festivals* (preceded by AGM)
- 26 Nov George Payne *Life in the RAF* (Annual military lecture)
- 14 Jan Trevor Gunton *An Empire in the Atlantic: in search of the Vikings*
- 11 Feb Malcolm Busby *Tales from Cambridgeshire and the Fens*
- 11 Mar Richard Mortimer *Fascinating Finds from a Fen-edge Settlement*
- 8 Apr Tim Ball *The Ghosts of Glastonbury: the Life and Work of Frederick Bligh Bond*
- 22 Apr ANNUAL RAILWAY LECTURE (speaker and title to be confirmed)
- 13 May John Drake *Historic Gardens of Cambridgeshire*



PETERBOROUGH MUSEUM SOCIETY

Chairman Mr D Sharp, 30 Apsley Way, Longthorpe, Peterborough PE3 9NE
Secretary Mrs R Rodwell, 9 Royston Avenue, Orton Longueville, Peterborough PE2 7AA;
 01733 231434

Meetings are held on alternate Tuesdays at 7.30 pm in the Museum Lecture Hall, Peterborough Museum & Art Gallery, Priestgate, Peterborough.

The main aims of the Society are to promote the study of local and natural history, archaeology, art, science and kindred subjects and to promote the interests of the Peterborough Museum & Art Gallery.

- 5 Oct Alan Dawn *Discovery of Leedsichthys problematicus*
 - 19 Oct Don Chiswell *The Battle of Balaclava*
 - 2 Nov John Harvey *The Lonely Anzac of Peterborough*
 - 16 Nov Dr Peter Kirby *Bugs in the Garden*
 - 30 Nov Peter Moyse *An Evening with John Clare*
 - 14 Dec Jill Collinge *Time, Gentlemen, Please*
 - 4 Jan Chris Montague *Lost and Found: the first year of the Portable Antiquities Scheme*
 - 18 Jan Stephen Perry *The Frank Perkins Story*
 - 1 Feb Mike Sockett *WE Gladstone, the embodiment of Victorian Values?*
 - 15 Feb Dr Jim Deboo *The History of Baker Perkins*
 - 1 Mar Dr Michael McGregor *Raymond May's Racing Days*
 - 15 Mar Mark Knight *Bradley Fen 2000: History of the Site*
 - 29 Mar Brian White *The History of the Horse-drawn Mail Coaches* (preceded by AGM)
- SUMMER OUTINGS PROGRAMME available from the Secretary in February 2005



ROYSTON AND DISTRICT LOCAL HISTORY SOCIETY

www.royston.clara.net/local history

Chair BH Skryme, 2 Garden Lane, Royston, Herts SG8 9EH
Secretary CP Black, 15 The Brambles, Royston, Herts SG8 9NQ; 01763 242677

The Society meets in the Town Hall, Royston, on the first Thursday of the month from October to April inclusive and on the second Thursday in May.

The annual subscription is £5 (due 1 September). Visitors are welcome to attend lectures on payment of £2 on each occasion.

The Society has produced a number of publications, including *Royston 1900: a Year in the Life of a Small Market Town* by S & J Ralls, available from the Cave Bookshop (Royston), Royston Museum, Sawston Books (Morley's Court, Sawston) and David's Bookshop (Letchworth).

- 7 Oct Richard Lavender *John and Robert Warner, Bell-founders of Hoddesdon*
- 4 Nov Geoff Hales *Private Kipling* (a one-man play)
- 2 Dec Tom Drayton *History of Drayton's Garage, Barley*
- 6 Jan F John Smith *The Pubs of Royston*
- 3 Feb Patrick Lepper *Churches of Bedfordshire and Hertfordshire, with special reference to North Hertfordshire*
- 3 Mar Alan Eade *Royston: A Bit of History and an Unusual House*
- 19 Mar HISTORY FAIR celebrating the Society's 40th anniversary, 10.30–4.00 pm

- 7 April Tony Kirby *Transport in South Cambridgeshire in the 20th Century*
 12 May Phil Smith *Scenes of Royston, 1880–1890* (preceded by AGM at 7.30 pm)
 11 Jun COACH OUTING to Bury St Edmunds



ST NEOTS LOCAL HISTORY SOCIETY

Chairman Rosemary Pullinger
Secretary Nell Marshall, 28 Avenue Road, St Neots PE19 1LJ; 01480 472495
ellenmarshall@clara.net

The aim of the Society is to stimulate and foster an interest in local history through monthly meetings, the opportunity for research and outings. The Society holds an archive of local history material in the local library. A magazine is published, usually four times a year, and now after twenty years is itself a prime source of local history information.

