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(incorporating the Cambs and Hunts Archaeological Society)

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for 1996

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Contents

Editorial

This is the last *PCAS* I shall edit (having decided that I should concentrate on my own research until senility overtakes me). The new Editor will be Alison Taylor, Cambridgeshire County Archaeologist for more than twenty years, and probably the first local archaeologist I met on my return to the 'old country' after many years in Australia. Alison's kindness and friendship, and her organisational abilities, I value highly, and I am delighted to edit this volume in her honour, at a time when she is beginning a new career as a consultant.

Many of the articles in this volume have been written by Alison's colleagues at the County Council, others by friends who have been associated with her and Cambridgeshire archaeology over many years, and this volume therefore concentrates on areas which I hope she will find of interest: around the massive piece of work on the Cambridgeshire Dykes are several shorter (but not small or insignificant) papers, all concerned with sites investigated in Cambridgeshire since 1974, and since Alison's appointment as County Archaeologist.

With our good wishes for future blossoming.

Audrey Meaney

Alison Taylor FSA, MIFA: Cambridgeshire County Archaeologist 1974–1997

Tim Malim

In every generation over the past one hundred and fifty years, one or two individuals have stood out as exceptional representatives of Cambridgeshire archaeology, men like Babington, McKenny Hughes, Fox, Fowler and Lethbridge, whose knowledge of the county's past was encyclopaedic and whose interest in the preservation and investigation of Cambridgeshire's archaeological heritage was of crucial importance. Alison Taylor must surely rank with these for her vast achievement as County Archaeologist during the last twenty-three years. Having worked closely with Alison for a decade in my capacity as Head of the Archaeological Field Unit, I am privileged to have been asked to summarise here her contribution to the archaeology of Cambridgeshire.

Alison's childhood home in Stevenage is close enough to the county's boundaries to call her a local girl, and although she has dug in Hampshire, Dorset and the Isle of Wight, the majority of her archaeological career has been spent in the eastern counties. As a teenager she dug an acre of flints at Grenstien DMV in Norfolk in 1965, and then underwent full initiation into the digging fraternity by excavating at Mucking in the winter of 1966, when all the experienced archaeologists stayed firmly in the tea-hut. Alison has gone on to demonstrate a profound independence of attitude and pioneering spirit during her thirty-odd years as a professional archaeologist. Her deep enthusiasm for the subject was glimpsed early, when she was the very first student to apply to the new Department of Archaeology at Southampton (and had to be sent away for a year as the course had not been fully set up). She read joint honours in archaeology and history from 1967–70, as part of Barry Cunliffe's first intake; he included Alison in the team that cut the first section through the rampart at Danebury in 1969. Perhaps more relevant to her later career was her supervision of a barrow group excavation on the Isle of Wight, where she indulged in some experimental archaeology, cutting and arranging the gorse around the burial mound and then setting it ablaze with an 'appropriate' ritual. Although there was no academic publication of this event, after graduation her enthusiasm for popularising archaeology led Alison to edit a national archaeological magazine called *Ago*, but unfortunately competition from *Current Archaeology* was too great, and within a year it folded.

After supervising sites in Lincoln, Alison went to Bedfordshire in 1972 to help on schemes that David and Evelyn Baker had set up on the creation of an Archaeology Service for the county, conducting an extensive parish survey by bicycle, and later jointly directing excavations at Roxton with Peter Woodward. It was while she was eating sandwiches during a balmy Roxton lunch break that a job advert in the Guardian caught Alison's eye, for County Archaeological Officer to the Cambridgeshire Archaeological Committee.

In November 1974, Alison was appointed by John Alexander, with a broad brief that covered not only advice to the planning authority and thus prevention of the wholesale destruction of archaeological sites, but also the creation of a Sites and Monuments Record to assist in this task, and a wider remit to involve the public and raise the profile of local archaeology, as well as bringing archaeology into conventional education, within the newly formed county of greater Cambridgeshire. For the first few years, Alison's position was a bureaucratic spaghetti junction; she was employed by the CAC, with annual grants from the Department

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of Environment, financial administration from Cambridge City Council, and office space from the County Council. In spite of the potential difficulties of such an arrangement, she made great steps forward: the SMR maps and card index were begun in 1975, agreements were established with the Districts and County for monitoring of planning applications, and archaeology was written into the County Structure Plan for the first time. Alison followed these achievements by setting up a programme of rescue excavations, successfully applying for DoE and MSC funding to help the overstretched voluntary groups that had carried out these tasks previously, and in 1976 David Hall was appointed as the County Council's Fenland Survey Officer. By 1977 Alison was holding monthly 'Archaeology Workshops' in Cambridge Central Library, the SMR was enhanced by crop-marks sketched from the collection of the Cambridge University Committee for Aerial Photography, and she had begun a public education programme. The first popular publications on the county's archaeology were written by Alison in 1978 and printed by Oleander Press, the first archaeological store was created in Castle Street, and later that year Francis Pryor was appointed as the County Council's Welland Valley Field Officer, complementing the work undertaken to the west of Peterborough by the Nene Valley Research Committee. 1979 saw the passing of the Archaeological Areas and Monuments Act and a review of all county sites to recommend those suitable for scheduling. It was only after this, in 1980, that a permanent post as County Archaeologist was formally adopted for Alison by the County Council, based in the Department of Land and Buildings.

During the 1980s, Alison developed the County Council Archaeology Section, seeking funding from a variety of sources so that up to 25 temporary staff were on the books at one time. Surveys were undertaken of Neolithic sites, redundant churches, and moats, while the team also responded to threats requiring archaeological rescue, the largest of which was the excavation on Castle Hill, Cambridge, where new buildings on the Shire Hall site revealed a large part of the Roman town. One of Alison's most important achievements, however, with her MSC workforce and County Council colleagues, was to initiate one of the first computerised Sites and Monuments Records in the country on the powerful 'Stairs' mainframe. This involved checking and synthesising records from a great variety of sources, and making use of any vacant terminals in offices throughout Shire Hall. Archaeologists came to be regarded with some caution by County Council employees who were not used to such irregular activities. Mud on the stairs was another issue of concern. To alleviate the problems of space (and mud) Alison persuaded the County to convert a redundant classroom block at Fulbourn for an archaeological store and processing area.

It was also through Alison's MSC funding that the first educational publications were produced by the Archaeology Office, and display panels were designed for use at schools, libraries, and other public events. The biggest of these were the East of England Shows, where Alison and staff could be found in period costume, with painted back-drops, artefacts, and even live chickens, as the team encouraged children to make contact with the past, and the activities of the Archaeology Office were widely promoted. In another sphere, Alison helped to found the Heritage Officers Group within the County Council, allowing discussion and cooperation between like-minded professionals isolated in diverse departments. Alison enjoyed close cooperation with musems such as the University Museum of Archaeology and Ethnography and the Folk Museum, which participated in joint exhibitions and mutual support. Alison wrote and erected the first archaeological information boards at Wandlebury, Devils Dyke and other monuments, and became known nationally as a pioneer in archaeology and education. Amateur involvement in archaeology was actively encouraged, and, jointly through the Cambridge Antiquarian Society's Archaeological Panel and Cambridgeshire County Council, small grants were made available to local societies. On Alison's initiative, *Conduit* was started as a free publication to keep those interested in the heritage of the county informed of what others were doing. Alison was much in demand to talk at meetings, and began giving an annual lecture to CAS on The Archaeological Year in Cambridgeshire.

The later '80s saw the termination of MSC funding, but the argument had been made for a larger staff at the Archaeology Office. Alison on her own could not carry out all the duties expected of the emerging Service: feeding into County Council policies, strategies and action plans; maintaining and developing the SMR; advising on planning matters; attending public enquiries; responding to development threats; excavating, recording and publishing sites; carrying out preemptive survey work; promoting an awareness of the importance of archaeology amongst young and old alike, and developing the educational side of the service.

In addition, Alison's interests were moving on to the management of monuments, again leading the field nationally in her endeavours to ensure their long-term preservation and presentation. First English Heritage and then County Council funding established a part-time Sites and Monuments Record Officer in 1985, followed by a part-time clerical assistant, then in 1987 grants from the Royal Commission on Historical Monuments, English Heritage and the County Council enabled a post as Alison's field assistant to be created, and in 1988 her first full-time Assistant County Archaeologist was appointed.

The following two years saw great strides by Alison and her new team in developing 'Cambridgeshire Archaeology' (as the County's Archaeology Section was popularily known). She acquired funding to undertake and publish two major surveys (Archaeology of the Cambridgeshire River Gravels and Archaeology on the Cambridgeshire County Farms Estate), and created a professional field operation for the Service under myself, beginning with excavations at Ely North Range, Wimpole *mansio* and Barrington Anglo-Saxon cemetery, and seconding staff to run the important Bronze and Iron Age excavations at Fengate Power Station. The Archaeological Field Unit has since grown to 30 staff, all funded by external sources, and the volume of artefacts requiring attention has enabled Alison to add another dimension to the County Archaeology Service with the appointment of an archaeological conservator in 1991.

English Heritage continued to give financial support for new initiatives and Alison proved herself extremely adept at finding partnership funding from the Countryside Commission and District Councils, especially South Cambridgeshire, to pilot a programme of Monument Management which became the envy of her counterparts in neighbouring counties. A fresh batch of archaeological interpretation boards were designed and erected as a parallel project, and a sustained campaign of cooperation with County Farms colleagues and English Heritage funding allowed all scheduled monuments on County land to be saved from damaging arable cultivation. In 1993, with the cooperation of County Council colleagues and South Cam-

bridgeshire District Council, Alison created a permanent Archaeology Store for the County in a converted barn at Worts Farm, Landbeach.

This location, opposite Jack Ravendale's house, was very appropriate, as Alison had worked closely with him and other local historians and landscape archaeologists, delving into the origins of local communities to help bring archaeology alive for the people of Cambridgeshire. She always encouraged amateur archaeologists and metal-detectorists alike to show her what they had found, so that a central record could be maintained, and she overwhelmed the antipathy that many of them feel towards professional archaeologists with her openess and enthusiasm for their knowledge.

Public archaeology continued to be a key aim for Alison in the 1990s, and she initiated a series of events such as guided walks around historic towns, villages and monuments, archaeology activity days at selected monuments, and displays at libraries and museums, as well as producing an annual leaflet, *Archaeology for All*, to publicize them. Alison was also instrumental in running a series of concerts at Guardianship sites, the 'Ancient Echoes' series, in 1993 and 1994, to help advertise the formation of the County's new Heritage Service, and to make these interesting buildings more accessible.

Typically, Alison' s latest venture is as audacious in scope as it is down-to-earth in character: having known more about the archaeology of the county than any one other individual over the past 20 years, since 1995 she has been working on a series of volumes to succeed the seminal work and pocket SMR written by Sir Cyril Fox in 1923, and, true to her overriding principles, this project is designed once again to make archaeology more accessible to the general public.

Alison has always put the interests of archaeology foremost in her dealings with all levels of authority, even at the expense of personal gain, she has been a leading communicator, stirring ordinary people's interest in their past, and she has been a pioneer in bringing archaeology into education and in looking for best management of existing monuments, to ensure their survival and enjoyment by future generations. Through her vision and energy she has formed a many-facetted Archaeology Service, and it is instructive to us all to see how she has achieved so much with so few resources. From her appointment in 1974 she has created a role as County Archaeologist which has become pivotal in the continued well being of the sites and monuments of Cambridgeshire and in the attraction that archaeology holds for the county's present-day communities, providing a focus for strategic planning, and influencing decisions at the highest levels. She has been an archaeologist of the people in the best traditions of local authority service, and from her retirement in September 1997 we look to the colleagues she leaves behind to see that her legacy is continued and her achievements as County Archaeologist preserved for the future.

This volume of the *Proceedings* is therefore dedicated to Alison Taylor in recognition of her crucial contribution to the Archaeology of Cambridgeshire.

Publications by Alison Taylor

1975. Cainhoe Castle excavation 1973 (with Peter Woodward). *Bedfordshire Archaeology* 10.

1977. Skeleton at Wandlebury hill-fort. *Proceedings of the Cambridge Antiquarian Society* 67.

1977. Roman Bank, a medieval sea-wall: a culvert beneath the Sea Bank at Newton, near Wisbech. *Proceedings of the Cambridge Antiquarian Society* 67.

1981. A Saxon glass beaker from Dry Drayton, Cambridgeshire. *Proceedings of the Cambridge Antiquarian Society* 71.

1981. Recent discoveries in Gonville and Caius College. *Proceedings of the Cambridge Antiquarian Society* 71.

1981. The Barrows of Cambridgeshire, in *Barrows of East Anglia*, ed. A. J. Lawson *et al.*

1982. Excavations at Roxton, Bedfordshire 1972-4: the post-Bronze Age settlement (with Peter Woodward). *Bedfordshire Archaeology* 16.

1982–3. Churches out of use in Cambridgeshire. *Proceedings of the Cambridge Antiquarian Society* 72.

1982–3. Excavation at the site of St Benet's Church, Huntingdon, 1980. Proceedings of *the Cambridge Antiquarian Society* 72.

1984. A Roman stone from Stuntney and gazetteer of similar coffins in Cambridgeshire. *Proceeding of the Cambridge Antiquarian Society* 73.

1985. Prehistoric, Roman, Saxon and medieval artefacts from the southern Fen-edge, Cambridgeshire. *Proceedings of the Cambridge Antiquarian Society* 74.

1985. A Bronze Age barrow cemetery and associated settlement at Roxton, Beds (with Peter Woodward). *Archaeology Journal* 42.

1991. Cambridge Castle Ditch (with Tim Malim). *Proceedings of the Cambridge Antiquarian Society* 80.
1992. Managing monuments in an arable landscape. *Archaeology in Britain.*
1993. A Roman lead coffin with pipeclay figurines from Arrington, Cambridgeshire. *Britannia* 24.
1993. Flat earth erosion control: caring for archaeological monuments in Cambridgeshire, in *Erosion on Archaeological Earthworks.* IFA and ACAO.
1997. *The Archaeology of Cambridgeshire,* volume I: *South-West Cambridgeshire.* Cambridgeshire County Council.
In press. *The Archaeology of Cambridgeshire,* volume II: *South-East Cambridgeshire.* Cambridgeshire County Council.
Forthcoming. A Roman child-burial with animal figurines and pottery, from Godmanchester, Cambridgeshire. *Britannia.*
Cambridgeshire County Council Annual Reports 1990–95.
Annual Reports in *Proceedings of the Cambridge Antiquarian Society, Medieval Archaeology, Archaeology in Britain,* etc.
Editorship and twice yearly reports in *Conduit.*

Booklets

Caring for Churchyards.
Castles in Cambridgeshire.
Prehistoric Cambridgeshire . Oleander Press.
Anglo-Saxon Cambridgeshire. Oleander Press.
Normans in Cambridgeshire (with J. Reck and F. Hivernel).

Leaflets

Earliest Cambridgeshire.
Archaeological Sites and Monuments for Cambridgeshire .
Archaeology and Planning.
Archaeology in Gravel Quarries.
Archaeology in the Field.
Managing Archaeological Monuments.
Sites of Interest Open to the Public in Cambridgeshire.
Archaeological Resources Available to Schools.

Acknowledgements

My thanks are due to John Alexander, Evelyn Baker, Bob Carr, Barry Cunliffe, William Frend and Audrey Meaney for their help in compiling the information and anecdotes contained above.

The Excavation of a Ring-Ditch Complex at Diddington, near Huntingdon, with a Discussion of Second-Millennium BC Pyre Burial and Regional Cremation Practices

Christopher Evans

with contributions by F. Lee & R. Palmer

Introduction

A limited excavation was undertaken in the Diddington Quarries, in conjunction with a watching brief conducted by the then Cambridgeshire County Archaeologist's Office, as a result of gravel extraction by ECC (Quarries) Ltd. Excavation was carried out on a voluntary basis during weekends in November and December 1986 by members of the Department of Archaeology, University of Cambridge and staff from the University's Haddenham Archaeological Project. In dire salvage circumstances, the fieldwork commenced long after the site had been machine-stripped by the gravel company, and it is estimated that up to 0.40–0.60 m of strata had by then been removed without archaeological control. This extreme truncation, and the fact that stripping occurred without regard to archaeological recovery (there were smeared and heavily crusted or compacted surfaces, and even localised levelling up), meant that features were extremely difficult to distinguish. At some points, this had evidently even resulted in the complete loss of minor features. This excavation report can, therefore, only be considered conclusive in terms of its positive results; that any possible feature-type was not found does not necessarily constitute negative evidence. Although of relatively complex bipartite plan, the over-machined ring-ditch proved 'simple', somewhat dauntingly so. Nevertheless, the recovery of an *in situ* cremation pyre raises issues concerning the wider occurrence of this rite within the region, and the broader implications of such practices are discussed below.

This work was undertaken to aid a colleague, and the author's responsibilities only pertain to this specific monument complex (*pace* French and Wait 1988: 78). Our involvement arose when, upon visiting the County Council's MSC-sponsored salvage excavation of a Romano-Celtic shrine, it was evident that it was without sufficient resources to investigate the early monuments in the same field. Since that time, the Birmingham Archaeological Unit has undertaken extensive developer-funded excavations in a southern extension to the quarry (Jones and Ferris 1993; Jones 1994; Jones, forthcoming), which will obviously provide a fuller understanding of the sequence of early land-use in the area (see Greenfield 1969 and Addyman 1969 concerning earlier investigations in the vicinity).

This is a ring-ditch complex of some renown inasmuch as it featured in Field's 1974 study (Fig. 3a, Plate VIIc; see also French and Wait: 78–9, Fig. 26; and Malim, forthcoming). Lying on the first and second terraces and former flood-plain of the River Great Ouse, 500 m west of the river (Fig. 1; TL 2084 6598), the site discussed here is the northernmost of an alignment of three ring-ditches (Plate I and Fig. 2; Sites I, II and IV; Field's ring-ditches 'f', 'b' and 'g', respectively) and another possible example (III), whose much fainter and dubious circuit appears on aerial photographs to conjoin with, or be a deflection of, the circle of monument IV. At either end of the alignment, the ring-ditches were significantly larger, and registered strongly as cropmarks.

The County Council team tested the two southern ring-ditches (I and II), from which sherds of Collared Urn were retrieved, and, to the west, a sub-rectangular Romano-Celtic shrine complex (V). When the latter was sum-

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Figures 1 and 2. *Site location map and cropmark plan, Diddington, near Huntingdon.*

marily investigated, the shrine proper was found to be located in its southern end, and a quantity of fine metalwork was recovered in association with it. The field was crossed by droves, field systems, and a series of small sub-rectangular paddocks, all sharing the alignment of the shrine complex, and presumed also to be of Romano-British date. Across the eastern side of the field was a substantial enclosure of 'rounded' sub-square plan with symmetrical entrances on the northern and southern sides (VI; aerial photographs show a small rectangular paddock coming off its southwestern corner). The County's testing of this enclosure was necessarily limited, as most of it had already been lost to the quarry by the time of the team's arrival on site, but it was thought to be of Iron Age date; given its relationship to the Romano-British system, a later Iron Age attribution is probable. Within the field immediately to the west, an area of dense Iron Age occupation was exposed (paddocks, pits, roundhouses surrounded by eaves gullies, etc.), the excavation of which was much more intensive (VII; the archive of their work is now held by the Cambridgeshire County Council Archaeology Field Unit, Fulbourn).[1]

Since the University's investigations were only concerned with the northernmost ring-ditch (IV) and the feature complex on its southern side (III), it is appropriate to discuss here the cropmark registration of these specific features in relation to their survival prior to the topsoiling of the site.

Aerial Photography

R. Palmer

The area studied lies in two modern fields which, throughout their photographic history, have been sown with different crops. Thus, although CUCAP have recorded the area on 20 different dates since 1952, the two fields have never simultaneously been showing archaeological features at their best. The accompanying plan has been compiled from

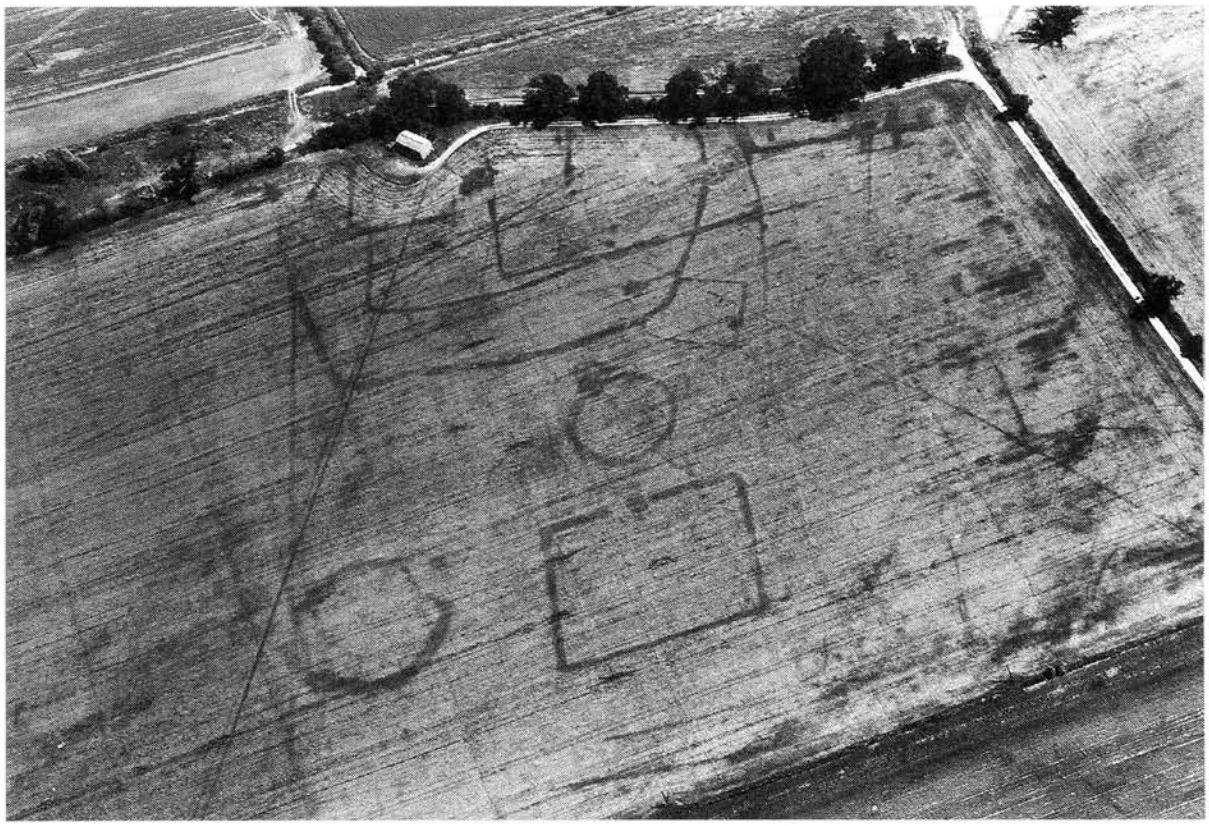

Plate I. *The site looking east: central foreground, the sub-rectangular shrine enclosure (V); immediately to the left, the northern ring-ditch (IV; aerial photograph BXZ-66, Cambridge University Collection of Air Photographs; copyright reserved).*

1:2500 rectified interpretations of five principal photographs (Fig. 2). It results from rapid work and is unlikely to show the degree of detail that would, perhaps, be produced by a more intensive study. The main components of the area, and their relationships, are quite apparent on the plan. Comment here will be restricted to the area of the ring-ditches (II–IV), which lie in the eastern field, and will specifically seek to focus on any relationship between the northernmost ring-ditch (IV) – that with a 'bite' out of its perimeter – and the pit which lies within that 'bite'.

It must be noted that all air photographs show the field under a full summer crop, and so any height differences visible will be crop height differences, rather than bare soil topography, and might give the opposite effect to that expected. Survival of any upstanding mound, however slight, would not be expected in a much ploughed field on river gravel. But, depending on plough depth, it is possible that a slightly packed, or protected, surface might survive below a now lost mound (this is a frequent occurrence on chalk soils; whether it applies to gravel locations is less certain) and it is this which may promote differential growth in crops. Over a mound this differential should show as weaker or shorter growth.

Most photographs of the ring-ditch group show suggestions of what appears to be a slightly lighter toned patch surrounding the pit (III; 1952, 1958, 1962, 1970, 1972, 1976), sometimes with the barest suggestion of a partial surrounding ring-ditch or hollow (enlargements of the 1962 and 1976 photographs). This patch could result from plough erosion of the local knoll on which the features were cut, but the eye tends to make it roughly circular, perhaps drawn by the curve of the 'bite'. Traces of a possible ditch surrounding the pit are even more indistinct (and appear to vary on different photographs). They do not appear to form a circle but, especially on the 1962 photograph, look more like the remnants of 'terminal' features attached to the ring-ditch either side of the 'bite'. Their alignment is dissimilar to any other local features but may relate to the other ring-ditches.

It is not possible, from the air photographs examined, to determine any priority of construction between the pit and 'bitten' ring-ditch.[2]

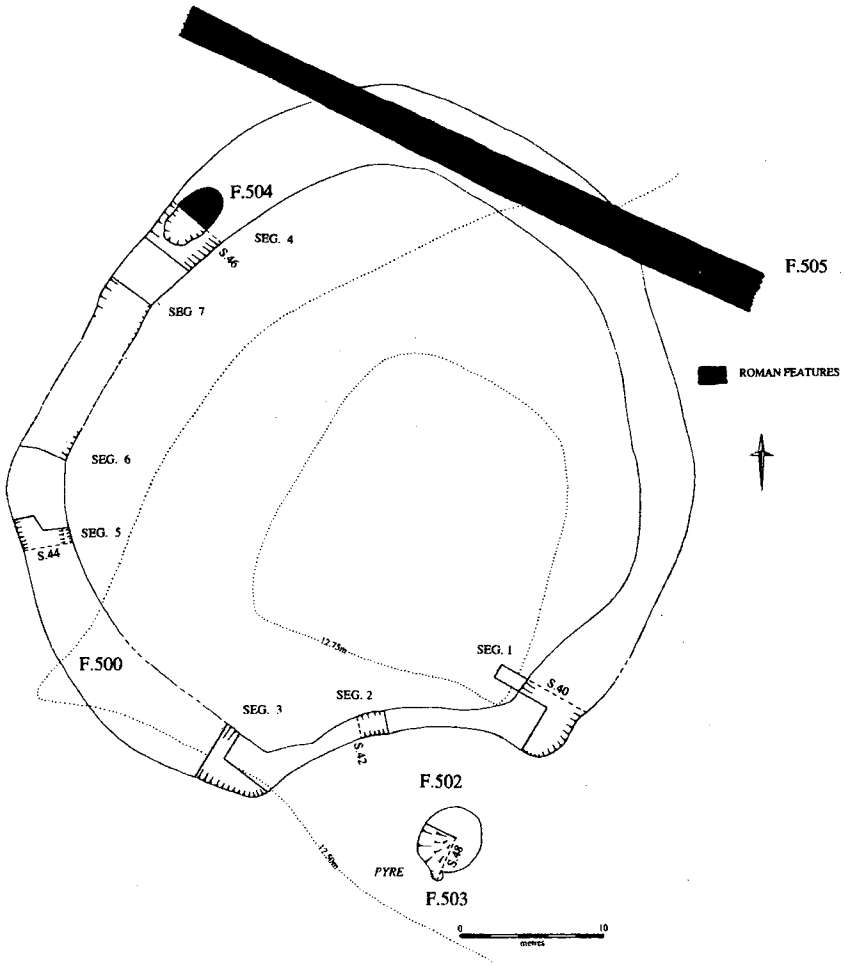

Figure 3.
Plan of ring-ditch IV and associated features.

The Excavations

The circuit of the large ring-ditch (IV) at the north of the alignment was found to enclose a minor knoll, which according to local sources stood proud of the flood levels in 1947, when it served as a refuge for local wildlife. The machine-stripped ground surface generally lay between 12.20 and 12.90 m OD, the level of the terrace sands and gravels. By comparison with the soil profile along the western side of the field, it was evident that approximately 1 m of overburden had been removed and that within the area of excavation the natural gravels had been machine-truncated. The 'mineral' was overlain by a 0.35 m thick horizon of 'hoggin' (gravels in dark brown silty clay). This was sealed by a layer of mid brown-grey silty loam (0.16 m thick), evidently a buried soil/B-horizon, above which was dark brown–black alluvium presumably laid down by freshwater flooding (0.40 m thick; the upper 0.10 to 0.15 m constituted the modern ploughzone).

The diameter of the ring-ditch (F. 500) varied between 41 and 45 m (averaging 42–43 m) and was slightly elongated on its north–south axis. In the southern sector, its line abruptly turned inwards by 3 m over a length of 17.50 m, to form a convex arc in relationship to the main circle. Across this in-turned sector the ditch was generally of minor proportions. This apparently does not represent a secondary blocking of an entranceway, but rather a deflection determined by earlier features.

Site III

The deflection of the circuit of the ring-ditch clearly occurred in relation to features lying 5.50 m to the south, just off the estimated centre of its in-turned arc (Fig. 3). The larger, F. 502, was a massive pit (4.2 m in diameter), clearly visible on aerial photographs. Its profile was stepped and shelved (1.50 m deep); the primary fills consisted of bands of yellow–brown sandy gravels and sandy clay with gravel. These relatively clean deposits filled the lower third of the cut and extended well up the sides, and may represent an intentional backfilling. The

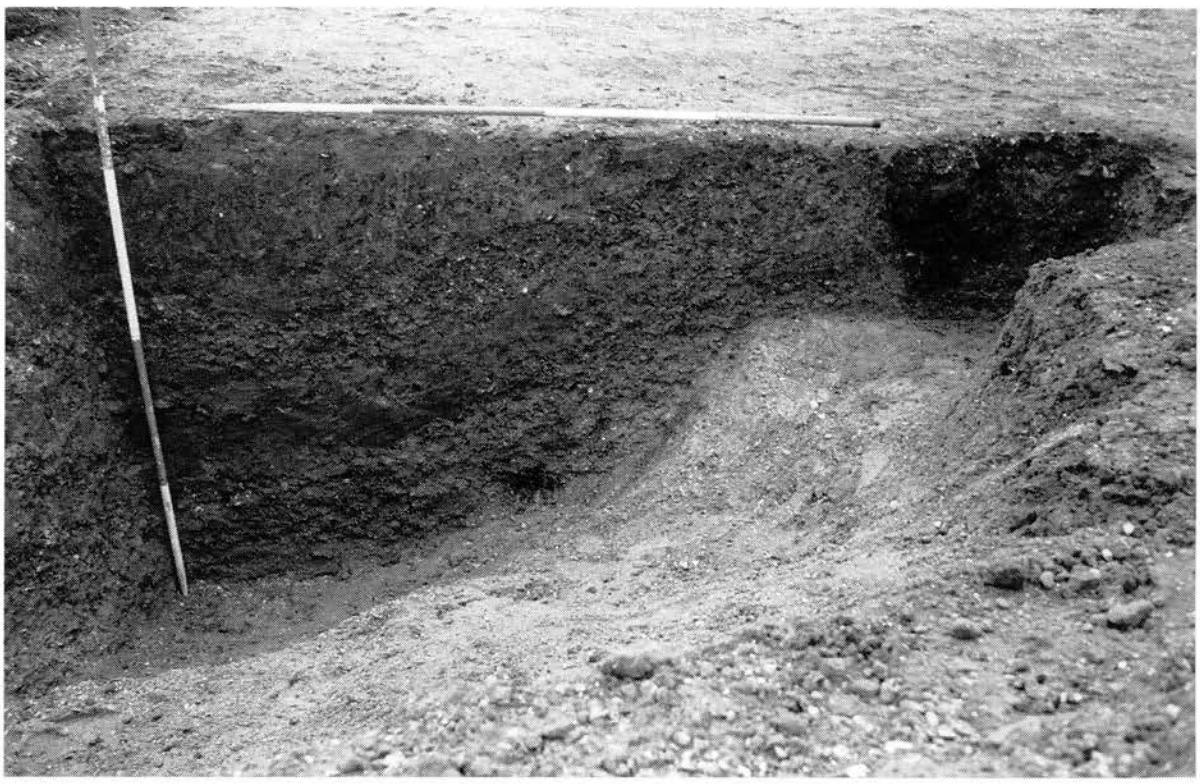

Plate II. *The Site III complex with the cremation Pit F. 503 (right) cut into Pit F. 502.*

uppermost metre of this cut, filled with heavy dark grey and brown clays, with only lenses of sandy gravel, had presumably been deposited in wet or damp conditions (Plate II and Fig. 4).

There was only time to excavate a quadrant of F. 502; the fact that no artefacts were recovered prevents secure interpretation. While it may have functioned as a well or shaft, subsequently backfilled, an alternative interpretation is possible. Its lower central fills were extremely soft, consisting of brown humic clays with coarse gravel cobbles and also frequent voids. It is just possible that these loose deposits represent a large post-pipe, estimated to have been 0.50–0.60 m in diameter. If this was the case, then the pipe could have been packed with clean gravel deposits which may themselves have been disturbed when the upright was removed. Certainly, the lack of finds from its fills would accord with the interpretation of this pit as a 'closed context' (not open to gradual infill).

A flat-based 'tongue' or shelf (0.55–0.60 m deep), extending for 1.10 m from the southern side of F. 502, was filled with the same primary gravels as the main cut. Into these had been dug F. 503, a steep-sided pit containing a cremation pyre (0.70 m in diameter; 0.55 m deep). That the firing had occurred *in situ* was demonstrated by the red scorching of surrounding deposits to a thickness of 5 cm and by the nature of the fills: predominantly charcoal fragments in black sticky 'clays' (i.e. largely reduced or 'structureless' charcoal). Bedded across the base and along its sides, and more occasionally throughout its fills, were fragments of white burnt bone. Although most were only 1–2 cm in size, some survived up to 0.15 m long. Bedded down into the upper middle of the profile were substantial charred timbers up to 0.30 m in length and 8–10 cm thick and wide. Their size would suggest that the enclosed or contained firing of the cremation had been inefficient, and this is corroborated by the state of the burnt bone. Apart from the size of the pieces, the bedding or stacking of the bone and timber also indicates that the cremation had not been extensively disturbed (stirred or raked) during or after firing. The upper third to half of this feature was filled with sandy gravels which bedded down into the centre to a maximum depth of 0.25 m, evidently representing an upcast sealing of the pyre. It can, of course, be argued from the fact that this cremation truncated the fills of the adjacent pit (F. 502) that it was a secondary activity, following the primary infilling of the larger feature. However, the fact that this pyre was cut directly into the 'shelf' of the main pit suggests a closer association (that

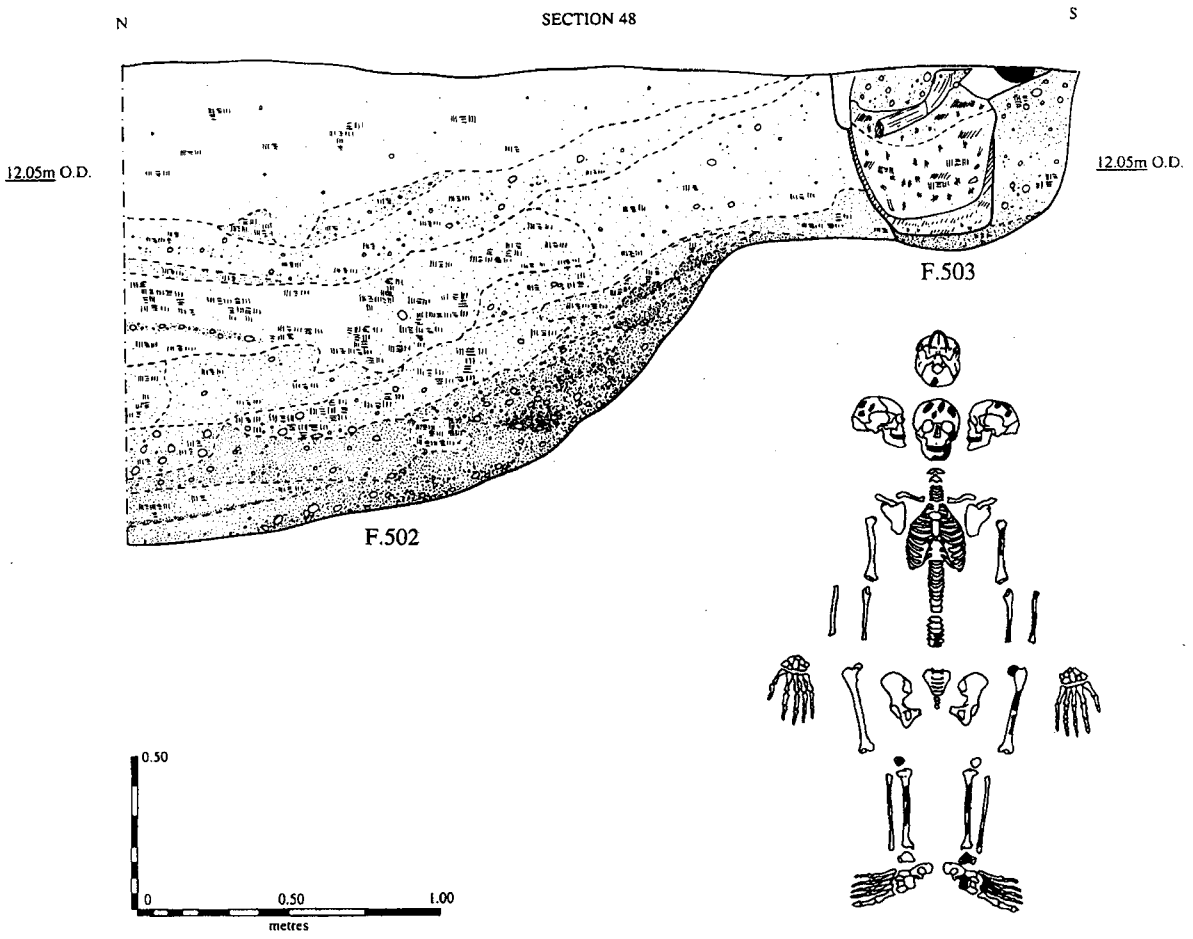

Figure 4. *Section through Pits F. 502 and 503; inset skeleton shows body parts represented.*

is, the larger pit was 'modelled' as if anticipating the cremation).

The cremated remains were those of an adult aged over 30 years (Fig. 4). The colour and size of the fragments suggest that the body was burnt at a low temperature with little circulation of air; such conditions are often found in simple pit-cremations. The pattern of cracking follows that which Baby (1954) described as occurring in fleshed cremations, notably transverse and longitudinal fractures, irregular lines, and some curving and warping of the bone as it burnt (see Appendix I).

From the local deflection of the main ring-ditch (IV) at this point, it could be inferred that the two exterior features (F. 502 and 503) were originally capped by a turf mound, or encircled by a bank, which determined the change in the line of the ring-ditch (a gravel barrow being unlikely, on the grounds that no substantial ditch can ever have enclosed these features). No trace of a subsided barrow core was, however, present within the upper fills of the large pit. It may, therefore, be more reasonable to propose that these features were instead enclosed by a (turf-stack?) ring-bank, or even a post-setting encircling cleared ground, in relationship to which the main ring-ditch was deflected. Given the degree of surface truncation, it is even feasible that they were enclosed by a minor ring-ditch (less than 0.30–0.40 m deep) that had been eradicated by the stripping (see Palmer's discussion of aerial photographic evidence, above; Evans & Knight, forthcoming, discuss the differential survival and recovery of ring-ditches and barrows).

The Northern Ring-ditch (IV)

The excavation schedule allowed for only seven segments around the circuit of the ring-ditch (F. 500) to be hand-dug: three across the inturned sector and its points of deflection (Segments 1–3), and four along its western side (4–7; Fig. 3). The latter concentration was due to an interruption of *c.* 5.00 m that was thought possibly to represent an entranceway. However,

no break in the circuit is apparent on aerial photographs, nor were terminals distinguished in excavation. Instead, comparison of the absolute levels of the base of the ring-ditch around the circuit suggest that this gap is the result of locally even more extreme machine-truncation.

The ditch was found to be 1.00–4.50 m wide, approximately 4 m on average. As a result of differential machining, its depth varied considerably, from 0.20–0.75 m. It is estimated that the ditch was originally 0.80–1.25 m deep, and that between a third and three quarters of its profile had been variously removed (Fig. 5: Sections 40, 44 and 46). Within its deflected arc, the proportions of the ditch were relatively minor: 1–2 m wide (average 1.50 m) and 0.30–0.35 m deep (Fig. 5: Section 42). The more massive proportions (especially the width) of the main circle were clearly the product of off-centre re-cutting. Generally, the profile was broadly 'U'-shaped with a flat or very slightly concave base. However, in a few instances a distinction was apparent between the angle of slope of the inner and outer sides, the outer edge sloping steeply, whereas the inner was broader or gentler. In some segments, the inner edge was slightly stepped, suggesting re-cutting, and elsewhere the basal or primary fills only survived within the inner half of the ditch, having been truncated on their exterior edge. A general pattern of re-cutting around the circuit (but not the in-turned arc) was, therefore, distinguished, which eventually resulted in an exterior widening of the ditch by a third to a half of its original profile.

A relatively uniform fill sequence was found in all the excavated segments (except for Segment 4 – see below), including that in the deflected arc: a primary fill of slipped sands and fine gravels, clearly derived from the lower C-horizon (5–8 cm thick), was sealed by a more substantial deposit of compacted dark brown sandy or gritty clay with fine and medium pebbles (0.10–0.30 m deep), which reflects the longer weathering of the upper soil or hoggin profile. This was capped by stiff dark brown–grey clays with moderate to frequent pebbles; the gravels were predominantly bedded in the base of this alluvial-derived horizon. Throughout, there was a higher proportion of sand and gravel inclusions in the fill matrix along the sides of the ditch. The general distribution of the gravels on both sides of its profile would not, however, necessarily indicate the location of major up-cast banks, and may instead simply reflect weathering of adjacent ground surfaces and the edges of the cut.

The knoll, 0.30–0.40 m high (12.85–12.90 m OD), which the ring-ditch encircled, extended over approximately 25 by 30 m. The gravels of its crown were blackened over an area of 10 by 10 m. This was base-planned and investigated to determine whether it might relate to either domestic usage or cremation-related activity. Apart from a chicken bone (obviously a recent introduction), no finds were present, and the discoloration was found to be the result of periglacial manganese staining and burning of tree-boles.

Later Features

Distinct re-cutting of the ring-ditch was apparent in Segment 4. Although, again, certainty is not possible, this seems to represent disturbance by two considerably later pits (both given the designation F. 504: they were 0.75 and 0.85 m deep respectively, and both 1.30 m wide; see Fig. 5: Section 46). Their primary fills consisted of reduced black organic remains ('black clay loam'), including preserved twigs and one possibly crudely worked or split fragment of wood. Sand lenses were found within the base of these deposits and fine to medium pebbles were present throughout the matrix; the natural gravels in the base had been stained a dark orange–red by iron oxide percolation. This discoloration and the character of these fills indicate that water lay in the lower portion of these re-cuts, at least seasonally (basal *c.* 0.20 m). A higher clay content was present in the upper portion of this organic horizon, and blended somewhat with the mixed secondary fills of interbedded lenses of grey clay and orange sand. Generally the fills included frequent pebbles, with the highest proportion of gravel inclusions found along the base and interior edge. These were sealed by dark grey–brown alluvial clay, somewhat 'softer' than the tertiary fills elsewhere along the circuit of the ring-ditch.

A relatively substantial quantity of animal bones (red deer and cattle?) was recovered from these pit re-cuts. This is in marked contrast with the rest of the main circuit, for (apart from a few scraps of burnt bone in Segment 3) the ring-ditch was devoid of artefactual remains. The waterlogging in the base of these features attests to wetter local conditions than in the other features excavated; their later date was confirmed by radiocarbon dating (see below). Before their dating was fully appreciated, a pollen sample was analysed from these re-cut pits. Dominated by Gramineae and other herbaceous taxa, the assemblage indicates open grassland, with cereal pollen and species associated with disturbed ground attesting to arable farming nearby. *Salix* probably grew close to the site,

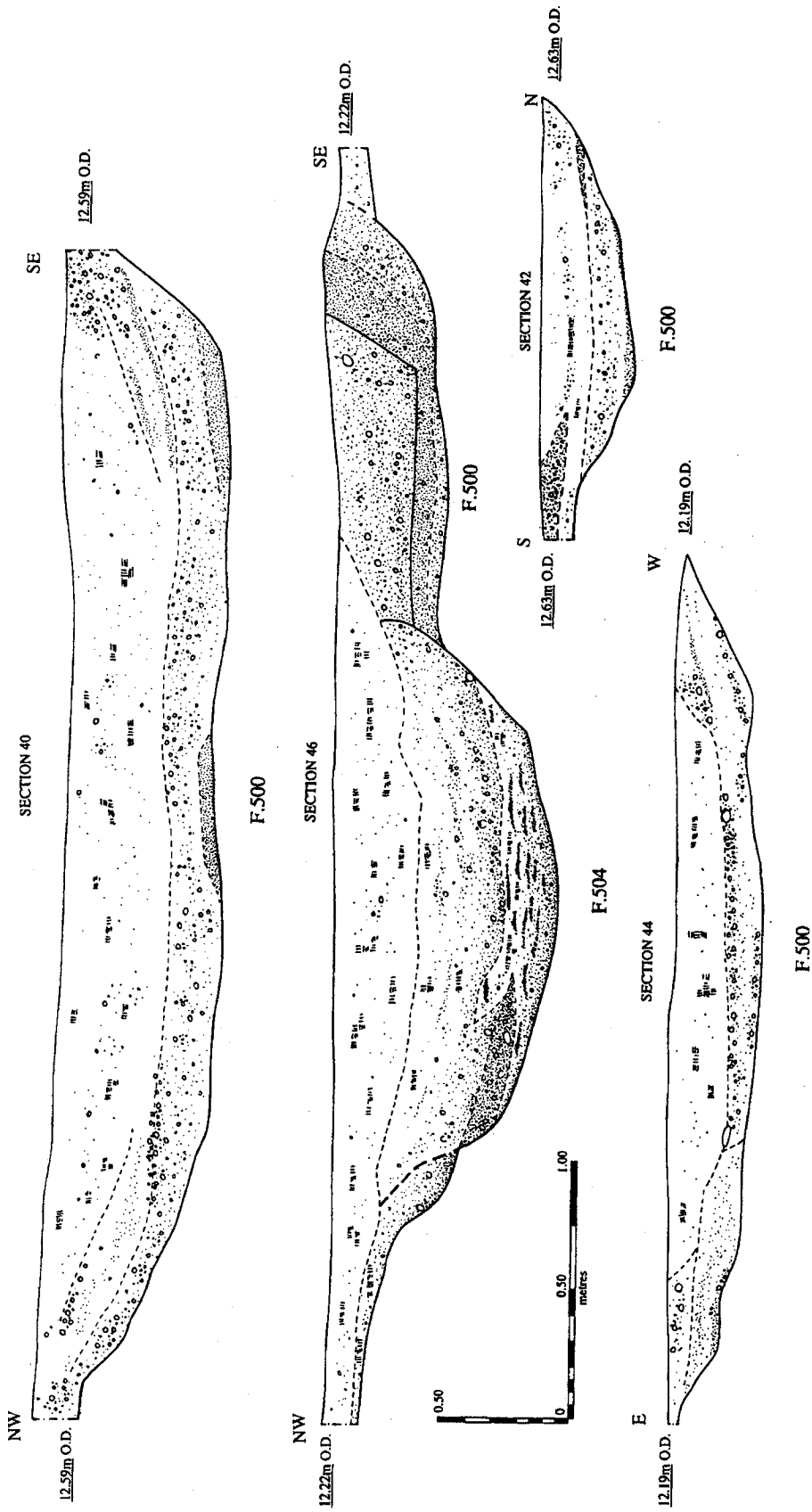

Figure 5. *Sections through ring-ditch IV.*

while a low proportion of other arboreal species suggests woodland only at a distance (*Tilia*, *Quercus* and *Alnus*; S. Boreham and S. Pegler, personal communication).

Unfortunately, there was insufficient time to investigate much of the area adjacent to the F. 500 ring-ditch thoroughly. A cluster of apparently later pits was, however, observed on the north-west side, and an east–west oriented ditch found to be cut along the north sector of the ring-ditch (F. 505). This latter feature was only most informally investigated – its line was traced to the quarry face, where it was found to be 0.20–0.30 m deep. Its fills were quite mixed but generally appeared to be composed of grey clay silt and weathered hoggin; obviously only the basal and primary fills had survived machine-truncation. Because of its alignment parallel with the shrine complex to the south, this ditch is interpreted as part of the Romano-British field system, and on aerial photographs it appears to run west to join with a major north–south oriented droveway.

Discussion

Dating Evidence

The complex was almost entirely without artefacts. Only two worked flints were, for example, recovered from excavation of the northern ring-ditch (F. 500). One is a broken tertiary flake with evidence of heavy utilisation along one edge; the other, a crude and heavily worn endscraper with a steep working angle and large irregular flake scars, is probably of later Neolithic or Early Bronze Age date (M. Edmonds, personal communication).

Given the remarkable paucity of finds, dating is obviously problematic and must largely rely upon radiocarbon determination. Three samples were submitted for dating; two initially to the British Museum. The first, from pit F. 504, re-cutting the main ring-ditch, produced a result of 1910 ± 50 BP (20–135 cal. AD at 68% probability; BM-2624) and relates to the site's Romano-British usage; the second, from the F. 503 cremation proved 'modern' and had evidently been contaminated (BM-2623). Subsequently, another sample from the latter feature was submitted, this time to the Godwin Laboratory, Cambridge, and a date of 3575 ± 40 BP was forthcoming (1625 ± 40 BC). Calibrated, it has a 68% probability of falling between 2020 and 1885 BC. However, the calibration curve at this point is such that there is a 95% probability that it actually falls into one of three much tighter date ranges (Switsur, personal communication):

1) 2035–1880 cal. BC
2) 1840–1820 cal. BC
3) 1800–1780 cal. BC

Given regional precedent (see below), the two latter seem the more likely, and a date range of 1840–1780 cal. BC is considered acceptable. Whilst it is not necessarily related, this would accord well with the recovery of a Collared Urn from the smaller ring-ditch located 60 m to the south (Site I; Fig. 2).