Meetings are held at Eynesbury Primary School, Montague Lane, Eynesbury, St Neots on the first Friday of each month at 7.30 pm (except for July and August, when outside visits are arranged). The annual subscription is £10; non-members are welcome at meetings on payment of £2.50 on each occasion.

- 1 Oct Bernard O'Connor *Tempsford Aerodrome in Wartime*
 5 Nov John Drake *Cambridgeshire and Huntingdonshire Parks and Gardens*
 3 Dec John Whitmore *The History of Magic*



SAWSTON VILLAGE HISTORY SOCIETY

www.sawston.history.org.uk

President Mary Dicken
Chairman Vacant
Secretary Bryan Howe, 16 Henry Morris Road, Sawston, Cambridge CB2 4JW; 01223 833963

The Society was formed twelve years ago to raise awareness of local history and to collect items of historical interest relating to Sawston. Its History Room at the Parish Council offices is open to the public on the second Saturday of each month, from 2.00 to 4.00 pm. New offices to be built soon will include facilities for storage and display of the collection.

Meetings are held at Chapelfield Community Centre, Link Road, Sawston on the second Thursday of each month at 7.30 pm. The annual subscription is £5 (concessions £2.50).



STAINE HUNDRED LOCAL HISTORY SOCIETY

Chairman Maureen Rogers
Secretary Janet Marsh, The Old Bakery, 22 High Street, Bottisham, Cambridge; 01223 811314
landjmarsh@aol.com
Programme Secretary Gill Rushworth; 01223 812146

The aim of the Society is to stimulate an interest in local history through monthly meetings and occasional outings. A wide area of East Anglia is covered.

Meetings are held at Bottisham Village College on the second Wednesday of the month at 7.30 pm.

The annual subscription is £10; visitors are welcome to attend meetings on payment of £2.30 on each occasion.

- 8 Sep Bill Wittering *The Story of Bottles*
13 Oct Sue Oosthuizen *Medieval Greens and Commons in Cambridgeshire*
10 Nov Chris Jakes *World War I in Cambridge*
8 Dec CHRISTMAS EVENT
9 Feb Chloe Cockerill *Heraldry in Cambridgeshire*



THE THRILOW SOCIETY

- Chair* Shirley Wittering; 01763 208269
shirleyann.wittering@ntlworld.com
Secretary Elsie Evans; 01763 208593

The Society aims to promote interest in the local history, the environment and the conservation of the Thriplow region. It cares for the Smithy on the village green and its collection of agricultural and local bygonies.

Meetings are held at the village hall at 8.00 pm; visitors are welcome on payment of £1 on each occasion. The annual subscription is £5 per family member; this includes three issues of the *Thriplow Journal*.

- 27 Sep Mike Petty *Vanished Cambridge in Photographs*
11 Oct Simon Walker *Witchcraft: the Reality*
15 Nov Laurie Friday *The Natural History of Wicken Fen*
12 Feb Mr & Mrs Seaton *The Restoration of Manor Farm* (followed by supper: members only)
28 Mar Bill Wittering *Illusion in Art*
18 Apr Anthony Cooper *History of the Cambridge Preservation Society* (preceded by AGM)



WEST WICKHAM & DISTRICT LOCAL HISTORY CLUB

- Chairman* Andrew Morris
Secretary Janet Morris, 21 High Street, West Wickham, Cambridge CB1 6RY; 01223 296083.
jmmorris@jmmorris.plus.com

Meetings are held in West Wickham Village Hall on the second Monday of the month at 8.00 pm. The annual subscription is £8 and visitors are welcome at meetings for £1.50.

The aims of the Club are to foster interest and appreciation of the history of the area. Being a small club with limited financial resources, we struggle to find speakers who are willing to talk to us for little more than a warm welcome. Offers are greatly appreciated – reciprocal arrangements distinctly possible!

- 13 Oct Alan Eade *The History of Timber-framed Buildings*
8 Nov Chloe Cockerill *The Lion and the Unicorn*
13 Dec Trevor Burlingham *A Magic Lantern Show*
10 Jan *To be confirmed*
14 Feb *To be confirmed*
14 Mar AGM

THE WHITTLESEA SOCIETY

Chairman Ken Mayor

Secretary David Hancock, 3 Vinters Close, Peterborough PE3 6BT; 01733 753894

Meetings are held at the Town Hall, Market Street, Whittlesey at 7.30 pm on the second Monday of each month.

The annual subscription is £3 (individual), £5 (family).

- 13 Sep Mike Petty *Pickwick's Fenland Scrapbook*
- 11 Oct David Cozens *The Cromwell Family*
- 8 Nov John Drake *Historic Gardens of Cambridgeshire*
- 13 Dec Brian White *Railway Rambles*
- 10 Jan Terry Barnatt *A Country Year*
- 14 Feb Gerry Burrows *When We Were Young*
- 14 Mar Dorothy Halfhide *Dot of the Dairy*
- 11 Apr Derek or Mike Harrison *The Stamford Shakespeare Company*
- 9 May Brian Jones *Riotous Behaviour in the Fens*

MUSEUMS AND OTHER ORGANISATIONS

CAMBRIDGE AND COUNTY FOLK MUSEUM

2-3 Castle Street, Cambridge CB3 0AQ; 01223 355159

www@folkmuseum.org.uk

email *info@folkmuseum.org.uk*

Curator Cameron Hawke-Smith

The Museum was established in 1936 to preserve a tangible record of the way of life of Cambridgeshire people. It won a grant of £786,000 from the Heritage Lottery Fund in 2002 and is currently undergoing major redevelopment. This includes the provision of an education room, facilities for visitors (including the disabled) and new stores and workshops. Re-opening is scheduled for Spring 2005 and a programme of events is planned.

Membership of the Friends of the Museum is available, at £10 p.a.

CAMBRIDGESHIRE ARCHAEOLOGICAL FIELD UNIT

Fulbourn Community Centre, Haggis Gap, Fulbourn, Cambridge CB1 5HD

www.camcnty.gov.uk/library/afu/index.htm

www.archaeology.freewire.co.uk

email *arch.field.unit@libraries.camcnty.gov.uk*

The following events are all at the Iron Age Farm, Hinchingsbooke Country Park:

- 14-24 Sep Schools Week: activity days £4.50 per pupil. Details: Alison Grey; 01480 451568
- 19 Sep Iron Age and Roman Living History , 11.00 am – 4.00 pm. Adults £1.
Details: Outreach Officer; 01223 714136
- 30 Oct Celtic (Samain) Halloween Tales, 6.30 pm £5 adults, £3 children over 10
Details: Outreach Officer; 01223 714136. To book, contact Alison Grey; 01480 451568
- 13/14 Nov Green Woodworking course, 9.30 am – 4.00 pm Numbers limited. Price on
application to Outreach Officer; 01223 714136
To book, contact Alison Grey; 01480 451568
- 27/28 Nov Basket Making Course. Time and price TBA. Details from Outreach Officer; 01223
714136. To book, contact Alison Grey; 01480 451568

ELY MUSEUM

The Old Gaol, Market Street, Ely; 01353 666655

www.ely.org.uk/museum.html

email *elymuseum@freeuk.com*

A number of special events are planned for the Autumn and early Winter 2004. Admittance to lectures, organised by the Museum Friends, is £1.50 non-members, £1 members.

- 11 Sep Heritage Open Day: free guided tours of the 13th century Museum building

- 25 Sep Mike Petty Lecture (contact the Museum for details)
 7 Oct Christine Pownall *Monastic Herbs* (7.30 pm)
 26 Oct Jan Parker *Harvest Printmaking Workshop for 7–10 year olds*. 2.00–4.00 pm, £1.50 per child, pre-booking essential)
 4 Nov Bill Morris *Musical Nostalgia* (7.30 pm)

FENLAND HISTORY ON FRIDAYS WITH MIKE PETTY

Ely Library, The Cloisters

email mikepetty@fenhistory.fsnet.co.uk

An introduction to sources, resources and techniques for local, family and house history.