Ring Forms, Cremation Practices and their Affinities

The Diddington ring-ditches essentially seem to have been just that – 'ring-monuments' – and not poorly surviving barrows. The evidence indicates that they were without substantial mounds and they therefore seem to constitute a distinct category of monument, one whose frequency and importance has been underestimated (see Evans and Knight, forthcoming). With a diameter greater than 40 m, ring-ditch IV is much larger than most contemporary ring-ditches or barrows, and its status is all the more intriguing in the light of its presumed construction between 1800 and 1600 BC. Whilst the paucity of finds associated with it points to a non-domestic function, its size could provide a link with later Bronze Age circular enclosures such as Springfield Lyons and Mucking Rings (Fig. 6; Buckley *et al.* 1987: 50–1), suggesting that behind the many rectangular field systems and settlements of the time lay a tradition of circular construction. Others have argued for a relationship between henge or hengiform monuments and ring-ditches (e.g. Burgess 1980: 116; see also Evans and Knight, forthcoming). Nevertheless, to judge by the regularity of its plan, the affinities of the Diddington ring-ditch clearly lie within the second millennium; rather than with the 'fragmented' character of later Neolithic ceremonial enclosures (see e.g. Kinnes 1979).

Due no doubt to extreme over-machining, the simplicity of the immediate group of features makes interpretation difficult. Essentially, any appreciation of the complex's sequence must hinge upon one feature – the F. 503 cremation pyre. It is one of three such cremations excavated over the last 15 years along the lower and middle reaches of the Ouse. The excavation in 1983 of a round barrow (upon which a Romano-Celtic shrine had been sited) on the Upper Delphs terrace at the fen-edge in

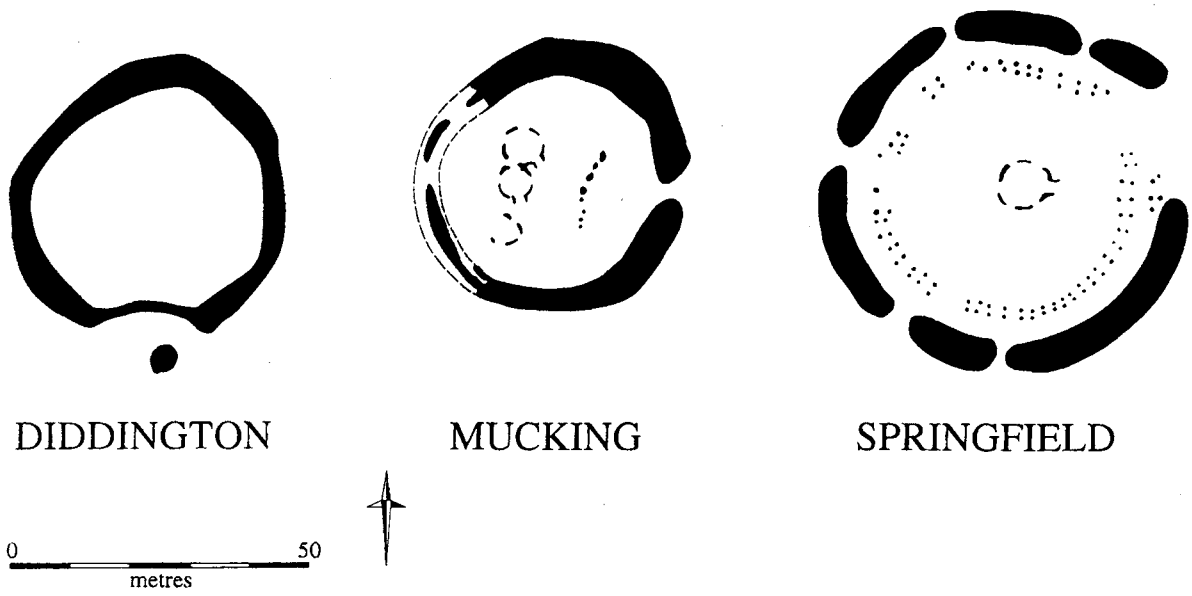

Figure 6. *Comparison with circular enclosures at Mucking and Springfield Lyons.*

Haddenham found as the primary interment a pit-pyre (0.90 to 1.05 m diameter and 0.60 m deep) cut into the northern arc of an upcast bank, which revetted the barrow mound (Fig. 7). The cremation was again that of a mature adult more than 30 years of age, this time certainly male. Burning and some cremated bone were recovered from elsewhere on top of the bank, and later a series of small urned and 'bagged' cremations had been inserted into the weathered slip of the barrow's southern flank. Similarly, 35 interments were also found within the southern sector of a double-circuit ring-ditch excavated on the western bank of the Ouse nearby at Barleycroft Farm in 1996 (fig. 7). Preceded by a more hengiform-type construction, associated with Collared Urn remains, and including an inhumation, the later cremation sequence was initiated by a ring-central pyre-burial of ovoid plan (0.40 by 0.80 m and 0.25 m deep); amongst the 'secondaries' was another pyre-pit of similar scale (0.37 by 0.50 m and 0.23 m deep). In both instances the (*in situ*) 'primary' cremated individuals were adults. The Haddenham pyre is dated to 1240 BC (HAR 6177: 1630–1310 ± 70 cal. BC with a 95% probability); results are not yet available for the central Barleycroft cremation, but will probably fall within the 1900–1500 cal. BC range. At both Haddenham and Barleycroft, pyre-interment preceded 'simple' interment of cremations carried out elsewhere.[3]

Given the absolute dating of the Diddington complex, if ring-ditch IV was a mortuary enclosure, then in all likelihood it would also have been cremation-related (an interpretation supported by the recovery of scraps of burnt bone in ring-ditch Segment 3). Probably of *ex situ* 'bag' or urned type, these would have had a maximum insertion depth of *c.* 0.20–0.40 m and would not have survived the site's drastic machine-stripping. If such was the case, then the fact that a natural hill-top was enclosed is significant, in as much as it may have substituted for a barrow; parallels are known for such 'false-mound' siting of secondary cemeteries (see e.g. Lawson *et al.* 1981: 23).

While not common, other examples of 'bitten' (to use Palmer's terminology) or deflected ring-ditches or barrows are known.[4] Their plans attest to accommodation – fitting around an earlier component – and therefore imply either intentional association with an earlier monument or forced proximity due to broader constraints upon monument siting (such as demarcation of the ritual landscape). In the case of ring-ditch IV, both factors could apply. Since it fell at the end of a ring-ditch alignment, broader landscape or extra-site restraints could have determined its relationship with the southern group of features (III). Yet there were no apparent constraints upon its layout, and it may have been a matter of intentional association – the F. 503 individual being selected as an 'ancestor' for the putative main ring-ditch cremation cemetery.

In all three of the Ouse pyres (Diddington, Haddenham and Barleycroft) the absence of substantial deposits of ash, and the occurrence of pure charcoal, large bone pieces and charred timbers, attest to slow burning in an oxygen-reduced environment. This implies sealing of

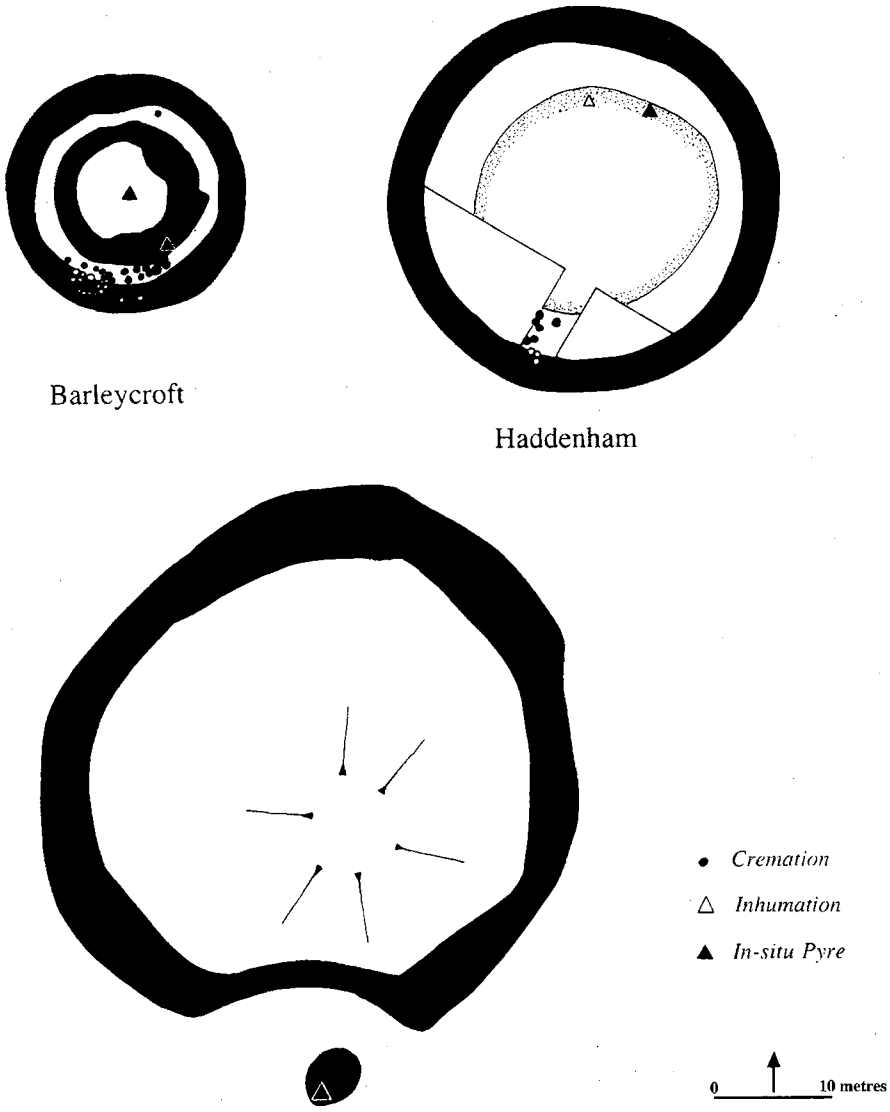

Figure 7. *Comparison with mortuary sites in the region.*

the pit, probably by stacked turves or upcast gravel. As a cremation method such closed pit-firings would have been inefficient; these procedures must be dependent on contemporary attitudes towards the body. Given the dimensions of the pits, aside from the Upper Delphs example, the corpse would somehow have had to been 'stuffed' in, either through de-fleshing, extreme crouched binding or dismemberment (cutting or excarnation after temporary interment).[5] Conditions at Barleycroft allowed for the much more careful excavation of the pyre there, and some degree of articulation was identified. Overall, the state of the bone indicates that the bodies were fleshed when burnt (see e.g. Appendix I), which leaves only two possibilities – dismemberment or binding. Although absolute confirmation will only be possible by electron-microscope scanning of the bone for cut-marks (planned for the Barleycroft 'primaries'), dismemberment seems the probable means of making the body fit the space available, since in no instance did the bone seem densely bundled and there is no evidence of pyre raking.

It is relevant to question whether the 'primary' ring-ditch/barrow pit-pyre cremation was really less efficient than the typical 'secondary' cremation interment with its minute bone fragments. In one of the other round barrows tested at Haddenham (HAD 3), a complex cremation deposit was recovered intact within a large Collared Urn and excavated in laboratory conditions. Dated to 1850–1520 cal. BC (BM-2497),

the large burnt bone fragments of an adult male had been arranged by type: cranial fragments in a scooped hollow within a pure charcoal deposit in the base of the urn, ringed by vertebrae with ribs adhering, beneath stacked long bones (Evans & Hodder 1987; Hall 1996). The charcoal bed was so pure and uniformly reduced that it may have been 'floated' and probably sieve-collected (?in baskets). The urn had been inserted upright into the flank of a low inner barrow mound or platform, on top of which the cremation had evidently occurred; the smouldering remains of the pyre were swept into the upper portion of the urn, scorching its rim. Set within it were a smaller decorated urn and bag-type jar. This, the processing of the charcoal, and the placement of the bones, tell of ritual sorting of the cremation components. More importantly, in the immediate context, the size of the bone is comparable to that in the Diddington, Haddenham and Barleycroft pyre-burials. That substantial bone was recovered in a non-pyre context could suggest that this was the standard level of body 'reduction' in most second-millennium cremations. Rather than attesting to more efficient burning *per se*, the smaller fragmentation common to secondary urned or bagged burnt interment could reflect mechanical reduction (i.e. pounding). If this were the case, it would represent another manipulation of the body, albeit already consumed by fire. Such procedures would contrast markedly with pit-pyres, in which the firing of the body was a hidden act, the closure of the pit effectively marking the end of the burial ritual. The sequence of 'simple' cremation would seem more public and open: the firing was visible and the bones were sorted from the pyre remains and then possibly pounded before burial. Yet caution must be exercised when contrasting *in situ* pyre and 'secondary' cremation rites, for in many instances the latter are associated with pyre sweepings. This is especially relevant in the case of urned interment, where insertion pits were often backfilled with pyre material. It is unlikely that such sweepings would have been carried any distance from their source, so these deposits attest indirectly to burning adjacent to the place of interment, where the pyres themselves do not survive.

The treatment of the body attested by pyre-interments must have been culturally specific. It is not a functional choice to force a corpse by whatever means into a small pit. In contrast, beneath a recently excavated Danish barrow, a cremation trench was found with cranial fragments which would have conjoined with those in the separately gathered cremation deposit. What is relevant here is that the pyre-pit was of a size to take a flexed body; no manipulation of the flesh need have occurred prior to burning (Olsen & Bech 1994). Of the many second-millennium BC pyres that have been recorded in Britain, the vast majority are not of subterranean type. Since they were on the ground surface, there would have been no necessary constraint upon the size of the pyre. In, for example, Edmondsham Barrow G2 in Dorset, the remains of a pyre (*c.* 1 by 1.50 m) – from which not all bone fragments were recovered – was found beside the sub-rectangular grave pit which received the majority of the burnt bone. As attested by a much broader ring of scorching, the pyre had evidently been scraped up into a heap; whereas the grave cut, lacking pyre ash or charcoal within its fill, must have been dug after the firing (Proudfoot 1963; Barrett 1994: 119–20). Another variation on pyre and burial setting is provided from a ring-ditch at Harston, Cambridgeshire. There the bones of an adult and younger individual apparently lay 'arranged' within a pit dug into the pyre itself, which has been dated to 1890–1625 cal. BC (Malim 1993: 31, Figs 13 and 14).

Within the sequence of Bronze Age mortuary rites, cremation seems generally a later phenomenon, following a period of predominantly inhumation burial (see e.g. Bradley 1984: 84). A final consideration arising from the Diddington complex and its pyre affinities concerns the relationship of the 'primary' pyre burials to 'secondary' *ex situ* cremations. Was the original pyre-firing an act of general consecration, preparing the ground or monument for subsequent peripheral interment, or were the inserted cremations just that, a later rite involving proximity to significant ancestors, whether real or proxy? As regards the Diddington example, one interpretation of the evidence would point to a disrupted or extended sequence. The relationship of any postulated secondary cremation cemetery within the northern ring-ditch to the Site III pyre was one of accommodation, otherwise the primary pyre should have been included within the circuit of the larger monument. Any such speculation is, of course, compromised the stripping of the site. More shallowly dug 'primaries' could have been lost within the main circle, and there is no means of establishing the interval between the closure of the pyre and the construction of the main bipartite ring. Equally, the occurrence of another pyre-pit amongst the 'secondaries' in the Barleycroft ring-ditch indicates that *in situ* cremation was not necessarily a 'one-off' primary act. This raises the possibility of subsidiary new beginnings, and of individual status or lineage re-definition determining the type

of cremation. In this regard, it is surely relevant that in all three instances of primary pyre interment the dead were mature adults.

Wider questions arise from a consideration of prehistoric cremation practices: what was the relationship of the 'transformation' of the body and soul to the general lack of accompanying grave goods (apart from pots)?[6] What might this tell us about perceptions of the afterlife? Did temporary inhumation precede cremation and, if so, did this relate to decision-making concerning which individuals warranted ring-ditch or barrow commemoration, or to the time needed to organise the necessary labour? These, however, must await fuller review and are beyond the scope of this study, whose aim has been more modest: to provide notice of the recent recovery and apparent frequency of cremation pit-pyres along the middle and lower Ouse valley.

Appendix I: Human Bone

F. Lee

Although much of the cremated bone within Feature 503 was unidentifiable, a sizeable proportion could be placed in broad bone types: long bones, flat bones, cranial fragments and vertebrae; and in some cases a more precise identification proved possible. The identification of bone from a significant proportion of the skeleton, including the lower legs, skull, upper limbs, trunk and vertebrae, would lead one to suppose that most of the skeleton was present. However, the total weight of the sample would suggest otherwise (see below). None of the body parts were duplicated, and it was considered that only a single individual was present. Some cremated bone was also found 0.50 m from the cremation pit, but, considering the poor preservation of the site and the method of discovery, it is probable that this material was originally from the cremation pit itself, and consequently does not add to the number of individuals present.

The age at death was established from the presence of fused epiphyseal plates on the identifiable long bones and phalanges of the hand, as well as the presence of fully erupted third maxillary and mandibular molars. Moreover, fragments of the cranium exhibited sutures which were totally obliterated endocranially, but were still visible on the external surface, suggesting the individual was an adult aged over 30 years.

Attribution of sex proved impossible as the diagnostic parts used in sexing skeletal remains were either absent or too fragmentary for an estimation. Nor were any observations on the presence of abnormalities or pathological lesions possible, with the exception of a single wormian bone, most probably from the lamboid suture. Wormian bones are extra (sutural) bones of the skull, centres of ossification that have been suggested to represent inherited dominant traits (Torgersen 1954; Brothwell 1981: 95).

The overall weight of the cremation collected was 0.7564 kg. Binford (1972: 385) estimates that 1.75 kg is the average weight of a single cremation, whilst Krogman (1962: 232) records the average weight of a dry fat-free skeleton as between 2 and 4 kg. This suggests that the cremation was incomplete. The most probable reason for this is that some of the cremated bone from the top of the feature was removed during machining. The archaeological evidence suggests that the body was cremated *in situ*, which eliminates the possibility of loss between the places of burning and burial. It is also unlikely that loss occurred during excavation, as the entire contents of the pit were lifted and later floated and sieved. The identification of bones from the skeleton (Fig. 4) shows that a substantial proportion of the whole was represented, albeit in a fragmentary state.

The efficiency, or otherwise, of the cremation can be discerned from the colour and degree of fragmentation of the bone assemblage. When burnt, bone follows a progressive colour change with white representing the most calcined bones, burnt at the highest temperatures; while blackening of the bone reflects charring at lower temperatures. The colour of the cremated bone fragments from Diddington ranged from cream to light grey through to black, with the mid–dark grey and blacks predominating. Whilst the material from Diddington was certainly subjected to heat, it is unlikely that this heat was intense. This is supported by the evidence from the dentition; the enamel covering the teeth shatters at relatively low temperatures. Where the teeth were identified, there is no enamel present, but the overall shape and structure is unaffected, again suggesting low temperatures. The evidence therefore suggests that the heat of the cremation fire was at the lower end of the range described by Baby (1954) and Ubelaker (1974).

The colour of the bone fragments may also provide information on the method of burning. Parker (1985: 18) suggests that the colour of calcined bone may not simply be determined by temperature, but that the amount of oxygen supplied to the fire is a crucial factor. Where there is free circulation of air, such as in a pyre,

the bone would be expected to have a uniform colour. At Diddington, where the colour ranged from white to black, the evidence suggests that there was a lack of free air circulation, resulting in both lower temperature and higher temperature colours occurring together. This suggests a simple pit-cremation, supporting the archaeological evidence. The second point of interest is that the colour of the bone may reflect whether cremation took place when the body was fleshed or defleshed. Where there was variation in colour, most notable at Diddington on the thicker cortical bone (for example the long bones), there was a progression from grey–white on the exterior to a band of grey and a layer of black on the inner surface. These, Parker (1985: 16, 19) suggests, occur in fleshed cremations, where the combined colours always have an ordered appearance, with high temperature colour on the outside, progressing inward to lower temperature colours.

On cremation, bone not only splits, but cracks and warps. The greater the heat, the greater the degree of fragmentation, distortion and splitting. Fifty-eight per cent of the sample was over 10 mm in size (26% of the total number of fragments), with a maximum range up to 86 mm in length. To some extent, the degree of fragmentation depends on the size of the unburnt bones. Indeed the larger pieces tend to be fragments of long bones of the lower limb, whilst the smaller fragments are from the ribs, vertebrae and flat bones. The type of fracture varies between fleshed and defleshed cremations. Curved transverse lines, irregular splitting, and warping and splintering are all indicative of fleshed cremations (Baby 1954); but there is no warping in defleshed skeletons. Again, this relationship may not be quite so simple and it is probable that the types of cracking also reflect the inherent properties and morphological structure of the bone. For example, long bones or round bones have predominantly longitudinal splits and curved cross hatches, while flat bones such as the pelvis and cranium have more random cracks.

Certain types of bone were not identified. They may well have fallen into the unidentifiable category, but another possibility is that they did not survive burning or were not retrieved. However, the latter suggestion is unlikely as the cremation appears to have occurred *in situ*.

Acknowledgements

Thanks are long overdue to those members of the Department of Archaeology, University of Cambridge, and the Cambridgeshire Field Club who spent many cold Sundays on this windswept site, and I am especially grateful to Robin Boast, John Ette and Dave Saxby for their labours; Fiona Wilmot, supervisor of the County Council's Diddington team, is to be acknowledged for her co-operation throughout.

Illustrations in this report are the work of Crane Begg (Figure 2 modified after R. Palmer). I am grateful for the participation of the contributing specialists, in addition to those formally credited, Roy Switsur (Godwin Laboratory), Steve Boreham and Sylvia Pegler (pollen), and Mark Edmonds (lithics); Stuart Needham kindly organised the British Museum radiocarbon dates, with Janet Ambers providing specialist comment.

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Endnotes

[1] To judge by the results from the Diddington quarry, Field's 1974 analysis of ring-ditches (based essentially on aerial photographic evidence) included a number of building eaves gullies within this category (e.g. Sites V and VII). This and recent discoveries elsewhere (see e.g. Evans and Knight, forthcoming), call for reappraisal of his distributions.

[2] *CUCAP photographs examined*:

JC 52-53, 56-61	29-06-52	BBY 59-62	16-06-70
VR 15-17	13-07-57	BCS 76-79	30-06-70
WH 4-8, 15-16, 20-22	03-06-58	BGD 13-17, 19-24	12-07-71
XK 86-91	19-07-58	BIP 49-51	09-06-72
XL 38-40	23-07-58	BIX 31-35	22-06-72
YW 61	23-06-59	BJF 83-86	05-07-72
ZA 73-74	26-06-59	BJM 81	11-07-72
V-D 13-17	15-06-60	K17-AA 89-90	11-07-72
V-E 7-8	15-06-60	BNK 82	18-06-73
AFW 95-97	07-07-62	BXX 38-42	22-06-76
BBX 101	15-06-70	BXZ 65-67	24-06-76

[3] Leeds reported the recovery of a pyre within his Tumulus 'C' at Eyebury, near Peterborough (1914–15: 121–5). Within a red-scorched spread was found a 'cremation hole' three feet in diameter and the same depth. Charred timbers lay within it, as well as reduced charcoal and the burnt leg bones and other smaller pieces of an individual; the pelvis, half-covered by the burnt layer, lay on the ground surface immediately beside the pit.

'It seems clear that the process of cremation had been effected by constructing a wigwam of timber, probably not unlike a charcoal-burner's pile, covered by earth or turfs, over the body, which was placed in a squatting position on a heap of wood or brushwood, a flue being left at one side to carry the draught. This construction had eventually

collapsed, carrying down with it the major part of the remains on to the fire-heap below, which completed the work of destruction.' (1914–15: 123, Fig. 4)

No grave goods were recovered from either the interment or barrow. Full re-appraisal is impossible given the recording; whilst Leeds's 'hole' may have been comparable to the Ouse valley pit-pyres (it could not have functioned as a flue), closed firing would not explain the much larger area of scorching and the bone found beyond the pit's limits.

4 In reference to Amesbury Barrow G72, Ashbee calls such plan configurations 'confluent' (1960: 27, Fig. 4). For other examples of similarly compounded ring-ditches see those within Group 3 at Stanton Harcourt (Case and Whittle 1982: Fig. 63).

5 At the later Bronze Age double-ring 'saucer-type' barrow (B) at Chippenham, apart from an inhumation and five 'secondary' cremations, Leaf recovered a central cremation with a Collared Urn inverted over burnt bone. Athough no scorching is mentioned, he reported this as an *in situ* pyre surrounded by a spread of charcoal and ash on the ground surface. A large pit nearby was thought to have provided earth for a small upcast mound over the pyre (1936: 142–44, Fig. 6). A similar feature was found adjacent to a secondary cremation (II). While speculating that this could have been the quarry for another minor mound, the excavator also questioned whether this pit and that adjacent to the central cremation were actually temporary graves for individuals awaiting cremation (1936: 145–6). Discussing the results of his Snailwell excavations, Lethbridge raised the possibility of smoke-mummified corpses awaiting barrow construction (1950: 31, 36) However, given his recourse to extreme models of long-distance migration, and over-reliance on direct, if diverse, ethnographic parallels, Lethbridge's 'dramatic' interpretations ('pastoral-mania') can no longer be considered valid (see Evans 1987).

6 Lethbridge reported bone pins, 'tubes', an awl and perforated antler piece, and three flint knives within a grave pit with a Collared Urn inverted over a cremation (II) in Snailwell Barrow A (1950). The cremation lay centrally within the barrow, having apparently occurred on site, and was presumed to have been 'primary'. (Note that, in his Fig. 2, Lethbridge's numbering of the cremations seems erroneous.)

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New Evidence on the Cambridgeshire Dykes and Worsted Street Roman Road

Tim Malim
with Ken Penn, Ben Robinson, Gerald Wait & Ken Welsh

and contributions by Debby Banham, Alex Bayliss, G.W. Dimbleby, C.A.I. French, Peter Murphy, Paul Pettitt & Ken Thomas

> Devil's Dyke ... has a kind of menacing, palpably ancient air, but also a feeling of monumental folly. It required an immense commitment of labour to construct, but it didn't take a whole lot of milltary genius to realize that all an invading army had to do was go around it ... and within no time Devil's Dyke had ceased to have any use except to show people in the fen country what it felt like to be 60 feet high.
>
> Bill Bryson, *Notes from a Small Island.*

Contents

Summary

A sequence of well stratified carbon dates has established that the first phase of Fleam Dyke was most probably constructed in the fifth century AD. *Ensuing phases, which produced the typical profile of the monument as it survives today, were sixth century or later in date, and, by analogy, the other three Cambridgeshire Dykes (Bran Ditch, Brent Ditch, Devils Dyke) are assumed to be of similar date. Comparison of their size and design supports an interpretation as defensive barriers, but their possible use as routeways and their association with earlier sacred places suggest that secondary functions may also have existed. Evidence from pagan Saxon burials, place-names and contemporary settlement suggests the existence of a definite cultural boundary in this zone between west and east, and between Anglian Cambridgeshire and British Hertfordshire and Essex. The Icknield Way zone into which the Dykes were built appears to have been grazed grassland, a tract of moorland between the Chiltern scarp and the spring-line beside Ashwell Street, and it was this zone that the Dykes controlled. However, the origins of the Dykes may lie further back in time, as boundaries in a prehistoric division of the landscape, as suggested for the Mile Ditches, together with many of the Hertfordshire dykes, which also cross the Icknield Way zone.*

Introduction

Since the time of the earliest antiquarians, the Dykes of southern Cambridgeshire (Fig. 1) have aroused great interest and debate, because they form a distinct group within the region; in the consistency of their overall concept and parallel courses, and in the execution of their design, they appear to share a common purpose. Information and theories regarding them have been published and re-worked many times, and their date of construction has ranged from Iron Age to Anglo-Saxon, but the basic premise that these structures were defensive earthworks preventing access to East Anglia and giving control of the Icknield Way has remained uncontested. They have been regarded as military

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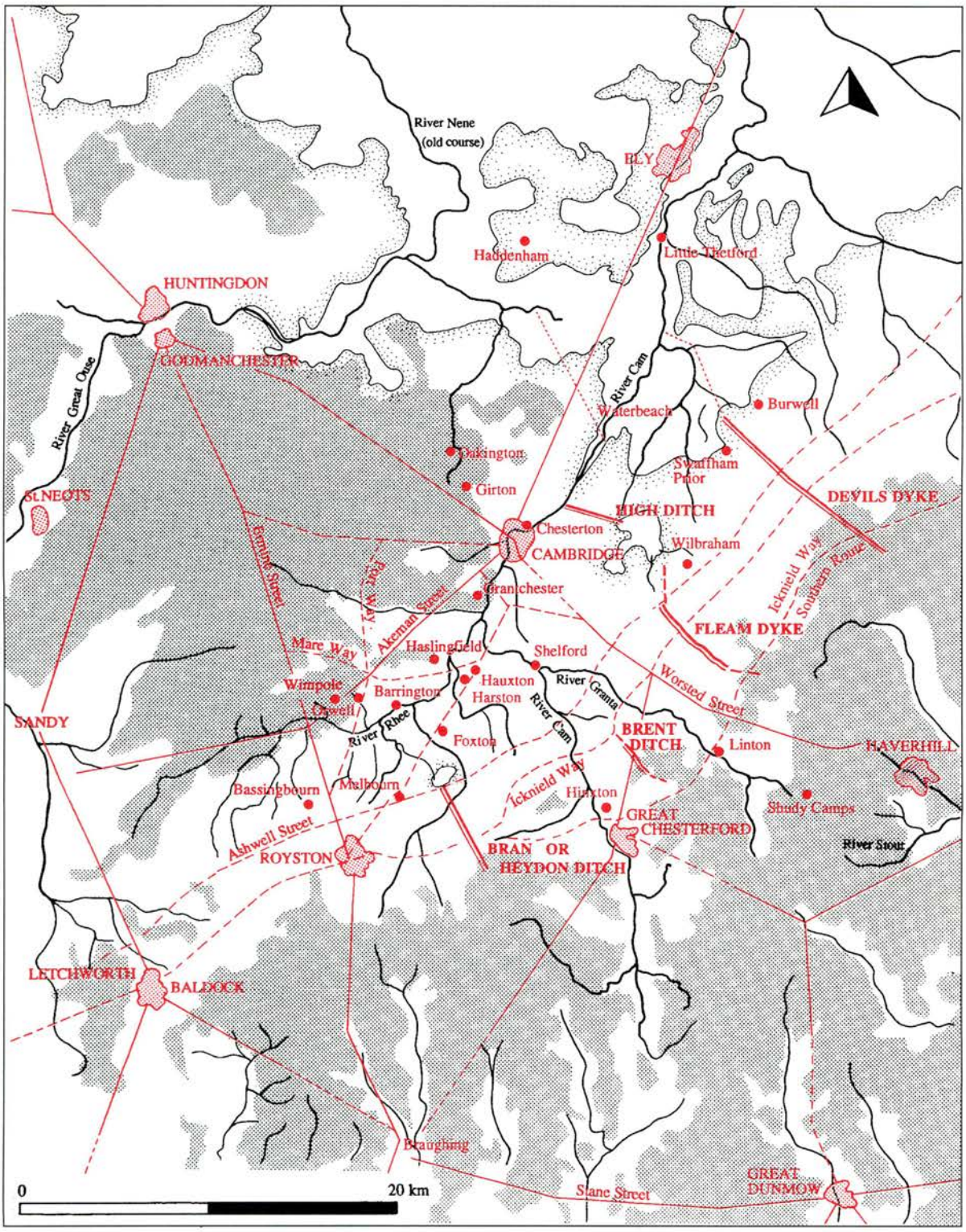
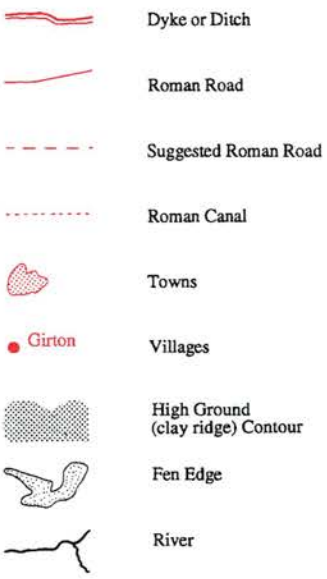


Figure 1. *Map of the Cambridge region, showing dykes, ditches and Roman roads.*

barriers running north west to south east between wooded hills to the south and fens to the north, both of which formed terrain that antiquarians have considered would have been impassable for an army (Fig. 2). From west to east, these Dykes are: Bran (Heydon) Ditch, Brent (Pampisford) Ditch, Fleam (Balsham) Dyke and Devils Dyke.



Key to Fig. 1.

Nineteenth-century archaeologists, including Beldam, Babington, Ridgeway and McKenny Hughes, who investigated these monuments (see Table 11), all agreed on their common defensive function for East Anglia and proposed that they were built, together with another 'dyke' along Worsted Street, by the Iceni. Ridgeway (1893) suggested they were used during the Roman attack by Ostorius. However, during the 1920s and 1930s, extensive excavations were undertaken by Fox and Palmer, and later by Lethbridge, which established a definite post-Roman date for their main construction, and ascribed the most likely historical context for them to the seventh-century wars between the expanding kingdoms of Middle Anglia (Mercia) and East Anglia. Worsted Street, however, was demonstrated to be a work of purely Roman engineering (Fox 1923b). Lethbridge (1958) later revised his ideas on the origins of the Dykes and suggested that they were works of the fourth-century Romano-British, designed to entrap marauding Anglo-Saxon raiding parties. Hope-Taylor (1976) reported that the bank of Devils Dyke sealed a fourth-century Roman coin, and that the primary fills of the ditch already existed by the time a twelfth to thirteenth-century human burial was inserted (see Table 11).

Subsequent work was piecemeal and conducted in response to particular threats, rather than as pure research, but nonetheless contributed significantly to the available data. In spite of this, definitive dating for the construction and use of these monuments continued to be elusive, until, in the early 1990s, a series of development threats, including water pipelines and the dualling of the A11, presented the chance for a new cohesive programme of research into the origins of three of the Dykes and Worsted Street, and an opportunity to

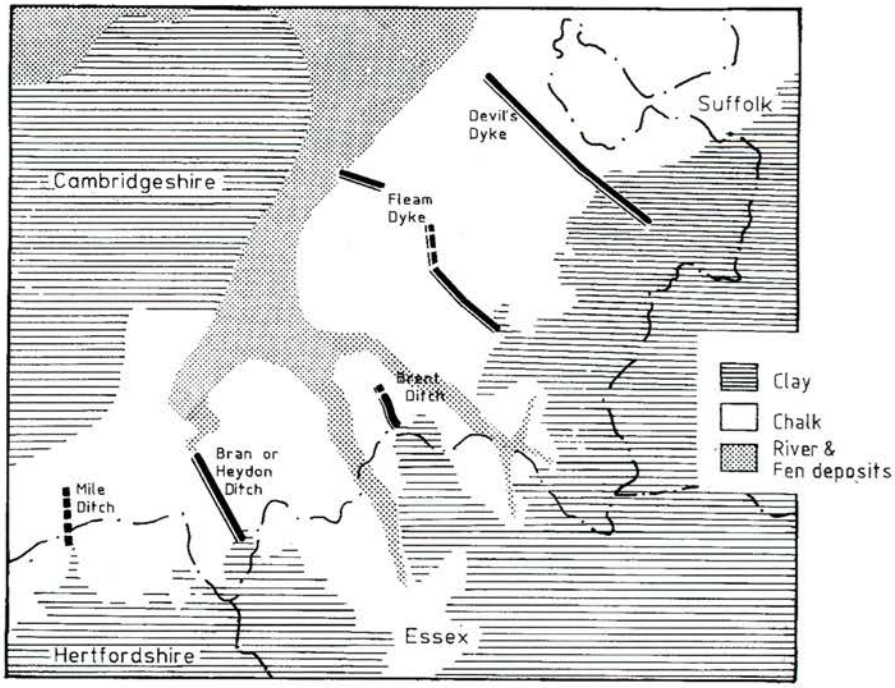


Figure 2. *Geology of the Cambridgeshire Dykes.*

Figure 3. *View of the southern end of Bran Ditch, surviving as a hollow way from Heydon village and continuing as a footpath to the north west (photo: Tim Malim, March 1993).*

Figure 4. *Aerial view of Bran Ditch, visible as a straight field boundary heading south-east across centre of picture from the northern end at Fowlmere RSPB reserve (left) (photo: Tim Malim, July 1993).*

reappraise the information and theories accepted as standard for so long. The following reports outline the main results from each project, the research aims of which were linked by a single organisation, the Archaeological Field Unit of Cambridgeshire County Council, which fortunately managed to undertake all the investigations in spite of the recently introduced tendering procedures for archaeology. Without such a circumstance, allowing continuity of key staff, the cohesiveness and value of the work would have been seriously undermined. To complete the programme of investigation as originally envisaged by the main author, English Heritage accepted the argument that, having excavated the other three Dykes, it was also important to examine Bran Ditch in order to provide valid comparative information and to investigate the monuments as a group. The main research aims, beyond recording the physical characteristics of the surviving monuments, were to obtain well sealed samples, firstly for absolute dating purposes and secondly to allow reconstruction of the contemporary environment, and also to untangle, as far as possible, the phases of development of each monument and their possible prehistoric origins.

The investigations of the individual Dykes are set out below as discrete site reports, arranged in geographical order from west to east, and the summarised data from every recorded excavation of the Dykes are presented in tabular form for easy comparison (see Table 11). The excavation results are followed by various specialist analyses, and the final contribution is a synthetic overview which examines the conundrum of the Dykes in their regional setting and contemporary context. However, it is not the intention at this stage of research to provide a detailed comparative discussion of the Cambridgeshire Dykes in relation to similar features in neighbouring counties; such broader analysis awaits further study.

Bran Ditch

Ken Welsh

Background

Geology and topography

Bran Ditch (Heydon Ditch) has its southern terminus at Heydon, at a height of about 120 m OD, on the edge of the Boulder Clay plateau which extends southwards into Essex and Hertfordshire. From here, Bran runs north-west for 5 km (Fig. 3), dropping down to a height of 25 m OD into the chalk plain of south Cambridgeshire to meet an area of wetland where springs rise out of the chalk (Fig. 4), an area curiously named Black Peak. In the field immediately to the north east of the terminus there are several large hollows, probably the result of quarrying; to the west there is a knoll (Black Peak itself) with an enclosure of Iron Age date, and to the east an extensive Roman site, both of which were probably located along Ashwell Street, an ancient west–east routeway.

The present wetland area, now the RSPB nature reserve, Fowlmere, at Black Peak, was more extensive in the past, and then known as Fowlmere Moor. After enclosure, the area was partially drained and watercress beds constructed in some of the remaining portion.

Previous work

Bran Ditch now survives only as an undulation in the ground and a field boundary along much of its length, although near the village of Heydon it is more substantial. Much of the bank was levelled (or removed) and the ditch filled in during the period after the enclosure of Melbourn and Fowlmere in 1845. However, it was still reported to be 7 foot (2.1 m) high and 80 foot (24.4 m) wide (total width of ditch and bank) in 1868 (Fox 1923a: 127).

Excavations on Bran Ditch by Fox and Palmer (1926) established a post-third-century date for its construction, and after a further excavation (Lethbridge and Palmer 1929; Palmer *et al.* 1932) they concluded that the bank and ditch deviated to respect a burial ground dated by pottery sherds and one or two iron objects to the Anglo-Saxon period. They also recorded two other ditches running roughly parallel to Bran Ditch which they thought were of an earlier date; it seemed therefore that Bran Ditch followed the line of an earlier boundary. The eight sections cut across Bran Ditch by Fox in the 1920s (Fig. 5, A–H) show a profile that varies along its length: in most places flat-bottomed and very similar to the other three Dykes, but at the northern end much less regular with a slightly rounded base. No trace of the bank was found near Black Peak, although to the south east it was recorded as a concentration of chalk fragments in the soil after ploughing.

Strategy and methods

During August 1993 two trenches were opened at the north end of Bran Ditch. Trench A (Fig. 6, 1993a) was situated on land rising to the south west towards Black Peak, and Trench B (Fig. 6, 1993b) was situated about 10 m from the present edge of the wetland area.

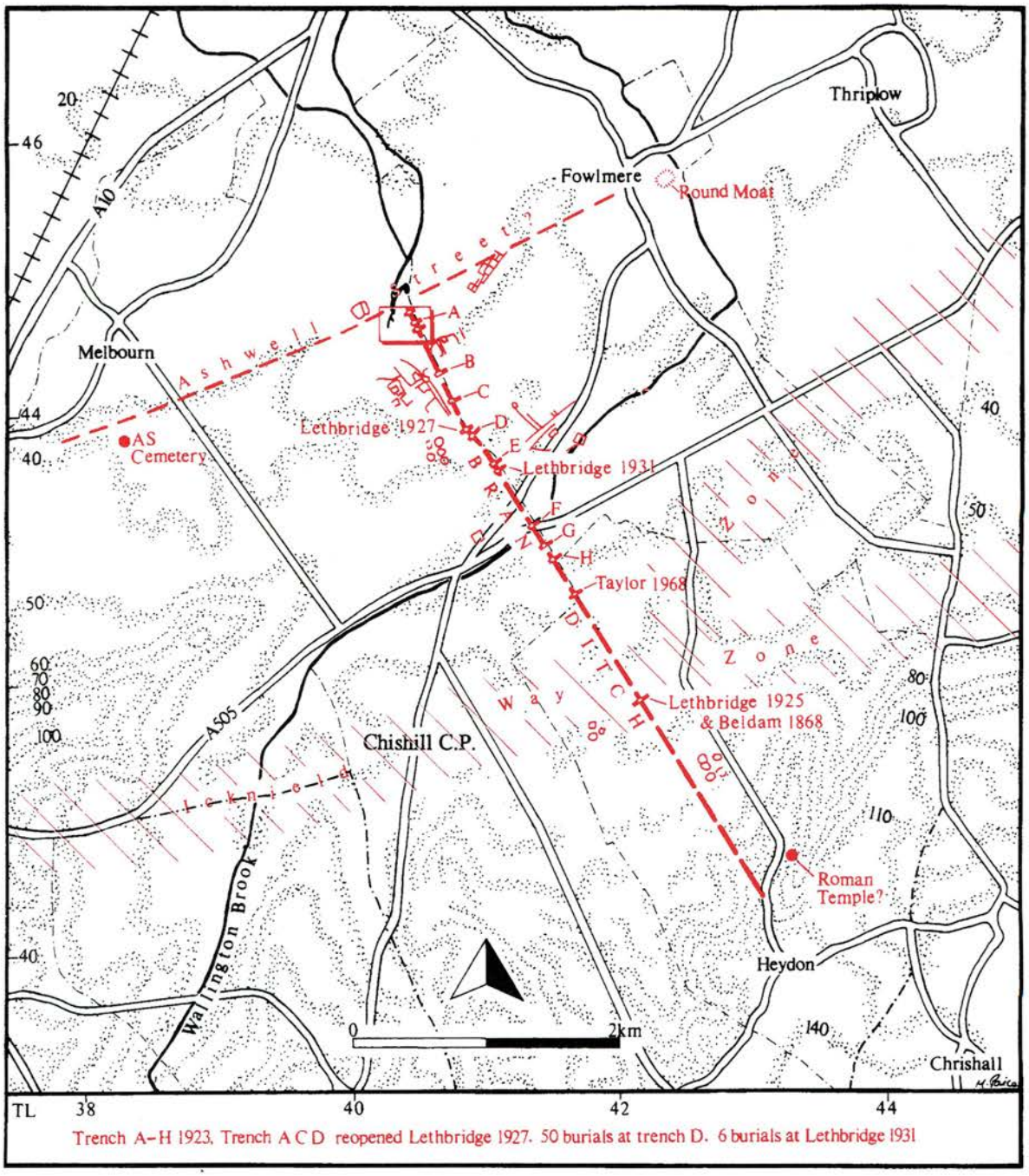
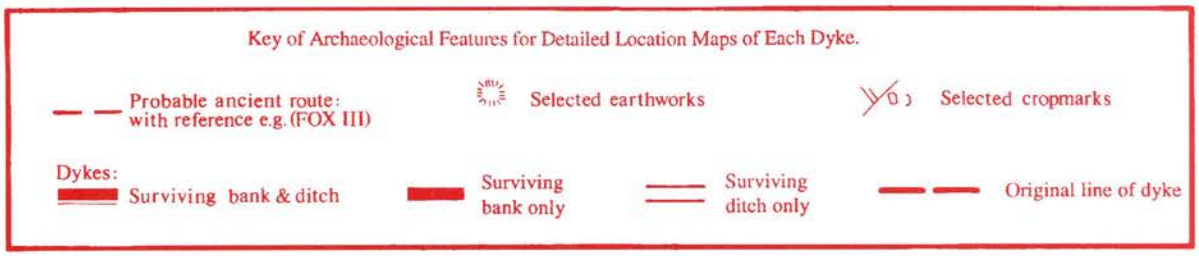


Figure 5. *Bran Ditch: location map showing previous work and associated archaeological sites.*



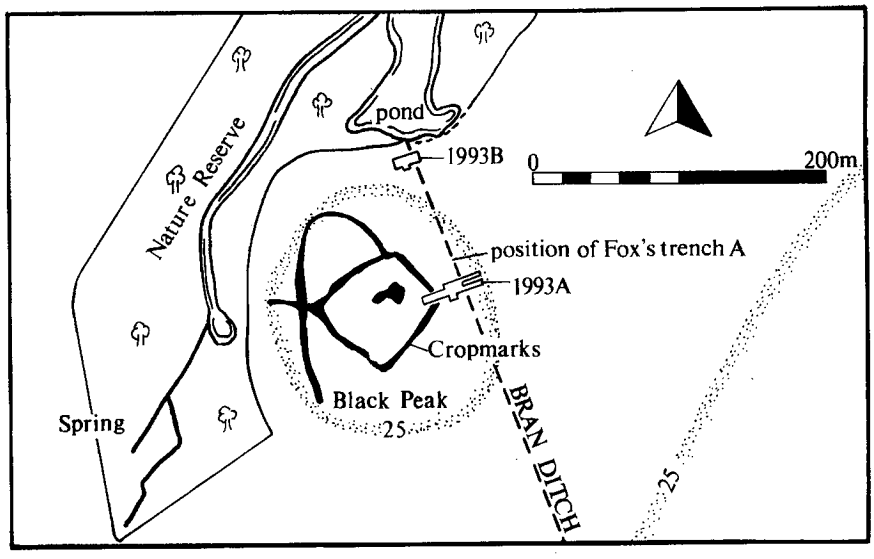


Figure 6. *Bran Ditch: location of 1993 trenches and cropmark features.*

The topsoil was stripped by mechanical excavator and the upper fill of Bran Ditch removed. The sides of the trenches were stepped for safety reasons, as well as to increase the light levels in the base of the ditch for photographic purposes, and the trenches were extended to either side of the Ditch in order to investigate any associated features. Trench A was positioned to coincide with the enclosure ditch seen as a cropmark in aerial photographs (Fig. 6). The positioning of Trench B was designed to examine the northern terminal of Bran Ditch and the most likely area for survival of organic deposits immediately adjacent to the wetland. However, a small water tank, used to top up water levels in the nature reserve during dry periods, had been installed here, and so it was necessary to place Trench B a few metres to the south.

The remaining Ditch fills and any other features revealed were then excavated by hand, and where appropriate the spoil was dry-sieved, using a 5 mm mesh, as it was removed. Samples from the ditch and buried soil were taken for molluscan analysis (Murphy, below), but the degree of oxidation of the deposits meant that ancient pollen was unlikely to survive. A column sample through the bank was taken for micromorphological analysis (French, below).

Results

The Ditch

In Trench A (Fig. 7) the original Ditch (**13**) was shown to survive to a maximum depth of 1.80 m. (Cut numbers are given in **bold** in this and the following reports; fills and layers in normal type.) The width at the top is 5.75 m and at the base 2.45 m (Figs 8 and 9). The natural chalk into which it was cut was strongly bedded and fractured. The surface of the chalk was 0.65 m lower on the north-east side than on the south-west because the upper part of the north-eastern edge had been cut away by a modern pipe-trench, laid in 1982 to supply water to the nature reserve.

The corners of the Ditch were filled by a series of primary weathering fills. The majority of these (Fills 38, 55, 56, 57, 60, 61, 62, 63, 64 and 65: Figs 8 and 9) were composed of very compact, angular or platy chalk fragments with a varying, but small, proportion of grey silty clay. Fills 39 and 59, thin layers within this mass of weathered chalk, were dark grey silty clay with only very occasional chalk fragments. In general, there was a tendency for the later of these weathering fills to contain a higher percentage of silt, and for the chalk fragments to be smaller. Cut into these primary fills was a possible recut (**54**) which contained a compact grey silty clay (40) but no artefacts. Overlying this, Fill 53, a brown silty clay containing moderately frequent chalk fragments, was cut by a pit **67**, which contained (66) a mixture of chalk fragments and grey chalky clay, presumably derived from the earlier weathering fills. Feature **52** contained a mid brown silty clay with occasional chalk fragments. Although no dating evidence was found, it seems probable that this was a drainage ditch cut into the base of the partially silted-up Bran Ditch. The upper fills of the Ditch (12, 50, and 58) were similar greyish brown silty clays, although 50 and 58 contained a much higher proportion of chalk fragments. A few post-medieval tile fragments were retrieved from Fill 12. All of these fills seem

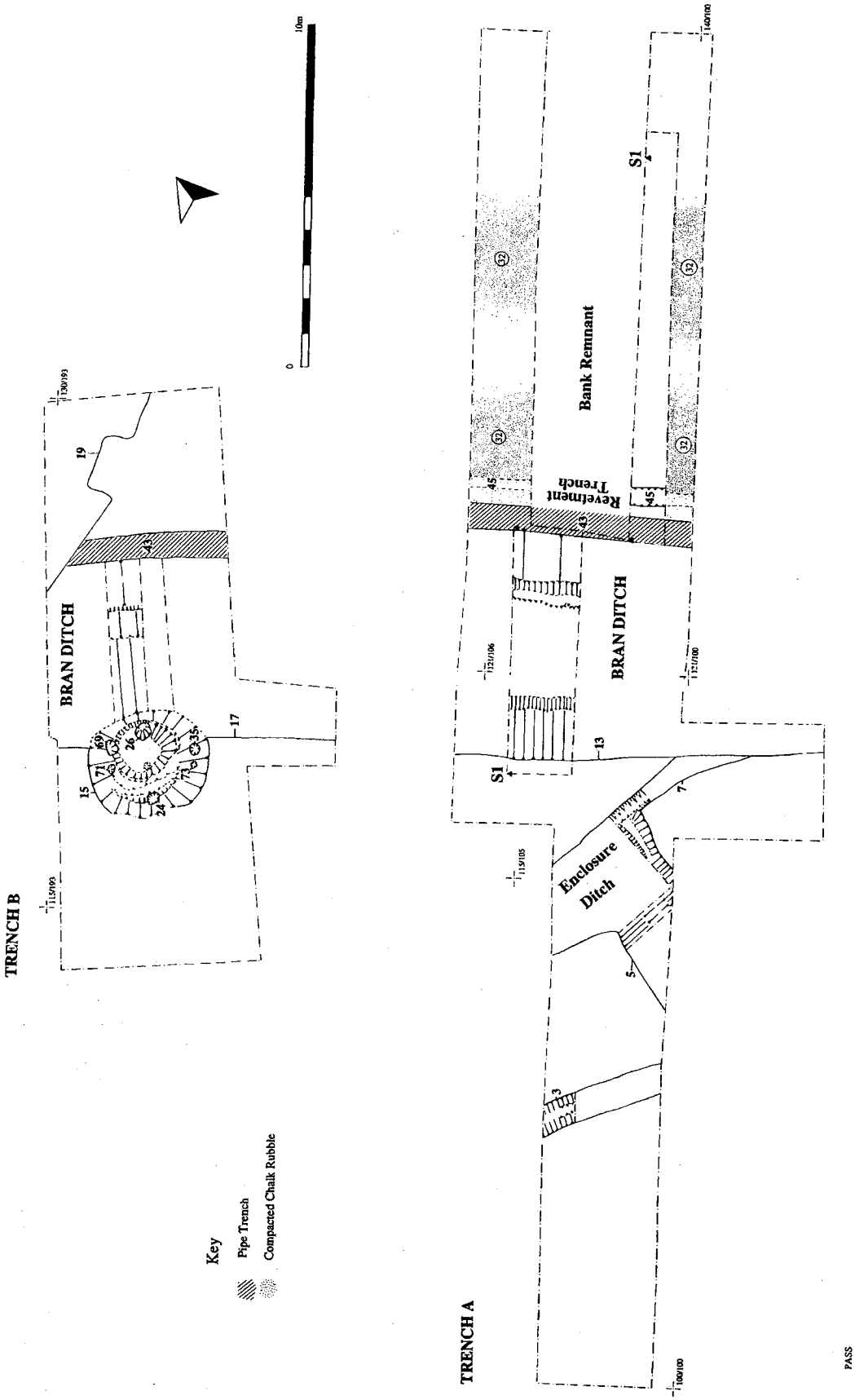


Figure 7. *Bran Ditch: trench plans (A and B).*

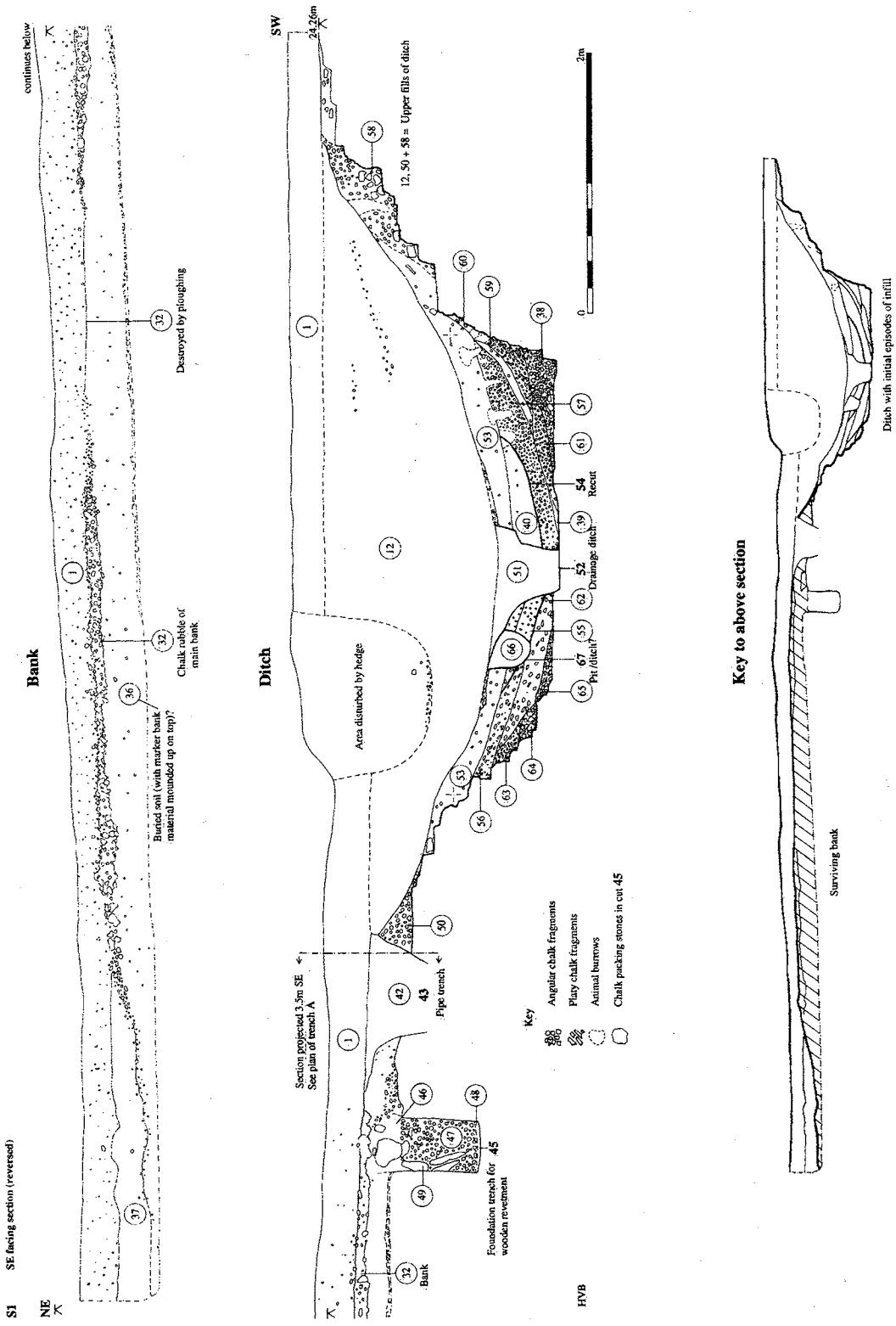


Figure 8. *Bran Ditch: south-east facing section through the ditch and bank (Trench A).*

Figure 9. *Bran Ditch: photograph of the south-east facing stepped section through fully excavated ditch (Trench A) (scale in 0.5 m divisions).*

Figure 10. *Bran Ditch: photograph of Trench B from the west, partly excavated, showing the northern end of Bran Ditch with the oval pit or structure in the foreground (scale in 0.5 m divisions).*

to be a result of deliberate 'ploughing-in', presumably at enclosure or in more recent times.

In Trench B, the original Ditch (**17**) was at least 5.3 m wide and had a maximum depth of 1.49 m (Figs 7 and 10). The north-eastern edge had been cut away by the modern pipe-trench (**43**), which itself was cut into redeposited chalk probably associated with the quarry pit to the north east. The fills of Bran Ditch were much simpler in Trench B, with none of the chalky weathering fills seen in Trench A. At the base of the ditch was a layer of chalk (44), badly disturbed by roots but otherwise indistinguishable from the natural chalk. Above this was a brownish grey clayey silt with occasional chalk fragments (29). The upper fill (16) was a greyish brown silty clay, very similar to the upper fill seen in Trench A and presumably having the same origin.

The natural chalk in Trench B was very different from that found in Trench A. Instead of showing clear bedding planes and fractures it had a smooth, structureless appearance, as if it had been dissolved, and was full of root holes filled with brown chalky clay.

The Bank

On the north-eastern side of Bran Ditch, a layer of chalk was at first taken to be chalk bedrock, cut by two ditches. It subsequently proved to be a layer, 0.13 m thick, of redeposited chalk rubble (32) destroyed by ploughing in its central part, and about 8.5 m wide in total (Fig. 8). It partially overlay Feature **45**, 0.48 m wide and 0.59 m deep, which contained large chalk blocks down its north-eastern edge. This feature ran parallel to Bran Ditch and about 1.2 m away from it. It is clear that Layer 32 is the remains of the original bank of Bran Ditch. Feature **45** would, therefore, appear to be a foundation trench, containing packing stones, for a wooden revetment. Stratigraphically, it is contemporary with the construction of the bank. A possible marker bank might have been used, represented by dumping of topsoil to give a mounded-up appearance to the buried soil (see below).

The Buried soil

Beneath the bank in Trench A was a layer of dark brown silty clay (36) containing abraded Iron Age and Roman pottery. It had a maximum thickness of 0.30 m. Although very homogeneous, the upper surface was not level; rather, it had a high point where Layer 32, above, had been ploughed away, and dropped away on either side. In part this layer is the ancient soil, buried when Bran Ditch was constructed, but the way in which it 'mounds up' suggests that the upper part is the upcast topsoil from the ditch, perhaps used as a marker bank (Fig. 8). The lowest 20–30 mm of the buried soil and the top of the weathered chalk below it contained many struck flint flakes of Mesolithic or Neolithic date, but no pottery.

Stratigraphically related features

Aerial photographs revealed a rectilinear ditch running round Black Peak and enclosing an area of roughly 0.4 ha (Fig. 6) with internal features. Trench A was positioned to coincide with the eastern corner of the enclosure ditch to the south east of Bran Ditch (Figs 7 and 11). This ditch (**5**), 2.5 m wide and 0.92 m deep, had fairly steep sides with a narrow, slightly concave base. The upper fills (4, 27, 30, 31, and 33), brown silty clays with a small proportion of chalk fragments, were the result of gradual silting. Feature **7**, cut by both enclosure ditch **5** and by Bran Ditch, 0.48 m wide and 0.44 m deep where excavated, contained greyish brown silty clay (6) over dark greyish brown silty clay (28). Below this was a very dark brown organic silty clay (34) containing a large fragment of soft, decorated late Iron Age pottery. The lowest fill (35) consisted of chalk fragments, probably weathered from the sides of the ditch.

Feature **3**, 1.05 m wide and 0.34 m deep, contained three fills. Fill 2, a greyish brown silty clay, may represent a post-pipe, where a post has rotted away or been removed. Fill 8, compact greyish brown silty clay and chalk fragments, appears to be packing material. Underlying this was a layer of compacted redeposited chalk.

A circular feature (**15**) (Figs 7 and 10) in Trench B was about 3.5 m in diameter and 0.9 m deep, and had steep sides which were stepped on the south-west side. The upper fill (14), 0.69 m thick, was a friable greyish brown silty clay very similar to the ploughsoil above. Below this, Fill 20, 0.21 m thick, was a greyish brown silty clay. Cut into the sides of Feature **15** were six post-holes: two (**69** and **71**) on the north west, two (**35** and **73**) on the south east; one (**24**) on the south west and one (**26**) on the north east. The fill in each case was mid or dark grey silty clay with occasional chalk flecks. All six post-holes were inclined towards the centre of Feature **15**. The stratigraphic relationship with Bran Ditch was unclear since the upper fills of both were exactly similar. Within Feature **15** there was an abundance of avian eggshell fragments which may relate to egg collection from wildfowl nests around the mere.

Molluscan and soil micromorphological analyses

A total of 15 samples were taken from the Iron Age enclosure ditch, the fills of Bran Ditch, the buried soil, and the circular pit and an associ-

Figure 11. *Bran Ditch: photograph of the Iron Age enclosure ditch from the north east (Trench A) (scale in 0.5 m divisions).*

ated post-hole. They were processed and analysed for molluscs and other macrofossils by P. Murphy (see below).

Seeds from a range of taxa from the *base* of the buried soil under the bank indicate the presence of established woodland, whilst the *top* of the buried soil contained molluscs which suggest that Bran Ditch was constructed in conditions of tall, damp grassland, and a sample from the ditch itself also indicates damp conditions, with periodic flooding. The buried soil was also sampled as an intact block and micromorphological analysis carried out by C. A. I. French (see below). It did not show any evidence of horizonation, and was probably a poorly developed rendzina-type soil with an A horizon which had developed directly on the chalk subsoil; this type of soil is usually associated with open, downland types of environment. From the base of the Iron Age enclosure ditch, the molluscan assemblage suggests that there was at least some open ground – perhaps the area within the enclosure – during the Iron Age. In short it appears that evidence from the *base* of the buried soil and from the ditch around the Black Peak enclosure represent an environment earlier than that in which the bank and ditch were constructed.

Discussion

Excavation in Trench A has shown that in this area Bran Ditch was 1.8 m deep from the surface of the natural chalk, and 5.75 m across. On the north-east side there was a berm of about 1.5 m between the ditch and the bank. The bank was 8.5 m wide at the base and during construction was revetted along its south-western side. The revetment was presumably intended to prevent the freshly excavated chalk rubble from slumping back into the ditch. That it fulfilled this function is clear from the roughly equal quantity of chalk rubble fill in either side of the ditch, suggesting that it derived from erosion of the ditch edge and not of the bank. Macrofossil analysis of these deposits suggests that open conditions prevailed. After a period of rapid erosion of the edges, the ditch may have been cleaned out once, after which it seems to have attained a stable profile. At some later date, two further recuts were made in the bottom fills of the ditch, which appear to be drainage ditches and must therefore date from a period when the original function of the ditch was obsolete. The final phase of infilling resulted in an homogeneous fill, clearly derived from the topsoil. It seems very probable that

its cause was deliberate 'ploughing-in' after enclosure. Either at this time or earlier, the bulk of the chalk rubble making up the bank must have been removed from the immediate area, as there is no evidence that it was used to backfill the ditch or that it was spread across the adjoining field.

In contrast, excavation in Trench B revealed a very different profile. Although only slightly smaller, the south-west side had a much shallower gradient and there was no sign of the steeply sloping weathering fills seen in Trench A. The combination of horizontally bedded fills and the nature of the natural chalk strongly suggest that this extreme portion of Bran Ditch was originally waterlogged. Indeed, the macrofossil assemblage shows that damp conditions prevailed, with occasional flooding from the wetland area. It seems likely, then, that the base of the ditch when constructed was close to the contemporary spring-line, with the result that the wetland area would have been contiguous with the end of the ditch. Baker's Map of Cambridgeshire (1825) shows that the springs in this area gave rise to a fairly substantial stream which flowed north-west. If this was the case in the Anglo-Saxon period, then it would have continued the line of Bran Ditch to the River Cam and obviated the need to construct an artificial barrier to impede access in this area.

The buried soil beneath the surviving remnant of bank contained many sherds of abraded Iron Age and Roman pottery, indicating a *terminus post quem* for the construction of Bran Ditch. At least some of this layer seems to derive from topsoil upcast from the ditch. Macrofossil analysis reveals that open conditions existed, and charred cereal in the soil suggests cultivation or grain processing in the area. The base of the soil and the surface of weathered chalk beneath contained many flint flakes, and may represent a Mesolithic or early Neolithic tool production surface; seeds in this portion of the buried soil have been interpreted as characteristic of wooded conditions with open areas, in some contrast to the environmental evidence derived from higher in the soil profile. The presence of a buried soil beneath the bank, along with a slight dip in the natural chalk, which afforded it protection from the ravages of modern ploughing, has resulted in the survival of useful information on the contemporary and earlier environment for Bran Ditch, and of a possible Mesolithic or Neolithic surface.

The adjacent rectilinear enclosure ditch contained an Iron Age sherd. Of the two other ditches revealed, Ditch **7**, outside the enclosure, was earlier than both Bran Ditch and the enclosure ditch but could not be dated otherwise. Ditch **3** may have had a slight curve but the length revealed was not sufficient for this to be certain. Its fills and profile suggest that it was used as a post foundation trench, perhaps for a palisade. Its date is uncertain, although it did contain a few sherds of abraded late Iron Age pottery. These features and cropmarks may well represent an enclosed Iron Age farmstead but, since they are so close to an area of springs, a ritual function is quite possible.

The excavations indicate that, at least at this northern end, Bran Ditch was constructed in a single phase when the ditch was excavated and the bank raised. There was no indication that it followed an earlier boundary, but this cannot be positively ruled out, since any evidence may have been entirely obliterated when Bran Ditch was constructed. The chance that traces of an earlier boundary may still exist at other points along the monument should not be ignored.

Brent Ditch

Ben Robinson

Background

Geology and topography

Brent Ditch (Pampisford Ditch) survives as a ditch running north west to south east for 2.3 km. The northern end has been cut through the glacial sands and gravels, which cap the Middle Chalk, on a slight rise of up to 30 m OD near Pampisford Hall (Fig. 12). It crosses a band of Middle Chalk before rising up to 80 m OD at its southern terminal, where it abuts a spur of Boulder Clay.

The northern portion is covered by the mature trees of a ninteenth-century arboretum, while the portion south of the A11 is similarly tree-covered, though with much smaller tree species. The non-scheduled section, the focus of the present investigations, was under cultivation at the time of excavation and runs from the A11 north west towards the arboretum (Fig. 13). Here the ditch is apparent as a slight linear depression (0.5 m deep), flanked by two low undulating ridges. Where the monument is tree-covered, the ditch survives to a greater depth, although there is little visible trace of a bank in these better preserved locations.

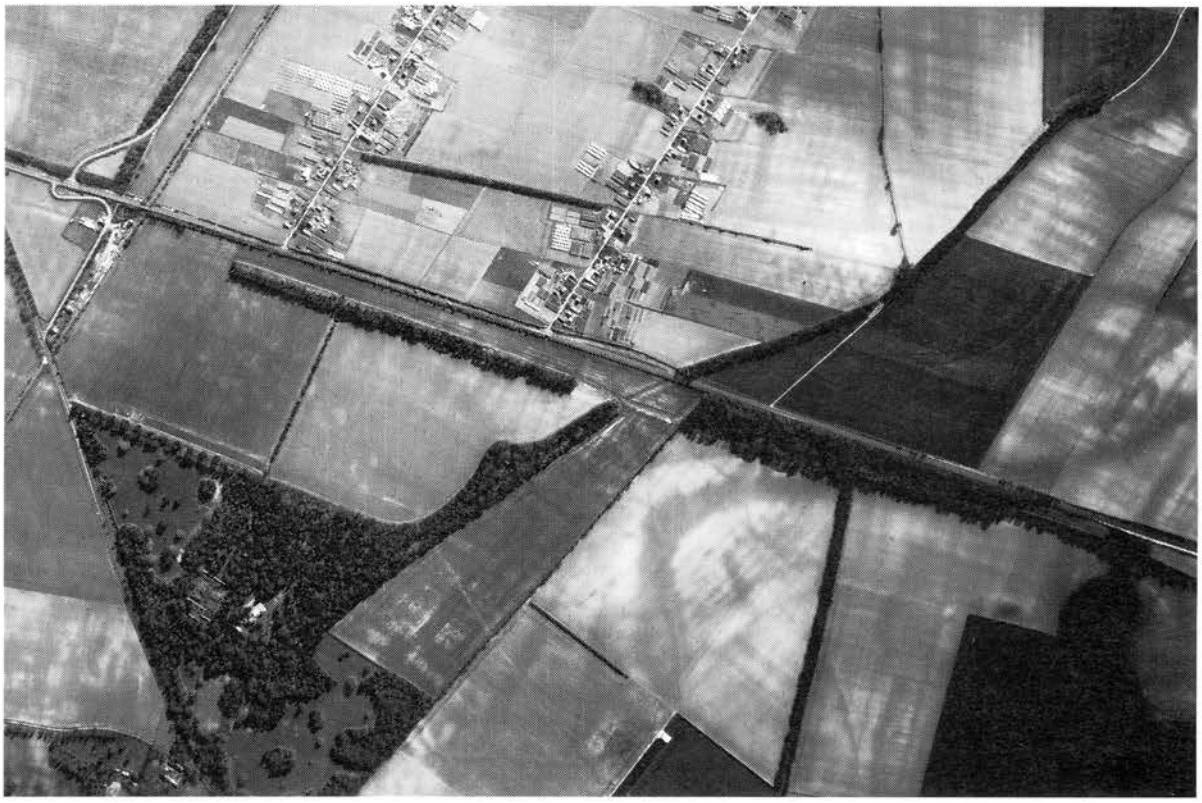


Figure 12. *Brent Ditch from the air, showing the northern end at Dickmans Grove and Pampisford Hall (bottom left), and a continuation as a curving line of trees towards the south east (top right). The recent excavations took place where Brent Ditch appears as a crop-mark joining the line of trees (centre) (Cambridge University Collection of Air Photographs RC8-BS-34, April 1977; copyright reserved).*

Previous work

Fox's investigation of Brent Ditch was limited to the examination of a small trial hole, and was never followed up by further excavation (Fox 1923a: 130). Fox noted that there was no definite bank along the length of the monument, but instead slight ridges bordering both sides of the ditch. He also mentioned that a 450 yard (400 m) portion of the ditch, which formerly continued to a spring at Dickman's Grove, north west of Pampisford Hall, had been destroyed (*ibid.*: 126).

A section of the ditch 400 yards (350 m) to the south east of the hall was exposed by excavations for a gas pipeline in 1968 (Taylor 1969; see Fig. 13). The section revealed that the ditch was 2 m deep and flat-bottomed, and had gently sloping sides with well marked ledges near the top. Its fill mostly comprised a dark brown loam with chalky lumps, although a lens of sand and gravel was apparent near to the surface. A small remnant of the bank had survived on the north-east side (less than 1 m in height), and this sealed a buried soil. A small undated ditch had been cut through the buried soil and was also sealed by the bank material. No artefacts were noted either in the buried soil or in the ditch deposit (Taylor 1969: 30) and consequently no secure dates for the construction of the ditch were obtained.

Brent Ditch is now cut by the A11, which is presumed here to follow the line of a Roman road (Margary 21B) emanating from Great Chesterford (Margary 1967: 24; but see Penn and Wait on Worsted Street, below). A slight cutting and embankment for the very short-lived Great Chesterford to Newmarket Railway (Joby 1977) bisected the monument a few hundred metres to the north of the A11.

The north-west portion of Brent Ditch (to the west of the A11) is within Pampisford parish; the remaining portion is in Great Abington. That part of Pampisford parish bounded by the A11 and A505 was agricultural land farmed in open fields until parliamentary enclosure in the early nineteenth century when Pampisford Hall and surrounding park was constructed (VCH VI:

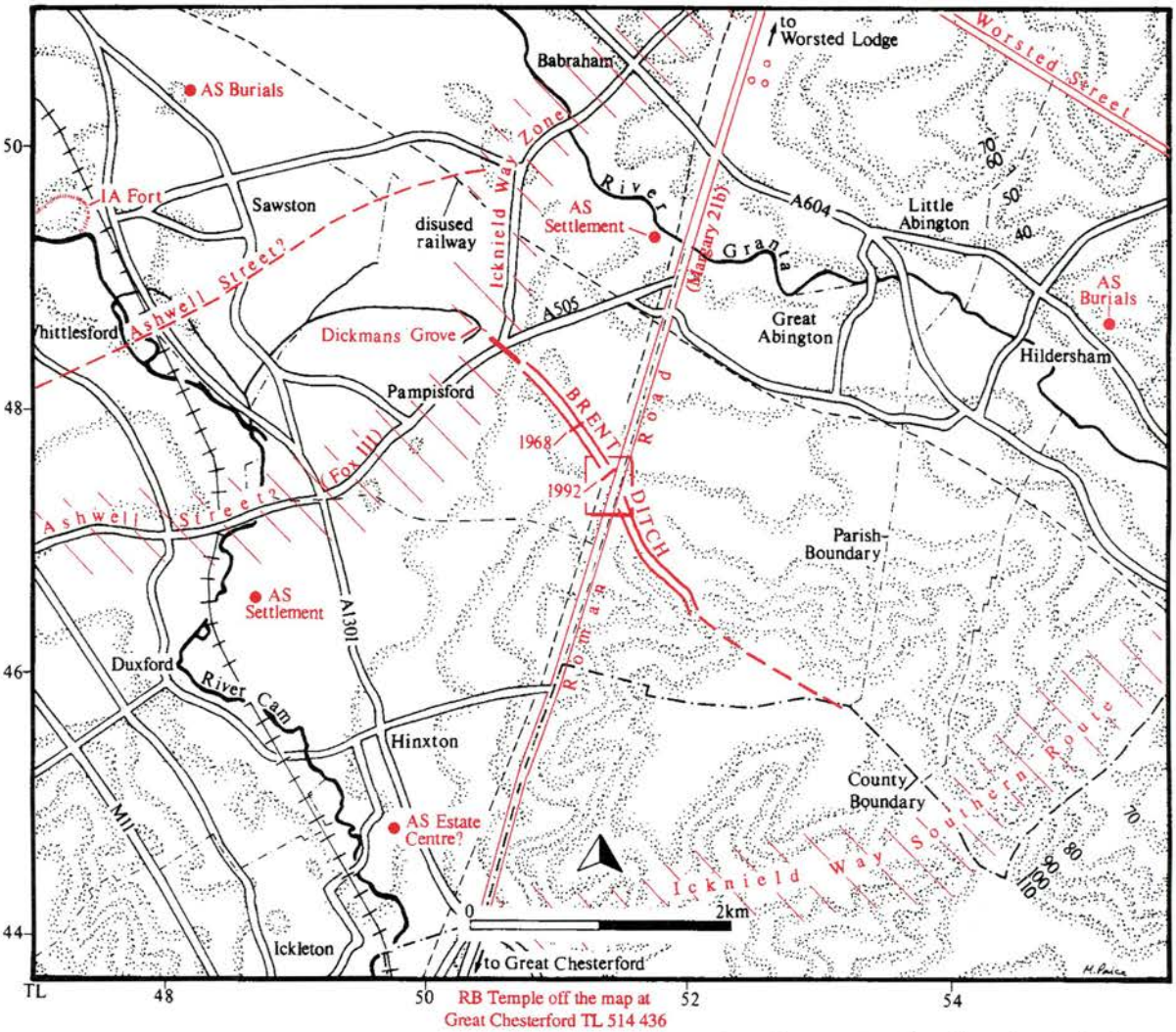


Figure 13. *Brent Ditch: location map, showing previous work and associated archaeological sites.*

105–107). Brent Ditch, known as the 'Green Ditch' just prior to enclosure, probably formed the boundary between Branditch Field and Middle Field (Mayo 1985: 21), which together with Mill Field and the less important Down or Dean Field, comprised the open field pattern established by the fifteenth century (VCH VI: 108). Further medieval references to the earthwork include mention of tenants 'Thomas in Dich' and 'Maud in Dich' in the Chilford Hundred Court Rolls (VCH II: 37). Ditch Field, one of Great Abington's three open fields in 1600 (VCH VI: 10), was presumably also named after Brent Ditch.

At the time of enclosure, Brent Ditch extended to the Royston to Newmarket turnpike road (A505) and a large clunch pit had been excavated close to the monument within 200 m of the road. The clunch pit, as depicted by the 1880s Ordnance Survey map of the area (LIV.12), appears to have encroached on the monument. The approach drive to Pampisford Hall was apparently constructed on the line of the ditch. On the 1880s OS map, the ditch is not marked to the west of the turnpike road, at 'Brent Ditch End'. Its former presence here, however, is suggested not only by the name but also perhaps by a boundary ditch leading across Dickman's Grove, which might preserve its line.

Site specific aims

Although the other Cambridgeshire Dykes have all been subject to some systematic excavations over the last seventy years, Brent Ditch, with the exception of a single recorded section and trial hole, has remained largely undisturbed. Consequently, little was known, although a great deal about its nature and origin was assumed by association with the other Dykes. The campaign described below was designed to fol-

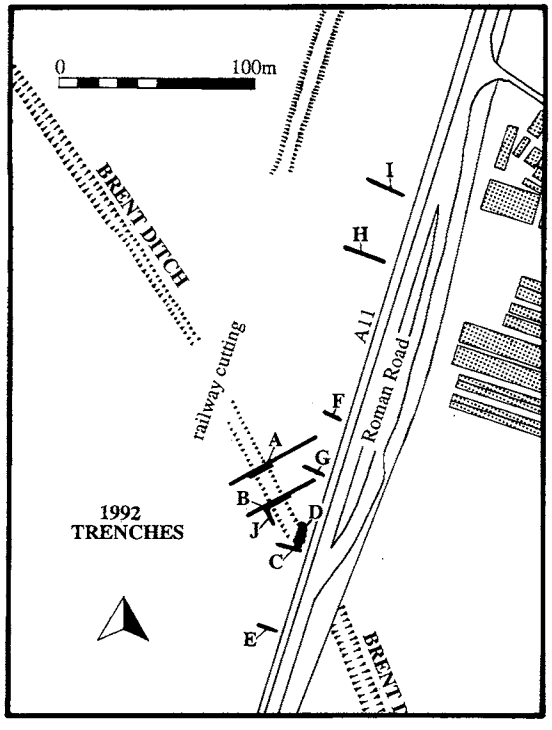


Figure 14. *Brent Ditch: location of the 1992 trenches.*

low the main research aims of the overall Dykes project and specifically to establish whether a bank existed in this area and on which side it was constructed. It was also hoped that a section could be excavated close enough to the A11 to be able to locate the Roman road and to establish the relationship between ditch, bank, and road surface.

Strategy and methods

The segment of Brent Ditch examined was adjacent to, and to the north of, the old A11 (Figs 13 and 14), on the Pampisford Hall estate (TL 5145 4753). Road widening created the opportunity to conduct a controlled excavation during August 1992, backed up by observation as roadworks progressed during summer and autumn 1994.

Two complete sections were investigated to lessen the possibility of obtaining unrepresentative information. Topsoil was removed by mechanical excavator over the ditch and in open areas to either side, and then archaeological deposits were excavated by hand. As in Trench A at Bran Ditch, wide steps were dug in the upper ditch deposits in order to ensure safety and facilitate working at depth lower down the profile. The hand-dug slots (1 m wide) were excavated in plan by mattock and trowel from just below the modern ploughsoil to the base of the ditch in two sections, and fills were dry sieved with 5 mm meshes to recover small artefacts.

Soil samples for molluscan analysis (2 kg dry weight) were taken in Trench B in a column from the ploughsoil to the base of the ditch, avoiding fill interfaces (Fig. 22), but macrobotanical samples were not taken, as concentrations of suitable charred material were not encountered. The oxidised nature of the ditch fill ensured that there was no chance of encountering preserved ancient organic material or pollen. The absence of a remnant of bank or buried soil meant that there was no opportunity for soil micromorphological analysis.

Results

Trench A

The location of Trench A was chosen in order to investigate the position at which the slight ridge on the north-east side of the ditch (possible bank remnant) was at its most pronounced (Figs 15 and 16). The trench ran south-west to north-east, perpendicular to the line of Brent Ditch. Over the width of the ditch, and a little to each side, the trench was expanded to allow for a wide-stepped section. This also allowed a good length of the ditch edge to be examined for post-holes, palisade trenches or any other associated features which might form part of the monument.

The composite section was made up of two sections offset by a 1 m step (Figs 17 and 18). A trial trench across the slight ridge at the north-east edge of the ditch proved that it was a natural chalk undulation, and not a remnant of bank.

The earliest layer (27) was solely composed of large, loose, tabular lumps of chalk which rested on the flat base of the ditch (Fig. 18). No 'trample' deposits were recognised below the chalk rubble. Consecutive layers of fine and coarse chalk flecks and lumps were visible, within the general trend of decreasing size of chalk inclusions as the ditch fills accumulated. Observation at Overton Down experimental earthwork, also dug into chalk, has established that such a pattern results from the differential, seasonally influenced weathering of the ditch sides (Jewell and Dimbleby 1966). Over time, these deposits become progressively more mixed in a greyish brown silt matrix; discrete layers were much less easily identified towards the top of the basal deposits of Brent Ditch, where they become progressively thinner and more compact.

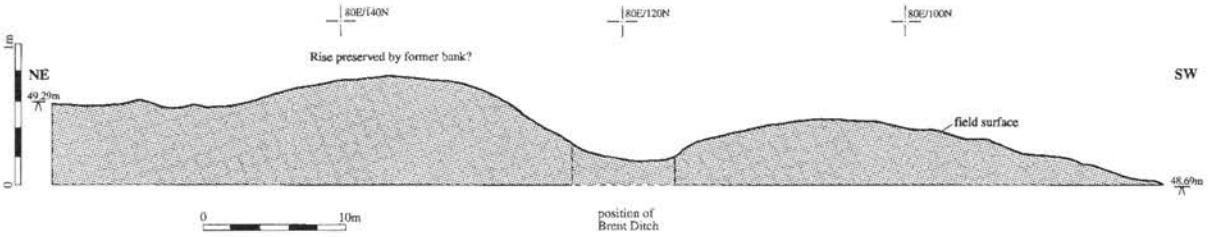


Figure 15. *Brent Ditch: pre-excavation profile of Trench A with exaggerated vertical scale, showing possible position of bank as a natural ridge to the north east.*

Figure 16. *Brent Ditch: photograph of Trench A from the south west, showing the natural ridge in the chalk to the north east (background).*

Contexts 16 and 13 define the profiles of the natural stabilisation of the ditch and seal the initial accumulation of chalk rubble deposits. The upper interface of these deposits formed a gently rounded and symmetrical profile in the centre of the ditch. This suggests that the weathering was equal on both sides of the ditch and, further, that the chalk rubble had derived from the ditch sides and edge, rather than from a bank on one side or the other. If a single bank was indeed all that was present (and the evidence from Taylor's section and Trench B suggests this is the case), a wide berm must have existed between it and the ditch in order to have prevented weathered material from the bank skewing the symmetry of the lower fills.

Deposits 8, 10 and 12, and the layers above, seem to have resulted from ploughing in. The presence of clay pipe-stem fragments in these fills indicates a post-medieval date, although intrusion due to burrowing animals cannot be ruled out entirely. Deposits 4 and 14 were very distinct, being much less chalk-flecked than the overlying fills, and Deposits 11 and 15 were fine chalk rubble tip lines. A clay pipe-stem and small fragment of willow-pattern pottery indicate that the above fills had not accumulated before the post-medieval period. Deposit 5 was much less compact than surrounding deposits

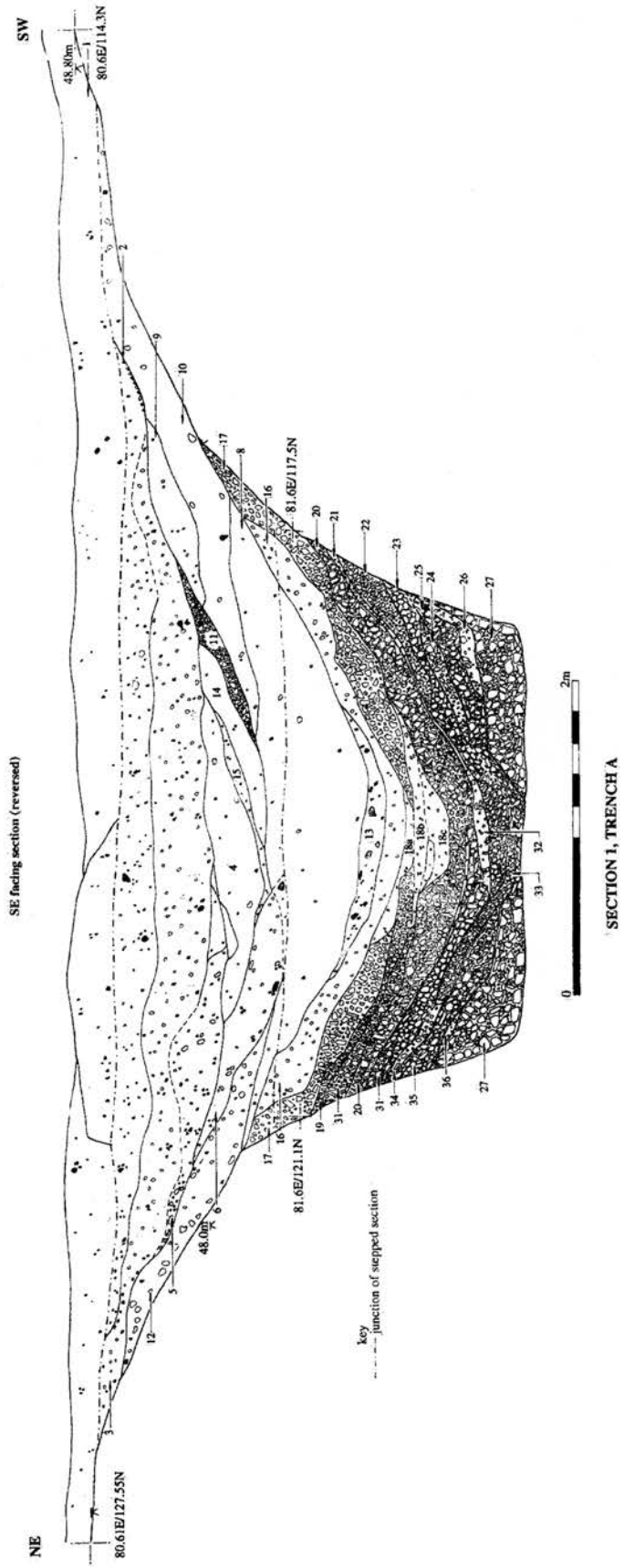


Figure 17. *Brent Ditch: south-east facing section through the ditch (Trench A).*

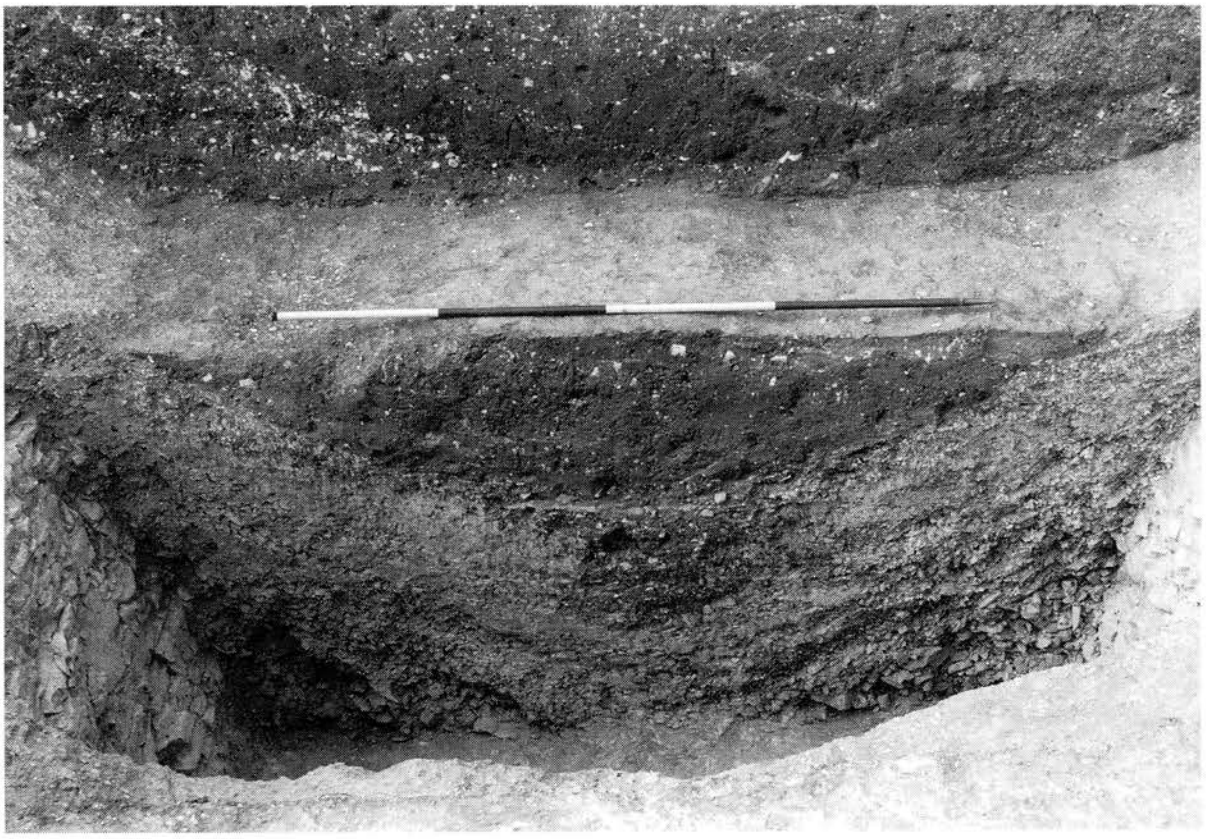


Figure 18. *Brent Ditch: photograph of the south-east facing section through the lower fills of the ditch (Trench A) (scale in 0.5 m divisions).*

and probably represents an area disturbed by animal burrows. Discrete burrow holes were evident in both sections down to the level of the basal weathered chalk deposits.

The modern plough-soil (1) directly overlay natural chalk. Regular deep-ploughing score lines (up to 50 mm deep) were visible on the surface of the chalk. Plough-soil had accumulated in the top of the depression over the ditch and had become compacted as Deposit 2. This layer contained clay pipe-stems, modern glass, and a very abraded Romano-British potsherd. Deposit 3 seemed to be similarly derived and contained similar modern inclusions. Deep plough score lines were apparent at its surface.

The section showed that the ditch was over 2.8 m deep, and had steep, convex sides which met the flat base (2.6 m wide) with a sharp break of slope. The convex sides, I would suggest, are a result of erosion rather than a true indication of the original profile of the ditch. A steep straight-sided ditch cut through the weathered upper interface of thinly bedded Middle Chalk would be prone to severe weathering. The transformation of an original sharp break of slope at the top of its profile into a more gentle or rounded break of slope would be a natural consequence of such weathering.

Trench B

A single section, 1.5 m wide, was dug from the base of the plough-soil to the bottom of the ditch. Both of the resulting composite sections were recorded. Overall, the fills encountered were generally analogous to those observed in Trench A; however, some differences were noted.

Deposit 110 corresponded to Deposit 16 observed in Trench A and seals the chalky initial weathering fills (Figs 19 and 20). The angle of repose of the basal rubble deposits followed a natural gradual decrease as they accumulated. There was no sign of recutting or ditch cleaning in any of the recorded sections. Deposit 129 was very loose amongst quite compact deposits and may have resulted from tree root or animal disturbance. The upper deposits of the ditch in this area (Fig. 21) corresponded to those revealed in Trench A, and were similarly dated, by small potsherds, brick or ceramic drain fragments, clay pipe-stems and glass, to the post-medieval and modern periods. Deposits 106

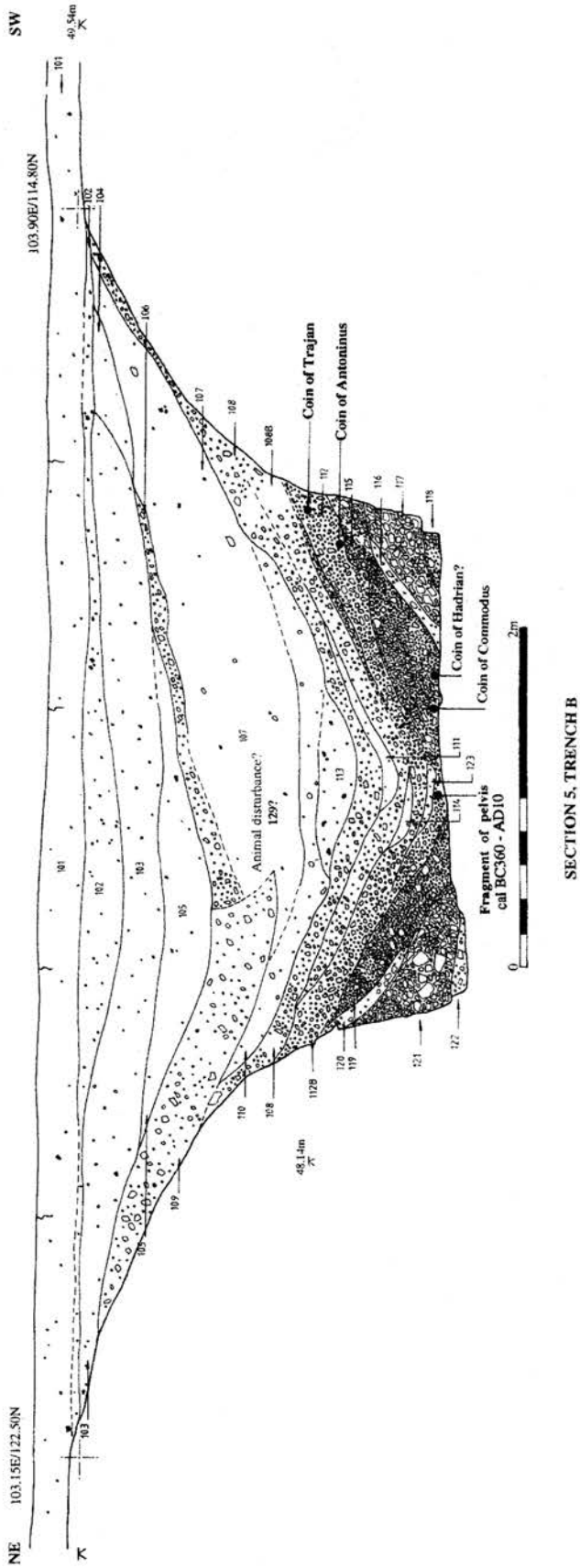


Figure 19. *Brent Ditch: north-west facing section through the ditch (Trench B).*

Figure 20. *Brent Ditch: photograph of the north-west facing section through the lower fills of the ditch (Trench B) (scale in 0.2 m divisions).*

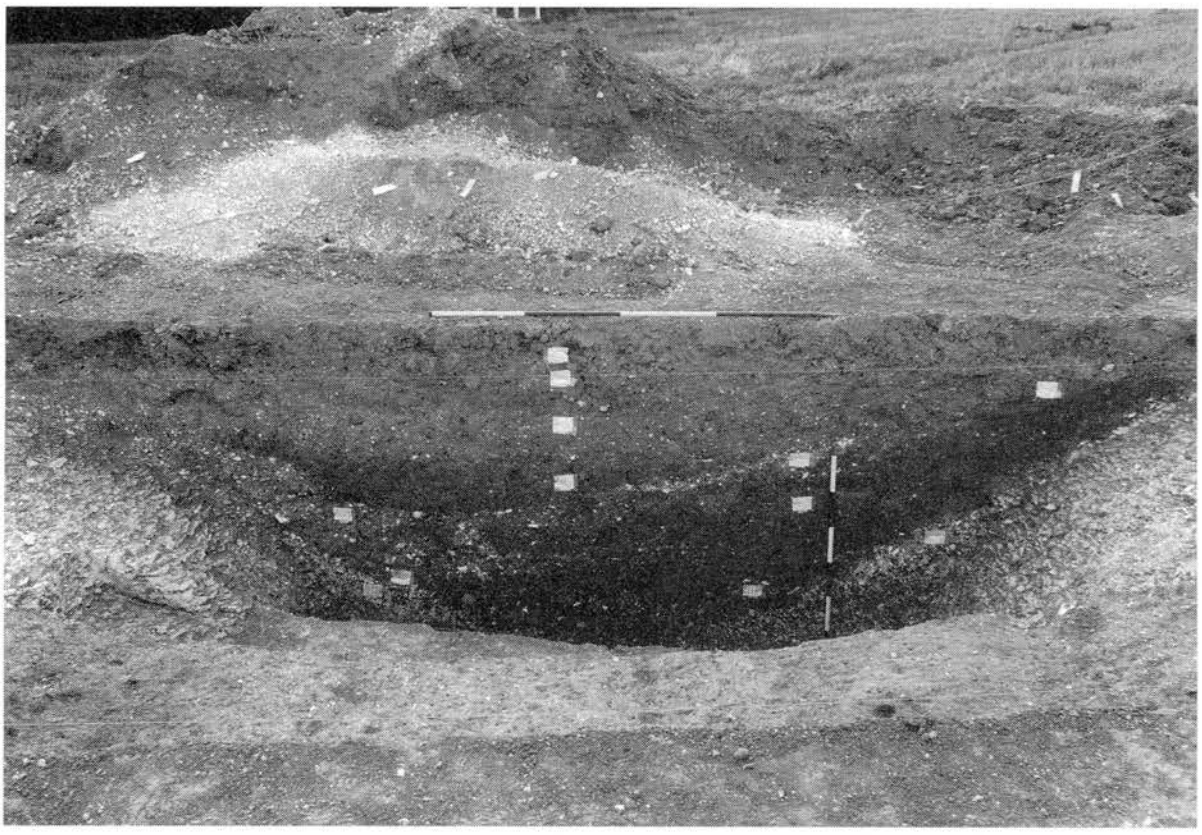


Figure 21. *Brent Ditch: photograph of the south-east facing section through the upper fills of the ditch (Trench B) (horizontal scale in 0.5 m divisions; vertical scale in 0.2 m divisions).*

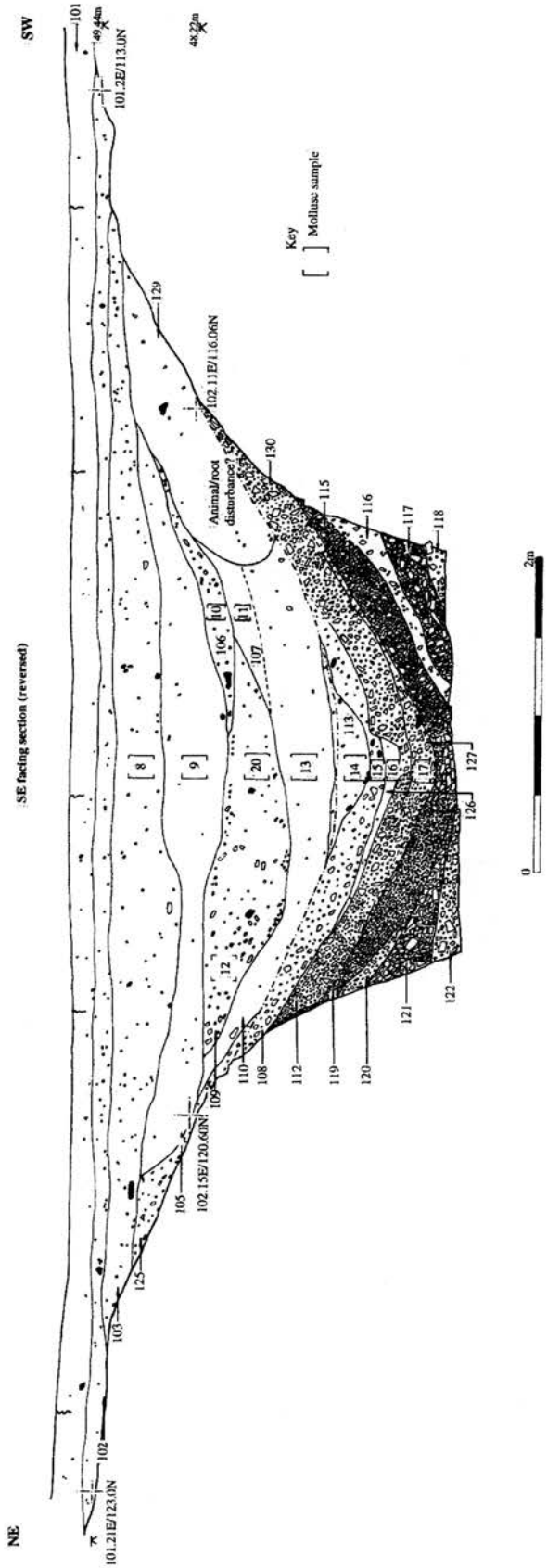


Figure 22. *Brent Ditch: south-east facing section through the ditch, showing location of soil samples (Trench B).*

and 109 were not, however, paralleled in the Trench A sections. Both contained larger and more frequent chalk lump inclusions than all other deposits, with the exception of the basal rubble layers. These deposits probably resulted from deliberate dumping, rather than the natural erosion and gradual accumulation exhibited by the other deposits. It is possible that they derive from the slighting of a bank, though there is not sufficient redeposited chalk material to suggest that anything but a part or remnant of a chalk bank was deposited in the ditch.