Fridays from 1 October 2004. 10.15–12.00. £2 per session.

Topics include *Pickwick's Fenland Scrapbook*, *Dating Victorian Photographs*, *Ely Brick*, *Old Ordnance Survey Maps*, *Fenland Flooding*, *Memoir of a Baptist Farmer*, *Wisbech Museum*.

PETERBOROUGH MUSEUM

Priestgate, Peterborough PE1 1LF

www.peterboroughheritage.org.uk

email museum@peterborough.gov.uk

Head of Service Veronica Wellington

Head Curator Glenys Wass

Contact (Marketing/Events) Stuart Orme

Owned by Peterborough City Council, the Museum records the history of Peterborough and its surrounding area. Collections encompass geology (including Jurassic seas monsters), archaeology, social history and the Napoleonic POW camp at Norman Cross. The Museum has varied temporary exhibitions, exciting weekend events and a busy education programme.

For more details on forthcoming events and exhibitions, please contact the Museum for a leaflet or visit its website (address above).

THE FARMLAND MUSEUM AND DENNY ABBEY

Denny Abbey, Ely Road, Waterbeach, Cambridge CB5 9PQ

Tel/Fax 01223 860988 (Office), 01223 863036 (Education)

www.dennyfarmlandmuseum.org.uk

email f.m.denny@tesco.net

The Farmland Museum and Denny Abbey is a Museum of Cambridgeshire farming and rural life and an English Heritage Grade I Abbey in a beautiful rural setting. On site there are various craft workshop displays including a blacksmith's, basket maker's and wheelwright's. There is a 1940s farmworker's cottage and village shop.

The Museum is open daily from 1 April to 31 October, 12.00–5.00 pm

Aug 29/30 *Medieval Mayhem*, 12.00–5.00 pm

Special event days with the Feudal Archers, a re-enactment group. Learn about medieval life with special children's activities.

Sep 11/12 *Art Workshop: Watercolours*

£12.50 for one day, £20 for two days. Prior booking essential: phone 01223 860988.

Sep 18/19 *Basketmaking Workshops*

£30 for one day, £50 for two days. Prior booking essential: phone 01223 860988.

Sep 26 *Vintage Vehicles Day*, 12.00–5.00 pm

Special event day with classic cars and bygone bikes. Children's activities also available.

28 Oct *Drop-in Children's Holiday Activity Day*, 12.00–4.00 pm

For children of 4 or over, who must be accompanied by an adult. Normal admission charges apply. There will be a free voucher for children to return on 31 October for the Hallowe'en special event. For further details, ring Jenny Rossiter on 01223 863036.

31 Oct *Hallowe'en at Denny*, 12.00–5.00 pm

With pumpkin carving, apple bobbing, face painting, lots of games and prizes for the best costume. Suitable for all ages. Normal admission charges apply.

ROYSTON CAVE

Melbourn Street, Royston, Herts; 01763 242223

Open Saturdays, Sundays and Bank Holiday Mondays, 2.30 pm to 5.00 pm from Easter to the end of September; also Wednesday afternoons in August.

Admission: Adults £2, Concessions £1, Children free.

ROYSTON MUSEUM

Lower King Street, Royston, Herts; 01763 242587

Open Wednesdays, Thursdays and Saturdays, 10.00 am to 5.00 pm throughout the year; also Sundays and Bank Holidays 2.00 pm to 5.00 pm Easter to September.

Admission free.

WORKERS' EDUCATIONAL ASSOCIATION (CAMBRIDGESHIRE)

County Organiser Sue Young, 15 Causeway, Godmanchester, Huntingdon PE29 2HA
syoung@wea.org.uk

The WEA provides courses for adults in many venues throughout Cambridgeshire, giving them the opportunity to continue learning whether they are young, older, in work, at home, unemployed or retired. Courses are also held for groups in day centres, for students with learning difficulties, disabilities, recovering from mental illness, etc.

Only those courses covering history, archaeology and cognate subjects are listed here. For the full programme (and for courses running in 2005), please contact the County Organiser.