The section revealed that the ditch retained the shape noted in Trench A but was approximately 0.4 m shallower. The possibility that the decreasing depth of the ditch as it approached the presumed Roman road indicated the presence of an original causeway was tested as far as was possible by the rapid excavation of a third trench (Trench D, see below).

Dating

Five coins were recovered from Fills 112 and 115, near the north-west facing section of Trench B (Fig. 19): a *dupondius* possibly of Hadrian (AD 117–138), a *sestertius* of Commodus (AD 180–192), a *sestertius* of Marcus Aurelius (AD 161–180) and two *sestertii* of Trajan (AD 98–117). Such second-century coins may have been in circulation up to the mid-third century, although the minimal wear on the later coins suggests that these examples were taken out of circulation around the beginning of the third century (K. Butcher, personal communication). It is conceivable that, despite their recovery from different (though adjacent) deposits, the coins originated from a single source, for example a grave or hoard, and were separated only by post-depositional influences such as animal burrowing or during the settling of the rubble deposits.

If we accept that, based on experimental work at Overton Down, these substantial basal rubble deposits had accumulated within a very few years of the construction of the ditch, then the coins suggest a somewhat surprising late second or third-century AD origin for the monument. However, a fragment of human pelvis, radiocarbon dated at 95% confidence to 360 cal. BC–cal. AD 10 (OxA-4065: 2105±55 BP), was also recovered from the basal chalk rubble deposits (Fig. 19). The Iron Age date for this find suggests there is residual material present. The coins may therefore also have been displaced during the construction of the ditch from a much earlier feature or deposit, such as the Roman road, and gone unnoticed by its builders. Trench J (Fig. 14) was opened to further investigate the lip of Brent Ditch in this area, and to establish whether there were any nearby features from which the finds might have derived. No features were found in close proximity to the ditch edge in this location, which does suggest that the coins are indeed a relatively secure indication of the monument's date. On the other hand, the presence of the earlier human bone indicates a possibility that all the dating evidence derived from features or horizons which were subsequently destroyed.

Stratigraphically related features

Trench C was opened in order to test for the presence of road ditches or field boundaries connected with the presumed adjacent Roman road (Fig. 14). A narrow linear ditch (**150**) which ran parallel to the A11 was encountered and excavated, and proved to contain two very small and abraded Romano-British(?) potsherds, but no other datable material. Further trenches were opened to test the continuity and alignment of the ditch, and to allow the excavation of further sections from which to extract datable material. The ditch was encountered in Trench D (Fig. 14), the section demonstrating that it pre-dates Brent Ditch. Unfortunately, the only feature apparent on the other side of Brent Ditch was an undated gully of differing alignment. Trench G gave similarly negative results. An undated ovoid feature (post-pit?) was sectioned in Trench F, and a modern(?) gully in Trench H. Trench I also failed to pick up ditch **150**.

Mollusc samples (see Murphy, below)

A discontinous column of samples was taken from the ditch fills in Section 4 (Fig. 22) with additional topsoil samples from Section 5 (Fig. 19). From the possible road ditch in Trench C two samples were examined. The samples consistently produced assemblages of low species diversity and it appears from the mollusca present that open conditions persisted throughout the period of ditch infilling with no evidence for any phase of stable vegetational cover or scrub growth. Some scraps of mussel shell in the samples may be related to nearby domestic activities.

Discussion

The ditch was originally around 3 m deep, 2.6 m basal width and over 4.5 m wide at the top (projected original width), with a very regular,

steep-sided, flat-bottomed profile. No structures suggestive of an earlier constructional phase or a palisade were observed. There is no evidence that the ditch was ever cleaned out or recut, and consequently it lost its sharp profile, and presumably much of its efficacy as a physical barrier, a few years after construction. A sufficiently wide berm must have existed between any single bank and the ditch in order to have prevented eroded material from skewing the accumulation of basal deposits. Although no bank was found to have survived on either side of the ditch, the profile of the ground surface recorded in Trench A, before excavation (Fig. 15), shows that the ditch was dug into a natural chalk undulation creating the effect of the flanking ridges observed by Fox. The higher part of the undulation is to the north-east side of the ditch and logically this should have been exploited for the foundation of the bank. This would be consistent with the evidence for the slighting of a bank remnant, seen in Trench B, and conforms with the evidence for a bank from Taylor's (1969) section; it is therefore reasonable to infer that a bank had once existed in this position. Indeed, where else would the material removed to construct the ditch have been put, except in a bank?

Ditch silting processes were seen to be essentially similar in each of the exposed sections, with the exception of the evidence of slighting in one trench. On the other hand, Taylor's (1969) section was free of chalk rubble and clearly demonstrated a different sequence of deposition. The sequence excavated in 1992 began with natural erosion from the exposed chalk edges of the ditch and culminated with the accumulation of washed-in and ploughed-in silts. The molluscan evidence suggests that the ditch sides and edges were never successfully stabilised by vegetation, and a large amount of chalk rubble accumulated in the base of the ditch early in its existence. Whilst it is clear that much of this derived from natural weathering processes, it is possible that human activity such as cultivation, movement along the nearby road, or even intensive grazing, served to increase erosion during its pre-medieval life.

If we accept that there was indeed a single bank only, and it was on the north-east side of the ditch, most of it must have been deliberately removed before many of the ploughed-in silts had accumulated. Some of the bank may have been quarried away as ballast for the nearby road, as happened to Devils Dyke at Swaffham Prior where it is crossed by the Burwell road (Robinson 1992). Alternatively, the navvies constructing the nearby railway embankment during the 1840s (Joby 1977) might have found it a tempting source of material.

It is possible that the fragment of pelvis and Roman coins are residual and do not reflect the date of the monument's construction (other than providing a reasonably secure *terminus post quem* of the late second century for the excavation of the ditch). The small ditch observed in Trenches C, D and E was discontinuous and is therefore unlikely to have been a roadside ditch, but it appears to run parallel to the A11 (and thus the presumed Roman road) and may represent a boundary connected with it.

Worsted Street Roman Road

Tim Malim, Ken Penn and Gerald Wait

Background

Geology and topography

Worsted Street, as represented by Wort's Causeway, runs nearly west to east towards Wandlebury and the War Ditches, before turning south east as the main line of Worsted Street to run along the top of a chalk ridge in the direction of Haverhill (Fig. 1). Southwards from its junction with the A11, Worsted Street becomes gradually less straight, though still very regular (Fig. 23). For most of its course it lies over a natural chalk subsoil, until Boulder Clay is reached near Horseheath. In the past, this earthwork was considered to be one of the Cambridgeshire Dykes (e.g. by Hughes 1904), with which it has many similarities in alignment and topographic location, and it therefore became the focus of one of the first campaigns of Dyke excavation in 1921 (Fox 1923b: 21–27).

Worsted or Wool Street (perhaps named after a medieval landowner as suggested by Dewhurst 1964: 56, but see also Reaney 1943: 31–33) is a Roman road (Margary 24) which survives today as a green way about 10 m wide overall, occasionally with a raised bank (*agger*) up to 2 m above the level of adjacent fields (Fig. 24). It is clearly of Roman character in the north-west stretch; in the nineteenth century it was suggested that it was part of a major route from Colchester to Chester (*Deva*), and the name *Via Devana* was coined for it. The system of Roman roads in Cambridgeshire is discussed by Fox (1923a), and later by Wilkes and Elrington (VCH VII: 15–29), who include the results of excavations and dating evidence for Worsted Street, but nonetheless the pattern of Roman roads around Cambridge is still imperfectly understood. It is clear that Akeman Street ran in from Sandy to the south west *via* Arrington (Margary 23a) and continued to Ely and Denver to the north east (Margary 23b), while the modern Huntingdon Road follows the line of '*Via Devana*' north-westwards (Margary 24), meeting Ermine Street at Godmanchester.

Figure 23. *Worsted Street from the air, looking south-east from the Worsted Lodge area (note the increasingly irregular line taken by the road to the south east) (photo: Ben Robinson, 1991).*

Figure 24. *Worsted Street: looking north-west from Trench 1 with the top of the* agger *visible in the cut section (1991).*

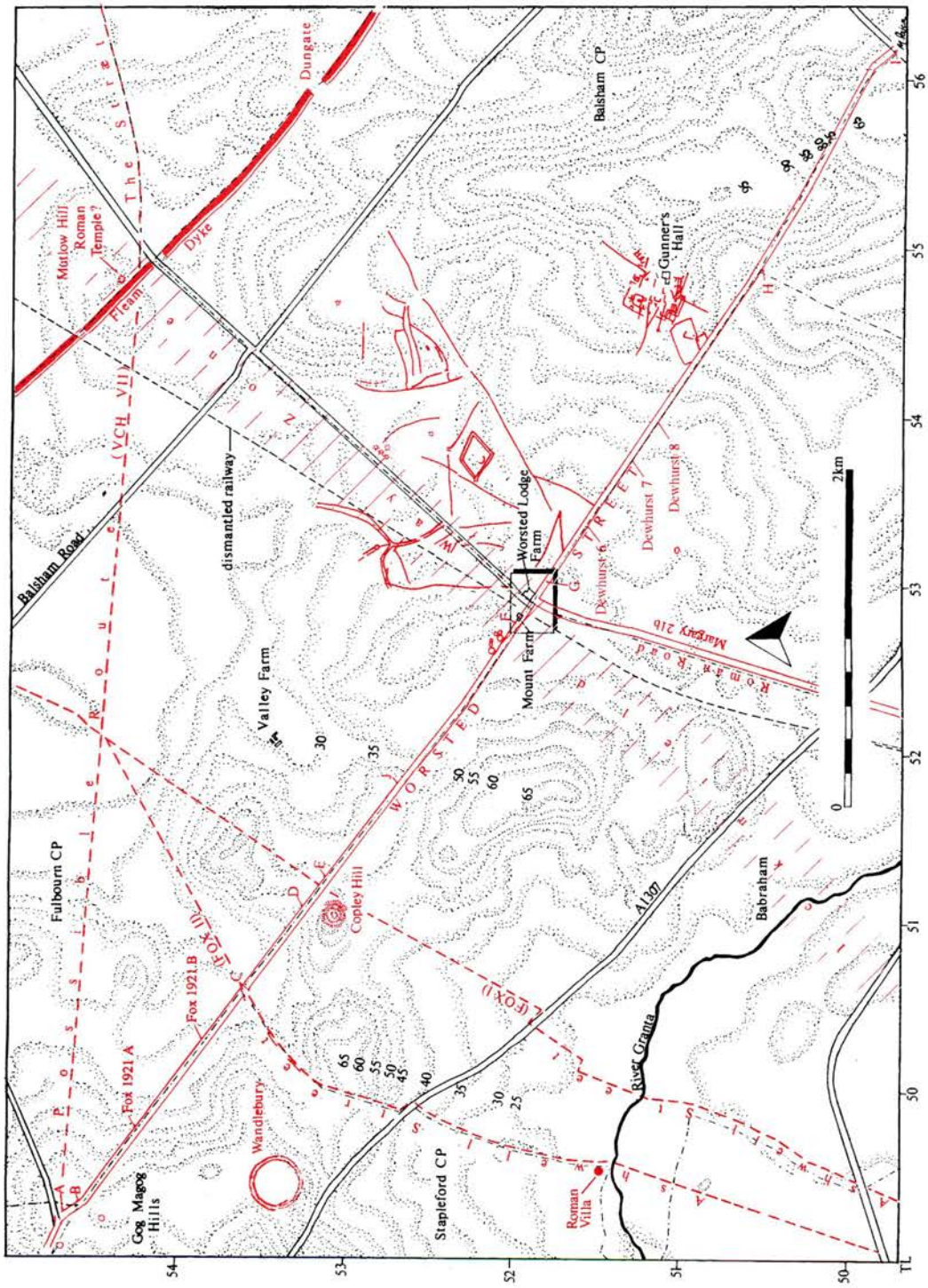


Figure 25. *Worsted Street: location map, showing the position of watching briefs (A–J) and associated archaeological sites and routeways.*

Worsted Street would therefore make a sensible continuation of this latter route to the south east, with the Roman town at Cambridge acting as a crossroads for these major roads, and Roman burials have been found in the vicinity of Cambridge alongside each of these roads (except Worsted Street) (Taylor 1993). However, a continuation of Worsted Street (Wort's Causeway) directly into the Roman town has not yet been proved; instead most authorities include in the road system a deviation along Wort's Causeway, itself probably the western end of a route that came in from the east via Mutlow Hill (Fox 1923b: 33; Lethbridge 1958: 2; VCH VII: 28), which would connect with a crossing of the Cam at Grantchester (Fox 1923a, map IV; VCH VII, 18). A Roman road along this alignment was not identifed by excavation in 1993, when the hypothesis was investigated archaeologically (Kemp 1993: 21–23; Site 4 Trench A), although soilmarks which appear to be a road have been seen from Addenbrooke's Hospital (personal communication). Excavations by Walker (1910) in the grounds of the Perse School revealed remains of a possible Roman road made of chalk with a gravel and chalk metalling; this road was once visible 'as a ridge' on its route to Red Cross to connect with Wort's Causeway and may therefore form the continuation of Worsted Street towards the Roman town. Further work at the Perse School in 1952 failed to confirm the earlier observations (VCH VII: 18) although it appears that this investigation was not actually on the line of the Roman road (Leith 1996: 1, 5).

Previous work

Previous archaeological work includes a section across Worsted Street near Horseheath, dug in 1910, which revealed a road (about '12 feet wide') composed of layers of chalk, clay and gravel, with flint and stone metalling. Although the date of this was not certainly Roman, it had at least one side ditch, one of which (the west) contained objects of Roman date (Walker 1910: 162, n.1). In 1921, Fox excavated two sections across Worsted Street, one near Gog Magog Hills, and the other 675 m to the south east, which revealed an *agger* with several layers, including chalk foundations over the old ground surface, with a final gravel metalling, but found no flanking ditches (Fox 1923a: 129; 1923b). Fox also noted that the line of the Icknield Way passed just to the north of the A11 junction at Worsted Lodge (Fig. 25).

Further work was carried out in 1959 by Dewhurst, who observed the construction of a gas main which was laid along Worsted Street from Gog Magog Hills to Haverhill, and recorded the character of the road at 24 places (1–24) along its length, a distance of 16 km (Dewhurst 1964). The gas main lay mostly within the road, but not at its centre. In the north-west stretch, 140 m north-west of Worsted Lodge (his Section 4) and close to 1991 Trench 1, the road comprised a foundation of chalk (0.3–0.5 m) over the old ground surface, capped with gravel, about 0.6–0.9 m in total thickness, and was flanked by ditches about 13–14 m apart. The metalled surface was some 2.5 m in width. Dewhurst recorded sections of the road south-east of Worsted Lodge at 5 (see Fig. 26), where he saw that the chalk continued (his Fig. 4), and at his Point 6, where he saw chalk foundation over turf with a gravel metalling (his Fig. 5). At Worsted Lodge he saw no trace of a 'Roman A11', but suggested that a thinning of the chalk foundation just to the north west marked the passage of the Icknield Way across Worsted Street, apparently confirming Fox's conclusions about their junction.

Further to the south, beyond Worsted Lodge, the *agger* and the present track did not always coincide precisely. Although the *agger* continued south-east of the Lodge, it became intermittent and irregular, appearing last in his Section 15 at TL 584 488, 6.5 km from Worsted Lodge (his Fig. 7). At 660 m south-east of Worsted Lodge (Dewhurst's Point 7) he again recorded a chalk foundation over a buried soil with a gravel metalling (Plate IVb). At 800 m south-east of the Lodge, he found coal sealed beneath the gravel metalling at Point 8, which suggested a date after the first century for construction, after the foundation of the fort at Cambridge. The road changed character in his 'Transitional Half-Mile', with the *agger* and side ditches intermittent there, and the course thereafter erratic.

Dewhurst suggested that Worsted Street was a local road, possibly pre-Roman in origin, intended to continue to Horseheath, but only completed in full Roman fashion to Worsted Lodge, and thereafter reduced in character, perhaps even during construction. He noted that the chalk overlay the buried soil throughout (Dewhurst 1964: 45).

Strategy and methods

During August 1991, excavations were conducted in order to record Worsted Street before damage from road widening and associated

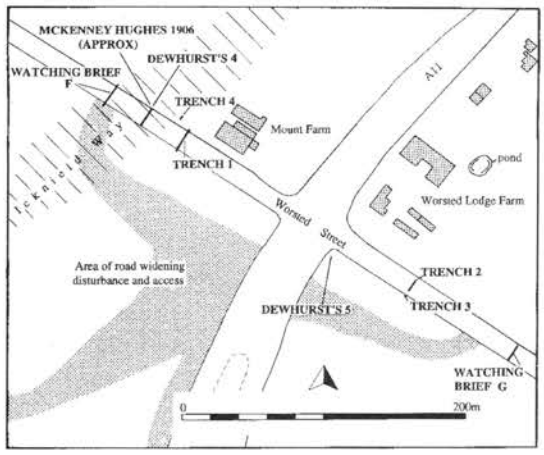


Figure 26. *Worsted Street: location of 1991 trenches.*

works for the present A11. The actual junction of Worsted Street and the A11 (presumed Roman road 333) could not be investigated, and four trenches were therefore laid out to either side of the junction. Trenches 1 and 4 to the north west, and Trenches 2 and 3 to the south east (Fig. 26). Access to farm entrances made a single full section impractical, and a complete section across Worsted Street north-west of Worsted Lodge was achieved by laying out two staggered trenches (1 and 4), so that the Roman metalled surface and both side ditches would be encountered. After initial machine excavation of the upper layers, excavation proceeded by hand. Samples for environmental analysis were taken from buried soils.

Trenches 2 and 3 were located on the south-east side of the A11 junction, to allow the examination of Worsted Street in its south-eastern stretch. Dewhurst had noted that the present track lay to one side of the Roman road, so that the south-western ditch lay 8 m into the field, and the north-east ditch lay under the centre of the track (Dewhurst 1964: Fig. 3). Trench 2 lay across the centre of the track, and Trench 3 over the likely location of any south-western ditch. This trench was necessarily restricted in size, and field observations were therefore ambiguous at some points.

A field walking and auger survey was undertaken along the line of Worsted Street to the south east of the A11 junction, and a record made during a watching brief on the digging of holes for gates and barriers at several places along Worsted Street, on behalf of South Cambridgeshire District Council (Fig. 25: A–I).

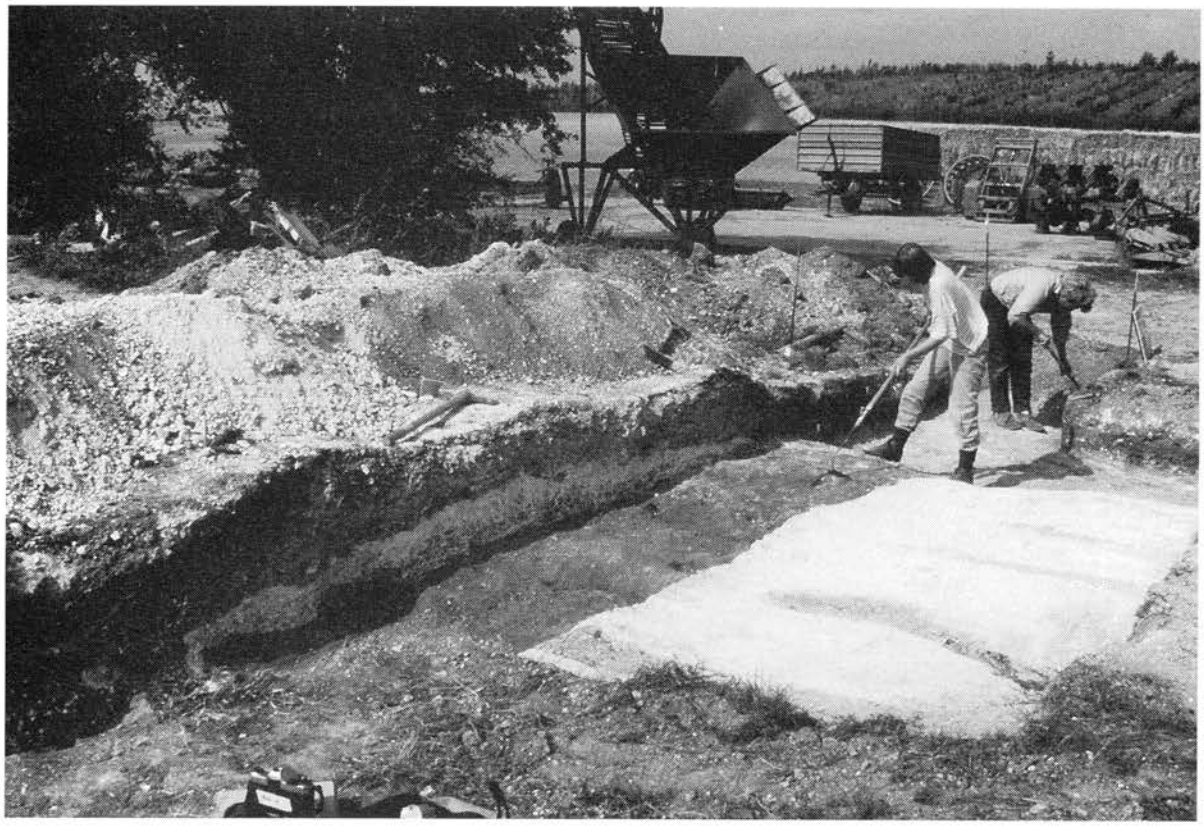


Figure 27. *Worsted Street: photograph of the south-east facing section through the Roman road (Trench 1).*

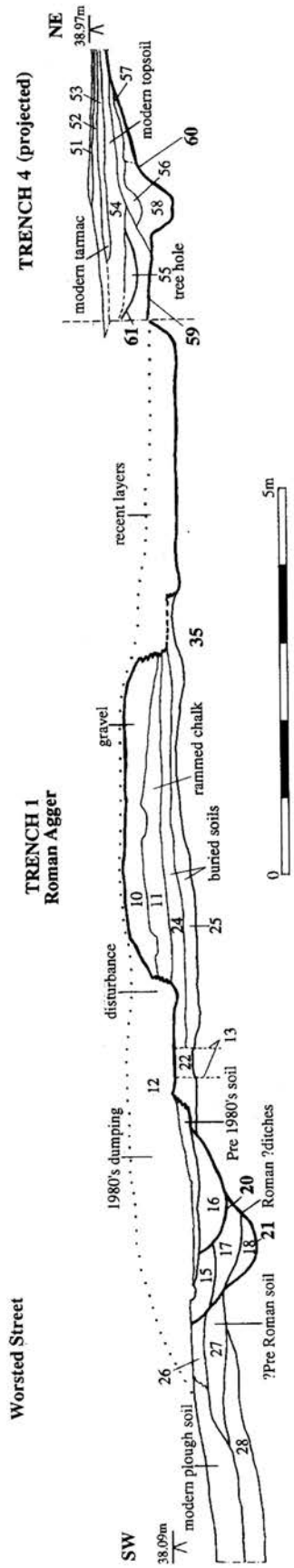


Figure 28. *Worsted Street: south-east facing section through the Roman road (Trenches 1 and 4).*

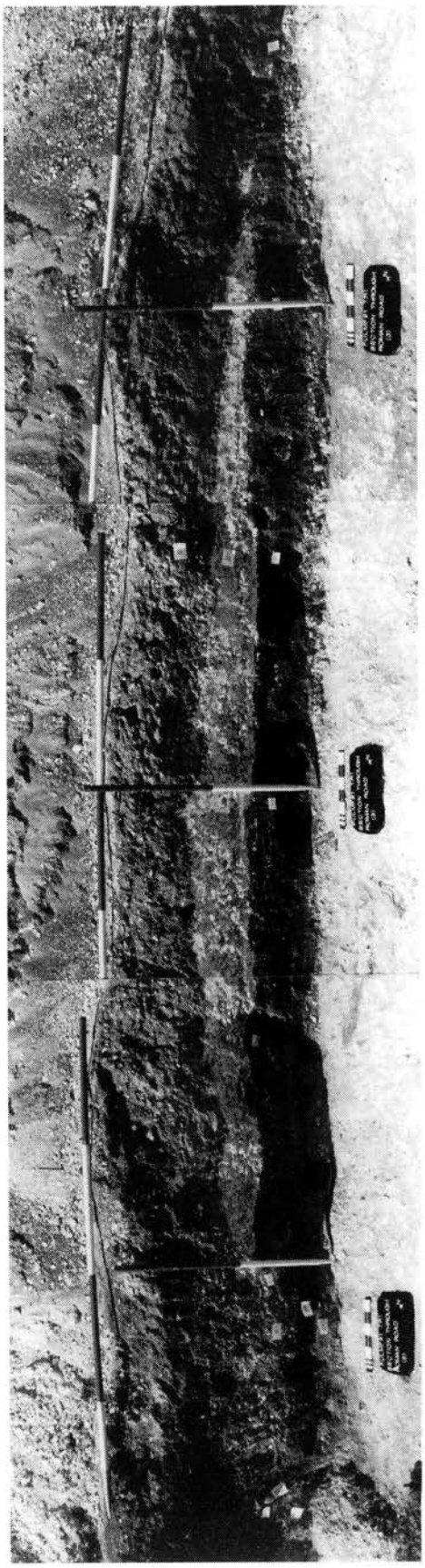


Figure 29. *Worsted Street: composite photograph of the south-east facing section through the Roman road (Trench 1), showing gravel metalling on top of rammed chalk above the buried soil (scale in 0.5 m divisions).*

Results

Trenches 1 and 4

In Trench 1 the Roman road was overlain by recent (1980s) massive dumping on the south-west side (contexts 2, 5, 12 and 23) and by modern build-up (7, 8 and 9) on the north-east side. Below this, the road and its flanking ditches were very clear in plan and section (Figs 27–29).

The *agger* survived to 3 m in width and to about 1 m above the surface of the natural chalk, with a gravel metalling (10) on top about 0.20 m thick, but this had been encroached upon by ploughing and other disturbances. This metalling was a yellow to yellow-orange slightly clayey rammed gravel, worn to a hard surface, with several episodes of repair and deposition evident in section. The gravel lay directly on a rammed chalk foundation (11), up to 0.25 m in thickness, whose surface bore wheel-ruts, seen in plan and section, possibly from construction traffic or even a period of use before the metalling was laid. The foundation chalk (11) had been dumped directly on the old ground surface; within this buried soil, both the A horizon (24) and the B horizon (25) could be clearly distinguished.

The flanking ditches could also be seen, **21** on the south-west and **60** on the north-eastern side in Trench 4. The south-western ditch **21** (approximately 1.5 m wide and 0.5 m deep) was found to contain fills of silty loam (17–18; see Fig. 28). The north-eastern ditch **60** (seen in Trench 4), was about 0.7 m wide and 1.00 m deep (from modern ground level), contained a primary fill of silty loam (58), and was sealed by Layers 50–56, including 53, a tarmac road of 1940s date. Layer 54 was a pre-war topsoil, 55 a tree-hole, and 56 a late fill of the ditch. Both roadside ditches seemed to be cut by later features (**20** and **59**), probably recuts of these ditches. The 1959 gas trench was also seen, overlain by recent dumping, and truncated by a modern disturbance which also cut into the side of the Roman road. A possible tree-hole (30) was found to cut the natural chalk sealed below the buried soil, and to the north east the surface of the natural chalk bore possible plough-marks.

The Buried soil

The buried soil sealed beneath the road material in Trench 1 comprised two distinct layers, 24 and 25 (Figs 28 and 29). Samples were taken for analysis, and the results are summarised here. Soil micromorphology analysis by C. A. I. French (see below) showed that the two horizons represent an upper, brown organic silt loam (24) and a lower greyish brown, less organic silt–loam (25), each about 0.20 m thick, and developed on a natural chalk subsoil.

Layer 24 represents a lower A horizon and 25 a weathered lower B horizon, with leaching of lime-rich water down the soil profile from the overlying chalk road foundation (11). Together these two layers comprise a poor to moderately well developed brown earth, only slightly truncated by turf removal.

Preservation of molluscs from the buried soil was good, and analysis by P. Murphy (see below) indicates an open habitat locally, superseding more shaded conditions. It seems likely that the road was built in an open landscape, possibly cultivated, and that woodland had been cleared from this area not long before. The snails from the upper layer (24) were characteristic of open soils, and probably indicate that the road was built across an open landscape, possibly treeless, at least locally. Other indicators suggest either very intensive grazing, or that the site was under cultivation when the road was laid out. The snails from the upper part of 25 were open-country species with some woodland snails, whilst in the lower part of the buried soil shelter-loving snails predominated, pointing to an earlier (probably Iron Age) phase of scrub or woodland. The main shade snail in the assemblage (*Pomatias elegans*) is indicative of soil disturbance.

Pollen was examined by E. Guttmann but had not survived in a condition suitable for evaluation as part of this project.

Trenches 2 and 3

In Trench 2, immediately below the topsoil (101) and subsoil (102) lay a bank of chalk (105), interpreted by the excavator as the natural chalk subsoil (Fig. 30). On the north-eastern side, pockets of convoluted sand (107, 109) lay over a brown soil (111) thought possibly to be the fill of a side ditch, or merely a soil butting the chalk bank 105 (although this could not be certainly established). The surface of the chalk bank (105) was very worn and eroded, and this may indicate much use and wear as an unmetalled track.

The rammed chalk of the road foundation in Trench 1 and the natural chalk in this area are very similar in their appearance, and therefore another interpretation for 105 is possibly to be preferred, which accords better with Dewhurst's observations of an *agger*

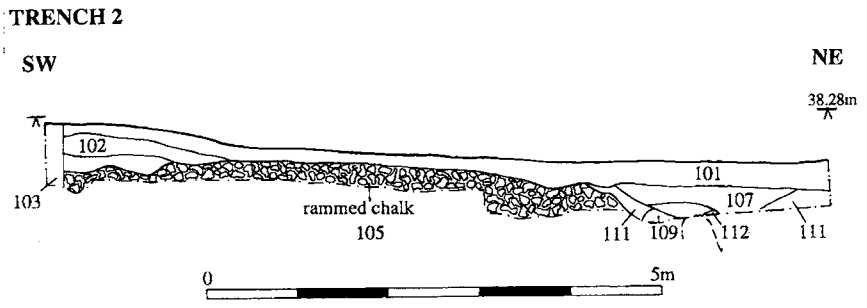


Figure 30. *Worsted Street: south-east facing section through the Roman road (Trench 2).*

in his section. This has 105 as the chalk foundation, whose slight surface curve corresponds to the curve of the foundation surface in Trench 1; the height of this surface relative to the adjacent fields is then explained, and the layers to the north east might then be interpreted as either remnants of a side ditch, or more likely, perhaps, later plough-soils lapping up to the *agger*.

Trench 3 to the south west was excavated to a depth of 0.50 m below the surface of the ploughsoil, at which depth the trench cut a sandy subsoil, with no sign of a side ditch or any other archaeological features.

Field survey

Field survey (with auger transects across the road at several points) was carried out along the length of Worsted Street, south-east of the A11 junction, to the Essex border, and 10 m each side of the track (where conditions allowed). A full *agger* could be observed for about 500 m south-east of Worsted Lodge before it dwindled, and was thereafter seen intermittently, the last sighting of the full *agger* being at TL 584 488, where a small test-pit was dug, and where Dewhurst in 1959 (Section 15) had recorded traces of the chalk foundation over a layer of loam (the buried soil). Further stretches of upstanding *agger* were seen at TL 555 503–561 498, 568 495–578 490, and north of Horseheath at 605 480–615 478. Work during the watching brief indicated that, south-east of the junction with the Balsham to Linton road, the apparent *agger* occasionally visible may be the product of erosion or lynchets.

The present track makes a short diversion immediately south-east of Marks Grave (TL 595 484), but air photographs indicate that Worsted Street continued here on its true course (Dewhurst 1964, 52n; VCH VII, 19n).

The field walking survey resulted in a background scatter of post-medieval pottery, but nothing clearly related to the road or its construction.

The watching brief

Gates and fencing were erected at nine places (A–I; Figs 25 and 26) along Worsted Street, involving posts set into concrete blocks set some 0.4–0.5 m into the ground. Of these nine places, only B, F, G and I lay within the track and were therefore likely to disturb surviving road fabric. Results were as follows:

B: topsoil lay over flint pebbles and then chalk, with no clear trace of the road, although the flints could be late repairs.

F (two holes, close to the 1991 Trench 1): yellow gravel metalling overlay a compacted soil, with no trace of a chalk foundation.

G: topsoil overlay a sandy soil, mixed chalk and then clean chalk, probably representing road foundation.

I: topsoil and chalk overlay sand and gravel, chalk, and then flint over chalk, probably the road foundation.

Discussion

The present work has confirmed Fox's and Dewhurst's previous conclusions that Worsted Street was typical of Roman road construction along its section from Wort's Causeway to Worsted Lodge with a 3 m wide gravel-capped *agger* and 5 m wide rammed chalk foundation, which survived in total to 0.6 m in height, and outlying ditches giving an overall width of 14 m; but the recent investigation was unable to demonstrate unequivocally the survival of a metalled road fabric south-east of the A11 junction. In spite of the lack of excavated evidence to show that Worsted Street was completed to full Roman standards over the whole of its length, it nonetheless maintains a very regular course in this south eastern part, and the chalk seen by Dewhurst and detected by the recent auger survey in stretches along this part of the road are indeed likely to be remnants of the chalk foundation seen north of the A11. This may suggest that in its south-east stretch Worsted Street was left as a minor road once

its course from Cambridge had joined with the Roman road (Margary 21b) to Great Chesterford, and with the Icknield Way (Margary 333) just north west of Worsted Lodge. However, Walker's results in 1910 hint at a formal road construction in Worsted Street's furthest south-east part.

Worsted Street and its place in the Roman road system have been much discussed (Charge 1986; Dewhurst 1964; Fox 1923a and b; VCH VII). There is no archaeological evidence that a Roman road (333) underlies the A11 itself, and this road was probably first set out by the Newmarket Heath Turnpike Trust *c.* 1764 in the most direct way to connect with existing roads to Great Chesterford (CRO: Minutes of the Newmarket Heath Turnpike Trust 1763–77). However, the line of the Icknield Way undoubtedly crossed Worsted Street and ran parallel to the present A11 on its north side *via* Mutlow Hill and Fleam Dyke, and thus the general impression of Margary's route 333 is valid. The failure to find specific evidence for this Roman road at Worsted Lodge is therefore not surprising, and perhaps clarifies the role of Worsted Street itself: Worsted Lodge was a major crossroads for the local Roman communication network where the road from Great Chesterford met the Icknield Way and also the southern access to Cambridge. From this point, travellers from Cambridge could take the route due south to Great Chesterford, or south-east towards the Stour valley, thus making the stretch of Worsted Street north of the A11 the important link road to Cambridge from the south east. This would account for the apparent discrepancy between the full Roman construction in this section and the more basic appearance of Worsted Street south-east of the A11. At face value, such a triangular arrangement seems illogical for access between Cambridge and Great Chesterford, but neither Fox nor Margary, or Wilkes and Elrington, refer to any direct road connecting these two Roman towns, and indeed the arrangement at the north end of Worsted Street with its sudden deviation to the west along Wort's Causeway is equally illogical. It would seem likely that a route must have existed along the Cam valley which would have given a more straightforward connection between the two towns, but it appears that the more complex arrangement involving Worsted Street was employed by the Romans. Such an arrangement might well have been due to the importance of a pre-existing ridgeway, which might have run along the line of Worsted Street past the Iron Age forts of War Ditches and Wandlebury to the Stour valley, as originally suggested by Dewhurst. This would also partly account for the Iron Age date given to Worsted Street when it was considered a 'dyke' by earlier scholars.

Fleam Dyke

Tim Malim, Ken Penn and Gerald Wait

Background

Geology and topography

The name Fleam Dyke has been attributed to three distinct monuments, which may together constitute a single original scheme. These three parts are firstly the High Ditch at Fen Ditton; secondly the 'northern extension' to the main part of the Dyke, from Great Wilbraham Fen to Shardelow's Well (Figs 1 and 35; see below); and thirdly the main section (also called Balsham Ditch) which runs north-west to south-east for 5 km from the fen-edge at Shardelow's Well, Fulbourn (Fig. 31), to beyond Dungate Farm, Balsham (Fig. 32), from where it runs a further 2 km as a hedge to Oxcroft Farm, after which its line is taken up by a minor stream (Fig. 33). It is a parish boundary for the whole of its length, and for virtually all this distance rests on a natural chalk subsoil. From 15 m OD at the fen-edge, the earthwork climbs to 50 m at Mutlow Hill (Fig. 32), and ascends a steep slope at The Ambush, reaching 100 m or more at Oxcroft Farm.

Previous work

The first recorded excavations on Fleam Dyke were the two campaigns by Fox and Palmer in 1921 and 1922 (Fox and Palmer 1923 and 1924). In 1921 Fox dug seven cuttings across the ditch and two across the bank (Fig. 33), revealing in each place two ditches, a V-shaped one near the bank, and a deep, flat-bottomed one further away. After first regarding them as successive features (Fox and Palmer 1923: 45–51), Fox came to argue that both belonged to a single phase of the monument (Fox and Palmer 1924: 31–3). His section across the bank at the railway cutting revealed a 'marker bank' or core, with two 'reconstructions', and Fox (at first) argued that the V-shaped ditch went with the bank 'core', and was part of the original dyke. He also excavated in the vicinity of Mutlow Hill, finding Roman pottery under and within the bank at two places, and adduced an early Saxon date for Fleam Dyke.

Further work was undertaken by Fox and Palmer in 1922 (Fig. 33) to answer outstanding questions, and this was reported in 1924. They cut a section across the bank 70 m south-east of the railway cutting, and found the buried soil, again containing Roman pottery, and the two ditches, but no trace of the 'marker bank'

Figure 31. *Fleam Dyke from the air, showing hollow ways leading to Mutlow Hill in the foreground, and the Dyke running north west to Shardelow's Well (photo: Geoffrey Robinson, 1990).*

Figure 32. *Fleam Dyke from the air, with Mutlow Hill in the foreground and the Dyke running off towards the hills to the south east (photo: Ben Robinson, 1991).*

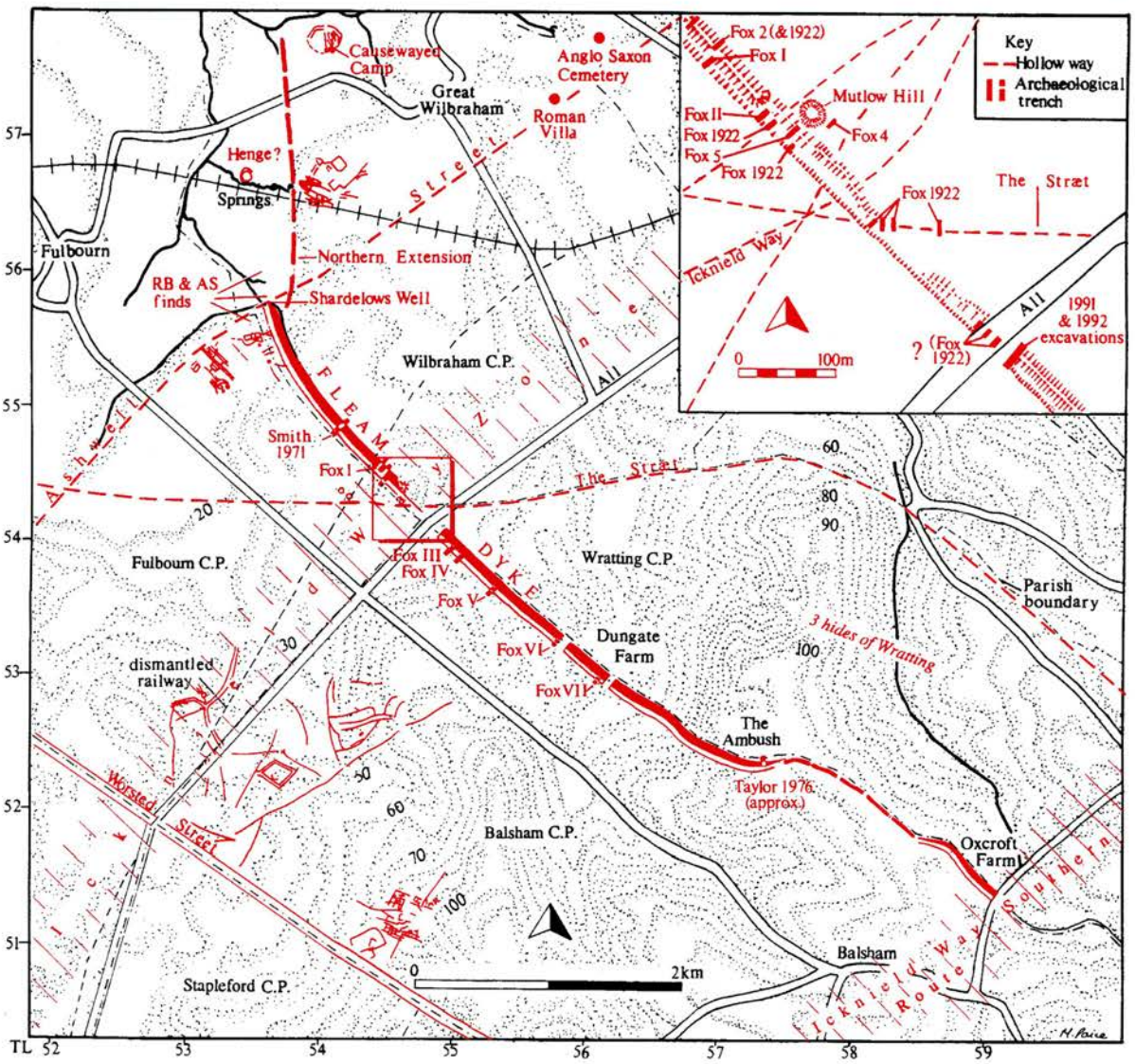


Figure 33. *Fleam Dyke: location map, showing previous work, 1991–2 trenches and associated archaeological sites and routeways.*

or original core. Although Fox altered his view of the V-shaped ditch, now regarding it as an integral part of a single-phase ditch, against his earlier conclusions, he still regarded the bank as the product of several reconstructions with intervening standstill phases (Fox and Palmer 1924: 31–3).

Fox also saw that the relationship of the Dyke to the contemporary road system was critical to its understanding, and therefore dug holes on either side of the A11 (close to the present work), where 'the sloping wall of the filled-in fosse was disclosed'. Trial holes along the line of the ditch at Mutlow Hill produced a similar result, showing a continuous ditch, and thus revealed that the two hollow ways he noted heading for this spot, the probable line of the Icknield Way passing immediately to the north of Mutlow Hill, and any other road across the Dyke, must post-date it and have had to cross the line of bank and ditch. Therefore, any idea that the A11 itself lies over a Roman road (Margary 333) must be doubtful, unless its exact line was re-established after a long period of disuse.

A partial section across the earthwork in 1971, just east of the Fleam Dyke Pumping Station (TL 542 548; Fig. 33), revealed the buried soil, a possible marker bank of chalk rubble, and the upper part of the large flat-bottomed ditch; the V-shaped ditch was apparently absent from the section exposed (Smith 1973). A further section by The Ambush was recorded in 1976 by Alison Taylor (Cambridgeshire County Council Sites and Monuments Record; Figs 33–36). There is a full discussion of Fleam Dyke, its character and date, in RCHME (1972: appendix).

Figure 34. *Fleam Dyke: photograph of the bank section from the northwest (1976 excavation: scale in 0.5 m divisions).*

Figure 35. *Air photograph of the north end of Fleam Dyke at Shardelow's Well, with crop-mark of additional extension to the bank and ditch running off northwards to Great Wilbraham River (photo: Ben Robinson 1990; from the south).*

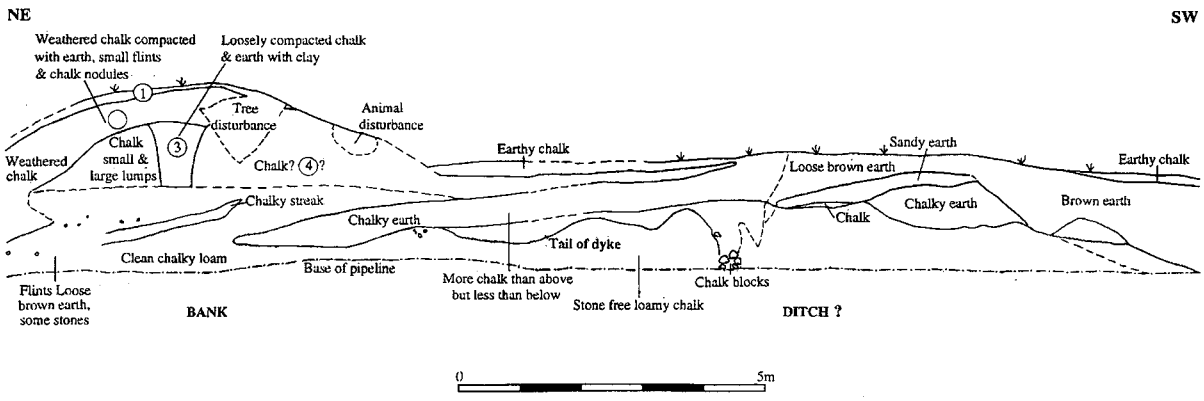


Figure 36. *Fleam Dyke: interpreted north-west facing section (1976 excavation: after Alison Taylor).*

Strategy and methods

In October 1991, excavations were carried out by Gerald Wait at the point where Fleam Dyke is crossed by the A11 trunk road (TL 548 541) (Fig. 33). This work was necessitated by the widening of the A11, and a full excavation was undertaken on both bank and ditch, making use of the false terminus to the bank left by previous roadworks to provide a 'stepped' section and therefore avoid any initial need for substantial shoring; the trench across the ditch was placed in line with the bank section. Before excavation, scrub and small trees were removed by hand.

Constraints on time and resources meant that initial excavation was by mechanical excavator, which was used to dig a stepped section across the bank and across the ditch, removing the most recent ditch silts (much disturbed by animals). This was followed by hand excavation and the recording of sections and surface features. The trench was 3 m wide overall, and the ditch was dug in plan in 1 m wide stepped 'slices', with shoring for safety. Samples for soil and environmental analysis were taken as necessary, in consultation with P. Murphy, both as spot tests and monoliths, with a buried soil (Layer 4) being cleaned as a target for the spot samples. Although both north-west and south-east facing sections were recorded, the south-east facing section of the ditch was the more complete and less disturbed, and has been used (reversed) with the north facing bank section for the published section (Fig. 37).

In 1992, roadworks cut 2–3 m further into the monument than had been proposed, revealing a less disturbed section than was recorded in 1991. This important section was recorded by Ruth Pelling at short notice without additional funding from English Heritage. The opportunity was also taken to retrieve further environmental samples from the buried soil and other critical layers identified during post-excavation work on the 1991 material, but when processed, these samples added little to the previous year's findings.

To distinguish between these two investigations, duplication of context numbers was avoided, so that all contexts from 1991 range between 1 and 499, and those from 1992 range from 500 to 599. Similarly, discussion of phases has been kept distinct, so that phases interpreted from the 1991 excavation have Roman numerals (Bank Phases I to III and Ditches Phases I to III) whereas the phases from the 1992 investigation have been given arabic numerals (Phases 1A, 1B, 1C, and 2–4).

Results of the 1991 excavation (Fig. 37)

A red–brown nearly stoneless soil (4) was seen to underlie almost all the bank material, and this was overlain by a small (marker) bank (53) of a similar material, with some bands of soil and chalk, and of a dark grey–black colour on its upper surface (Fig. 38). Over 200 sherds of pottery came from the buried soil (4), and these were mostly, as far as could be told, from coarse-ware vessels of the first to second centuries AD, but were highly pulverised. These represent either surface trample, or pottery thoroughly broken by subsequent agricultural activity. This pottery included three sherds of early to middle Bronze Age date. There was nothing in this buried soil clearly dateable to the later Roman period, and no material of post-Roman date (C. Going, personal communication). The bank appeared to have been built in two or three phases, a conclusion consistent with the evidence from the ditches.

Two ditches cut into the solid chalk were found, the earlier being a V-shaped ditch (**76**), at least partially silted by the time the second (**77**) was dug (Fig. 39). This second ditch had

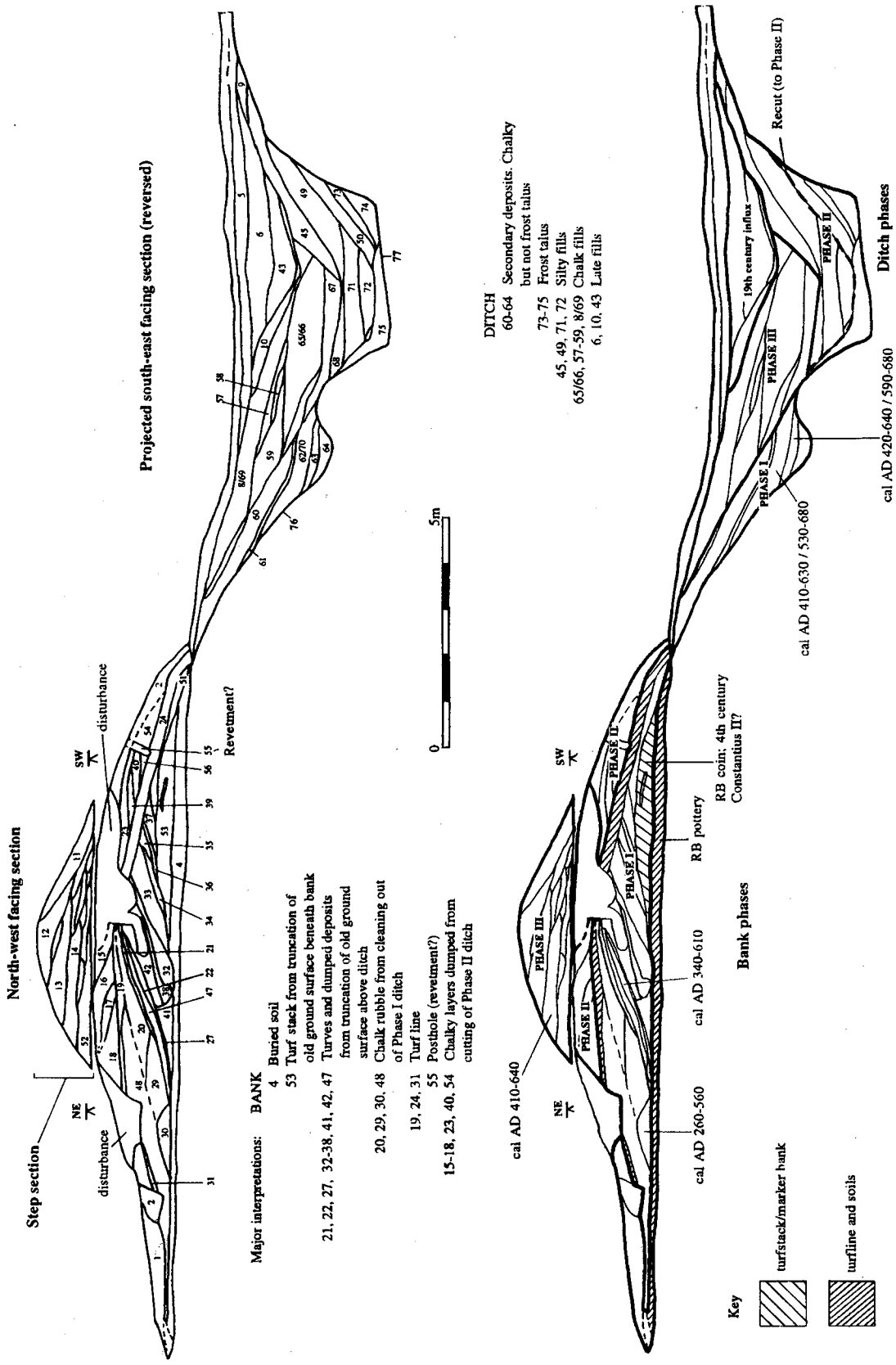


Figure 37. *Fleam Dyke: composite section through the bank and ditch (1991 trench).*

Figure 38. *Fleam Dyke: photograph of the buried soil beneath the Phase I bank (1991 trench: horizontal scale in 0.5 m divisions; vertical scale in 50 mm divisions).*

Figure 39. *Fleam Dyke: photograph of the south-east facing section through the fully excavated ditches (1991 trench: scale in 0.5 m divisions).*

very chalky lower fills which lay below fawn to mid-brown loamy upper fills and a dark topsoil. This ditch was flat-bottomed, and cut the silted remains of the earlier ditch.

From the excavated evidence it is possible to identify the major events of ditch digging and bank construction with reasonable certainty. However, the finer interpretation of episodes such as erosion, infill, cleaning out and dumping, and therefore of direct relationships between individual layers or groups of layers in the ditch and bank, is extremely complex and has to remain much more tentative. The layers seen in the two sections, of bank and ditch, cannot be reconciled with certainty, and the bank and ditch sequences are therefore described separately below.

Phasing of the bank

The excavated sections across the bank and ditch confirm the general sequence recorded by Fox of two or three successive reconstructions, although the need to utilise stepped and machine-dug sections introduced a little uncertainty into this section. Some less certain aspects of the 1991 excavations are elucidated by reference to the 1992 results, in particular, the probable existence of two turf layers running across the width of the contemporary bank. The low profiles of the first one or two phases of the bank probably indicate the loss of the original profile by erosion.

Phase I began with a low bank of turves (?) (53) (equivalent to layer 546 in 1992) over the buried soil (4); this may have been the result of turf-stripping from above the buried soil to provide a guide bank for further dumping, for the creation of the Phase I bank that survives to 1.50 m above the buried soil (Fig. 40; the excavator noted that this buried soil corresponded closely with the modern ground surface in adjacent fields). The Phase I bank comprised a number of layers, dipping down from south west to north east, whose angles could indicate some truncation or loss of material at the front (south) side, perhaps by slumping into the ditch. This cannot be proved, but the final surviving chalky silting (60) of the V-shaped ditch (ditch Phase I) may reflect a substantial erosion from the Phase I bank whose eventual low profile was capped with Layers 19 and 24. These layers were identified by the excavator as a single turf-line, which could have formed during an extended break in the construction of the bank, although the low shape of the bank might also indicate that this soil developed over a slightly eroded bank (this would also fit the evidence of the 1992 excavation, where two turfy layers (532 and 524/526) were observed, corresponding to the top of Phase I and Phase II respectively). Layer 24 was 0.25 m thick, layer 19 (and 31) was 0.2 m thick; the top few centimetres of each were a fine chalk rubble, compressed or worn to a hard surface, and markedly more silty than most of the other layers in the bank (attempts to take soil samples to confirm turf growth were not successful). However, within the Phase I bank, a complex pattern of deposition can be seen (Fig. 37), showing that several episodes or stages in construction occurred, before a major interlude allowed formation of the turf line represented by layers 19, 24 and 31. Another layer of fine chalky rubble, which appeared to have been compressed or worn to a hard surface 80 mm thick, was layer 21 which, together with two possible incipient turf lines (22 and 47), is interpreted as a stabilization episode within the main body of the Phase I bank. Indeed, within the Phase I bank, the tip-lines (33–7: layers often described as 'turf like' by the excavator) may point to a second stage in its construction (seen more clearly in 1992 as Phase 1B; see Fig. 42), and may be evidence of the truncation of the old ground surface over the area of the ditch by turf stripping and dumping of this material as 21, 22, 27, 32–38, 41, 42 and 46–7. This was followed by a third stage (1992 Phase 1C) at the rear of the bank, consisting of initial excavation of the V-shaped ditch, and possibly cleaning out and dumping of the accumulation of frost talus (layers 20, 29,30, and 48). This would suggest that the second stage (1992 Phase 1B) happened very soon after the creation of the marker bank, and may in fact be a continuation of the first episode of construction, whereas the third stage was, at the latest, a maintenance episode within the first few years of the life of the Dyke, when the primary fills (chalk talus) were cleaned out of the V-shaped ditch, but more probably represents part of the first phase of overall construction and digging of the V-shaped ditch.

The buried soil (4) produced 200 sherds of well abraded Romano-British pottery, mostly of first to second-century date. The possible marker bank (53) produced a probable fourth-century Roman coin, and an animal bone from Layer 22 (an early temporary stabilization layer, sealed by chalk layers dumped from initial ditch construction and cleaning out) was sent for radiocarbon analysis and produced a date range of cal. AD 340–610 (OxA 4066: 1580±55 BP). A second sample was submitted from the base of the final stage of construction of the Phase I bank (from layer 30, a dumped deposit, perhaps from initial cleaning out of the first phase ditch) which produced a date range of cal. AD 260–560 (OxA 5350: 1615 ± 50). Together these radiocarbon determinations can be analysed and refined to suggest a date range of *cal. AD 330–510* (at 92% confidence; see Bayliss *et al.* below), which would place the construction of the Phase I bank in the late Roman or early

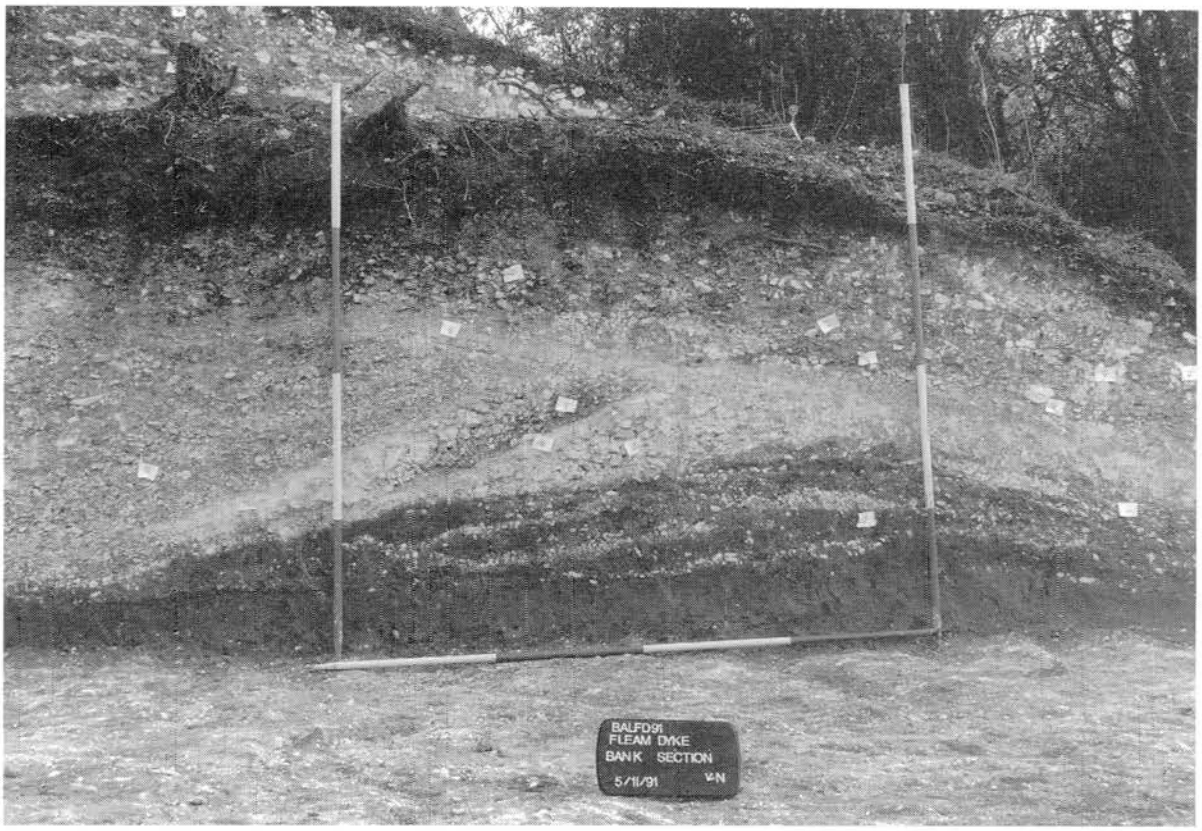


Figure 40. *Fleam Dyke: photograph of the north-west facing section through the Phase I bank (1991 trench: scale in 0.5 m divisions).*

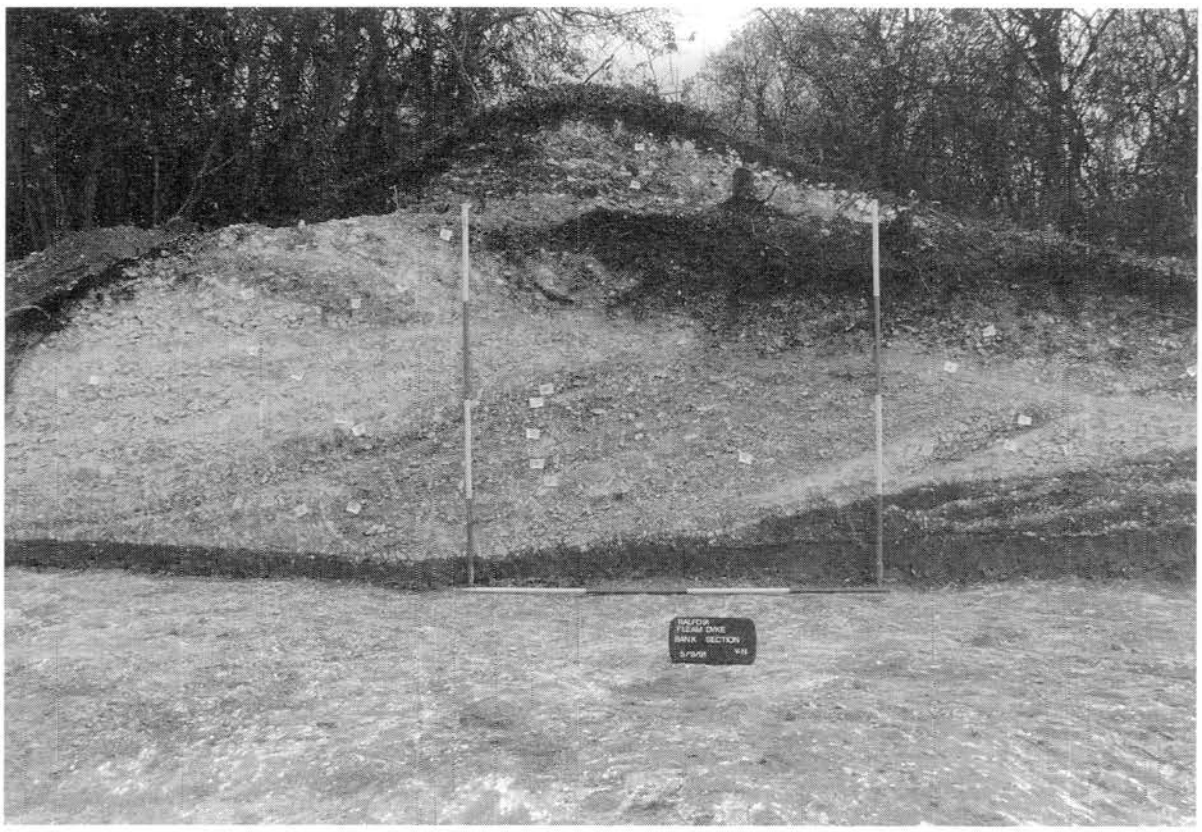


Figure 41. *Fleam Dyke: photograph of the north-west facing section through the Phase II/III banks (1991 trench: scale in 0.5 m divisions.*

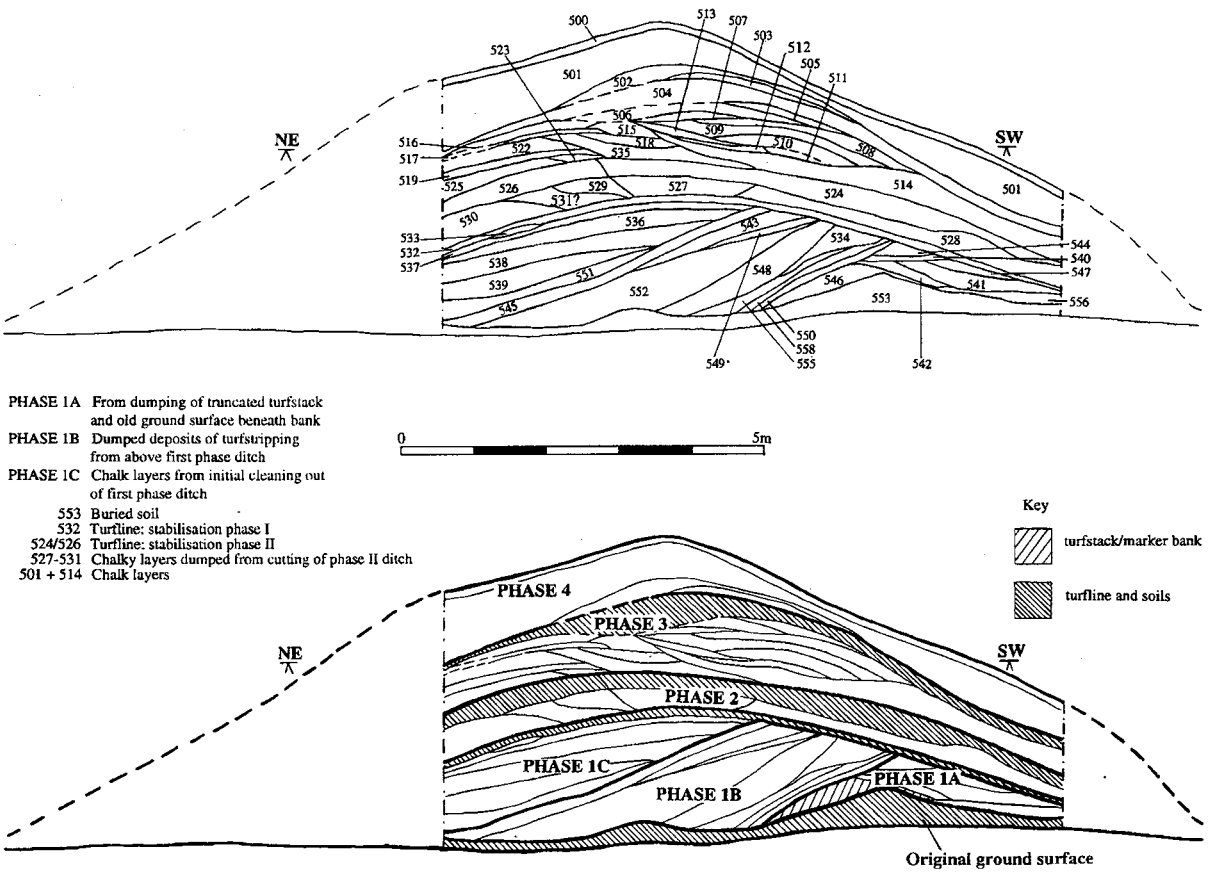


Figure 42. *Fleam Dyke: north-west facing section through the bank (1992 trench).*

Saxon period. The existence of the soil layer and turf line (19/24/31 = 532 from 1992) suggests that the Phase I bank existed for some time before Phase II was raised.

Phase II, the next raising of the bank, was represented by chalky Layers 15–18, lying over 19, and 23, 39, 40, 54 and 56, lying over 24 (Figs 37 and 41). Interpretation of this section is hampered by the stepped section, and rests partly on comparison with the 1992 section, which shows the Phase 2 bank as of little surviving thickness and surmounted by a turf-line layer (524/526). The Phase II bank may derive from material excavated as a major recutting of the ditch on a larger scale, shown as **77** on the ditch section (Fig. 37).

Phase III, the final raising of the now eroded bank, was represented by a number of layers, the topmost of which were 11, 12, 13 and 14, all of which contained fine layers of silt and chalk rubble, and could derive from later periodic cleanings of the large ditch, with the spoil added to the top of the bank (represented by Phases 3 and 4 in 1992; see Fig. 42). The filling of both ditches, and the need for a recut, could indicate that substantial erosion had taken place on the bank in both main phases.

On the front (south) side of the bank, Context 55 appears to have been a post-hole about 0.20 m in diameter, and survived to a depth of 0.60 m below the modern ground surface. The 'post-hole' was angled 'down-slope' to the west, and would be consistent with a rampart upright which has been forced out of the vertical by the collapse of the rampart. If this was part of a wooden rampart or internal frame, the slightness of the surviving post-hole points to considerable erosion of the bank in which it was set.

An animal bone from Layer 14 within the Phase III bank produced a date range of cal. AD 410–640 (OxA-5349: 1530±50 BP). This date, more recent than the previous two radiocarbon dates from the bank, is consistent with its stratigraphic position and points to the sixth century, a date certainly still within the early Saxon period, for the raising of the Phase III bank.

Phasing of the ditches

The sections recorded by Fox make it clear that more than one phase was represented, notwithstanding his later arguments to the contrary. The general sequence of layers here is consistent with Fox's stylised drawings and suggests that the V-shaped notch (**76**) nearest the bank is the remains of a first-phase ditch.

The Phase I ditch (**76**) was represented by five fills (60–64) on the east side of the present

Figure 43. *Fleam Dyke: photograph of the south-east facing section through the Phase I ditch (right) (1991 trench: scale in 0.5 m divisions; note: main ditch only partly excavated).*

ditch (Fig. 43), truncated by the digging of the second ditch (**77**). From the evidence of its lowest part, the original ditch profile would appear to have been a deep V-shape, originally about 6 m in width at the old ground surface, and 3 m deep. Layers 63 and 64 were the initial fills, and contained a considerable amount of small chalk fragments; the excavator noted that they were not entirely typical of the frost talus found in initial weathering, and suggested that the first fills had been cleaned out (possibly producing some of the chalky layers of the Phase 1C stage (Fig. 42) of the first phase bank construction) before the ditch was refilled with a mixture of silts and fine chalk fragments. The upper fills, 60 and 61, were similarly silty and might derive from the weathering of silt running off the bank. This cannot be established for certain, but any cleaning out could have been connected with initial erosion of ditch sides and slumping of the Phase I bank, and hence its reconstruction by dumping the initial infill of the ditch at the rear of the eroded bank (see above). It is possible that the V-shaped ditch was well filled when the large Phase II ditch was dug, and that the Phase II ditch profile which truncates the Phase I ditch-fills at a shallow angle represents an erosion of an original steep Phase II ditch profile.

Animal bones from the Phase I ditch fills produced two sets of date ranges from each of Layers 63 and 62. From Layer 63 came date ranges cal. AD 420–640 (OxA-5454: 1510±45 BP) and cal. AD 590–680 (OxA-5353: 1390±45 BP); from Layer 62 came date ranges cal. AD 410–630 (OxA-5352: 1535±50 BP) and cal. AD 530–680 (OxA-5351: 1430±55 BP). Overall, this suggests accumulation within the sixth century (Table 10: but see also, below, the section on Radiocarbon determinations by Bayliss *et al.*, and the discussion in Overview).

The Phase II ditch (**77**) was dug to the west of the partially silted Phase I ditch and on a much larger scale, between 7 and 8 m wide and over 4 m deep (from the old ground surface) (Fig. 44). The initial fills (73, 74 and 75) were mostly chalk rubble, typical of initial frost talus, as was 72, a silty layer. As the excavator noted, the survival of the initial frost talus, derived from the side of the ditch, indicates that any cleaning of the ditch never reached this lower level, and was restricted to upper layers of the ditch fill. As can be seen from the section drawing, this section is comparable to that of the

Figure 44. *Fleam Dyke: photograph of the south-east facing section through the main ditch (1991 trench), showing dark 19th century infill and the chalk fill of phase III, with phase II fills beneath (scale in 0.5 m divisions).*

experimental earthwork on Overton Down, Wiltshire, which had developed within four years (Jewell and Dimbleby 1966). The chalk material excavated for this ditch may have been used to construct the Phase II bank.

The character and angles of the fills in the Phase II ditch strongly suggest that this ditch was cleaned out, and therefore that fresh material was placed on the bank as Phase III (Phases 3 and 4 from 1992). Above initial Fills 73–5 and 50, Fills 68, 71 and 72 lie at the horizontal and may be the result of slow silting, although the steep angle of Fills 50 and 75 could hint at a further cleaning out. However, it seems more likely that 45 represents the top fill of the Phase II ditch, which was then recut, providing material for a corresponding raising of the bank (equivalent to Phase III?).

Fills 65/66, 57–9, and 68/69 were markedly more chalky, and were thought by the excavator to reflect an increased rate of silting from the side of the ditch and the bank. Fills 57–9 were almost entirely chalk rubble with a little silt, and may indicate substantial erosion or slumping of fresh bank material into the shallow recut(?) ditch then existing, and also the extent to which the bank profile had changed. However, these fills were thicker on the north-west side of the excavated trench, but were almost absent on the south-east side, which might indicate some local, even deliberate, erosion or slighting of the bank, although the suggestion that this was to provide a causeway remains speculative.

Although animal bone from Phase I fills has been used for radiocarbon dating, no pottery was found in the earlier ditch fills of Phase II to help with dating these layers. The uppermost fills (6, 10 and 43) contained nineteenth-century pottery, and this may reflect a sudden influx of silts accompanying the establishment of intensive arable agriculture, in place of traditional heathland pasture, in the early nineteenth century.

Correlation between ditch and bank phases (Figs 36 and 42)

Whilst there are uncertainties in the exact relationships of the bank and ditch phases, it is possible to postulate a sequence of events, as follows:

i) Ditch **76** (ditch Phase I) cut and the spoil raised as bank Phase I and Phase 1 (stages 1A–1C).
ii) Frost talus erodes from the bank and ditch sides into the ditch.
iii) Ditch cleaned out and the spoil placed on the bank as part of Phase 1C.
iv) Further erosion of the bank into the ditch as 60–62 and 70.
v) Standstill episode; formation of a turf-line and stabilization layer on top of the Phase I/1 bank (19, 24, 31 and 532).
vi) Ditch **77** (ditch Phase II) cut, and bank Phase II/2 raised from the excavated material.
vii) Erosion of the bank into the ditch: fills surviving as 50, 73-75.
viii) Standstill episode; formation of turf-line and stabilization layer on top of Phase II/2 bank (524/526).
ix) The partly infilled Phase II ditch is recut and the spoil placed on the bank as Phase III/3.
x) Further erosion into the ditch (45, 49 and 71–2).
xi) Standstill episode and formation of turf-line and stabilization layer on top of Phase III/3 (504).
xii) Ditch recut as Phase III and the spoil placed on the bank as Phase 4.
xiii) Slow erosion into the ditch of 57–9, 65 and 67.
xiv) Infilled Phase III ditch recut, probably in nineteenth century.
xv) Final erosion into the ditch or deliberate infilling of 5, 6 and 43, containing ninteenth-century and later finds.

Molluscan and soil micromorphological analyses

The recent excavations have revealed the character of the environment when the dyke was built, when it appears to have been surrounded by an open landscape and one that was heavily cultivated or grazed. Analysis by C. A. I. French (see below) shows that the buried soil (4) under the bank (Fig. 38) seems to have been a thin and poorly developed soil (more of a rendzina than a brown earth), which had suffered considerable truncation. This type of thin rendzina soil is generally associated with deforested and intensively cultivated soils in prehistoric Wessex. It is suspected that most of the turf and upper half of the soil was reincorporated into the bank. This fits well with the macrofossil evidence noted by P. Murphy (see below), who concluded that the assemblage from the top of the buried soil (4) was an extreme open-country assemblage, indicating a high proportion of bare ground and disturbed soils in the vicinity, as a result of cultivation or heavy grazing pressure. The evidence from the macrofossils may suggest that little time passed between the three stages of Phase I bank construction (as seen e.g. in layer 22), with few shells being incorporated into the earlier bank surface, although there was time for the formation of a stabilization layer or topsoil (19/24 and 532), and that Phase I and II ditches were clearly separated by sufficient time for the silting of the V-shaped ditch. Pollen was found to be too poorly preserved for further analysis (E. Guttmann personal communication).

Results of the 1992 investigation (Fig. 42)

During road construction in summer 1992, machining at the site of the 1991 excavation cut further back (southwards) into the bank than had been anticipated, exposing a fresh section of the bank. This was cut in one almost vertical plane and afforded a section less disturbed by trees and 'stepping' than the 1991 section. However, because of the manner in which machining had been carried out, only the central, high part of the bank could be properly examined (Fig. 42). Fortunately, the machining had exposed the buried soil (553) seen in 1991 (as 4), and this allowed good comparison with the previous work.

The bank was composed of many discrete layers of chalk rubble, some more or less soily, and several old soil surfaces (or topsoil dumps), thought to mark successive stages in the construction of the monument. Above the buried soil (553) of the old ground surface (equivalent to Layer 4 from 1991), four main phases of construction were identified (Phases 1–4, of which 3 and 4 equate with Phase III from 1991), and three distinct stages could be seen within the development of the first phase bank (Phases 1A–1C).

The end of Phase 1 was defined by an old soil surface (532), which may mark the end of the first major construction phase. This soil surface was a thin band of silt and chalk, rather than a true topsoil, but overlay all the material identified as the Phase 1 bank (and was equivalent to 1991 Layer 19/24). This Phase 1 bank had three apparent construction episodes (A–C) over a small 'bank' of soil or turf (546) identical to the 1991 'marker bank' (53), with 1C being equivalent to the 1991 Layers 20, 29, 30 and 48.

The Phase 2 bank was defined by Layer 524/526 running across the entire exposed section. This was thought to define another 'buried soil' marking the top of a bank raised by further

massive dumping of material (527–531), probably derived from the cutting of the second ditch, on which this soil developed. This episode and successive bank constructions seem to have involved dumping upon existing surfaces, rather than any reshaping of the earthwork profile.

Phases 3 and 4 together equate to the 1991 Phase III, the final raising of the bank. Phase 3 was the result of substantial dumping to raise the height of the bank by at least 2 m, the material including several lenses of quite soily material (504, 506, 508 and 510) which rested directly over the Phase 2 material, with layer 504 being interpreted as soil build-up, and a possible turf-line. Phase 4 was the final phase of construction, and consisted of a thin soily layer (502) and a thicker layer of chalk rubble (501), below the present topsoil (500).

The 1992 section was about 2 m to the south of the 1991 section and naturally has the same basic features, such as the buried soil and turf-lines. Although three or four phases of construction seem to be indicated by the 1992 'buried soils' (532 and 524/526), there was little hint of how long a time intervened between the major phases. However, this was apparently sufficient for turf-lines (if that is what they were) to form, Layer 532 probably reflecting the interval between Phase 1 bank construction and cutting of the second ditch. As may be seen in the 1991 section, much chalky material eroded from the bank into the ditch before the slow silting began.

In the Phase 1 bank, the angle of the layers was quite steep, which may suggest that this bank had eroded, and had once been rather higher than the 1.5 m it stood when Phase 2 was raised by the dumping of more material from the Phase II ditch. If Phases 3 and 4 represent a major phase of bank construction, this may have gone with the recutting of the Phase II and cutting of the Phase III ditches, which would then also have provided the material for the embankment.

Discussion

Whilst the work of Fox and Palmer in 1921 to 1922 remains a major source for the history of Fleam Dyke, the present work has confirmed the multi-phase nature of the monument, demonstrated the contemporary environment in which the Dyke was constructed, provided good scientific dating for the likely early Saxon context of the Phase I bank, which survives to 1.5 m high, and produced evidence for the subsequent building of a more imposing earthwork, which survives as a bank with a basal width of approximately 15 m and over 3 m in height, a first phase V-shaped ditch over 2 m deep and probably originally some 6 m wide, and a more substantial second phase ditch 10 m wide and over 3 m deep, with steep sides and a flat base.

The 1991 excavation showed that the dyke was built in at least two phases, beginning with the V-shaped ditch and its bank, followed after a lengthy period of erosion and silting by a much larger bank and a deeper, flat-bottomed ditch. The bank-derived fill in the ditch indicates that the Phase II bank was originally rather higher or of steeper profile. The evidence also suggests that the Phase II ditch was recut at least once, with a corresponding raising of the bank as Phase III, although the bank and ditch phases cannot be equated with any certainty. Whether the post-hole (55) in the front of the bank belongs to a wooden-framed rampart for a later bank remains speculative in the absence of further evidence (none was noted by Fox for Fleam Dyke or Devils Dyke); fronted by a 4 m deep ditch, even an unramparted bank would have been a formidable barrier.

Fox's dating evidence pointed to a late Roman or post-Roman date for the Phase I bank, and the 1991 excavation amply confirms this, with pottery from the buried soil (4), the fourth-century coin from 53 (probably of Constans, 337–350 AD, or Constantius II, 337–361 AD), and the series of radiocarbon determinations which together give a range *cal.* AD *330–510* (92% confidence; see Fig. 64 and the section on Radiocarbon determinations below), suggesting a fifth-century date. Together, these determinations indicate strongly that the first phase of the monument belongs in the early Saxon period.

The molluscan evidence from the buried soil reveals that the earthwork was built across an open landscape, cultivated or heavily grazed. Similar results were obtained from soil micromorphology, which revealed a thin rendzina indicative of open downland, but one that was described as having been heavily grazed and severely truncated, presumably deturfed and partly removed as part of the initial construction process (see Murphy and French, below).

Although the final construction phase (or major cleaning out) was before cal. AD 620 (95% confidence), nonetheless the final use of the monument appears to have occurred *between cal.* AD *590 and 700* (95% confidence limits; see Fig. 64 and Radiocarbon determinations below). This suggests that the final construction phase was in the sixth century, but that there may have been continued use into the seventh century.

The 1992 work added further detail to that derived from the 1991 excavation, identifying three possible stages in the make-up of the Phase 1 bank (Phases 1A–1C), and three sub-

Figure 45. *Devils Dyke from the air, looking south-east from Reach. In the middle distance the Dyke can be seen rising over Gallows Hill, the approximate position of the 1991 section. Fox's excavations were between Gallows Hill and Reach village (photo: Ben Robinson, 1995).*

sequent phases of bank construction; this clarified the ambiguities resulting from the stepped section and tree hollows evident in the upper part of the 1991 trench.

The two main phases of ditch cutting at Fleam Dyke may imply two separate historical contexts for its construction, but this cannot be explored separately from a consideration of the other Cambridgeshire Dykes and related features of the landscape, which must include Fleam's southern continuation to Oxcroft, the possible 'northern extension' at Wilbraham, and a stretch of earthwork along High Ditch, Fen Ditton. The present work has demonstrated an early Saxon context for the construction of the Dyke and has considerable implications for the origins and character of the early Saxon settlement of East Anglia (see below, in Overview).

Devils Dyke

Ken Penn and Gerald Wait

Background

Geology and topography

Devils Dyke is the longest of the Cambridgeshire Dykes, and runs for about 11 km, from the fen-edge and 'Roman' lode at Reach in the north west (Fig 45), south-eastwards across open countryside (Fig. 46) to terminate some 600 m into the Boulder Clay plateau at Woodditton (*dic-tun*). Thus, for almost all its length, the monument lies over a natural chalk subsoil.

Previous work

In the late nineteenth century, McKenny Hughes observed a section of the bank during the construction of the railway cutting at TL

5755 6525 (Fig. 47). He found objects of Roman date within the bank and argued that the monument was therefore of Iron Age origin, but raised in height in the Roman period (Hughes 1913: 148–9). In 1923 and 1924, Fox dug sections across the bank and ditch near the Roman villa at Reach, and demonstrated that the monument was of Roman or later date. He excavated in four places (Fox I–IV; see Fig. 47), obtaining three sections each of the bank and the ditch (Fox 1925: Fig. 2), with similar results at each place. The top of the bank lay almost 9 m above the flat base of the ditch, whose sloping sides continued into the profile of the bank. Fox saw the monument as a single-phase construction; he suggested in his published Section I (*ibid.*: Plate III) that the bank was built in two or three stages, but that these were very close in date.

In Fox's sections, the base of the ditch was flat, and varied in width from 5.7 m to 8.1 m, lying about 4.5 m below the old ground surface, with marked angles to its floor. In each of the ditch sections, Fox found the same three basic fills, an initial frost talus in the corners, followed by a fill of a loamy silt, representing a very slow accumulation, grading upwards into a relatively modern humic topsoil. The fills were quite shallow, between 0.3 m and 1 m deep at the centre of the ditch (discounting the upper chalky fill in his Section III, the probable result of erosion from the bank, as suggested by its concave profile; Fox 1925: Plate IV). The dating of the monument was indicated by the abraded and pulverised Roman pottery, the latest of second-century date ('now regarded as 3rd century': RCHME 1972: 144), found in the buried soil below each of the three bank sections. Similar Roman pottery was found within the bank by both McKenny Hughes and Fox; Fox convincingly argued that this derived from the dumping of nearby topsoil *en masse* during the building of the bank (Fox 1925: 121).

A further section across the bank was dug by B. Hope-Taylor in 1973, in advance of the construction of the A45 Newmarket Bypass (Figs 47–49). This has not been fully published; only a short interim report has appeared (Hope-Taylor 1976). Hope-Taylor recorded a substantial ditch fill, with a chalky lower fill below a loamy upper fill, and a single burial (radiocarbon dated to cal. AD 1180–1290, BM966) dug into the top of the chalky fill and sealed by the upper fill. A layer within the upper fill just above this burial produced potsherds of '*c.*1000–1200'. A fourth-century Roman coin found in the buried soil below the bank pointed to a post-350 date for the bank, whose first stage was thought by Hope-Taylor to have been a 'marker bank'. Environmental analysis was undertaken

Figure 46. *Devils Dyke from the air looking north-west, with the 1991 pipeline in the foreground and Gallows Hill beyond. Note the marked change in direction of the Dyke at this point. The 1991 excavation was in the scrub-covered ditch on the line of the water-pipe (photo: Ben Robinson, 1991).*

as part of this work, and the results (previously unpublished) are published here, by kind permission of the authors (Dimbleby and Thomas, below).

To the south of the A45, the Newmarket Racecourse crosses the Dyke at a point called the 'Cambridgeshire Gap', which also represents the line of Ashwell Street Roman road. A resistivity survey conducted by David Trump in the winter of 1988 produced results consistent with a causeway through the ditch at this point, implying that the Dyke builders left a crossing place for this major route.

Strategy and methods

In October 1991 an excavation was carried out in the ditch of Devils Dyke, on the east flank of Gallows Hill, near Ditch Farm (TL 5845 6438; Fig. 47) in the parish of Swaffham Prior. This work, directed by Gerald Wait, took place in

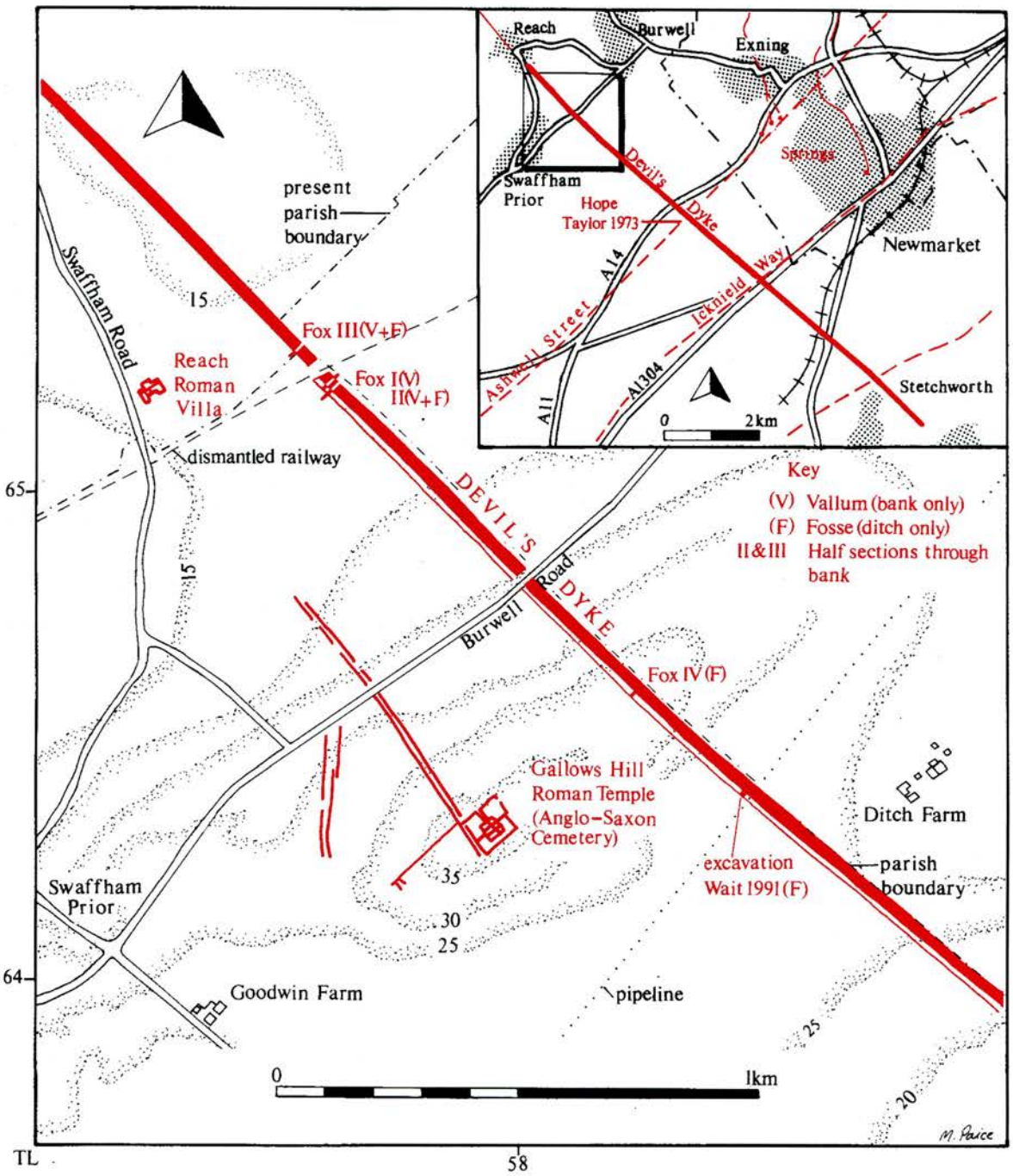


Figure 47. *Devils Dyke: location map, showing previous archaeological work, the 1991 trench and associated archaeological sites.*

advance of the construction of an underground aqueduct by Cambridge Water Company.

The work for the aqueduct involved thrust-boring beneath the bank of the monument, but within the anticipated depth of the ditch fills, and thus excavation was restricted to the ditch. The ditch remains open in this stretch to a depth of over 4 m below the ground surface. The excavation was sited immediately adjacent to the location of the projected thrust-bore (Fig. 46). After clearance of scrub in the partially silted ditch, a trench 3 m by 8 m was laid out, and excavated entirely by hand (Fig. 50). The flat-bottomed base of the ditch was reached below 0.75 m of fills, the lowest part of the east side running up out of the excavated section (Figs 51 and 52).

Preservation of molluscs was excellent, and a series of samples was taken in a column through the silts by P. Murphy, whose report (below) is the source of the comments on them

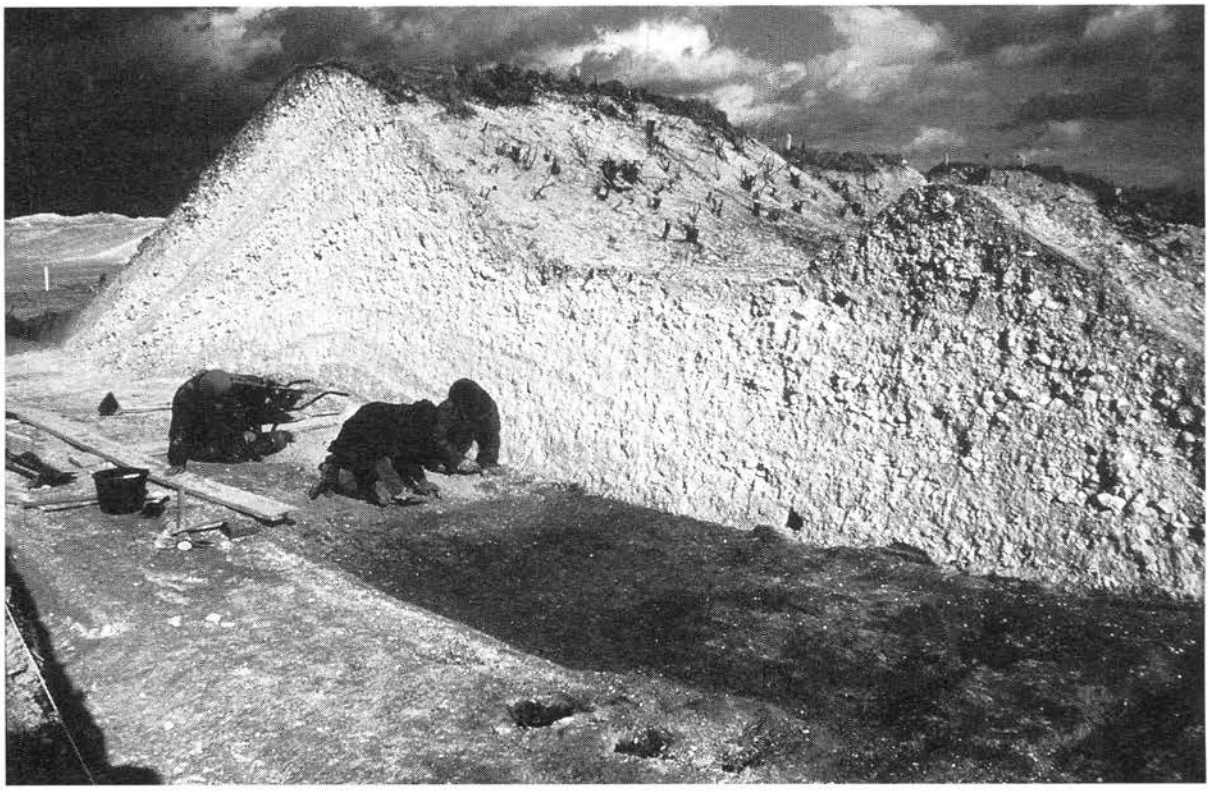


Figure 48. *Devils Dyke: south-east facing section of the bank at the level of the buried soil (1973 excavation: photo: Alison Taylor).*

Figure 49. *Devils Dyke: north-west facing ditch section (1973 excavation). Figures are on original base of ditch (photo: Alison Taylor).*

Figure 50. *Devils Dyke: general photograph of the 1991 trench, looking north (scale in 0.5 m divisions).*

incorporated in the text. The shallowness of the fills precluded any useful pollen or soil micromorphological analysis.

Results (Fig. 51)

The fill was 0.75 m deep at the centre of the ditch, and lay on a flat-bottomed floor, just over 7 m in width (Fig. 52). Eighteen fills were recorded, mostly very slow silts over a primary deposit of chalky material in the corners of the ditch (Fig. 53). Three basic fills were identified, representing three stages in the silting of the ditch. The initial fills (8, 10–14 and 16–7) were layers of mostly chalk pieces and blocks, typical of frost talus accumulating in the first years of exposure (Jewell and Dimbleby 1966; Limbrey 1975: 291 and Fig. 33). Above these were secondary fills (5–7 and 18) of pale fawn loamy silts, at fairly low 'bedding' angles, reflecting a very slow accumulation of silts over a long period from the surface of the bank. The top layers (1–4 and 15) are part of a humic topsoil with much animal and root action, and are probably relatively modern. These final layers contained various modern artefacts (cf. Limbrey 1975: 292).

Molluscan analysis

The preliminary analysis of the molluscs, from column and 'spot' samples, corresponds very well with the three main phases in the ditch fills (frost talus, slow silt, and recent topsoil). The mollusc assemblage from all but the topmost fills was dominated by open-country snails, and shows that the loamy silt of the very long second phase developed within an open-country environment, probably grazed, whilst the snails from the late topsoil, with a mix of open-country and some 'shade' snails, probably reflect the invasion of scrub and the change from extensive grazing to intensive modern farming, with subsequent increased run-off.

Discussion

As already stated, in the region of the excavated section, the ditch of Devils Dyke is still open to about 4 m below the present ground surface, and contains a further 0.75 m of infill. The bank has a fairly regular sloping profile, which continues down into that of the ditch, the original base of which was flat and 7 m wide.

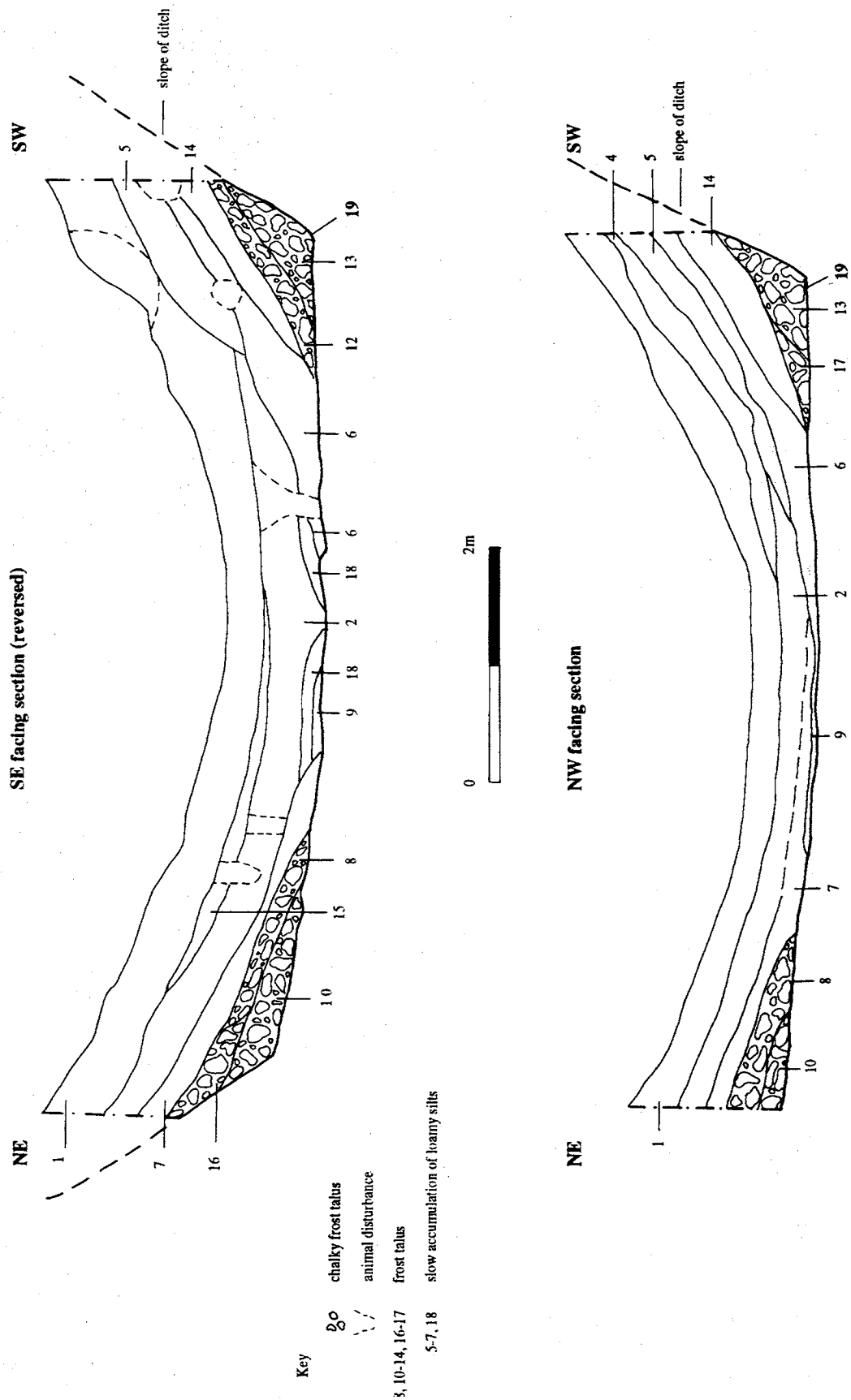


Figure 51. *Devils Dyke: sections through ditch fills (1991 trench).*

Figure 52. *Devils Dyke: photograph of the south-east facing section through the ditch fills (1991 trench: scale in 0.5 m divisions).*

Although the shallow depth of the ditch fills in 1991 was a little surprising, it is in harmony with Fox's observations in 1923 and 1924 and with his main conclusions. The small amount of frost talus and silting must indicate that little erosion of ditch or bank material has taken place, and this must reflect an original stable angle of repose in both bank and ditch. This seems evident in the character of the secondary fills, representing a very slow silting washed in from the surface of the bank and the adjacent fields (arable in the medieval period), and indicates that the monument very quickly reached relative stability, or indeed was stable from its construction, since it seems to have lost little of its original material, and seems not to have been remodelled. The molluscan evidence points to open-country conditions, probably with much grazing, with little substantial run-off until the advent of intensive agriculture in modern times, the decrease of grazing and the subsequent invasion of scrub into the ditch.