Alconbury Contact Betty Dix; 01480 890663

Edwardian England Tutor: Mary Dicken

Tuesday 10 weeks starting 14 September, 10.00–11.30 am, Methodist Church School Room, Chapel Street, £30

Bottisham Contact Shirley Ellis; 01223 811891

Going Dutch Tutor: Mary Conochie

Thursday 10 weeks starting 30 September, 10.00–11.30 am, The Youth Centre, High Street, £30 (concessions £21)

Cambridge Contact WEA Cambridge; 01223 361656

Beginning Latin 1 Tutor: Gill Mead

Monday 10 weeks starting 20 September, 7.30–9.00 pm, Chesterton Community College, Gilbert Road, £32 (concessions £23)

Continuing Latin 1 Tutor: Gill Mead

Thursday 10 weeks starting 23 September, 1.30–3.00 pm, Chesterton Community College, Gilbert Road, £32 (concessions £23)

The Plant Hunters Tutor: Peter White

Tuesday 10 weeks starting 28 September, 11.15–12.45 pm, Gilmour Building, Botanic Gardens, Bateman Street, £32 (concessions £23)

Edwardian England Tutor: Mary Dicken

Tuesday 10 weeks starting 21 September, 2.00–3.30 pm, Women's Institute Hall, High Street, Girton, £32 (concessions £23)

Medieval Life as reflected in the Canterbury Tales Tutor: Pauline Blake

Tuesday 10 weeks starting 21 September, 7.30–9.00 pm, Parkside Community College, Parker's Piece, £32 (concessions £23)

Roman Britain: an archaeological introduction Tutor: Ben Croxford

Wednesday 10 weeks starting 29 September, 7.30–9.00 pm, Parkside Community College, Parker's Piece, £32 (concessions £23)

Cottenham Contact Liz Millway 01954 250039

Investigating Brick through History and Architecture Tutor: Mary Lockwood

Tuesday 10 weeks starting 21 September, 9.30–11.00 am, Cottenham Village College, High Street, £29.50

Haddenham Contact Derek Genders

Victorian Landscapes Tutor: Liz Carter

Monday 10 weeks starting 20 September, 10.00–11.30 am, Arkenstall Village Centre, Station Road, £29.50 (concessions £21)

Huntingdon Contact Vera Williams 01480 810353

Stories of the Fens and Fen People Tutor: Brian Jones

Tuesday 10 weeks starting 21 September, 7.30–9.00 pm, Godmanchester Primary School, Park Lane, £29.50

Ickleton/Chesterfords Contact Ann Wade 01799 542530

Medieval Life as reflected in the Canterbury Tales Tutor: Pauline Blake

Thursday 10 weeks starting 23 September, 7.45–9.15 pm, Ickleton Village Hall, Frogge Street, Ickleton, £30

Linton Contact Leslie Allison

Imagery and Symbolism in Medieval Churches Tutor: Lynne Broughton

Tuesday 10 weeks starting 21 September, 10.00–11.30 am, Linton Social Centre, Coles Lane, £29.50 (concessions £23)

March Contact Celia Taylor 01354 657410

Stories of the Fens and Fen People Tutor: Brian Jones

Thursday 10 weeks starting 23 September, 10.15–11.45 am, The Conservative & Unionist Club, 14 Creek Road, £30 (concessions £26)

St Ives Contact Jo Rogers 01480 301188

The American Civil War Tutor: Mike Muncaster

Thursday 10 weeks starting 23 September, 10.00–11.30 am, St Ivo Community Lounge, St Ivo School, High Leys, £29.50 (concessions £21)

St Neots Contact Elaine Donaldson

1066 and All That Tutor: Honor Ridout

Thursday 10 weeks starting 23 September, 7.30–9.00 pm, Ernulf Community College, Barford Road, Eynesbury, £33 (concessions £27)

Upton Contact Nora Wood 01480 890646

Landscaped Estates and Gardens Tutor: Brian Jones

Wednesday 10 weeks starting 15 September, 10.00–11.30 am, Upton Village Hall, Green Lane, £29.50

Willingham Contact Edward Lachlan 01954 230226 or Jacqueline Hodkinson 01954 201816

Edwardian England Tutor: Mary Dicken

Monday 10 weeks starting 27 September, 10.00–11.30 am, Willingham Baptist Church Hall, George Street, £29.50 (concessions £22)

Wisbech Contact Ivan Esgate 01945 583326

Ancient Peru Tutor: Angela Rhys-Williams

Wednesday 10 weeks starting 22 September, 10.30–12.00 pm, Upper Room, St Peter's Church Hall, £29.50 (concessions £26)

Proceedings of the Cambridge Antiquarian Society

Notes for contributors

The Editor welcomes the submission of papers which are principally on the history and archaeology of the County. Papers will be sent out to referees.

Format of articles

All articles should begin with a Summary. The main text of the Article should be followed by (as appropriate): Appendices; Glossary; Acknowledgements; Endnotes (if absolutely necessary); Bibliography; Acknowledgement of Grant.

Notes should be numbered consecutively throughout the article. Full stops after initials should be omitted.

References in the Bibliography should be cited as follows:

Manuscripts: Buckinghamshire Record Office (hereafter Bucks RO) Dormer estate, D/93/Box 2, Court

Roll of Ravensmere Manor, Hughenden 1752

Books: Schmorl, G & H Junghanns 1971 *The human spine in health and disease*. 2nd American edn, ed. EF Besemann, New York: Grune and Stratton

Articles in books: Hines, J 1998 'The sixth-century transition in Anglian England: an analysis of female graves from Cambridgeshire'. In J Hines (ed), *Studies in Early Medieval Chronology*. Oxbow Monographs.

Articles in Journals: Moorrees, CFA, EA Fanning & EE Hunt 1963 Formation and resorption of three deciduous teeth in children. *American Journal of Physical Anthropology* 21: 205-13

Theses: Mortimer, C 1990 *Some Aspects of Early Medieval Copper-Alloy Technology, as illustrated by a Study of the Anglian Cruciform Brooch*. Oxford University D Phil thesis, unpublished

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Tables

These should be set out with no vertical rules and as few horizontal rules as possible. A paper copy must be supplied. Files supplied from a specialist database must be compatible with Microsoft Excel.

Figures and illustrations

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, and named in a way that identifies the article in which it is to appear ('Fig.1' alone is not sufficient). The desired location of each figure must be marked 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.

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Crops should be marked on an overlay.

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Camera-ready artwork must be supplied no larger than A4, in finished form, and with adequate keys and scales included (note that a textual statement of scale is inaccurate if the image is subsequently resized). The scanning process is less able to compensate for some problems than was the camera: extremely fine lines and small text should be avoided. Letratone must not be used.

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Copyright

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Copyright will remain with the Society.

Other information

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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.

Proceedings Volume XCIII, 2004

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Contents

The Structure and Formation of the Wandlebury area Steve Boreham	5
Prehistoric Lithics from Station Road, Gamlingay, Cambridgeshire Jon Murray	9
Evaluation survey and excavation at Wandlebury ringwork, Cambridgeshire, 1994–7 Charles French	15
A Roman Cemetery in Jesus Lane, Cambridge Mary Alexander, Natasha Dodwell and Christopher Evans	67
Anglo-Saxons on the Cambridge Backs: the Criminology site settlement and King's Garden Hostel cemetery Natasha Dodwell, Sam Lucy and Jess Tipper	95
The Origins and Early Development of Chesterton, Cambridge Craig Cessford with Alison Dickens	125
A late seventeenth-century garden at Babraham, Cambridgeshire Christopher Taylor	143
The Hearth Tax and the Country House in 'Old' Cambridgeshire Tony Baggs	151
The Cambridgeshire Local History Society Photographic Project 1992–2000 Gill Rushworth and John Pickles	159
Surface scatters, rates of destruction and problems of ploughing and weathering in Cambridgeshire Stephen Upex	161
Fieldwork in Cambridgeshire 2003	179
Book Reviews Alison Taylor	189
<i>Index</i>	195
Abbreviations	201
Recent Accessions to the Cambridgeshire Collection Chris Jakes	203
Summaries of papers presented at the Spring Conference 13 March 2004, Law Faculty, Cambridge: <i>Recovering Cambridgeshire's Past</i>	215
THE CONDUIT: local history and archaeology organisations, societies and events	221