In all the sections excavated by Fox, Hope-Taylor and Wait, the evidence suggests that Devils Dyke is a single-phase monument, with a bank raised above a ditch with sloping sides. There is no evidence of it being ramparted, its effectiveness being a product of its size.

Environmental Analyses

Mollusca and other macrofossils: 1990s excavations

P. Murphy

The Cambridgeshire Dykes excavations provided an opportunity to obtain palaeoecological information on the Cambridgeshire chalklands from the immediately pre-Roman period into the seventh century AD.

Methods

Given the dry and highly calcareous nature of the deposits, land molluscs were the main palaeoecological indicators. Shells were extracted from samples using the methods of Evans (1972). The sieved fractions were partly scanned under a binocular microscope at low power to assess

Figure 53. *Devils Dyke: photograph of the south-west facing section through fills in the side of the ditch (1991 trench).*

the nature of shell assemblages, and assessment reports were prepared prior to full analysis (Murphy 1992 and 1993 a and b). Samples which were not thought to be worth analysing at this stage have been retained for possible future examination. Bulk samples were also taken from appropriate deposits to retrieve charred plant material by flotation, but these proved to contain little material, with abundant modern roots. Detailed study was not thought to be profitable. Samples from palaeosols and other deposits were examined for pollen by Erika Guttmann for Worsted Street, Fleam Dyke, Devils Dyke and Brent Ditch, but with negative results. Reports on the micromorphology of buried soils are given in separate reports by C. A. I. French (below). The excavation at Bran Ditch was visited by Patricia Wiltshire, who noted the potential of lake sediments in the adjacent Fowlmere for pollen analysis.

Bran Ditch

Sections across Bran Ditch were excavated close to its terminus adjacent to Fowlmere. The excavation was on low ground at the foot of a ploughed hillslope.

Contexts sampled by Duncan Schlee were an Iron Age enclosure ditch (34), a pit (Fill 20) and associated post-hole (Fill 23), the buried soil beneath the bank remnant (36) and fills of Bran Ditch itself (11, 37, 38, 39 and 40). Samples were collected from the buried soil as a short column, subdivided at 50 mm vertical intervals. Following assessment (Murphy 1993b), full analysis was confined to four contexts (Table 1).

As at Worsted Street, the base of the buried soil (36; sample 10, 0.30–0.35m) produced an assemblage indicative of shaded conditions (Fig. 55). It is notable that this assemblage is not composed principally of weathered robust shells: a range of taxa differing in durability is represented. For this reason, assemblage composition is not thought to be primarily a taphonomic effect (cf. Carter 1990), but to relate to a pre-monument woodland phase. Dating is a problem.

The base of the Iron Age ditch enclosing a low hill next to the mere (34; sample 12) included a snail assemblage with open-country

Table 1. *Molluscs from Bran Ditch.*

Context number	34	36	36	40
Sample number	12	4	10	15
Context type	IA ditch	Buried soil		Bran Ditch
Open country species				
Vertigo pygmaea (Draparnaud)	2	3	4	
Pupilla muscorum (Linne)	63	30	8	5
Vallonia pulchella (Müller)	8	4	1	4
Vallonia costata (Müller)	29	89	54	21
Vallonia excentrica Sterki	18	39	7	6
Vallonia spp (a)	156	191	93	50
Helicella itala (Linne)	5	22	4	3
Catholic species				
Cochlicopa spp	31	8	26	33
Trichia hispida group	145	191	43	114
Cepaea nemoralis (Linne)	2			
Cepaea/Arianta spp		4	10	10
Limacidae	6	3	6	11
Shade-loving species				
Pomatias elegans (Müller)	x	1	x	1
Carychium spp (b)	65	9	286	54
Vertigo pusilla Müller			2	
Acanthinula aculeata (Müller)			32	
Punctum pygmaeum (Draparnaud)	13	4	10	1
Discus rotundatus (Müller)	3	1	42	
Vitrina pellucida (Müller)		6		
Aegopinella spp	2	3	36	5
Vitrea spp	3		35	11
Nesovitrea hammonis (Strom)	6	1	26	5
Oxychilus sp				1
Zonitidae indet (a)	7	3	49	3
Euconulus fulvus (Müller)			1	4
Clausilia bidentata (Strom)			11	
Clausiliidae indet (a)	3	2	1	
Marsh species				
Succineidae indet		1		16
Vertigo angustior Jeffreys	3		1	
Freshwater'slum' species				
Lymnaea truncatula (Müller)		1	1	16
Anisus cf *leucostoma* (Millet)			2	9
Freshwater species				
Valvata cristata Müller				1
Bithynia sp (opercula)	1			
Lymnaea cf *peregra* (Müller)				22
Planorbis planorbis (Linne)				23
Armiger crista (Linne)				1
Sphaeriidae indet (juveniles)	1			1
Others				
Vertigo sp	1	1	2	4
Cecilioides acicula (Müller)		7	1	14
Unidentified (a)	1	4		2
Sample weight (kg)	1	1	1	1

Arionid granules present. (a) Immature/small apical fragments; (b) Mainly *C. tridentatum*. *C. minimum* also present.

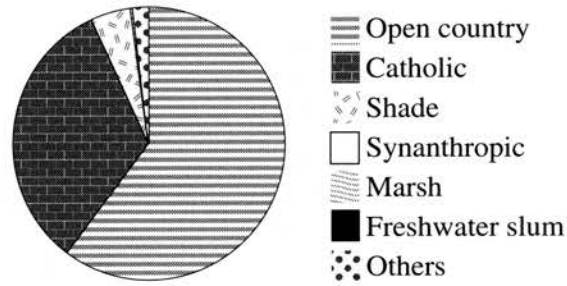


Figure 54. *Bran Ditch: molluscs from buried soil (Context 36, upper) (0–0.05 m. N=628).*

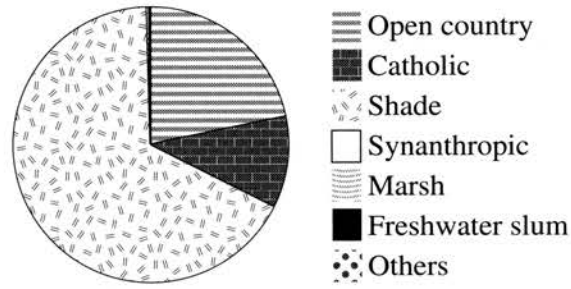


Figure 55. *Bran Ditch: molluscs from buried soil (Context 36, lower) (0.30–0.35 m. N=791).*

Table 2. *Charred cereals from the buried soil (36) at Bran Ditch.*

Context number	36	36
Sample number	4	10
Triticum sp (caryopses)	2	
Triticum sp (glume base)	1	
Triticum sp (spikelet base)	1	
Triticum spelta L. (glume base)		1
Hordeum sp (caryopsis fragment)	1	
Sample wt (kg)	1	1

and woodland terrestrial species. A possible interpretation is that this ditch enclosed a cleared hummock within a locally wooded environment.

The top of the buried soil under the bank (36; sample 4) contained snails indicating that the earthwork was constructed in open grassland (Fig. 54). However, catholic terrestrial species are common and *Pupilla muscorum* relatively rare. This, together with the presence of *Vallonia pulchella* and *Lymnaea truncatula*, indicates tall, damp grassland, in contrast to the results from Fleam Dyke and Worsted Street.

Context 40, a fill of Bran Ditch, included a mixed shell assemblage comprising open-country, catholic and shade-loving terrestrial

species, with marsh, freshwater slum and aquatic molluscs. The deposit presumably contained a substantial allochthonous component of shells derived both from the mere during flooding and shells transported down-slope.

Other noteworthy contexts were the undated pit (15; Fill 20) and associated post-hole (Fill 23). Samples from these were not analysed in detail, but assessment indicated the presence of predominantly open-country snails, associated with abundant avian eggshell fragments, some of which were discoloured by burning. It is possible that these relate to egg collection from wildfowl nests around the mere.

The buried soil (36) produced sparse charred cereal remains, including spelt and barley, presumably of Iron Age or Roman date (Table 2).

Brent Ditch

At this site the monument lay within a ploughed field. The bank and any buried soil beneath it had been levelled and destroyed, and only the ditch was available for sampling. Other small features examined included a small ditch apparently associated with the Roman road.

A discontinuous column of samples was taken from the ditch fills in Section 4 (Fig. 22) with additional topsoil samples from Section 5. Samples processed and assessed were:

Topsoil	3 (101), 4 (102)
Upper loamy fills	8 (103), 9 (105).
Underlying chalk rubble fills	10 (106), 12 (109), 20 (109)
Underlying loamy fills	11 (107), 13 (110), 14 (113)
Basal chalk rubble fills	15 (108), 16 (126), 17 (127)

From the possible road ditch in Trench C, two samples, 18 (151) and 19 (150), were examined.

The samples consistently produced assemblages of low species diversity, dominated by *Vallonia excentrica, V. costata, Pupilla muscorum, Helicella itala,* and the *Trichia hispida* group. Other taxa included *Pomatias elegans, Cochlicopa, Punctum pygmaeum, Nesovitrea hammonis,* limacids, arionids, *Cepaea* and *Cecilioides acicula. Candidula intersecta* and *C. gigaxii* occurred in the topsoil samples and in 103, and sporadically in deposits as deep as 107, where they were probably introduced by burrowing animals. The presence of these alien species in superficial deposits is unsurprising. Four representative samples from 101, 105, 110 and 127 were fully analysed (Table 3).

It appears that open conditions persisted throughout the period of ditch infilling: there is no evidence for any phase of scrub growth.

Table 3. *Molluscs from Brent Ditch.*

Context number	101	105	110	127
Sample number	3	9	13	17
Open-country species				
Truncatellina cylindrica (Ferussac)				2
Pupilla muscorum (Linne)	5	58	165	368
Vallonia costata (Müller)	2	4	4	69
Vallonia excentrica Sterki	6	16	77	27
Vallonia spp (a)	6	19	98	87
Candidula intersecta (Poiret)	1			
Candidula gigaxii (Pfeiffer)	2		3	
Candidula spp (a)	5	1		
Helicella itala (Linne)	8	16	38	152
Helicella/Candidula spp (a)	2			
Catholic species				
Cochlicopa spp		5	36	27
Cepaea/Arianta (b)		1		1
Trichia hispida group	1	2	90	
Limacidae	1	2	4	
Shade-loving species				
Pomatias elegans (Müller)	1	2	3	x
Punctum pygmaeum (Draparnaud)		1		5
Vitrina pellucida (Müller)				1
Zonitidae (a)	1			
Clausiliidae (b)		1		
Synanthropic				
Helix aspersa (Müller)	x			
Freshwater				
Bithynia tentaculata (Linne) (c)		4		
Others				
Cecilioides acicula (Müller)	9	13		
Burnt non-apical fragments		x		
Sample weight (kg)	2	2	2	2

Arionid granules also present. (a) Small apical fragments; (b) Abraded apices; (c) Opercula.

Most of the deposits were rapidly accumulated basal rubble fills, material derived from bank destruction or inwashed ploughsoil. The apparent absence of *Vertigo pygmaea,* a common grassland snail, and the frequent abundance of *P. muscorum,* a species favouring bare ground, implies that phases of stable, complete vegetation cover (if any) are not represented in these deposits. Samples 107 and 105 included a few opercula of the freshwater snail *Bithynia tentaculata,* some discoloured by burning, together with burnt non-apical shell fragments probably of other freshwater taxa. Sample 107 also included scraps of mussel shell. It is probable that these are related to nearby domestic activities – food refuse and perhaps residues from the burning of fen peat.

Table 4. *Molluscs from Worsted Street Roman road.*

Context no.	24	24	24	25	25	25
Sample no.	24.5	24.6	24.7	25.1	25.2	25.3
Depth (m) from top of context 24	0–0.05	0.05–0.10	0.10–0.15	0.15–0.20	0.20–0.25	0.25–0.30
Open-country species						
Truncatellina cylindrica (Ferussac)	2					
Vertigo pygmaea (Draparnaud)	7	10	4			
Pupilla muscorum (Linne)	346	550	167	6	22	7
Vallonia costata (Müller)	78	105	49	2	5	1
Vallonia excentrica Sterki	114	158	53	2	4	
Vallonia spp (a)	270	327	101	2	18	13
Helicella itala (Linne)	67	100	35	3	3	
Catholic species						
Cochlicopa spp	26	53	19	1	2	
Cepeaea/Arianta (b)	2	4	1	1	7	5
Limacidae		2				
Shade-loving species						
Pomatias elegans (Müller)	8	9	8	4	62	15
Carychium tridentatum (Risso)	1	3			7	3
Punctum pygmaeum (Draparnaud)	1	3	2			
Discus rotundatus (Müller)		x			3	x
Aegopinella sp (b)					1	
Zonitidae (b)					1	
Nesovitrea hammonis (Strom)	1	2	1			
Clausiliidae (b)	2	4	1	1	7	1
Others						
Helicella/Trichia sp.	43	47	16	1	1	5
Sample weight (kg)	1.8	2	1.6	2	2	2

Arionid granules also present. Shells generally poorly preserved. (a) Immature/small apical fragments; (b) Badly abraded.

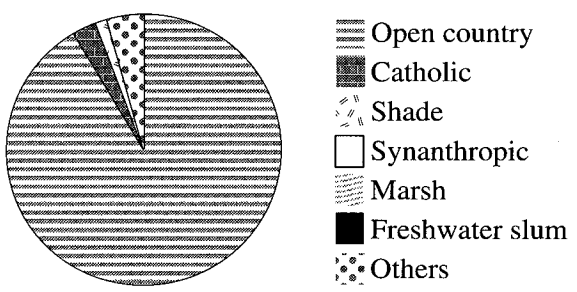


Figure 56. *Worsted Street: molluscs from buried soil (Context 24) (0–0.05 m. N=968).*

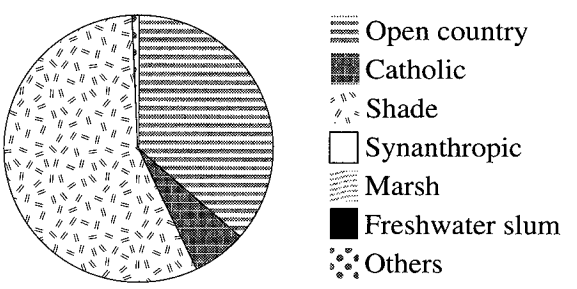


Figure 57. *Worsted Street: molluscs from buried soil (Context 25) (0.20–0.25 m. N=143).*

Worsted Street

A section across the Roman road, which is perpetuated as a modern lane, showed that layers of chalk and gravel metalling sealed an apparently intact palaeosol formed on chalk. It comprised two distinct horizons: 24, an upper, more organic silt loam (0.15–0.20 m thick) or former A horizon; and 25, a lower, less organic silt loam B horizon (0.15–0.20 m thick) (C. French, personal communication). A short column of samples, sub-divided at 50 mm intervals, was taken by Erika Guttmann from this buried soil for molluscan analysis (Table 4; Figs 56 and 57). Bulk samples were also assessed from Contexts 30, a possible tree throw-hole, and 60, the basal fill of an undated roadside ditch. These included some charcoal, small

mammal bone, abundant modern roots, and shells mainly of *Pupilla muscorum* and *Vallonia* spp. Shells were generally poorly preserved, weathered and pitted with holes and, in some cases, surface deposits of secondarily reprecipitated calcite, which has resulted in some identifications being only tentative.

The mollusc assemblages from the A horizon are composed almost entirely of snails characteristic of open conditions. *Pupilla muscorum* consistently predominates, *Vallonia costata, V. excentrica* and *Helicella itala* are common, and there are a few shells of *Truncatellina cylindrica* and *Vertigo pygmaea.* The apparent absence of the commonly associated *Trichia hispida* group at this site is notable. All other taxa occur at percentages of 4% or less. The road was clearly constructed across an open, at least locally treeless, landscape. *Pupilla* is particularly characteristic of earth bare of vegetation; and *Vertigo*, more indicative of stable conditions with a complete grass cover (Evans 1972: 143–148), is rare. This suggests that either there was very intense grazing locally, with soil disturbance by hooves, or that the site was under cultivation just before the road was laid out.

The assemblages from the B horizon also include open country snails, but at 0.20–0.25 m there is a marked concentration of shells of woodland snails, particularly *Pomatias elegans* but also *Carychium tridentatum, Discus rotundatus*, Zonitidae and Clausiliidae. Carter (1990) considers that concentrations of robust shells (e.g. *Pomatias elegans*) in the lower parts of palaeosols are a product of differential preservation, and do not give reliable ecological data. However, these taxa are not represented here by weathered apices, but by many intact, largely unweathered shells. Whatever the precise taphonomy of this assemblage of woodland taxa, it is thought to indicate a woodland or scrub phase at the site. Placing a date on this phase is difficult, although the good preservation of the shells suggests that it did not long pre-date the open conditions represented in the A horizon.

In summary, the road was constructed in an open landscape, possibly under cultivation locally, but woodland had been cleared from the site not long before.

Fleam Dyke

At Fleam Dyke, a section was cut through the bank and ditch just next to the A11. The surrounding area comprised arable fields sloping markedly towards the site. At the top of the dyke was a footpath, but its flanks and ditches were covered with buckthorn, hawthorn, wild privet, sloe, elder, roses, ivy and some fairly mature birches trimmed as a hedge where the scrub bordered the arable.

Beneath the bank, an area of buried soil about 10 by 2.5 m was exposed. From the bank section it was clear that there was more than one phase of construction, and so three column samples at different locations were taken from the soil (Samples 10–12), since it seemed probable that not all areas of soil were buried by bank construction contemporaneously. The columns also provided an opportunity to check for the presence of charred plant material and thereby to determine whether bulk samples from the soil (Samples 1–9) would be worth processing. Assessment of Samples 10–12, however, showed that they included very similar mollusc assemblages and only one (11) was fully analysed (Table 5; Fig. 58). There were only a few charcoal flecks in the samples and further work on charred macrofossils was not thought worthwhile.

The bank was largely constructed of chalk rubble, although there were some more humic layers within it, apparently representing phases of stabilisation between construction phases. Samples from two of these (47 and 22) were analysed. There were two ditch cuts. From the first cut, samples from Contexts 61, 62 and 64 were analysed, and from the second, samples from 6, 43, 44, 45, 71 and 50 (Table 5). Other samples were assessed but seemed very similar to those fully analysed (Murphy 1992).

The assemblages from the buried soil were composed almost entirely of open-country taxa (Fig. 58). Compared to the buried soil under Worsted Street, of late Iron Age or early Roman date, this late Roman or post-Roman soil includes a much higher proportion of *Pupilla muscorum.* Here it comprises up to 77% of total shells, compared to a maximum of 40% at Worsted Street. Apart from *Pupilla muscorum, Vallonia costata, V. excentrica* and *Helicella itala,* other species are rare: *Cochlicopa* spp. comprise up to 3.3%, the *Trichia hispida* group up to 1.6%, and all other snails under 1%. This clearly indicates a very open landscape locally, with soil surfaces apparently more disturbed than at Worsted Street, as a result of cultivation or heavy grazing pressure.

The fills of the first ditch cut produced similar shell assemblages: the basal rubbly fills (e.g. 64) contained fewer shells than upper layers representing a phase of stability (e.g. 61), but there seems to be little variation in species composition. Similar assemblages, dominated by *Pupilla* and *Trichia*, came from the second cut. Only at 2.25–2.35 m in Context 71 were shade-requiring snails present in any significant

Table 5. *Molluscs from Fleam Dyke.*

Context no.	4	4	4	47	22	61	62	64	6	43	43/44	45	71	50
Sample no.	11	11	11	13	14	16	18	19	22	23	25	27	28	30
Depth (m), where appropriate	0–0.05	0.05–0.10	0.10–0.15						0.75–0.85	0.95–1.05	1.15–1.25	1.75–1.85	2.25–2.35	2.65–2.75
Context		Buried soil		Layers in the bank		Layers in the first ditch cut			Layers in the second ditch cut					
Open country species														
Vertigo pygmaea (Draparnaud)			1				1		2	1		2		
Pupilla muscorum (Linne)	486	530	223	48	43	324	84	66	20	15	122	92	223	29
Vallonia costata (Müller)	17	57	18		3	27	10	7	6	1		1	50	
Vallonia excentrica Sterki	22	37	5	3	1	14	2	7	3			2	15	1
Vallonia spp (a)	46	86	16	6	5	41	26	18	6	5		2	96	
Helicella itala (Linne)	42	48	19	8	3	97	31	9	1	3	4	9	30	
Catholic species														
Cochlicopa spp	21	27	4		1	22	8	4		1			18	2
Trichia hispida group	3	13	2	2	3	37	7		106	71	93	11	109	
Cepaea/Arianta (b)				1			1							
Limacidae		1							1					
Shade-loving species														
Pomatias elegans (Müller) (c)	x	1	x	x	x	x	x	1	x	x	x	x	1	x
Punctum pygmaeum (Draparnaud)				1							1	3	6	
Vitrina pellucida (Müller)													1	
Aegopinella sp									2					
Nesovitrea hammonis (Strom)		4												
Oxychilus sp									1					
Zonitidae (a)													4	
Others														
Cecilioides acicula (Müller)							2	1	5	3	5	9	3	
Indeterminate (b)				1										
Sample weight (kg)	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Arionid granules also present. (a) small apical fragments/immature shells; (b) Abraded; (c) Mostly non-apical fragments.

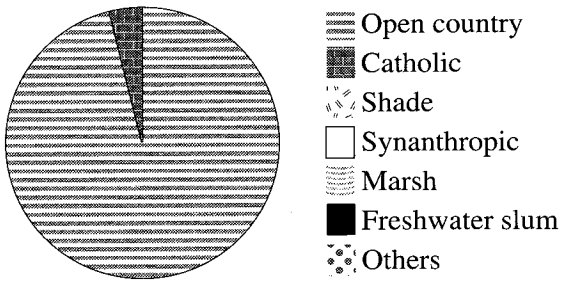


Figure 58. *Fleam Dyke: molluscs from buried soil (Context 4) (1991 trench) (0–0.05 m. N=637).*

numbers, but even in this layer there is no evidence for any significant scrub growth.

Layers 22 and 47 in the bank produced rather sparse assemblages of open-country snails, which suggests that insufficient time elapsed between phases of bank construction for many shells to become incorporated into the earlier bank surface.

Devils Dyke: pollen analysis, 1973 excavation

Geoffrey Dimbleby

Dr. Brian Hope-Taylor sectioned Devils Dyke in 1973, and suggested that the opportunity should be taken of obtaining evidence from the buried soil, which might indicate environmental conditions at the time of construction. For botanical evidence, pollen analysis of the soil was carried out; this report discusses the procedure and the findings.

Soil

An understanding of the nature of the soil is essential to the interpretation of the results. The buried soil was a rendzina, an A/C type soil, developed in Chalky Drift. The A horizon was 0.20 m deep, humus-stained and uniform. Such a horizon would have been intensively mixed by earthworms throughout its depth. It was sharply differentiated from the C horizon, the parent material, which was not investigated.

Sampling and counting

A column of ten contiguous 20 mm samples was taken, covering the whole depth of the A horizon. The samples were decalcified with hydrochloric acid, treated with hydrofluoric acid and then acetolysed. Slides were prepared on a quantitative basis to allow the calculation of the abundance of pollen, but in the event this proved uninformative and was not continued .

The frequency of pollen was very low, which meant that it was not possible to reach counts large enough to give reliable percentages for each sample; all totals exceeded 200 grains, which gives acceptable values for the better represented taxa. The results are presented in Figure 59.

In order to achieve greater precision, it is acceptable in a mixed soil to add up the counts for the whole profile; Table 6 gives the totalled counts for the ten samples and the percentages based on these. This is in effect a spectrum of all the pollen at the time the Dyke was constructed.

Also included in Figure 59 is a summary diagram of the relative occurrence of three composite categories:

1 Trees and shrubs
2 Herbs
3 Fern spores.

These will be discussed separately to illustrate the different considerations which have to be taken into account when attempting interpretation.

Table 6. *Amalgamated analyses of the Devils Dyke pollen.*

	counts	percent
Trees and shrubs		
Alnus	30	1.2
cf. *Castanea*	1	<0.1
Pinus	37	1.5
Quercus	44	1.8
Tilia	1	<0.1
Ulmus	2	<0.1
Corylus	77	3.1
Ligustrum	1	<0.1
Sum trees and shrubs	193	7.9
Herbs		
Gramineae	466	19.0
Cereal type	1	<0.1
Caryophyllaceae	1	<0.1
Chenopodiaceae	1	<0.1
Centaurea nigra	17	0.7
Compositae Liguliflorae	451	18.4
Compositae Tubuliflorae	20	0.8
Plantago lanceolata	96	3.9
Plantago major/media	13	0.5
Ranunculus type	4	0.2
Rosaceae	1	<0.1
Rubiaceae	8	0.3
Succisa	28	1.1
Varia	49	2.0
Sum herbs	1156	47.1
Fern Spores		
Filicales undiff.	388	15.8
Polypodium	69	2.8
Pteridium	649	26.4
Sum fern spores	1106	45.1
Total count	**2455**	

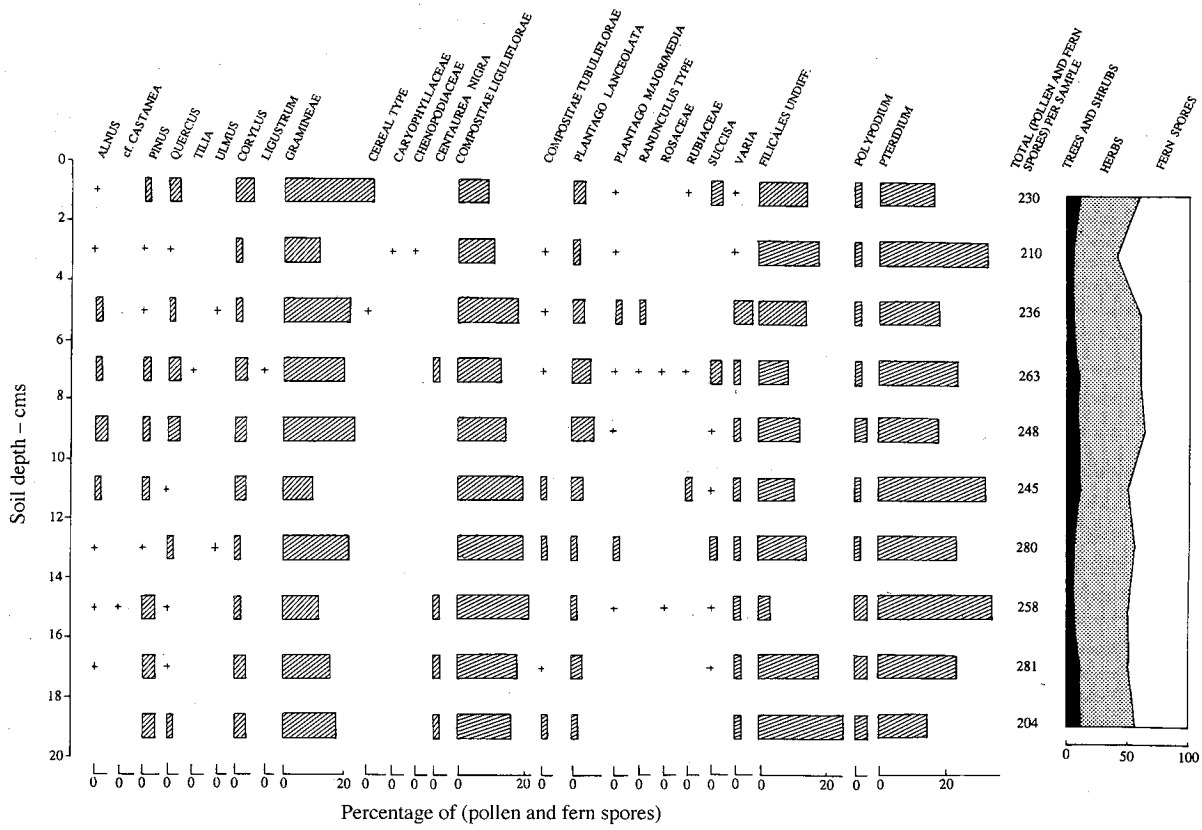


Figure 59. *Devils Dyke: pollen diagram (1973 excavation).*

Trees and shrubs

This group forms a minority of the pollen count for the whole profile. For dating purposes it is necessary to have an adequate representation of the spectrum of tree pollen at any one time. In this case this is not possible, because the totals are low and the pollen is mixed, so that pollen of different periods may occur together. The best that can be said on dating is that the data are not at variance with the archaeological post-Roman dating.

There is a surprisingly high level of pine (*Pinus*) pollen. At the time the dyke was constructed pine was scarce in southern England, so such a high representation is unlikely to have been due to wind dispersal from other areas. From a number of more recent analyses of chalk soils, both prehistoric and contemporary, there are indications that the traces of pine pollen, which is very resistant to decay and whose grains are easily recognised, may be a relic from a pre-clearance phase (see also Fern spores, below).

The only shrub consistently recorded throughout the profile is hazel (*Corylus*), but its occurrence is low compared with other soil analyses of comparable periods. This may be due to pressure of grazing and browsing; hazel is readily eaten by most grazing stock.

Herbs

Grasses (Gramineae) make up the bulk of the herb pollen. In common with almost all other calcareous soils there is a strong element of Compositae Liguliflorae (dandelions, hawkbits, etc.). These have easily recognisable pollen grains, although with preservation as poor as in this soil it is not possible to distinguish different genera. Their pollen is very resistant to decay and this, combined with their ease of recognition, may account for the fact that they are such a conspicuous element of calcareous soil analyses.

One other species figures substantially here and is widely present in soil analyses: ribwort plantain (*Plantago lanceolata*). Today it is a common plant of waysides and wasteland, but its most characteristic habitat is grassland that has been mown or grazed. Other herbs in this analysis which are found in the same habitat are the bedstraws (Rubiaceae), other plantains (*P. major/media*), buttercup (*Ranunculus* type) and the lesser knapweed (*Centaurea nigra*).

Pollen evidence of plants of arable land is low. The families Caryophyllaceae and Chenopodiaceae are present in traces and one grain of cereal-type pollen was recorded.

Fern spores

This category is distinct from the previous two in that it is based on taxonomy rather than ecology. Fern spores are remarkably resistant to decay and therefore, through differential decay, they can dominate an analysis. This is a common phenomenon in soils of most types, particularly those which are the most active microbiologically, that is to say, soils of neutral or high pH.

However, fern spores cannot be lumped together as of equal significance. There are three distinct types. Many produce a smooth kidney-shaped spore; it is not possible to identify these further. They are listed as Filicales undifferentiated. Without being able to identify the species, it is not possible to speculate on their origin.

A second type is recorded as *Polypodium*. This is also kidney-shaped, but it is large and has a thick patterned wall which is easily recognisable. The three British species differ somewhat in habitat preference, but their occurrence is of no archaeological significance. They may be relics from an earlier period.

Finally there is bracken (*Pteridium*); this is an important plant today and may be of some archaeological relevance. Its spores, which are quite unlike those of the other groups, occur conspicuously in many chalk soils, although bracken is not a common plant on chalk today, apparently preferring acidic soils. However, it can grow on soils of high pH, and it has been suggested that fire may have been a factor in changing its soil preference. Here, too, there is the possibility that bracken spores may be relic in origin. We urgently need some pollen spectra which relate specifically to the period of conversion from woodland to grassland on chalk soils; such evidence is at the moment lacking.

Discussion

Leaving aside those taxa which are probably over-represented because of differential decay, the overall picture presented by these data is of short-turf grassland. Tree and shrub pollen is scarce and probably the result of long-distance wind transport. There is no more than a trace of arable land use; on the other hand there is consistent evidence that the grassland was maintained by grazing.

Although the buried soil contains free calcium carbonate, this can be attributed to the fact that it had been buried for so long under a metre or two of Chalky Drift. The pollen shows no species of high fidelity to chalk grassland, although these have been found in other contexts. Those taxa present here are consonant with a circumneutral soil. This would tally with the deep A horizon, suggesting that it had been undisturbed for long enough for some degree of decalcification to have taken place.

Devils Dyke: mollusca, 1973 excavation

K.D. Thomas

Samples were taken at 100 mm intervals from 0.15 m below the surface of the exposure to a depth of 0.60 m. A sample only 50 mm thick was taken at the surface of the buried soil.

Shells were extracted from 0.5 kg samples of air-dried soil by wet sieving. The numbers of identifiable apical fragments are given in Table 7; non-apical fragments are indicated by a +.

The species of *Vallonia* are entered in Table 7 as a single taxon. Two species of this genus were encountered: *V. costata* (Müller) and *V. excentrica* Sterki. Although in all of the samples *V. excentrica* was the more abundant of the two species, it was not possible to separate all of the specimens with a high degree of certainty. Thus they are treated together.

Figure 60 shows a histogram of the percentage frequencies of molluscs through the profile. Apart from minor fluctuations, there is not a great deal of variation through the profile in the composition of the mollusc assemblages. The deepest sample yielded a rather low total number of shells but, interestingly, had the highest species diversity of all the samples. The relatively high frequencies of *Pomatias elegans* in the lower samples may be a reflection of the resistance of these shells to destruction. However, as is suggested below, they may represent rather different environmental conditions.

The species have been grouped according to their ecological preferences; the frequencies of these groups are shown in Table 8. Open-country species (*Vertigo pygmaea*, *Pupilla muscorum*, *Vallonia* spp. and *Helicella itala*) predominate throughout the profile. A grassland habitat is indicated. This grassland was probably fairly stable, as suggested by the presence of *Vertigo pygmaea*, albeit at rather low

Table 7. *Absolute frequencies of Mollusca from the Devils Dyke samples.*

	Depths (m)				
	0.15–0.25	**0.25–0.35**	**0.35–0.40**	**0.40–0.50**	**0.50–0.60**
Species/genus					
Pomatias elegans (Müller)	5	1	+	22	28
Cochlicopa lubricella (Porro)	18	24	15	30	10
Vertigo pygmaea (Drap.)	5	19	12	5	–
Pupilla muscorum (Linn.)	111	304	165	164	95
Acanthinula aculeata (Müller)	–	–	–	–	3
Vallonia spp.	95	170	171	198	89
Clausilia bidentata (Ström)	4	2	1	6	7
Cepaea sp.	+	+	+	3	1
Trichia hispida (Linn.)	24	21	39	61	9
Helicella itala (Linn.)	53	23	21	50	29
Punctum pygmaeum (Drap.)	4	1	6	3	1
Discus rotundatus (Müller)	–	–	–	–	6
Oxychilus cellarius (Müller)	–	–	–	–	5
Totals	**319**	**565**	**430**	**542**	**283**

+ = non-apical fragments

Table 8. *Percentage frequencies of ecological groups of molluscs in the Devils Dyke samples.*

	Depths (m)				
	0.15–0.25	**0.25–0.35**	**0.35–0.40**	**0.40–0.50**	**0.50–0.60**
Ecological preference					
Catholic	14.41	7.85	13.95	17.88	7.41
Open-country	82.77	91.62	85.82	76.95	75.28
Shade	1.25	0.35	0.23	1.11	7.42
Loose soil	1.57	0.18	+	4.06	9.89

+ = non-apical fragments

frequencies, and the grass fairly short (*Helicella itala* is a heliophilous species, preferring open grassland). Thus, it is possible that the grassland was used for pasture; the palynological evidence points to a similar conclusion (G. W. Dimbleby, personal communication).

The deepest sample is of some interest in that it contains the highest frequencies of those species preferring loose soil or shaded conditions (including *Acanthinula aculeata*, *Clausilia bidentata*, *Discus rotundatus* and *Oxychilus cellarius*). A rather less stable grassland is suggested (*Vertigo pygmaea* is absent) with rather loose or disturbed soil (*Pomatias elegans* is a burrowing species). The relative abundance of shade-preferring species at this level may indicate the presence of tall vegetation, but the fairly high frequency of *Helicella itala* argues against this.

It is possible that this deep sub-fossil assemblage may reflect a land surface which, although largely covered by grass, was rather unstable and littered with calcareous debris. Evans and Jones (1973) have shown that rock-rubble habitats may provide suitable microclimates for typically 'woodland' species of snails, notably of the genera Oxychilus, Vitrea and Discus. The present 'mixed' fauna may reflect similar conditions, as postulated above.

Devils Dyke (1991)

P. Murphy

Excavation at this site was confined to a section through the ditch deposits: the pipeline was tunnelled through the bank, so there was no opportunity to sample the bank make-up or any buried soil beneath it.

The excavation was in an area of scrub, dominated by elder with wild privet, hawthorn, sloe, brambles, ivy, ground ivy and nettles. At the margins of the scrub there was a tall herb vegetation of nettles, goosegrass, hogweed, wild carrot, wild mignonette, musk thistle and greater knapweed, with some brambles and small bushes of sloe and elder. It appeared that this vegetation was of fairly recent development and that scrub was in the process of spreading along the earthwork from the site into areas still under short grassland,

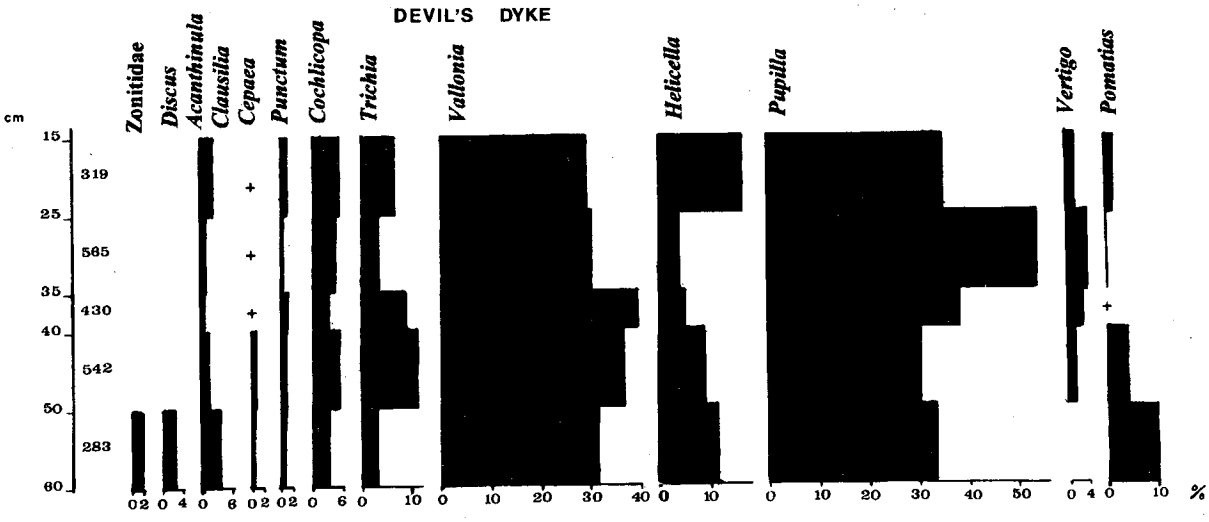


Figure 60. *Devils Dyke (1973 excavation). percentage frequencies of mollusc genera (see Table 7 for species identifications). Numbers on the left are numbers of shells per 0.5 kg of soil (K.D. Thomas).*

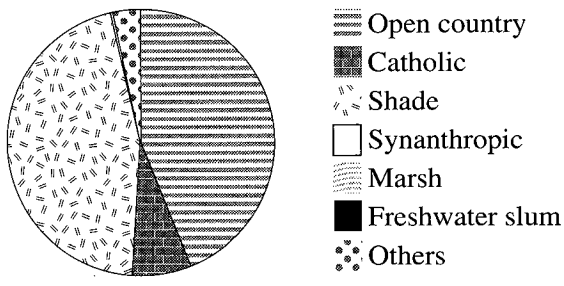


Figure 61. *Devils Dyke: molluscs from modern soil under elder scrub (1991 trench) (N=842).*

presumably as a result of reduced grazing pressure.

The following samples were collected from the ditch fills:

a) Central column 1.1
1.2 Layer 1, subdivided at 100 mm intervals
1.3
15.1
2.1
2.2 Layer 2, subdivided at 100 mm intervals
2.3
18.1

b) Spot samples from layers at edges of ditch 7.1, 8.1, 12.1, 14.1 and 16.1.

Assessment of the sieved fractions indicated that there seemed to be three main phases of deposit accumulation: an initial phase of infilling with chalky rubble; stabilisation of the ditch profile and, recently, development of a humic soil under elder scrub.

Table 9. *Molluscs from Devils Dyke.*

Context number	1	2	18
Sample number	1.1	2.2	18.1
Open country species			
Vertigo pygmaea (Draparnaud)	3		2
Pupilla muscorum (Linne)	101	80	46
Vallonia costata (Müller)	69	7	9
Vallonia excentrica Sterki	19	18	24
Vallonia spp (a)	162	51	37
Helicella itala (Linne)	16	9	18
Catholic species			
Cochlicopa spp	37	2	4
Trichia hispida group	18	27	23
Limacidae	5	1	1
Shade-loving species			
Pomatias elegans (Müller) (d)	x	x	1
Carychium tridentatum (Risso)	61		
Ena obscura (Draparnaud)	4		
Punctum pygmaeum (Draparnaud)	17	3	2
Vitrina pellucida (Müller)	109		1
Aegopinella spp (b)	141		
Oxychilus sp	4		
Zonitidae (a)	25		2
Clausiliidae (c)	1		
Trichia striolata (Pfeiffer)	20		
Synanthropic species			
Helix aspersa Müller (d)	1		
Others			
Trichia spp (a)	17		
Cecilioides acicula (Müller)	12	11	6
Sample weight (kg)	2	2	2

Arionid granules also present. (a) Small apical fragments; (b) *A. pura* and *A. nitidula* present; (c) Abraded, (d) Non-apical fragments.

The mollusc assemblages throughout all but the topmost fills were dominated by open-country snails. Two representative samples (2.2 and 18.1) were analysed quantitatively (Table 9). These clearly resemble the open country assemblages from the A horizon under Worsted Street, although the *Trichia hispida* group is common here. Open, disturbed conditions are clearly represented.

The modern topsoil sample (1.1) includes an interesting mixed assemblage of open-country and shade-requiring species (Fig. 61). Some common 'shade' snails are apparently absent (notably *Discus rotundatus*) and this presumably is related to accidents of colonisation: the elder scrub at the site is isolated from any nearby woodland by arable land and short-turfed grassland.

General conclusions

P. Murphy

At all sites investigated, molluscs from buried soils and ditch fills clearly indicate construction in open, probably grassland, habitats. However, there are marked variations in assemblage composition (Figs 54, 56, 58 and 62). The assemblage from the top of the buried soil at Fleam Dyke (Fig. 58) produced an extreme open-country assemblage, dominated by *Pupilla muscorum*, indicating a high proportion of bare ground and disturbed soils in the vicinity. At the other extreme is Bran Ditch (Fig. 62), where there was a higher proportion of catholic land molluscs and *Pupilla* was rather scarce. The presence at this latter site of freshwater and marsh species indicates wetter conditions and periodic flooding. Taller, damp grassland is indicated.

At the bases of the buried soils under Worsted Street and the bank of Bran Ditch, snail assemblages indicative of shaded conditions predominated (Figs. 55, 57 and 63). These are considered to relate to more wooded conditions at these sites at an earlier period, rather than being taphonomic artefacts. The basal assemblage from Worsted Street (Fig. 57) resembles, in its gross composition, the assemblage from a modern soil under scrub predominantly of elder at the Devils Dyke (Fig. 61). The main shade snail in the assemblage from Worsted Street is *Pomatias elegans*, indicative of soil disturbance. An assemblage from an Iron Age ditch at the site of Bran Ditch is thought to indicate locally open conditions in a wooded area, and provides support for the ecological interpretation of the basal palaeosol assemblages.

Samples were inspected for charred plant remains, but only at Bran Ditch were significant amounts of charred cereals (spelt, barley) present. It seems likely that these were derived from crop processing activity further up-slope. They are likely to be of Roman or Iron Age date.

The linear earthworks of Cambridgeshire represent fossil transects across the interfluves and there is little doubt that sampling buried soils at intervals along their lengths would provide information on spatial variations in vegetation cover across the landscape just before construction. The suggestion that the south-eastern termini of these earthworks mark the boundary of dense woodland is amenable to testing by mollusc analysis. As has been shown above, the soils also preserve semi-stratified chronological sequences, with potential information on variations in land-use history. Further information on the vegetational history of the area could come from pollen analysis of lake sediments within the Nature Reserve at Fowlmere.

Micromorphological analysis of the buried soils: 1990s excavations

C.A.I. French

Introduction

The recent campaign of investigation into the linear earthworks of South Cambridgeshire provided the opportunity to compare and contrast evidence of soil micromorphology across a wide transect of country and to help set these monuments in their contemporary physical context. Accordingly, samples were taken through the banks and associated ditches at Fleam Dyke and through the Roman road at Worsted Street, both of which monuments were found to have preserved buried soils, and a few samples were also taken at Bran Ditch and Brent Ditch. At Bran Ditch, although the bank was largely ploughed out, a buried soil did survive, but at Brent Ditch no palaeosols survived.

Methodology

Given the previous lack of evidence for the setting in which these linear monuments were built, the environmental programme combined micromorphological analysis of the buried soils beneath the banks by the present writer and molluscan anlaysis of these same soils and adjacent ditch deposits by Peter Murphy (above).

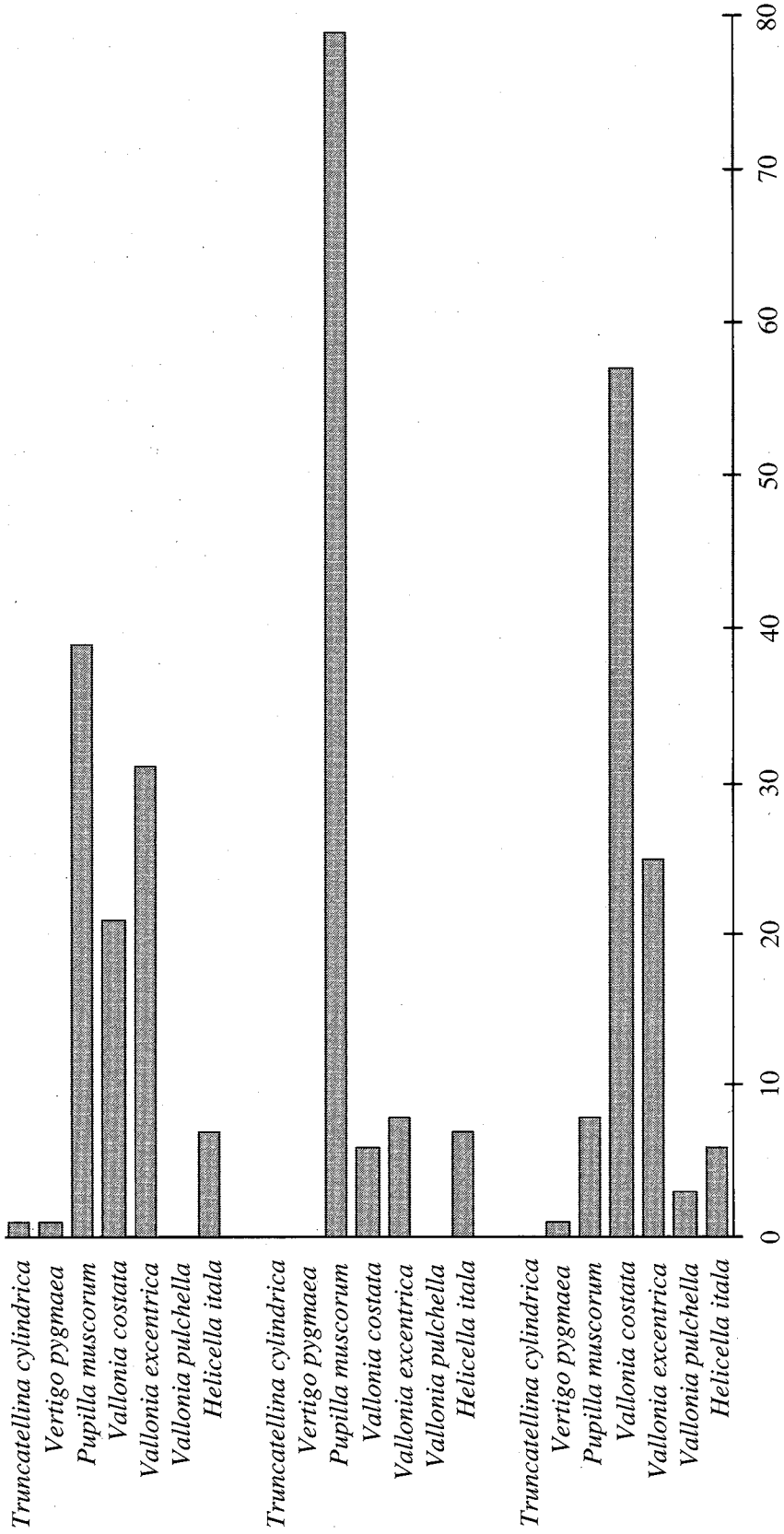


Figure 62. *Cambridgeshire Dykes: percentage composition of mollusc assemblages (open country component). Top: Worsted Street, Context 24, N=884. Middle: Fleam Dyke, Context 4, N=613. Bottom: Bran Ditch, Context 36, N=378.*

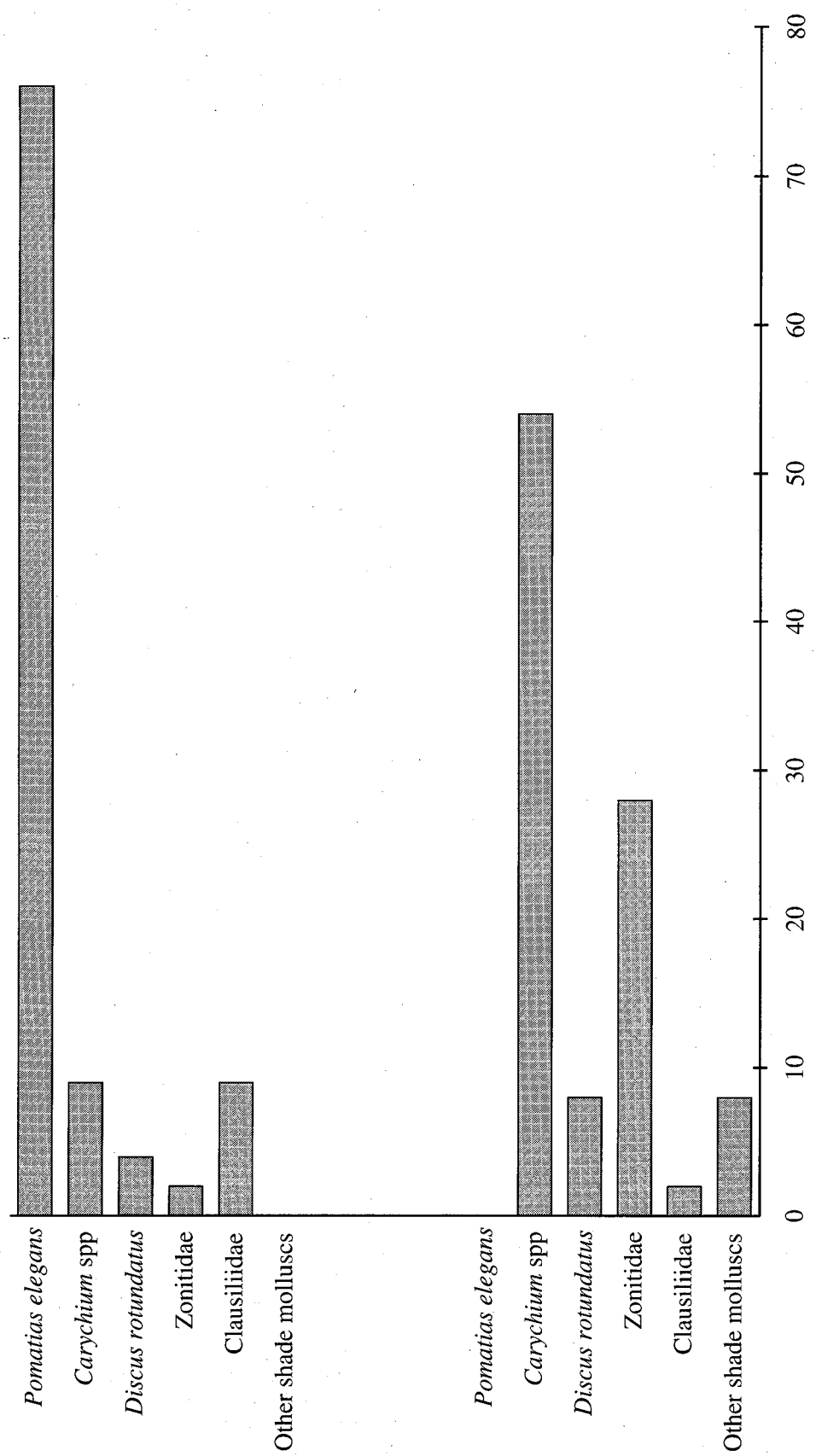


Figure 63. *Cambridgeshire Dykes: percentage composition of mollusc assemblages (shade component). Above: Worsted Street, Buried soil, 0.20–0.25 m. N=57. Below: Bran Ditch, Buried soil, 0.30–0.35 m. N=531.*

Accordingly, the buried soil profiles beneath the banks at Fleam Dyke, Bran Ditch, and the Roman road, or Worsted Street, were sampled as intact blocks and made into thin 'mammoth' sections (after Murphy 1985). The thin sections were described in detail (see Appendix) using the internationally accepted terminology of Bullock *et al.* (1985).

Bran Ditch

At this site, the bank was almost ploughed away, but consisted of a thin zone of surviving chalk rubble. Beneath this was a *c.* 0.25 m thick, very dark brown loam containing frequent fine (<10 mm) chalk fragments.

In thin section, this palaeosol had a uniform calcitic fine sand composition, with only minor amounts of organic matter and textural pedofeatures (see Appendix). There were few clues as to its past development, except for the incorporation of substantial amounts of amorphous and microsparitic calcium carbonate throughout the groundmass, infilling the void space to a greater or lesser degree.

The surviving palaeosol under the thin remnant of the chalk rubble bank was a structureless fine sand dominated by secondary calcium carbonate formation. There was no evidence of horizonation or significant textural pedofeatures. This suggests that this was a poorly developed rendzina type soil with an A horizon developed directly on the chalk subsoil. The upper humic or Ah horizon has been destroyed by subsequent oxidation and/or the construction of the bank. It is therefore a very similar profile to that observed at Fleam Dyke.

The substantial proportion of secondary calcium carbonate within the groundmass could have resulted from the burial of chalk rubble during the construction of the bank, just as apparently occurred in the Worsted Street and Fleam Dyke profiles. At this site, the subsequent infilling of the void space is probably a more recent feature caused by ploughing and leaching of calcareous soil water.

Worsted Street

The section cut through the surviving profile of this Roman road revealed a well preserved buried soil which had developed on the chalk subsoil, sealed beneath the road make-up. This buried soil was composed of two distinct horizons: an upper, brown, more organic silt loam and a lower, less organic, greyish brown silt loam. There were no visual indications of disturbance or truncation.

In thin section, both horizons exhibit relatively similar characteristics, although the upper horizon has a less porous structure, a slightly greater organic component and stronger brown colour (see Appendix). The whole profile exhibits a moderately well developed small blocky ped structure. The sandy loam matrix is characterised by a general absence of organic matter, partially 'cemented' by secondary amorphous calcium carbonate formation and abundant dusty clay formation within the groundmass and as coatings of quartz grains. The upper horizon, in particular, contains a much greater quantity of amorphous organic matter, and is slightly coarser in terms of its quartz sand content. There is no indication of any turf surviving in the upper part of this horizon.

The relative absence of organic matter from the lower horizon of the buried soil beneath the *agger* of the Roman road, as well as the occurrence of illuvial clays well integrated into the groundmass of the soil, suggests that this is a weathered or cambic (Bw) lower B horizon. The illuvial dusty clays indicate a degree of soil disturbance and the movement of soil fines down the profile, but this disruption could have been caused by the building of the road itself; there is no need to invoke former episodes of clearance or ploughing. The abundance of amorphous calcium carbonate formation throughout the matrix suggests continued leaching of lime-rich water, as a result of burying the chalk rubble make-up of the road, and its secondary deposition lower down the profile. The upper horizon is more or less similar to this underlying Bw horizon except for the much greater organic component. Combined with the absence of any evidence for an horizon of turf, this would indicate that this upper horizon is a lower A horizon.

This pre-Roman road profile therefore represents a poorly to moderately well developed brown earth, about 0.40 m thick. The profile has only been slightly truncated, and only its turf removed.

Fleam Dyke

Beneath the substantial series of surviving banks, there was a clear buried soil. Unlike that observed at Worsted Street, it was composed of one thin (*c.* 0.20 m) and homogeneous horizon. In this case, the palaeosol was a reddish brown silt loam containing common small, subrounded chalk fragments, developed directly on the chalk subsoil. In thin section, this soil horizon was indeed a silt loam with little or no

organic or clay component (see Appendix). As in the Worsted Street section, the groundmass is characterised by the presence of calcium carbonate, either as coarse sand size aggregates or as an amorphous mass. There is no secondary calcium carbonate within the void space.

The high proportion of secondary calcium carbonate material suggests that this soil underwent a considerable period of leaching and calcium carbonate formation and redeposition. This was possibly associated with the disturbance caused by the construction of the bank itself. Significantly, this did not appear to have continued after the construction of the bank.

By comparison with the profile at Worsted Street, the thin single horizon here suggests a much more poorly developed soil, more of a rendzina than a brown earth, that has suffered considerable truncation. It is suspected that most of the turf and upper half of the soil was incorporated into the bank. This type of thin rendzina soil profile is generally associated with deforestation and intensive cultivation after the early Bronze Age on the chalk downlands of the Wessex region (Evans 1972; Limbrey 1975).

Conclusions

Although buried soils survived at all three sites, they were not particularly informative on past environmental conditions and land-use. In general, they were thin rendzina soils (at Fleam Dyke and Bran Ditch), and a thin, very poorly developed brown earth at Worsted Street. These types of soil are generally associated with open downland types of environment, a conclusion that is in broad agreement with the molluscan data (see above).

Although these soil types were to be expected, they have all suffered some truncation of their upper humic A horizons. This truncation is probably associated with the construction of the road and banks themselves.

In addition, each soil profile exhibited considerable secondary formation and intrusion of calcium carbonates. Much of this secondary calcium carbonate deposition is undoubtedly associated with the burial of these soils by either road make-up or banks composed of chalk rubble.

Appendix: the detailed soil micromorphological descriptions

Bran Ditch, Fowlmere (FOWBD93)

Trench A: Samples 1 and 2

Structure: apedal to very weakly developed vughy; homogeneous

Porosity: 20%; 15% vughs, irregular to sub-rounded, smooth to weakly serrated, unoriented, 100 μm–6 mm, almost all infilled by amorphous and microsparitic calcium carbonate, original proportion of vughs much higher, *c.* 25%; 5% channels, irregular, smooth to weakly serrated, walls partially accommodated, 100 μm–1 mm wide, 2–8 mm long

Organic components: <2% very fine flecks of organic matter in groundmass, 25–50 μm; <2% fine charcoal, sub-rounded to irregular, 50–100 μm and 1–2 mm with cell structure evident

Mineral components: Fabric 1: limit 100 μm; coarse/fine ratio: 15/85; coarse fraction: 5% medium and 10% fine quartz, sub-rounded to sub-angular, 100–500 μm; fine fraction: 10% very fine quartz, sub-rounded to sub-angular, 50–100 μm; 5% silt and 5% clay; very weakly speckled; 65% amorphous and microsparitic calcium carbonate; pale greyish brown (CPL), pale brown (PPL), pale yellowish brown (RL); *c.* 50–75% of total groundmass; Fabric 2: intrusive fabric of amorphous and microsparitic calcium carbonate; <25% of groundmass in upper three quarters of profile and up to 50% of groundmass in lower quarter of profile; also discontinuously to continuously infills void space, with *c.* 25–90% of voids infilled

Groundmass: fine and related: closed porphyric; coarse: undifferentiated

Pedofeatures: textural: occasional (5%) non-laminated dusty clay in groundmass, weak to moderate birefringence, amber (CPL); *fabric:* see Fabric 2 above; *amorphous:* very few (<2%) sub rounded sesquioxide nodules, <250 μm; few shell fragments in cross-section.

Worsted Street (FULMF/91)

Profile 1/2: lower half of Context 24

Structure: small sub-angular to sub-rounded blocky peds, <10 mm, all partially cemented with amorphous calcium carbonate

Porosity: <35%; 20% interpedal channels, irregular, walls partially accommodated, weakly serrated, <1 mm wide, mainly <10 mm long with one example *c.* 5 mm long; 10% interpedal vughs, sub-rounded to irregular, weakly serrated, <2mm in diameter; 5% intrapedal vughs, sub-rounded to irregular, <2 mm; <2% intrapedal channels, irregular, <75 μm wide, <500 μm long, weakly serrated, walls partially accommodated

Organic components: few (2%) very fine flecks of amorphous organic matter, sub-angular, <50 μm, usually well incorporated within groundmass

Mineral components: limit 100 μm; coarse/fine ratio: 35/65; coarse fraction: 20% medium and 15% fine quartz, sub-rounded to sub-angular, 100–300 μm, unoriented; fine fraction: 15% very fine quartz, 50–100 μm, sub-rounded to sub-angular; 25% silt, 15% clay, and 10% amorphous calcium carbonate; weakly speckled; reddish brown (CPL), amber (PPL), orange (RL)

Groundmass: fine and related: porphyric; coarse: undifferentiated

Pedofeatures: textural: rare (<2%) non-laminated limpid clay, moderate to strong birefringence, yellow (CPL); abundant (13%) non-laminated dusty clay in groundmass and of grains, orangey red (CPL); *amorphous:* very rare fragment of shell; generally cemented with amorphous sesquioxides; very few (<2%) sesquioxide nodules, sub-rounded, <250 μm; rare (<1%) amorphous manganese staining of groundmass, <500 μm; few (5%) sub-rounded aggregates of amorphous calcium carbonate, <250 μm, within the groundmass; micrite crystals, 25–50 μm, up to 20% of the fine groundmass.

Profile 1/1: upper half of Context 24

This thin section is similar in its description to Sample 2 above, except for:

Structure: denser and smaller ped size than Sample 2, <5 mm

Porosity: <20%; 10% interpedal channels, irregular, walls partially accommodated, weakly serrated, <500 μm wide and <1 mm long; 4% interpedal vughs, sub-rounded, weakly serrated, <500 μm; 2% intrapedal channels, irregular, <50 μm wide and <200 μm long; <2% intrapedal vughs, subrounded, <250 μm

Organic components: few (5%) very fine flecks of amorphous organic matter, <50 μm; whole groundmass is generally 'stained' with amorphous organic matter

Pedofeatures: textural: c.10% non-laminated dusty clay of groundmass, poor to moderate birefringence, gold (CPL).

Fleam Dyke (BALFD/ 91)

Profile 1

Structure: poorly developed, small, irregular to sub-angular blocky to cracked to massive structure in places, peds <5 mm

Porosity: <20%; 10% interpedal channels, irregular, weakly serrated, walls partially accommodated, <0.5 mm wide, <10 mm long; 5% intrapedal channels, irregular, weakly serrated, walls partially accommodated, <100 μm wide, <0.5 mm long; 5% intrapedal vughs, sub-rounded to irregular, 1–3 mm or <300 μm

Organic component: rare (<1%) very fine flecks of black amorphous organic matter/charcoal within fine groundmass, <50 μm

Mineral components: limit 100 μm; coarse/fine ratio: 15/85; coarse fraction: 5% coarse, 5% medium and 5% fine quartz, sub-rounded to sub-angular, 100–500 μm; fine fraction: 5% very fine quartz, sub-rounded to sub-angular, 50–100 μm; 50–60% silt; 20–30% amorphous calcium carbonate, often occurring in coarse sand size aggregates; medium brown to greyish brown (CPL), greyish brown (PPL), white and yellow (RL)

Groundmass: fine and related: closed porphyric; coarse: undifferentiated

Pedofeatures: amorphous: 20–30% amorphous calcium carbonate within the fine fraction; commonly occurs as coarse sand size aggregates within the groundmass; rare (<1%) shell fragment; rare (<1%) calcium carbonate replaced plant tissue.

The Radiocarbon Determinations

Alex Bayliss, Paul Pettitt & Tim Malim

Eight radiocarbon age determinations were processed by the Oxford Radiocarbon Accelerator Unit in 1993 and 1995 (see Table 10). The laboratory maintains a continuous programme of quality assurance procedures, in addition to participation in international intercomparisons (Rozanski *et al.* 1992; Scott *et al.* forthcoming). These tests indicate no laboratory offsets and demonstrate the validity of the precision quoted.

The seven measurements from Fleam Dyke were on animal bone from the primary or secondary fills of the first phase ditch, or from material upcast to form the banks. Whilst the taphonomy of such samples is not obvious, the absence of other cultural material on the site suggests that it may relate to the use of the monument. The consistency of the results supports this interpretation. The strategy of submitting a number of items for dating was adopted to ensure that any residual samples were identified as such, as it would be unlikely that all the material dated was residual to the same extent, particularly given the lack of earlier archaeological features beneath the excavated section of the Dyke.

The single measurement from Brent Ditch was on a fragment of human bone from the primary silt. The difference in date between this item and the Roman coins from slightly further up the profile strongly suggests that this item is residual.

Radiocarbon analysis

In the laboratory the bone samples were prepared by extracting the protein 'collagen', using a semi-automated continuous-flow process (Law and Hedges 1989), before purification by means of gelatinisation and ion-exchange (Hedges and Law 1989). Combustion to carbon dioxide (CO_2) was done using a Europa Scientific Roboprep/CHN analyser (Hedges *et al.* 1992). Correction for isotopic fraction involved measuring the $\partial^{13}C$ of a small aliquot of gas and is to within ±0.5–1.0‰. The age determination was carried out using an accelerator mass spectrometer (AMS) system filled with a CO_2 gas ion-source (Bronk and Hedges 1987, 1989

Table 10. *Radiocarbon age determinations.*

Laboratory number	Radiocarbon age (BP)	$\delta^{13}C$ (‰)	Calibrated date range (1σ)	Calibrated date range (2σ)
Fleam Dyke				
OxA-4066	1580±55	-21.8	cal AD 410–550	cal AD 340–610
OxA-5349	1530±50	-20.2	cal AD 430–600	cal AD 410–640
OxA-5350	1615±50	-21.2	cal AD 390–530	cal AD 260–560
OxA-5351	1430±55	-21.5	cal AD 590–660	cal AD 530–680
OxA-5352	1535±50	-21.2	cal AD 430–600	cal AD 410–630
OxA-5353	1390±45	-22.1	cal AD 620–670	cal AD 590–680
OxA-5354	1510±45	-21.7	cal AD 530–610	cal AD 420–640
Brent Ditch				
OxA-4065	2105±55	-18.5	cal BC 200–90	cal BC 360–cal AD 10

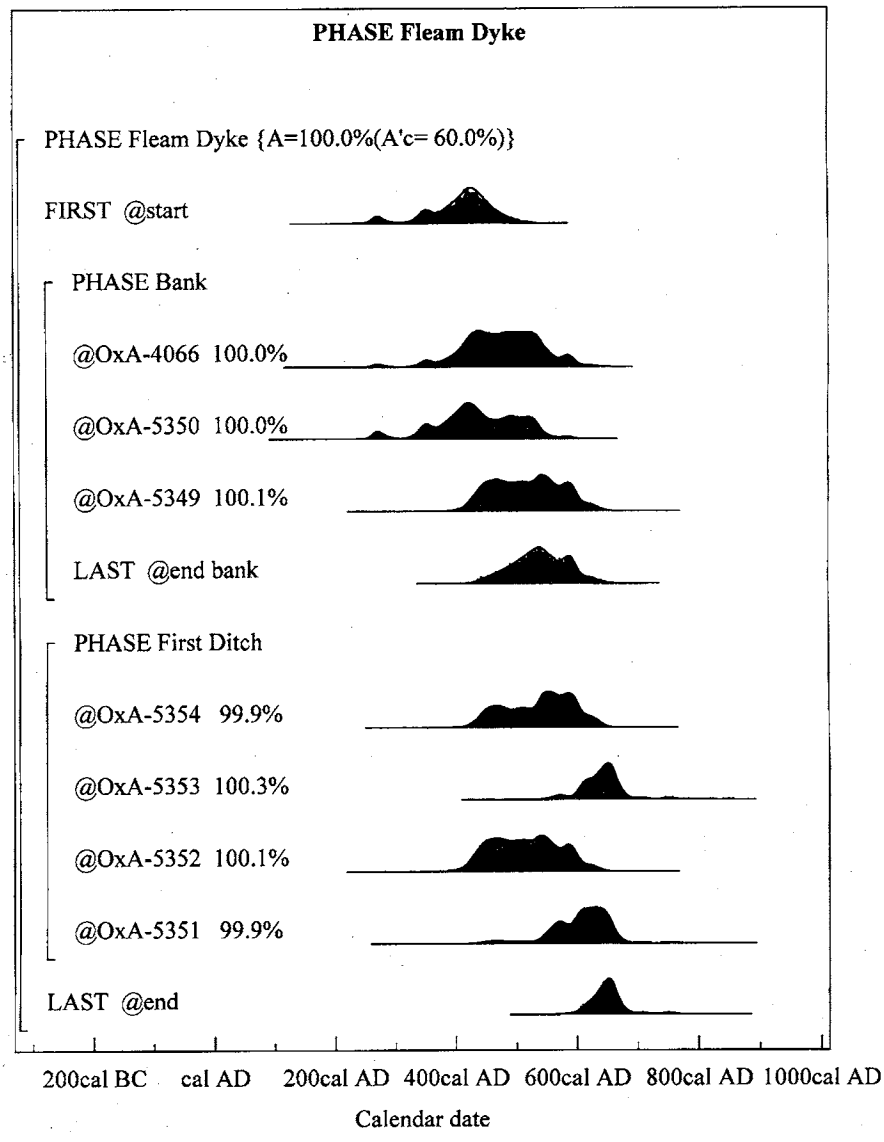


Figure 64. *Fleam Dyke radiocarbon dates: probability distributions.*

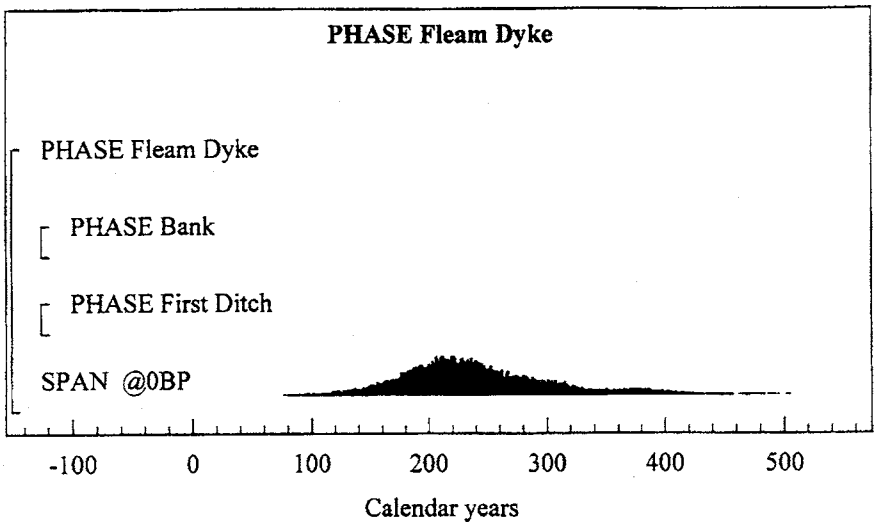


Figure 65. *Fleam Dyke radiocarbon dates: probability distribution for span of dated events.*

and 1990; Hedges *et al.* 1992). Uncertainties have been quoted at one standard deviation, and estimate the total error in the system including the sample chemistry. For operational details, error handling, and the estimation of background, cross-contamination, reproducibility, and accuracy, see Hedges *et al.* (1989 and 1992).

Results

The results are given in Table 10, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977).

Calibration

The calibrations of these results, which relate the dating evidence directly to the calendrical time scale, are given in Table 10 and Figure 64. All have been calculated using the computer program OxCal (v2.17) (Bronk Ramsey 1994 and 1995) which is based on the dataset published by Stuiver and Pearson (1986). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years.

The ranges in Table 10 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986) – these are best regarded as a 'shorthand' method of referring to the *date of the bones*. The probability distributions (Fig. 64) are a more accurate representation of the calibrated dates, but are obviously rather difficult to cite in text. These have been calculated using the usual probability method (Stuiver and Reimer 1993; Deckling and van der Plicht 1993; van der Plicht 1993). Ranges given in italics have been derived from mathematical modelling of archaeological problems (see below).

Archaeological interpretation of the results from Fleam Dyke

The best estimates of the archaeological dates of interest (for instance the start of construction) are not given by the simple ranges or probability distributions, but by estimating the dates of the events (as opposed to calculating the dates of the samples). This is an important distinction, as the 'radiocarbon dates' are no longer regarded as the answer to the archaeological question, but each as a piece of evidence to be interpreted in order to resolve a particular archaeological question – in this case the dating of the construction of Fleam Dyke. This can be done by means of 'Gibbs sampling' (Bronk Ramsey 1994). These estimates are not absolute – they can and will change as more data (such as further ^{14}C results) are fed into the model. However, they do provide the most realistic *estimate* of the dates of the archaeological events, given the data presently available.

As mentioned above, the taphonomy of the samples we have chosen to date is unclear. All the samples were firmly attributed to contexts during excavation. However, it is not certain how the samples reached these contexts. For example, OxA-5351 (1430±55 BP; cal. AD 530–680) is a sheep/goat metatarsal from a secondary fill of the first phase ditch. This could be derived from weathering or slippage of the first phase bank, or could have been dropped during the use of the monument. The archaeological interpretation of such samples is uncertain,

and so we have chosen not to include the stratigraphic order of the samples in the analysis of the results. In fact, when such information is included, the mathematical model is consistent with the extra information, and the resulting estimates are not very different (see archive). Nevertheless, we have chosen to err on the side of caution.

The methodology used below to calculate the chronological limits for the use of the monument is detailed in Bronk Ramsey (1994: 52–4). Figure 64 shows details of the model. A similar problem, which has been tackled using a slightly different methodology, has been published by Buck *et al.* (1994).

The probability distributions for the first and last dated events from the monument are illustrated in Figure 64. It should be noted that, since the dating of use is not constrained by other chronological information, this method tends to suggest that the period of use started rather earlier than it did in reality. This is caused by the scatter of the results provided by radiocarbon measurement, and is unavoidable. The analysis suggests that the monument was first constructed *between cal. AD 330 and 510 (92% confidence)* or *cal. AD 260 and 290 (4% confidence)*, and that the last dated use was *between cal. AD 590 and 700 (94% confidence)* or *cal. AD 740 and 760 (1% confidence)*. The last dated event from the bank sequence was *between cal. AD 450 and 620 (95% confidence)*. This may be the most reliable estimate for the last dated construction, as opposed to use.

Figure 65 shows the probability distribution for the span of the dated events, and is the best estimate for the length of time over which the monument was used. In this case the method is liable to suggest that the period of use of the monument is longer than it really was. The analysis suggests that the monument was in use for *between 130 and 340 years (95% confidence)*.

Finally, it must be emphasised here that the ranges given in italics and the probability distributions shown in Figures 64 and 65 are *interpretative estimates* based on the radiocarbon measurements and archaeological evidence currently available. They can and will change if further excavation or radiocarbon dating is commissioned, or if other researchers choose to model the problem in different ways. However, we believe that the estimates for the dates of archaeological interest presented here are the most reliable and robust available on present evidence.

The South Cambridgeshire Dykes: early medieval documentary evidence

D. Banham

Due no doubt to the Viking depredation of East Anglian and Mercian religious houses, documentary sources do not refer to the south Cambridgeshire Dykes as much as one would like. There is only one early reference to the building of any of the Dykes, and that is certainly erroneous. In any case, at least some of them must have existed before 903 (or probably late in 902, since the annal year runs from March to March), when they are mentioned in the *Anglo-Saxon Chronicle*. The context of this episode is the disputed succession to the West Saxon kingdom between Edward the Elder and his cousin Æthelwold, on the death of Edward's father Alfred the Great in 899. Æthelwold had little support within Wessex, but he made an alliance with the East Angles, now independent once more under a Viking king. The passage from the *Chronicle* reads, in translation, as follows:

> In this year Æthelwold induced the army in East Anglia to break the peace, so that they harried over Mercia until they reached Cricklade. And there they crossed the Thames, and took all they could seize both in and around Braydon, and then turned towards home. Then King Edward went after them, as fast as he could collect his army, and harried all their land *between the dykes and the Ouse* right as far north as the Fens.[1]

It has been suggested that the River Wissey is intended, rather than the Ouse, since the two names are etymologically identical, but in either case the area identified would still be south Cambridgeshire. It is unfortunately impossible to tell which dykes are meant, or even how many. When Matthew Paris (d. 1259) came to describe this episode, he apparently missed the reference to the river, and interpreted the passage as follows: 'King Edward ... followed Æthelwold as he fled towards East Anglia and, finding him with all his men prepared for guerilla warfare (*campestre proelium*) between the

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[1] Slightly adapted from Whitelock's (1979: 903) translation.
Her aspon Æðelwald þone here on Eastenglum to unfriðe, þæt hie hergodon ofer Mercna land oð hie comon to Creccagelade 7 foron þær ofer Temse 7 namon ægðer ge on Brædene ge ðær ymbutan eall pæt hie gehentan mehton 7 wendan ða eft hamweard. Þa for Eadweard cyning æfter, swa he raðost mehte his fird gegadrian, 7 oferhergade eall hira land betwuh dicum 7 Wusan, eall oð ða fennas norð. (Bately 1986: 62)

two dykes (*fossata*) of St Edmund, having urged on his own men, rushed manfully upon them.' (Luard 1872–83, vol. I: 437).

Devils Dyke was regularly known as St Edmund's Dyke in the middle ages, because it marked the limit of the jurisdiction of the abbots of Bury St Edmunds. 'Florence' of Worcester, also using the *Chronicle* as his source, described the same territory as lying *inter terrae limitem sancti regis Eadmundi et flumen Usam* ('between the boundary of the holy King Edmund's land and the river Ouse': Thorpe 1848–9, vol. I: 119). But which other dyke Matthew Paris may have had in mind, it is hard to tell. As he was a monk of St Albans, he may not have been particularly familiar with south Cambridgeshire, so his words should not be taken as evidence that two of the dykes were attributed to St Edmund in his time. He may, reading *betweox dicum* as 'between the dykes', have simply assumed that there were two dykes close together and they must both belong to the saint.

Returning to the tenth century, when Edward the Elder finally conquered the Scandinavian kingdom of East Anglia in 917, he seems to have circumvented the Dykes by fighting the East Anglians away from their home territory, first killing their king at Tempsford in Derbyshire, then attacking Colchester and finally seeing them off at Maldon (Stenton 1971: 328–9). It may be that he simply preferred for personal reasons to subdue Essex before East Anglia, and that this worried the now leaderless East Anglians into attacking his garrison at Maldon and dissipating what remained of their strength, but it seems more likely that Edward, well known as a canny campaigner, was deliberately avoiding the Icknield Way bottleneck with its numerous obstacles.

This is the last we hear (or rather, do not hear) of the Dykes in a military context, but, later in the tenth century, we find a reference to a *dic* in the bounds of land at West Wratting granted by King Edgar to his thegn Ælfhelm Polga in 974. It is likely that these bounds are older than the charter in which they occur: while the charters in which they are recorded are normally in Latin, charter bounds are nearly always in Old English, and it is thought that this is because the bounds of estates were preserved orally by the local inhabitants. Thus they must by definition have existed before the charter was drawn up. This is even more likely here, since there is a discrepancy between the hidage stated in the grant (two and a half) and in the bounds (three). However, it is not possible to say just how much older than 974 these bounds might be, since this is the first document in which they occur. The text of the bounds, in translation, reads as follows:

> These are the land bounds of the three hides at Wratting, in wood and field, as it lies within the boundary. First, at the high gate, from the gate east along the street [to the boundary of Weston – crossed out], from the field to the wood boundary, along the boundary to the boundary of the [.....]ldings, along the boundary to Wickham [.....] boundary, along the boundary to Yen Hall, from the boundary of Yen Hall to the boundary of Balsham, along the boundary that [i.e. then] to the [...] *ditch again.* [2]

Despite the lacunae in the text, most of the course of these bounds can be traced on the map. The road still known as the Street, once part of a major local routeway, leads east from where the Icknield Way crosses Fleam Dyke at Mutlow Hill, presumably the high gate (see Fig. 33 and Fox and Palmer 1923: 32–33). Evidently the Dyke still presented a functional barrier when the bounds were drawn up. The deletion of 'to the boundary of Weston' may be connected with the reduction in size from three to two and a half hides. If the line of the bounds does not run along the boundary with Weston, its course is now obscure, since the field and the wood boundary cannot be identified, and nor can the '.....ldings'. The only place-name in the vicinity containing the element *-inga*, 'people of', is Willingham Green, and, while the form of that name is suitable, the bounds, if they went that far, would include Weston, and thus make the estate much bigger, rather than smaller. After this the bounds are clearer, following the boundaries of West Wratting with West Wickham, Yen Hall (evidently then a separate estate) and Balsham before reaching the Dyke. Although this is not stated, the bounds then presumably return along the Dyke to the gate. In other words, the boundaries of the 974 estate did not differ much from those of the modern parish.

Still in the tenth century, Abbo of Fleury wrote a *Life of St Edmund* while staying at Ramsey Abbey between 985 and 987. This begins with an account of the origins of the kingdom of East Anglia and a description of its terrain, including the following sentence:

---

2 Þis syndon þara preora hide land gemæra æt wræt tinge wudes ⁊ feldes swa hit binnan þæm mearcum beluð. ærest æt ðan hean gatan fram ðan gatan east ⁊lang stræte ~~oð west tuniga gemæra~~. of þæm felde on þa wude mearca ⁊lang pæs mæres oð [.....]ldinga gemæra ⁊lang gemæres oð wichamme [.....] gemære ⁊lang gemæres to eanheale of eanheale gemæra to bellesham gemære ⁊lang gemæres þæt [sc. ponne] eft on þa [...] dic. (Birch 1885–99, vol. 3: 628–9; Sawyer 1994: no. 794.)
The charter was preserved at Ely, to which house Ælfhelm left the estate *for his sawle* in his will (Whitelock 1930: no. 13; 30–5).

'On that side where the sun sinks to its setting, this kingdom is continuous with the rest of the island, and thus open; but so that the frequent irruptions of the enemy should not break in, it is protected by a rampart in the form of a high wall [and] a ditch in the earth.' (Winterbottom 1972: 69–70). Again, it is not certain that Abbo had actually seen the dyke he was writing about; it is perhaps most likely that he knew that the jurisdiction of St Edmund's was delimited by such an earthwork, and believed that this also marked the boundary of the former kingdom. However, it is not clear whether St Edmund's jurisdiction did extend this far in Abbo's time. The earliest reference I have found to *fossatum Sancti Edmundi* is that of William of Malmesbury, *Gesta Pontificum*, c. 1125. 'King Cnut ordered the ditch to be built,' he writes, clearly wrongly, but he may be preserving a tradition that Cnut (1016–35) fixed the boundary of the abbots' jurisdiction at the Dyke (Hamilton 1870: 154).

On the subject of names, both Fleam and Devils seem most commonly to have been referred to simply as the *dic* or *le Micheldyche*, *magnum fossatum* (both 'great ditch') throughout the middle ages (Reaney 1943: 34–5). Fleam Dyke is an early name, first appearing in various forms in Domesday Book and its companion volumes as a hundred name (modern Flendish). The early forms point to a derivation from Old English *fliem*, 'flight', or *flieming*, 'fugitive'. According to Reaney (1943: 140) this is quite a common association with linear earthworks; this may be because fighting usually ended in defeat and flight for one side or the other, or because the ditches later served as refuges for the homeless or fugitives from the law.

Devils Dyke or Ditch is a post-medieval name, presumably deriving from a belief that anything that big must be of supernatural origin; in the Middle Ages, when it was not St Edmund's or just the great dyke, it was usually called Reach Dyke, as for instance in the account of the siege of Ely by William the Conqueror in the *Liber Eliensis*. Here, one of the men posted by the king as a guard *apud fossam de Reche* explains how Hereward the Wake's men had passed by them, set fire to Burwell, and then attacked the Dyke (Blake 1962: 182). The *Liber* would presumably not have presented the Dyke as defensible if this were not plausible to its audience.

Bran and Brent Ditches both have early forms in Brang- or Brank- (Reaney 1943: 33). This may conceivably be connected with the verb 'brank', to prance or strut, but this is not recorded before the late Middle English period, and it is hard to see what it would mean in relation to dykes. At any rate, they are not burnt ditches, nor connected with the Celtic hero Bran, and Reaney (*ibid.*) discounts 'brant' or 'brent' meaning steep.

The larger Dykes are mentioned in the 1279 Hundred Rolls for Cambridgeshire: Bran (Branedich: Illingworth 1812–18, vol. II: 546) in the bounds of a warren in Fowlmere, Devils (*magni fossati*, Brayedich: *ibid.*: 484) in those of Swaffhams Prior and Bulbeck, and Fleam in those of Great Wilbraham (*magnam fossam*) and of the land of Gilbert of Dunmow's tenants in Fulbourn (*magno fossato*, Flemigdich: *ibid.*: 445). By now it seems that their main function is the demarcation of local boundaries: there is no longer a political division between Mercia and East Anglia, the forests are almost gone from the claylands, and the fens, although now getting wetter again, are less sparsely inhabited, and drainage, albeit sporadic and largely unsuccessful, has been going on since probably the tenth century.

Overview and Discussion: the Landscape of the Dykes during the Roman–Saxon Transition

Tim Malim

The results of the recent work reported in the preceding pages not only endorse much of our existing knowledge and interpretation of the Dykes, but also considerably elaborate many of the details. It is difficult to better the investigation strategies and logical arguments characteristic of Fox's work, even with the benefit of the technology available to us today. We can, however, hone our interpretation, and thus redefine the debate about these monuments, and we need to reappraise accepted wisdom in the light of new avenues of research.

The original research aims of the present project were designed to investigate the constructional episodes of each Dyke, to record their subsequent history of decay, to date their construction accurately, and to establish the contemporary environment in which they were built. These aims have been largely achieved. Fleam Dyke has provided samples that for the first time allow a chronology based upon absolute rather than relative dating methods. Thus we have been able to establish with reasonable precision that the original construction of this earthwork took place during the fifth century, and that its main phases of use occurred during the fifth and sixth centuries (as first sug-

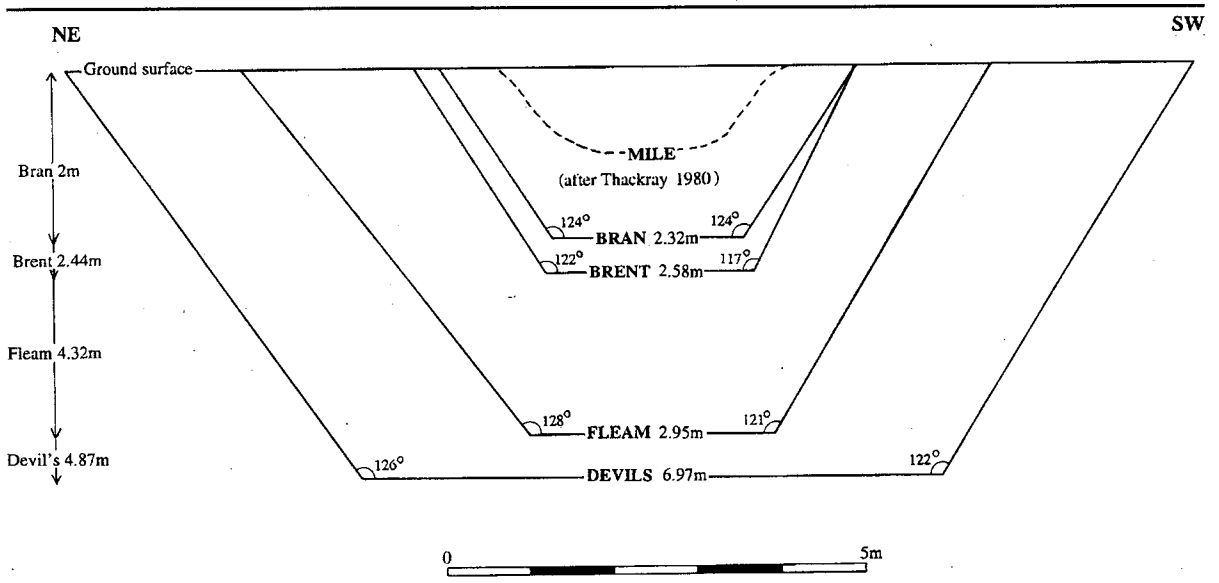

Figure 66. *Cambridgeshire Dykes: comparative ditch profiles based on average dimensions from all available excavated data (see Table 11). (Note: the Mile Ditches profile is taken from David Thackray's 1980 observation of the westernmost ditch).*

gested by Fox and Palmer 1924: 25), with secondary construction (the classic profile of the steep-sided, flat-based ditch) probably in the sixth (see Bayliss *et al.*, above) and continued use into the seventh century. Such scientific dating is supported by the stratigraphic and artefactual evidence, which includes a fourth-century Roman coin in the marker bank or turf core for the earthern rampart (created by excavation of the first phase (V-shaped) ditch). This first stage of bank construction was sealed by a temporary stabilization layer within the Phase I bank, which contained bone giving the earliest ^{14}C date of *cal.* AD *330–510*, and bone from the last phase of bank construction was dated *cal.* AD *450–620* (see Bayliss *et al.*, above). The historical importance of this is that it places the beginnings of Fleam squarely in the darkest part of the Dark Ages, the immediate post-Roman period, when Anglo-Saxon peoples were establishing themselves over several generations as local communities, and in so doing must have produced a complex pattern of relationships with indigenous populations, and between disparate elements among the migrants.

The landscape in which all the Dykes were built appears to have been remarkably similar, to judge by the evidence of recent work (see French, and Murphy, above) and Hope-Taylor's excavation in 1973 (Dimbleby, and Thomas, above). The molluscan, pollen and soil-micromorphological analyses all point to a largely treeless landscape of thin rendzina or brown earth soils with short-turf (grazed) grassland, but with local variations apparent at each site (for example, the proximity of the northern end of Bran Ditch to wet areas was apparent, and suggested a water-carrying ditch, whilst a woodland phase was possibly of earlier date). It is perhaps significant that samples from Worsted Street suggested a slightly different landscape, in that a brown earth with a woodland or scrub phase was identified, shortly predating the open conditions contemporary with the making of the road (early?) in the Roman period, and thus considerably earlier than the post-Roman Dykes. It was also noted that truncation of soil profiles was consistently evident, as would be expected in earthworks that mounded up the topsoil as a first stage of construction.

Concept, engineering and design

All the Dykes and Worsted Street begin or terminate at their north-western ends in wet areas, often with springs, and at their south-eastern ends in the hills which form the tail of the Chilterns, precisely at the junction of the chalk with the Boulder Clay plateau (Fig. 2). This is also largely true of the Mile Ditches, but not of the dykes further west around Baldock and Luton, which tend to run in shorter lengths and are often parallel to the Icknield Way (Bryant and Burleigh 1995; Burleigh 1995). The Icknield Way and other routes into East Anglia were cut at right angles by the Cambridgeshire Dykes and Mile Ditches, whereas Roman roads tend to run parallel or at an obtuse angle to them. All the Dykes have ditches on the west

Table 11a. *Cambridgeshire Dykes: table of fieldwork. Ditch details.*

Name	Excavator	Date of excavation	Trench location	Marker ditch	Width Top	Width Base	Depth from ground surface	Profile	Angle SW	Angle NE	1st phase	2nd phase	3rd phase
Mile Ditches	Beldam	1868			3 ditches = 30m		1.5						
Mile Ditches	Crawford	1934	(W -West C -Central E -East)		W-3$^1/_2$ 'paces' C-2$^1/_2$ E -2$^1/_2$								
Mile Ditches	Burleigh	1978	TL 333 403 N side A505		W -3.5 C -2.0 E -3.0	0.2 approx	W -1.2 C -0.75 E -0.95	W-flat, narrow C & E - dished	150 - 160	150 - 160	Chalk nodules	Slow silting	Levelling of banks C19
Mile Ditches	Thackray	1980	TL 333 403 S side A505		W -3.9 C -2.0		W -1.0 C -0.9	W-flat base C-dished					
Bran	Beldam	1868	Icknield Way area										
Bran	Fox & Palmer	1923	A	Yes	5.3	2.7	1.5	Slightly dished	115	125	Organic 'black soil'	Loamy earth 'recent' infill, c.1870	
Bran	Fox & Palmer	1923	B	Yes	6	3	1.2	Irregular or recut?	145	125	Organic 'black soil'	Loamy earth 'recent' infill, c.1870	
Bran	Fox & Palmer	1923	C	Yes?	6	3.6	1.5	Slightly dished base + burial	c 125	c 125	Chalk original weathering	Loamy earth 'recent' infill, c.1870	
Bran	Fox & Palmer	1923	D		4.9	1.8	2.0	Flat base	115	110	Chalk original weathering	Loamy earth 'recent' infill, c.1870	
Bran	Fox & Palmer	1923	E	Yes?	4.8	1.4	2.13	Flat base	125	120	Chalk original weathering	Loamy earth 'recent' infill, c.1870	
Bran	Fox & Palmer	1923	F	?	4.9	2.7? V-shape below	2.4	V-shape (near to brook)	130	120	Chalk	Loamy earth	Recut
Bran	Fox & Palmer	1923	G	Yes, with chalk fill?	4.3	1.4	2.3	Flat base	120	125-135	Chalk mostly SW side	Loamy earth	
Bran	Fox & Palmer	1923	H		5.2	2.3	2.3	Flat base	135	105	Sandy chalk mostly SW side	Sandy earth with hearth	
Bran	Lethbridge & Palmer	1925	Icknield Way area	Yes?		1.83?	2.70?	Flat base	120?	135?	Frost talus	Hearth and infill	Gravel metalling and more infill
Bran	Lethbridge & Palmer	1927	Fox's A										
Bran	Lethbridge & Palmer	1927	'Fowlmere Path' 41m from D									Uniform fill to base	Gravel metalling at ground level
Bran	Lethbridge & Palmer	1927	Fox's D	Yes, possibly = 'mid ditch'									
Bran	Lethbridge & Palmer	1927	Fox's C				2.44				0.3 m with AS sherds above		

Table 11a (continued). *Cambridgeshire Dykes: table of fieldwork. Bank details.*

Earlier ditch	Berm	Original core or marker bank	Width	Surviving height	Phases	Contemporary revetment	Contemporary Environment	Dating
		4 banks recorded	3.95 Earth bank and ditch	1.5				
			Overall width of ditches 21 paces	W-Bank either side C-east side				Prehistoric or RB on morphology
			22 Overall widthof ditches	Last bank portions levelled 1940				Horse jaw in basal fill of W ditch 2040±80 BP (250 cal BC–AD120) RB & Med finds in fills
			24.4 Ditch + bank	2.13 m				No dates
Yes - Fox's ditch Y				No evidence of bank found		Probably but not identified as such by Fox; Fox's ditch X	Black earth as primary ditch fill indicating 'settlement'	IA & RB pot in primary ditch fill
				Levelled in C19		Probably but not identified as such by Fox; Fox's ditch X	Black earth as primary ditch fill indicating 'settlement'	C3 RB pot in primary ditch fill
		Thin layer of chalk nodules		Levelled in C19?	1?		Possible buried soil	C3 RB pot in ditch fill W–E skeleton in base of ditch (probably later insertion)
	3.5 m with burial	Earth bank			1?			No dates
		Chalk rubble? Possible SW counter-scarp	Spread 18.3?	0.75? Spread earth bank	1?			Knife and RB potsherd in ditch fill
				Possible bank — or ancient ground level 0.9 m	1?		Wallington Brook 27m to south. Marshy ground and no evidence for a bank. Also test pit with slightly shallower ditch 9m south of Wallington Brook.	No dates
				Footpath on bank?				Unabraded C12? pottery in ditch fill
				Footpath on bank?				Hearth 2 m deep in ditch, near base
	Yes	Yes			3 Phases with road on top		Possible buried soil	Horse shoes and nails; boot cleats
								Late med. pottery beneath metalled surface; horseshoe nails in metalling
								IA and RB pottery
2 'earlier'	4.88 m wide with postholes		8.53	0.68		Probably but not identified by Lethbridge ('back ditch')		Unabraded AS pottery in base of ditch
							Buried soil	50 burials inc. decapitations and mutilations; AS knife and belt fitting

Table 11a (continued). *Cambridgeshire Dykes: table of fieldwork. Ditch details.*

Name	Excavator	Date of excavation	Trench location	Marker ditch	Width Top	Width Base	Depth from ground surface	Profile	Angle SW	Angle NE	1st phase	2nd phase	3rd phase
Bran	Leaf & Lethbridge	1931	269m N(?) of Fowlmere-Royston road										
Bran	Taylor	1968	TL 41744262 210m NW of Heydon Grange		6.4		Not bottomed		120	130			Light brown chalky loam
Bran	Welsh	1993	Trench A		5.75	2.45	2.1	Flat base	110	140	Rapid weathering	Cleaning out	Stable profile. Slow accumulation
Bran	Welsh	1993	Trench B		5.3		1.49	Flat base			Water deposited chalk	Silty layer	Stable profile Slow accumulation
Brent	Taylor	1968	TL 51104803 366m SSE of Pampisford Hall	Yes? - at back of bank only	9.14	2.44	2.13	Flat base	135	150		Sandy loam	Dark brown loam, 4th phase of sand and gravels
Brent	Robinson	1992	A		7.5	2.6	2.8	Flat base	110	110	Initial rapid weathering	Stabilised slow accumulation	Post-medieval ploughing-in
Brent	Robinson	1992	B		7	2.7	2.4	Flat base	105	105	Initial rapid weathering	Stabilised slow accumulation	Slight post-medieval ploughing-in of bank
Fleam	Fox & Palmer	1921	I	Yes		3.73	4.88	Base sloping down to NE	110	115	Frost talus	Silts	Very late infill, 18th century?
Fleam	Fox & Palmer	1921	II										
Fleam	Fox & Palmer	1921	III	Yes		2.71	4.57	Flat base ?	125	125	Frost talus	Silts	Very late infill, 18th century?
Fleam	Fox & Palmer	1921	IV	Yes		3.05	(4.57)	?	110	120			
Fleam	Fox & Palmer	1921	V	Yes		2.97	3.81	Base sloping down to NE	120	130	Frost talus	Silts	Very late infill, 18th century?
Fleam	Fox & Palmer	1921	VI	Yes		2.89	4.57	Base sloping down to NE	120	130	Frost talus	Silts	Very late infill, 18th century?
Fleam	Fox & Palmer	1921	VII	Yes		2.13	4.57		120	140	Frost talus	Silts	Very late infill, 18th century?
Fleam	Fox & Palmer	1921	1										
Fleam	Fox & Palmer	1922	2										
Fleam	Smith	1971	Fulbourn pumping station TL542548		12?				150	145	Chalk and clay	Silts	Very late infill, C18 (chalk)
Fleam	Taylor	1976	Near The Ambush, beyond scheduled area										
Fleam	Wait	1991	A11 south side	Yes	10	3.2	3.3	Sloping down to NE	115	120	Frost talus	Silts	Slumping from bank, 4th phase late infill
Fleam	Pelling	1992	A11 south side										

Table 11a (continued). *Cambridgeshire Dykes: table of fieldwork. Bank details.*

Earlier ditch	Berm	Original core or marker bank	Width	Surviving height	Phases	Contemporary revetment	Contemporary Environment	Dating
'earlier mid-ditch'	2.44 m wide	Yes	4.88	0.61		Probably but not identified by Lethbridge ('mid ditch')	Buried soil	6 burials with wounds; C5? pottery (revised Lethbridge 1935)
No 'earlier' ditches								No dates
	1.5	Yes	9.3	0.13		Yes	Buried soil: tall damp grass-land; open down-land. Ditch:periodic flooding, open continuously	Late IA & RB pottery beneath buried soil
				None found				No dates
Possibly, or marker ditch for bank	Ledges both sides		8	Less than 1m			Buried soil	No dates
	Probable			None visible but rise in chalk				No dates
				Ditch fills circumstan-tial evidence			Molluscs: open country	Human bone 110 cal BC (351 BC–AD 17) from primary fills; RB coins 2nd century
							Buried soil	RB pot in ditch
								Medieval pot in ditch at 0.75m
		Yes	15.85	3.6	1, 2, 3		Buried soil	
			12.8	3.05	1?, 2 & 3 +?		Buried soil	1st century AD Roman and IA pot sherds
		Yes	12	3.6	Several			
			11?	3	Several			
		Yes	14	3	1, 2, 3		Buried soil — thin rendzina; open country, grassland	1st bank cal AD 330-530; 2nd 380-560; 3rd 440-630. Phase 1 ditch silts 410-590. C2 Roman pot, C4 coin
		Yes	17	4	1, 2, 3 and 4			

Table 11a (continued). *Cambridgeshire Dykes: table of fieldwork. Ditch details.*

Name	Excavator	Date of excavation	Trench location	Marker ditch	Width Top	Width Base	Depth from ground surface	Profile	Angle SW	Angle NE	1st phase	2nd phase	3rd phase
Devils	Fox	1923-4	I										
Devils	Fox	1923-4	II		18.3	5.8	5.2	Flat base	140	145	Frost talus	Silt	
Devils	Fox	1923-4	III		18.5	6.9	5.4	Flat base	120?	115	Frost talus	Silt	(Recent?) Chalk rubble
Devils	Fox	1923-4	IV		c 15.2	8.2	Approx 4.9	Flat base	115	115	Frost talus	Silt	
Devils	Hope-Taylor	1973									Chalk from erosion (frost talus)	Loamy silts; delib. infill from counterscarp bank	
Devils	Wait	1991				7	4	Flat base	115	130	Frost talus	Slow accumulation loamy silts	Modern topsoil

Notes:
1 Dykes listed in order from west to east with Mile Ditches at beginning for comparison.
2 All measurements in metres: all conversion calculations from feet to metres at 0·3048.
3 This table does not include all finds of burials at Fleam and Devils Dykes: see Lethbridge 1958.
4 IA and RB pottery generally referred to as 'abraded' by excavators.
5 Since this table was compiled a further section has been excavated across Bran Ditch at Heydon Grange: see Lee 1996.
6 SAM=Scheduled Ancient Monument; SMR=Sites & Monuments Record.

Table 11b. *Cambridgeshire Dykes: topography at terminals and present status of monuments.*

Name	Terminals SE End	Terminals NW End	Status	Parish boundary	Foot-path	Survival
Mile Ditches	Therfield Heath chalk 85 m OD	Bassingbourn Springs 30 m OD	SAM 244 SMR 3353	No	No	Cropmarks
Bran	Boulder clay, hills 120 m OD	Black Peak Fowlmere Moor 25 m OD spring	SMR 7802	N of Heydon Grange	S of Icknield Way	Field Boundary
Brent	Boulder clay spur, 80 m OD	Dickmans Grove spring feeds tributary of Cam 30 m OD	SAM 2 SMR 6227	No	No	Earthwork ditch
Fleam	Boulder clay 90–100 m OD	Shardelows Well, Fulbourn Fen, 15 m OD Wilbraham river	SAM 6 SMR 7889	Yes	Yes	Earthwork bank and ditch
Devils	Boulder clay 100 m OD	Reach Lode (Fen) 3 m OD	SAM 5 SMR 7801	Yes	Yes	Earthwork bank and ditch

side and banks on the east (whereas Crawford's (1934) evidence suggests that a bank also occurred on the *west* side of the Mile Ditches); thus they effectively barred access to the east and linked the lowland rivers and fens with the local uplands. The general south east to north west alignment can be seen in many features including the Dykes, Mile Ditches, Roman roads such as Ermine Street and Worsted Street, and field boundaries (medieval furlongs?) seen on air photographs and reported by Crawford (1937). This pattern is a product of the hills that form the eastern continuation of the Chilterns, running in a south west to north east direction immediately south of Royston and Newmarket, to which major archaeological features have been aligned at right angles.

The Dykes are all extremely similar in overall design, but they are distinct in individual execution, suggesting that they were neither planned nor undertaken as a single programme, but rather followed a known model, amended for each in turn. The diagram in Figure 66 shows the comparative ditch sections of all four

Table 11a (continued). *Cambridgeshire Dykes: table of fieldwork. Bank details.*

Earlier ditch	Berm	Original core or marker bank	Width	Surviving height	Phases	Contemporary revetment	Contemporary Environment	Dating
		Yes, NE side of bank	19.8	4.5	Single		Buried soil	377 sherds RB pot from buried soil, mostly C2, some C3–4. C3 coin
		Yes	22	4.6			Buried soil	IA and RB pot from buried soil. Fragment of human jaw from ditch
		Yes	18.9	4.6			Buried soil	IA and RB pot from buried soil and ditch. Small horse skeleton, C16 pottery in ditch
		Yes	23	5.3				No dates
		Yes and counterscarp bank ?on SW side of ditch			Single		Buried soil. Pollen: grazed grassland. Molluscs: grassland	C4 RB coin in buried soil. Ditch burial cal AD 1180–1290 (BM966). Potsherds above burial 1000–1200
							Ditch fill: open country, probably grazed	No dates

Dykes, using average dimensions for each based upon all available excavated data (see Table 11), and includes measurements of the Mile Ditches for comparison, although it excludes the first phase of Fleam. This clearly shows the systematic increase in scale from the westernmost Dyke (Bran) eastwards to the massive Devils Dyke. The maximum variation between the four averages is 4.65 m for the basal width of the ditch, 2.87 m for the depth, and 7° and 6° for the angles of the south-west and north-east sides respectively. This demonstrates that the slope of the ditch, as well as its flat base, was a crucial and constant factor common to all the Dykes, which can be expressed as the ratio between optimum defensive steepness and least erosion. In the case of Devils, this equilibrium appears to have been achieved for the bank as well as the ditch, as Fox and Hope-Taylor have described (Fox 1925; Hope-Taylor 1976; and Fig. 51): a massive piece of engineering executed in a single phase, which needed no maintenance or remodelling even after settling and weathering, as revealed by the minimal natural infill and lack of evidence for recutting at any of the excavated sections. Perhaps this optimum design was achieved only after several previous attempts, which would be consistent with Devils being the latest in the sequence.

All the main ditches show similar patterns of infill: frost talus (representing initial erosion), followed by a long period of very slow silt accumulation, and then subsequent, probably deliberate infill, from post-medieval times onwards, but especially prevalent after enclosure. However, at Fleam there were two other important dimensions to the ditch: a first phase V-shaped ditch and at least one major recut of the fills in the main ditch (Fig. 37), clearly showing major reuse over a long period of time; this would accord with a theory of the Dykes as defensive boundaries moving back and forth across the region depending upon military conditions. This first phase of construction at Fleam shows the original core of the bank close to the edge of a V-shaped ditch, which is not paralleled in the other Dykes. At Devils there is a similar original core bank, composed of stripped topsoil and turves mounded up as a marker – but this occurs at the rear (north-eastern side) of the bank, a considerable distance from the ditch; a counterscarp on the south-western side has been argued for by both Fox and Hope-Taylor, which would mean that there had been a second marker 'bank' on this side, indicating the full width within which the dyke builders had to operate. At Brent a shallow ditch at the rear (north-eastern side) of the bank, observed by Taylor (1969), might have been a similar marker.

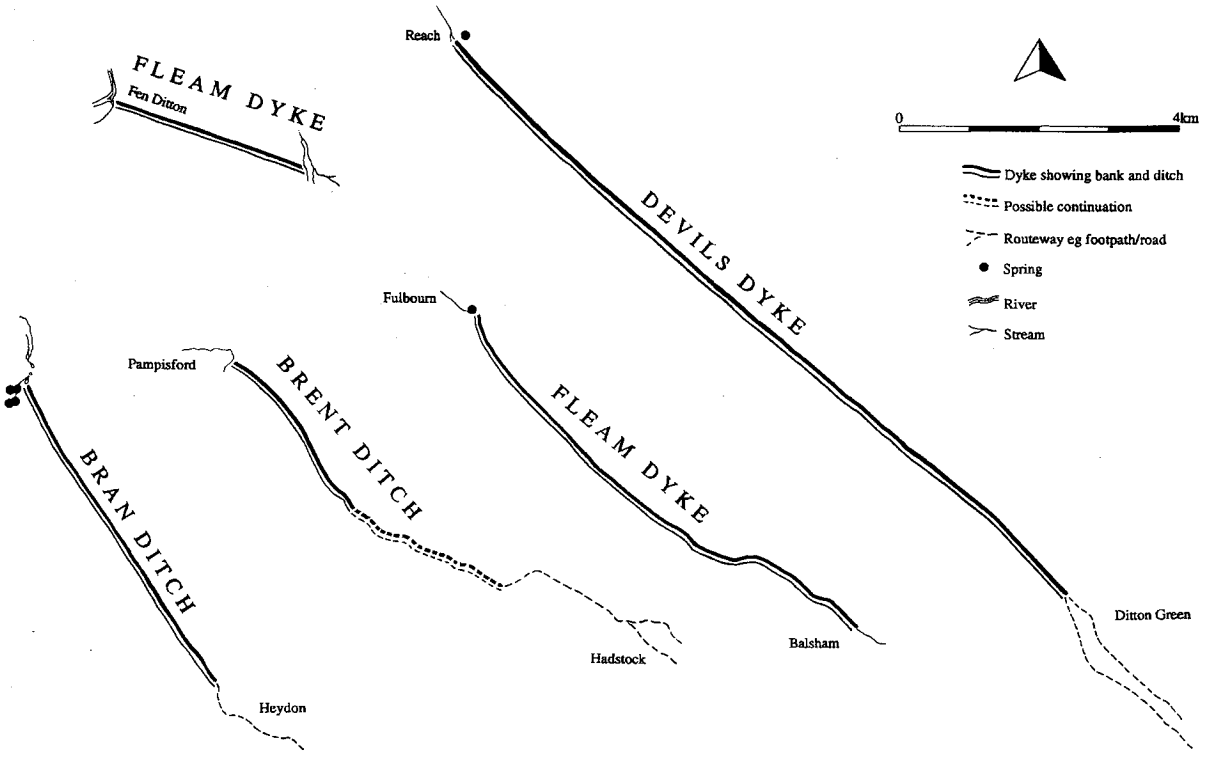

Figure 67. *Cambridgeshire Dykes; comparative plans. Note the straightness of Bran and Devils in comparison to the more sinuous course of Brent and Fleam.*

There are other aspects of Fleam that suggest differences from the rest of the group. Fox remarked on the standstill stages in its construction, and a visit to the monument today reveals lengths with slightly different undulations, possibly suggesting mounding and slumping at the junctions of portions built by different work gangs. Fleam is a very sinuous monument, similar to but far longer than Brent, but distinctly different from the much straighter courses of Devils and Bran (Fig. 67). The southern end is known to have continued beyond its present termination, just beyond Dungate Farm, to Oxcroft Farm (Palmer 1935: 33–34), and at its northern end there are three possible termini, one of which is its present end at Shardelow's Well and Ashwell Street; however, air photographs and nineteenth-century maps (such as the first edition OS) show that an arm of the Dyke ran obliquely to the north east, past a possible henge, to meet with Wilbraham River at a Neolithic causewayed enclosure, and this may have been its original end (Figs 33 and 35). The river and Wilbraham and Teversham Fens would have formed a wet barrier, and on their northern side a further ditch and bank ran to the third possible terminus at Fen Ditton (Fig. 1). This has been known as the northern Fleam Dyke and can be seen today as High Ditch Road. Anglo-Saxon burials were found at its southern end on Newmarket Road in 1957 (Lethbridge 1958; Hutchinson 1964). It would seem that these three northern termini reflect the composite nature of the monument and its successive phases of construction. The arm from Shardelow's Well to Great Wilbraham is *probably* a later addition to the main Dyke, and possibly much later. In 1990, the laying of a water pipeline presented the opportunity to observe this northern extension close to Shardelow's; it was reported as consisting of a ditch 10 m wide and 1 m deep (Ette 1993: 9). The field records, however, suggest that this 'ditch' may in fact have consisted of lynchets. Although the pipeline must have crossed the line of the northern extension, conditions on such schemes are often not ideal for observing complex archaeology; if this feature was part of the original Fleam Dyke, it would have been substantially deeper than one metre and evidence ought to have survived for a bank on the east side (as can be seen in air photographs (Fig. 35)).

The continuation to Fen Ditton, on the other hand, would seem to be contemporary with, if not earlier than, the main Fleam Dyke; Taylor (1973: 63–66) suggests that Horningsea and Fen Ditton formed a Roman tenurial unit, and

the early Saxon skeletons found buried in the infilled ditch (Lethbridge 1958) would support such a hypothesis; if this is true, it implies a complex use of Dykes and waterways to define areas of settled land over a long period of time.

Place-names and boundaries

There is ambiguity in modern usage as to which river is the Cam, as opposed to the Rhee or Granta, south of Cambridge. In this article, I use 'Rhee' for the tributary running west to east alongside Barrington, 'Cam' for the river running north from Great Chesterford, and 'Granta' for the tributary that joins this from Bartlow and Linton (see Fig. 1).

There are many problems with using place-names as historical evidence, since onomastics is a relatively modern science, and interpretation is constantly undergoing revision. The ancient names for the Dykes help us very little in examining their date and function (Reaney 1943; Banham, above). Names of settlements and parishes in the area of the Dykes are, perhaps, more useful in this context. David Thackray (1980: 77), following in the footsteps of Arthur Gray, points out that the earliest Anglo-Saxon settlement names, those with *-ham* endings, are concentrated, although not exclusively, to the east of Fleam Dyke (Fig. 68). In fact it is truer to say that Worsted Street forms the western boundary for *-ham* suffixes, a place-name type that extend eastwards into Suffolk and Norfolk and north-westwards in a zone running as far as the Huntingdonshire fen edge and including parts of the Isle of Ely. To the south of the Dykes as far as the vicinity of the Blackwater estuary and Chelmer River, it is noticeable that *-ham* place names are virtually absent between the Rivers Lea in the west and Colne in the east, in other words over much of Hertfordshire and Essex, which formed in Roman times the heartland of the *civitates* of the Catuvellauni. In addition Taylor (1973) refers to the presence of a number of village names with the prefix 'West' which he ascribes to satellite settlement from origins in Suffolk, probably connected with forest clearance during a later phase of expansion (expressed in *-ley* suffixes), which congregate at the south end and immediately to the east of Fleam Dyke. Such differences in the distribution of early settlement names within the region suggest that the 'wooded' hills at the southern end of the Dykes formed a very real boundary during early Anglo-Saxon times.

A look at the map shows how thinly settlement is spread nowadays, and probably always was, along the Boulder Clay hills between Royston and Newmarket. There is little evidence of prehistoric or Roman settlement in this area, probably due to the lack of easily accessible water sources, but it is also evident that the zone of sparse early settlement as recorded in Domesday Book (Fox 1923a: Map V; Meaney 1993: Map 1) includes the Icknield Way corridor, which is occupies a tract of land north of the Boulder Clay, sloping down to the springs along Ashwell Street (thin settlement continued westwards along the Icknield Way: Davis 1982: 58–9). The exception to this rule is the band of settlements running upstream along the Cam to Great Chesterford and along the Granta to Bartlow, where the proximity to water allowed a different early pattern to develop.

This tract of land providing the corridor for the Icknield Way was probably composed of dry moor and heathlands, as indicated on early maps such as the *Comitatis Cantabrigiensis* (1646), enclosure and tithe maps (and described as such in VCH VII), a landscape more suitable for grazing stock than arable agriculture (as evidenced by the molluscan, soils and pollen reports presented above), and it is precisely this corridor of land which the Dykes cut, dividing it into approximately equal parts. Both the northern and the southern ends of the Dykes and Mile Ditches are roughly equidistant, at an interval of 5–6 miles, thus creating blocks of moorland with borders three miles wide south to north, and five to six miles long west to east. Thackray (1980: 314–319) suggested that a Dyke may have existed at the boundary of Snailwell and Chippenham, which would have filled the gap in the sequence between Devils Dyke and the Black Ditches in Suffolk (Fig. 1). The existence of this feature is hypothesised solely on the basis of a single reference in the 1637 edition of Camden's *Britannia*, and no physical evidence can be traced. Nevertheless, such a consistent pattern of regular spacing suggests there was more to the creation of the Dykes than purely successive defensive barriers. It is more akin to the (prehistoric) division of the landscape suggested by Dyer (1961: 39–43) for the Hertfordshire dykes and familiar on moors elsewhere in the country (for instance the Dartmoor reaves, which often use streams in a similar manner to the Cambridgeshire Dykes, to continue their boundary function: Fleming 1988: 40). It is not surprising that, in a region largely devoid of clear landscape features, the Dykes were used for later estate and parish boundaries. Brent, which is not a parish boundary (although a possible continuation to the southeast might be presumed from the line of the present county boundary) appears to be

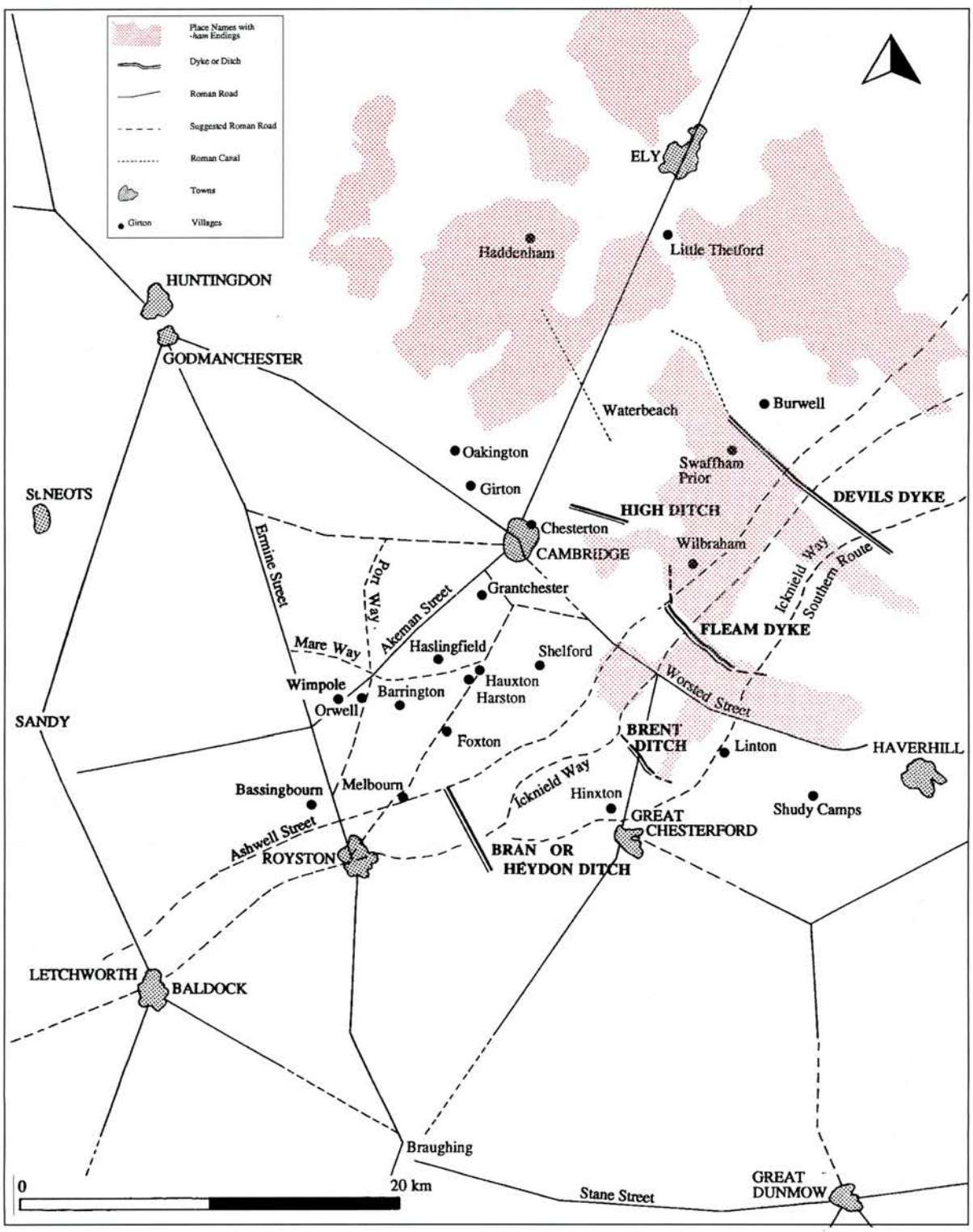

Figure 68. *Map of South Cambridgeshire, showing the Dykes and Worsted Street, other Roman Roads, and* -ham *place-names.*

an exception, but the presence of rivers nearby on either side meant that there was less need for an artificial feature to fill this role.

Early Anglo-Saxon settlement evidence

It has been suggested that the late survival of Great Chesterford was due to its importance as a north-eastern bastion of the Romano-British canton based on *Verulamium*, and recent work has identified large-scale re-fortification in the fourth century, which tends to support such theories (Chris Going personal communication). The evidence for settlement continuity between late Roman and Anglo-Saxon times is tenuous, and derives largely from the association of early Germanic burials with Roman towns and villas. It may only have been after their desertion that such Roman sites acted as a focus for Anglo-Saxon activity, rather than settlement being continuous, but the presence of the cemeteries nonetheless suggests Anglo-Saxon settlement in reasonably close proximity to Roman centres. Such evidence is reasonably clear for Cambridge and Great Chesterford, but for the villas it is only recently that excavations have begun to demonstrate re-use or continuity. Great Staughton (Greenfield *et al.* 1994) and Haddon (Upex 1993) have both provided such data in terms of burials and settlement, and to these can be added Anglo-Saxon burials at the Romano-Celtic temple on Gallows Hill, Swaffham Prior (Simon Bray personal communication), close to Reach villa and Devils Dyke (Fig. 47). By analogy, the Little Wilbraham cemetery (Fig. 33) and those at Linton may relate to adjacent villa complexes (Ette and Hinds 1993a and b), and this may also be true of Foxton villa and an Anglo-Saxon (estate centre?) settlement at *Appesford* (Manor Farm, Harston: Malim 1993), where late Roman and 'Romano-Saxon' pottery has been found associated with a *Grubenhaus*.

Recent excavations have added to the number of known Anglo-Saxon settlement sites, mainly through accidental finds of hall-like timber buildings, *Grubenhäuser* and associated artefacts during general purpose rescue work. Sites that appear to be early, with some evidence of fifth century date, include Hinxton (Hall and borrow pit: Denham *et al.* 1996; Evans 1993), Bourn Bridge in Pampisford (Pollard 1996), Linton and Little Linton (Collins 1980; Taylor *et al.* 1995; Bray 1992), Harston (Malim 1992), and Waterbeach (Robinson 1996; Denham *et al.* 1996), beside the Car Dyke, supplementing evidence found by Lethbridge.

As outlined above, the evidence is scant, but it has grown in recent years compared to the distribution of late Roman sites in *VCH Roman Cambridgeshire* (VCH VII: 36), where only nine sites are listed for the period AD 400–450.

Associated burial evidence

Burials and Anglo-Saxon weaponry have been found in association with all the Dykes save Brent. The debate about the 'massacre' at Bran Ditch (Lethbridge and Palmer 1929; Gray 1931; Palmer *et al.* 1932; Lethbridge 1935) unfortunately diverted attention from methodical examination of the evidence concerning the earthwork itself, and Lethbridge's reports are not clear about the extent of the ditch and bank, lacking precision and consistency in text or illustration. The opinion of Fox (Fox and Palmer 1926) and later of Hill (1976), that these burials (found lying within and over a series of small ditches between the main Bran Ditch and the bank) relate to a nearby gallows site or *cwealmstow* of possible tenth to eleventh century or later date, appears very sensible, and is supported by local field names (Fox) and quoted parallels (Hill).

However, the stratigraphic relationship of these burials to the bank needs explaining; Lethbridge attempted this in 1935 when he revised his opinion of their date to the fifth century, based on the discovery of one skeleton in a ditch with a fifth century pot placed around its head (see Lethbridge 1932: 55 and his Fig. 1), and suggested a first phase of defence consisting of shallow ditches with a timber palisade between. However, the presence of post-holes and 'earlier' ditches on the berm or cut by the main ditch could also indicate structural elements of the original earthwork, such as a contemporary revetment (see Welsh, above). The regular square cut of one of these 'earlier' ditches found by Lethbridge in his original excavations, and also found to contain the burials in 1931, was similar to one found by Fox in his sections A and B, and to a feature excavated by Welsh, who interprets it as a palisade trench for a contemporary revetment of the bank. The squareness of the surviving cut in all cases, as well as its general dimensions, support Welsh's interpretation as a palisade trench rather than one of a pair of open ditches subject to erosion, as proposed by Lethbridge (Lethbridge and Palmer 1929; Lethbridge 1935). Instead, the burials may indicate a remodelling of this part of Bran as a gallows site (some of the post-holes referred to by Lethbridge might be associated with this) and associated graveyard situated adjacent to a way through the earthwork ('Fowlmere path'). The considerable distance between the ditch and bank is an indication that the bank may have been shifted

to the east as part of this re-use as pathway and *cwealmstow*. Soil from the redeposited bank could have fallen over some of the Anglo-Saxon burials, which were apparently found stratigraphically beneath the redeposited bank.[3] There is much here which needs further investigation; more precise data are needed before an interpretation can be convincingly argued. This could be achieved firstly by osteological re-examination and carbon-dating of the skeletons, and secondly by fresh fieldwork, including excavation around this location, to establish the extent of the deviation and produce an accurately surveyed stratigraphic and descriptive record.

Cemeteries broadly contemporary with the Dykes (fifth to seventh centuries) are found throughout south Cambridgeshire, and recent finds of possible pagan settlement are also plotted on the map (Fig. 68). How do we reconcile this evidence for settled rural life with the turbulence and warfare indicated by the great defensive earthworks?

Of the 20 to 25 cemeteries and burial places listed by Meaney (1964; 1992 unpublished revision) which are relevant to south Cambridgeshire and the Dykes, most can be dated to a particular century. Not surprisingly, the majority are of sixth-century date, with varying degrees of overlap at either end of the century. Some burials with fifth-century attributes were found at Barrington B, Cambridge St John's, Great Chesterford, Cratendune (Ely), Girton, Haslingfield, Sawston and Trumpington: a group clearly concentrated along the Cam, mostly around the fortified Roman towns of Cambridge and Great Chesterford, and along Akeman Street towards Ely, with another at Little Wilbraham associated with a villa. Cremations are almost exclusively confined to this early group, whereas the predominantly inhumation cemeteries of the sixth century are distributed more widely, expanding to fill the area at the northern end of the Dykes to the west, and spreading east, as well as south-east along the Granta past Hildersham and Linton. The pattern is amplified by the continued use of some cemeteries, and the establishment of others, in the seventh century. This evidence corresponds well with the distribution of early place-names in Cambridgeshire outlined above.

The contrast between this distribution and that of pagan Anglo-Saxon burials in Hertfordshire and Essex is stark. A handful of locations represents the total number of inhumations from this region (seven reasonably certain from Essex and two from Hertfordshire, compared to 87 entries for modern Cambridgeshire: Meaney, *ibid.*; and SMRs), most of which are so close to the Cambridgeshire border that they are in fact part of the south Cambridgeshire pattern (Great Chesterford, Wendens Ambo, Ashwell, Therfield). Comparison of published maps with such distributions clearly illustrate this contrast between the regions (OS Map of Britain in the Dark Ages, 1966; Davis 1982: Maps 3 and 4, updated by Wingfield 1995; Robinson and Duhig 1992: Fig. 12, after Meaney; Evison 1994: Fig. 10). It is also worth pointing out the interesting variation within the modern (post-1974) county of Cambridgeshire, in that much of Huntingdonshire (apart from St Neots) contains little evidence for pagan Anglo-Saxon activity, with no concentration of burials, for example, around Godmanchester, although some continuity at Great Staughton and Haddon villas has recently been suggested (see above).

The fifth-century pattern around Roman towns and major roads is consistent with that seen in Oxfordshire and the Thames Valley, where it has been suggested that these burials represent Germanic *foederati* (e.g. Welch 1992: 101–2). According to Gildas, this was a period of great upheaval with civil war, Anglo-Saxon uprising, British counter-attack and eventual victory in the battle of Mount Badon around AD 500 (Thackray 1980: 55–65). This was followed by a period of greater stability and then Anglo-Saxon offensives during the sixth and into the seventh centuries (Brooks 1991: 9–10). The distribution of cemeteries discussed above would fit the historical model of a strife-ridden landscape, with south Cambridgeshire one of the main areas of contest, leading to construction of the Dykes as defences across a strategically important no-man's land; it was only with the onset of comparatively peaceful times that the Anglo-Saxon population expanded in this area,

[3] If the burials were fifth-century, they would have been covered by the original bank, and could have remained covered if the bank material was moved to the east. However, if the bank is in its original position it must have been diverted to avoid the burial-ground, but still covered some of the easternmost burials. If the skeletons were late Anglo-Saxon or medieval, associated with a gallows site, and the bank was remodelled to allow room for the gallows, then a burial-ground in a widened area between ditch and bank is explained, and some of the redeposited bank material might have been used to cover some of the burials. The smaller ditches were presumably visible when the bodies were interred, as some skeletons are lying in them. If they were visible, they are probably not much older than the burials, since otherwise the ditches might have silted up. Taking into consideration the west–east burial on the floor of Bran Ditch, the whole situation is bizarre, and on present evidence must remain ambiguous.

witnessed by the proliferation of sixth to seventh-century cemeteries. The existence of these cemeteries would seem to indicate a stable and prosperous community living along the Cam, Granta and Rhee valleys and utilising all the landscape dominated by the Dykes. Such a hypothesis, based on available dates for the cemeteries and current understanding of the historical situation, might be somewhat simplistic but forms a sound springboard from which to launch further research. This hypothesis would assign the construction of the Dykes to the fifth and sixth centuries and would also suggest that the British victory at Mount Badon threatened Anglo-Saxon occupation of south Cambridgeshire and East Anglia, and that the main phase of the Dykes was built to counter this. The skeletons and Anglo-Saxon weapons found at so many locations on the Dykes could represent the burial of warriors killed in action, as argued by Lethbridge (1958), but a thorough re-examination of the associated equipment is needed to see if it is indeed possible to attribute a fifth-century date to them, while an osteological examination would determine the nature of any skeletal injuries and indicate the relative proportion of male to female.

Functions of the Dykes

The Dykes were clearly barriers across the Icknield Way zone. The concept and scale of their construction argues for a strong central authority, which could call on support from a wide population base in order to execute the scheme of works envisaged, and for a home territory that made the exercise essential. They were in this sense political manifestations, clearly stating that beyond them was alien territory.

Defence was the most obvious function for the Dykes, as suggested by antiquarians, the argument presented succinctly by Ridgeway (1893) with his elegant map, and elaborated by Fox (1923a) and Lethbridge (1935). Documentary sources always refer to the Dykes as *dic* or *fossa*, demonstrating that it was the *ditch* which was significant, rather than the bank behind (see Banham, above). The depth, steepness and precision of construction all suggest a military origin, and the overall strategic positioning of the Dykes between (probably) wooded hills in the south, and wet areas connecting with the fens in the north gave the defenders control of the Icknield Way corridor. As the banks were all on the eastern side, the builders and defenders were clearly East Anglian.

When the average dimensions of the Dykes are drawn up for comparison, it can be seen that there are two distinct groups in terms of scale (Fig. 66): Bran and Brent form a slighter group while Devils and Fleam, in its later form, are considerably more massive, a pattern consistent with an eastwards progression, suggesting defence in depth, or a development of ever larger barriers with which to defend the territory to the east. Even the smaller dykes, however, are not unimpressive as defensive structures compared to known Iron Age examples, such as the ditches of the fort at Stonea Camp (Malim 1992). At Stonea, similar design elements were used: deep, steep-sided ditches (130–140° inclinations) with flat bases up to 1.75 m deep and 2.8 m basal width, and large, possibly revetted banks behind, but their execution appears to have been less regular than has been evident in the numerous Dyke excavations. Such dimensions, from a known defensive earthwork, demonstrate that even the smallest of the Dykes, Bran, exceeded the size previously considered appropriate for effective defence. A revetted bank at Bran (and possibly at Fleam) has been suggested (see Welsh, and Penn and Wait, above) which would have enhanced its defensive properties, although the evidence adduced has occurred at locations close to possible crossing-places (Ashwell Street and 'Fowlmere path' at Bran, and Icknield Way on Fleam), which might indicate special construction measures at these points.

Defensive qualities can therefore be definitely attributed to the Dykes, distinguishing them from the Mile Ditches, for instance, but we need to examine in more detail exactly how such a defence would actually have been used. It is unlikely that the full lengths of these defences could have been permanently manned, so their main function would have been more that of an obstacle, perhaps allowing time for an armed force, alerted by lookouts, to move rapidly to the point of incursion. This would still suggest the presence of a handy garrison and well-organised reconnaissance and communication system. An examination of the lie of the land in which the Dykes have been built reveals drawbacks to the defensive argument, because the Dykes are not all sited in the best place for defence, the crests of hills or existing natural barriers such as rivers. This was noted by McKenny Hughes (1886: xiii–xiv), who stated that Fleam and the other Dykes

> did not run along the most easily defended positions or those most exposed to attack, but in a nearly straight line [that is, like the military Roman roads], often obliquely down the slope of one side of the valley and obliquely up the other, in a manner that rendered it extremely improbable that they were meant for defence, as in one part they were commanded from the West and in the other from the East,

and supported by Babington (in Hughes, *ibid.*), who attributed their function not so much to defence as delaying marauders or cattle raiders; it was also noted that excavation of Fleam Dyke north of Brymbo Hall had shown that no ditch existed but instead the steep hillside had been cut away so as to create the bank alone. David Thackray (1980) undertook an exhaustive study of these monuments for his PhD thesis, and presents much information of value regarding the topographical situations of the Dykes. At Devils, similar positioning can be noted, with the Dyke running downslope on the east side of high land at Gallows Hill, Swaffham Prior, while at its southern end near Stetchworth the Dyke is found in the valley base, downslope from a western crest. Thackray (*ibid.*: 406) argues that all changes in alignment are the result of variations in topography, and that at Camois Hall and Stetchworth the adjustment is needed to cross the head of a valley (*ibid.*: 221).

Brent lies between two streams, either of which, and especially the Cam, would have formed a barrier in its own right and could have been effectively defended from the eastern bank without the effort of constructing Brent Ditch between them. However, Thackray points out (*ibid.*: 47) that Brent was positioned to straddle two Roman roads (Margary 21b and 230): 'no more than 1 mile apart they were forced through a narrow neck of Middle Chalk between Fen and probably wooded boulder clay', which gave the Ditch strategic importance and a clearly defined role.

J.S. Conder (quoted in Lethbridge 1935: 95) questioned the East Anglian origin of the Dyke builders, if the primary function was to delay cattle-raiders, because the ditch would then have to be on the 'home' side of the bank. Lethbridge (*ibid.*) consequently suggested the Dykes were constructed by Romano-British people against Anglian raiders and expanded this theory after the discovery of more Anglo-Saxon warrior burials at Fleam, when he argued the Dykes served to trap Anglo-Saxon maurauders during Theodosius's campaigns around AD 367 (Lethbridge 1958). Rutherford Davis's (1982) masterly synthetic study of the Chiltern area argues for the continued existence of a Romano-British territory immediately south and west of south Cambridgeshire, probably well into the sixth century. The use of cavalry by the Roman army, enhanced by the traditional affinity of the Celts for horses, suggests that Romano-British military tactics would have made extensive use of mounted soldiers, with their ability to respond rapidly to attacks from unexpected directions and to hunt down adversaries whose retreat would be impeded by the Dykes. However, the same line of argument could be used to present the opposite case, that the Dykes were built as a defence specifically against fast moving cavalry because they would have seriously impeded the deployment of mounted troops.

Ritual

Ritual connotations are an aspect of the Dykes that has not previously been explored and needs to be mentioned here, not in order to present speculation such as Lethbridge's chalk-cut figures of Gog and Magog at Wandlebury, but to indicate an area that could benefit from further study and debate.

There is a significant number of burial places and possible sacred sites along the route of Fleam and Devils Dykes, and the northern terminals of all the monuments are in wet areas, often with springs: locations that attracted ritual activities during prehistoric, Roman and later times. Coincidence could play a part in aligning the Dykes on prominent features used earlier as ceremonial venues, but it is also possible that the builders of the Dykes wanted to include these points for their very sacredness. Mutlow Hill and other barrows have been identified on their routes, sometimes incorporated in the earthwork, and the ditches of the Dykes attracted Anglo-Saxon and later burials.

Roman temples have been found at Mutlow (Neville 1852) on Fleam Dyke and Gallows Hill, Swaffham Prior (adjacent to Devils Dyke) (Simon Bray, unpublished archive), and also near the southern end of Brent Ditch on the hill above Great Chesterford (Miller 1996). At the southern end of Bran, a Roman rectangular building was recorded (Fox 1923a: 187), for which Thackray suggested a possible function as a signal station, along with the circular example at Mutlow (1980: 43); however, the obvious interpretation of the latter as a temple (see Fox and Palmer 1924: 30) would suggest that the building on the relatively unoccupied highland at Heydon was also a temple. Its excavator Lord Braybrooke implied such an interpretation by using the word 'altar stone' and referring to associated finds of bullocks' horns, a bronze bell and other metalwork (Neville 1848; see also Babington 1883). The Mile Ditches terminate at their southern end beside the barrow field on Therfield Heath, into which some secondary Anglo-Saxon burials were introduced. Halfway along their length northwards, these ditches run downslope to the east of Limlow Hill, another possible Romano-British temple site.

The sinuous shapes of Fleam and Brent are remarkably similar to one another, and recall prehistoric 'avenues' such as those associated with Avebury. Similar symbolic ways leading to sacred sites could be represented by the Dykes, which terminate at their southern ends in (apparently) wild heath and woodland, and at their northern ends at springs, places notorious for votive offerings in Anglo-Saxon as well as earlier times. At Shardelow's Well, for example, at the northern end of Fleam, a concentration of rich Roman finds has been discovered by metal-detectorists, as well as Roman burials and some Anglo-Saxon jewellery, discoveries which lend weight to the idea that the spring may have been a focus for ritual activity.

Precursors to the Dykes could have been prehistoric ditches similar to the Mile Ditches (Burleigh 1980; and see Place-names and boundaries, above). The fact that none except the Mile Ditches have survived from this earlier period could be accounted for by the massive scale of the later Dykes, which would have obliterated any trace of smaller prehistoric features. Associations with other prehistoric sites, such as a henge and causewayed enclosure near the northern 'extension' of Fleam Dyke, lend support to such a possibility. That the Anglo-Saxons may have revered these sites is suggested by finds from the peat fen just outside the Great Wilbraham causewayed enclosure. A trench excavated here in 1976 revealed organised deposits of horse bone, including a ring of longbones with a skull in the middle. A radiocarbon sample from this material produced a post-Roman date (Ian Kinnes personal communication).

In short, there is no proof that the Dykes were anything other than secular, a prosaic response to troubled times, but their coincidence with known ritual sites, and with potentially sacred ones, such as the springs at the northern end of each (except Devils), a situation similar to the Mile Ditches, suggests deeper motives and religious connotations, which perhaps gave the builders an added psychological defence against their enemies. The association between sacred sites and boundaries has been discussed on many occasions for many different periods.

Routeways

Most of the Dykes survive today in part as footpaths, the exceptions being Brent and the northern end of Bran. The possibility that they were constructed as routeways linking the fens (lowlands) with the hills is one that has received but scant attention. Fox refers to a lack of evidence for wheel ruts in the ditch at Devils (Fox 1925: 121), and earlier writers dismissed the idea of 'covered ways'. Nonetheless, Worsted Street was considered to be one of the group of Cambridgeshire Dykes by McKenny Hughes (Ridgeway 1893: 204; Hughes 1913: 144–5) and, although this has been disproved in terms of construction technique and date, the similarity of orientation between Worsted and the Dykes could argue for a similar purpose. McKenny Hughes (1895) refers to a 'dyke' at Cherry Hinton, directly in line with Worsted Street, and although this 'dyke' may have been part of the defences of an Iron Age fort known as the War Ditches, Hughes does not correct this in his later report (1904), where he keeps the presumed line of Worsted Street (and presumed 'dyke') in his map of the district alongside, but detached from, the ditch of the ringwork. However, the presumption that Worsted Street was laid out to pass between Wandlebury and the War Ditches, either to terminate at the springs in Cherry Hinton, as suggested by Hughes and on analogy with the Dykes, or to continue the same alignment through modern Cambridge to meet the Cam nearly opposite the Belgic settlement on Castle Hill, is a very reasonable one. Prehistoric origins for Worsted may be indicated by the occurrence of two Iron Age forts near its northern terminal, one on either side (a situation perhaps paralleled by the henge and causewayed enclosure either side of the northern 'extension' to Fleam), and also by the alignment that it follows, common in ridgeways, keeping to the high ground a couple of kilometres east of and parallel to the River Granta. The strategic location of this route would be similar to that of the Dykes, which allowed rapid deployment along them and safe passage behind them, principally for military purposes, but also secondarily for the secure movement of the civilian population, protected by the Dykes.

Penn and Wait (above) argue that Worsted Street as a Roman road was primarily built to connect Cambridge with the Icknield Way in the Worsted Lodge–Mount Farm area. It is also suggested that there was no Roman road beneath the A11 north of Worsted Lodge, but that the Icknield Way ran parallel and a little to the north of the modern road (Fox 1923a: Map III), and that, to the south, a Roman road ran to Great Chesterford, with a less important route continuing the line of Worsted Street to the south east, demonstrating that Worsted Street played an important role in the communications network.

Along its length south of Worsted Lodge, Worsted Street seems to get less like a Roman

construction until it appears to peter out somewhere near Horseheath. In fact, footpaths continue the general line until they meet a tributary of the River Stour that runs down the valley in which modern Haverhill is situated. Between Fulbourn and Balsham one of the main routes could well have been along the bank of Fleam Dyke, the parish boundary and present footpath, and again the watershed of the Stour is perhaps the end point of the footpaths that continue the sinuous line of Fleam past Oxcroft and Yen Hall. At Devils Dyke also, a footpath continues from the southern end through Ditton Green towards Kirtling Green and the headwaters of the River Stour.

All of the paths mentioned above could be aiming for the same general point, a passage through the hills and an easy descent beyond them following the valley of the Stour (as suggested for another route in VCH VII: 28), and as such they would represent routes between the fens and communities on the far side of the relatively barren areas of the Icknield Way and the Boulder Clay lands. Such a pattern was reproduced during parish formation when good and bad lands were shared out so that no particular community was advantaged over another; many fen-edge parishes are long parcels of land which take in fen at one end and chalk upland at the other, with the main settlement situated centrally to exploit both types of terrain.

Both Brent and Bran also have footpaths emanating from their southern ends, a function certainly of more recent times, but nonetheless a feature common to all the Dykes and to Worsted Street. At their northern ends no such pattern appears, but more importantly they all (except Devils) terminate along the supposed route of Ashwell Street (Street Way), a Romanised prehistoric trackway (Fox 1923a: 147–150 and Map V). How early in their history the Dykes were used as paths cannot be ascertained, but it appears that at an early stage they must have made very convenient routes between the lowland Ashwell Street and the hillside Icknield Way, and beyond to the south side of the Boulder Clay hills. However, even though considerable wealth is known to have been invested by some cultures, such as the Roman, in an intricate system of communication, the design and size of the Dykes argue that their principal purpose was not that of a roadway. All the dating evidence places the Dykes unambiguously in the Dark Ages, and the pagan Anglo-Saxon period is not one renowned for road building, but a combination of roles, a defensive obstacle also designed to enable rapid defensive deployment of troops, could constitute a valid military function lying behind the construction of the Dykes, and resulting in their added value as routeways.

Conclusions

The recent investigations and reappraisal of existing sources have succeeded in establishing a tighter understanding of the Cambridgeshire Dykes, and have pointed the way for future research.

Carbon-dating of Fleam Dyke, in association with the phasing postulated from stratigraphic data, has refined our knowledge of the initial construction and subsequent use of this monument, so that we can put its first stage of construction in the fifth century AD, from the date of *cal.* AD *330–510 (92% confidence)* for the first phase bank. That the main activity relating to its use and remodelling (which resulted in the steep-sided flat-based ditch profile common to all the Dykes) occurred around the sixth century is reflected in a range of *cal.* AD *450–620 (95% confidence)* for the last dated event from the bank sequence, and a range of *cal.* AD *590–700 (94% confidence)* for the last dated use of the monument (see Bayliss *et al.*, above). It is obviously dangerous to extrapolate more widely than this to the entire length of the Dyke, and although the environmental evidence shows that all the Dykes were built in a similar landscape of grazed pasture or moorland, suggesting they are contemporary, it is even more dangerous to assign the other Dykes to the same period on the basis of a single sequence of dates from one monument. However, the weight of previous work has established that they are all post-Roman but earlier than late Anglo-Saxon, and the finer pieces of the dating jigsaw, including pottery, and artefacts accompanying burials, point to fifth and sixth-century dates (see for example Lethbridge 1935: 94; and the many references to skeletons with Anglo-Saxon weapons by Fox, Lethbridge and Hutchinson).

To this relatively direct evidence must be added more circumstantial but still pertinent evidence from the cemetery distribution in the area, the clear distinction between south Cambridgeshire and Hertfordshire indicating a major cultural boundary, the occurrence of early place-names east of Worsted Street and north along Akeman Street, and indications of Romano-British sites acting as focuses for early Anglo-Saxon activity at Cambridge, Great Chesterford and some of the villas. All of these strands of evidence point to the Dykes having been constructed and used during early pagan

times, emphasising their likely origin in the fifth century and continued use in the sixth as a defence against British counter-attacks into one of the heartlands of Germanic settlement. The early Anglo-Saxon settlers here must have been closely involved with the construction of the Dykes, and distinctly different from the people further south, perhaps a British population with its power-base at St Albans (Chris Going, personal communication). The Dykes were barriers in both the political and military spheres, and were designed specifically as defensive obstacles, probably to counter the rapid deployment and mobile nature of British 'cavalry', which could have had a devastating effect on settled communities of Anglo-Saxons. The wars of this period were not a Romano-British defence against sea-borne maurauders, but instead internecine conflicts between British 'tyrants' and attacks by them on farming communities established by Germanic migrants.

Building on the excellent field observations and synthesis of previous work presented by Thackray (1980), we can see that further close study of the full extent of each Dyke, in relation to the topography in which each section was constructed, is essential for the depth of knowledge necessary to interpret them fully. Such fieldwork should be combined with a programme of field walking adjacent to the earthworks, and a plotting of all available air photographs, so as to identify any areas of settlement or other activities. This would help in targeting excavations to obtain further samples for dating and environmental study.

The potential of these linear earthworks for extensive environmental reconstruction, reaching from the fens to the hills, has been indicated by both French and Murphy (above). They provide transects across the landscape which could be systematically sampled to reconstruct the conditions of early Anglo-Saxon and late Roman times, and this timespan could perhaps be extended back into the late Iron Age, especially at Worsted Street. So far, most investigations have taken place in, and all environmental evidence has come from, the central and northern parts of the Dykes. We have no definite evidence for the long-held belief that there was dense woodland at their southern ends, and it would be relatively easy to undertake small-scale excavations on each Dyke at a suitable location, in order to confirm the existence of contemporary woodlands.

These locations would also be some of the most likely to produce samples for carbon-dating, as trees would have been cut down (and possibly burnt) during construction of the Dykes, leaving some of their remains trapped between the buried soil and the construction phases of the bank. Other potential sources of dating evidence include the Bran Ditch skeletons, from which a large enough sample could be extracted to obtain a reasonably close carbon date, and the hearths discovered at the base of Bran Ditch, or some of the enigmatic pottery found during excavation there (Lethbridge 1929; Palmer *et al.* 1932), which could be used for thermoluminescence dating. Close dating of all weapons found at the Dykes might, as proposed above, also help to confirm (or deny) a fifth and sixth-century date.

On the wider scale, the Cambridgeshire Dykes need to be considered together with other dykes in neighbouring counties, those along the Icknield Way in Bedfordshire and those in Norfolk and Suffolk, many of which seem to be of Iron Age date, a period in which the Cambridgeshire Dykes might also have originated, as suggested for the Mile Ditches. There can be little doubt that the Cambridgeshire Dykes in their extant form are of Anglo-Saxon construction, and therefore a comparative study of continental examples from the Anglo-Saxon homelands would be an important exercise. It is also clear from the arguments presented above that a proper study of these monuments cannot be isolated, but must comprise a series of different areas of research, including archaeology and related scientific techniques of environmental reconstruction and absolute dating, as well as historical and place-name evidence, and that the more obvious functional interpretations of the Dykes should not blind us to the fact that, in contemporary eyes, the Dykes probably fulfilled several roles.

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Excavations at Orchard Lane, Huntingdon, 1994

Niall Oakey with Paul Spoerry

and contributions by Umberto Albarella, Corinne Duhig, Sandra Garside-Neville, Peter Murphy, Pippa Smith & Paul Spoerry

Summary

Excavations at Orchard Lane, Huntingdon, in 1994 revealed rubbish and cess pits dating from AD *900–1150, and information was obtained on the diet of the Saxo-Norman population. Probably in the eleventh century, the site became a cemetery and remains of over twenty individuals were excavated. Burials had ceased by the fifteenth century and, apart from a quarrying episode in the sixteenth or seventeenth century, thereafter the property remained open or was used as a builders' yard. The opportunity is taken to publish a group of Saxo-Norman pottery, and future research priorities for archaeology in Huntingdon are proposed.*

Introduction

In July 1994 a team from the Archaeological Field Unit of Cambridgeshire County Council carried out an archaeological evaluation of a site at Orchard Lane, Huntingdon (NGR TL 2420 7160, Figure 1). This was in response to the placing of an archaeological condition on development by Huntingdonshire District Council, acting on the advice of Development Control, Archaeology Section, Cambridgeshire County Council. The project was designed to sample, investigate and evaluate surviving archaeological deposits threatened by the proposed development of a hostel for people with learning difficulties by Huntingdon Mencap.

Human skeletal remains were encountered during the evaluation phase and, in view of the probable destruction of these and other significant archaeological remains, English Heritage (who funded the evaluation) provided the financial resources necessary to carry out the excavation and recording of the area within the footprint of the proposed development. All human skeletal remains were cleared, under the conditions of a licence for the removal of human remains issued by the Home Office under the provisions of the Burial Act, 1857.

Following the guidelines of English Heritage (1991), the data produced by the excavations were assessed and a design for further post-excavation analysis was submitted (Oakey *et al.* 1995). English Heritage agreed to fund the proposed programme leading to publication of this report.

The Orchard Lane project has significance as the first opportunity in recent years to carry out and publish the results of a substantial urban excavation in Huntingdon. It will initiate a modern archaeological database for the town and provide a background against which future decisions on the management of the archaeological resources of Huntingdon and its environs can be made.

Historical and Archaeological Background

The historic core of Huntingdon lies on First Terrace River Gravels on the north bank of the River Great Ouse (British Geological Survey, *Sheet 187: Huntingdon* (Southampton 1978)). Isolated prehistoric artefacts have been recovered from Huntingdon, but the first structural evidence of settlement dates from the Romano-British period. At this date the settlement appears to have been subsidiary to Godmanchester on the opposite bank of the Ouse and lined Ermine Street for several hun-

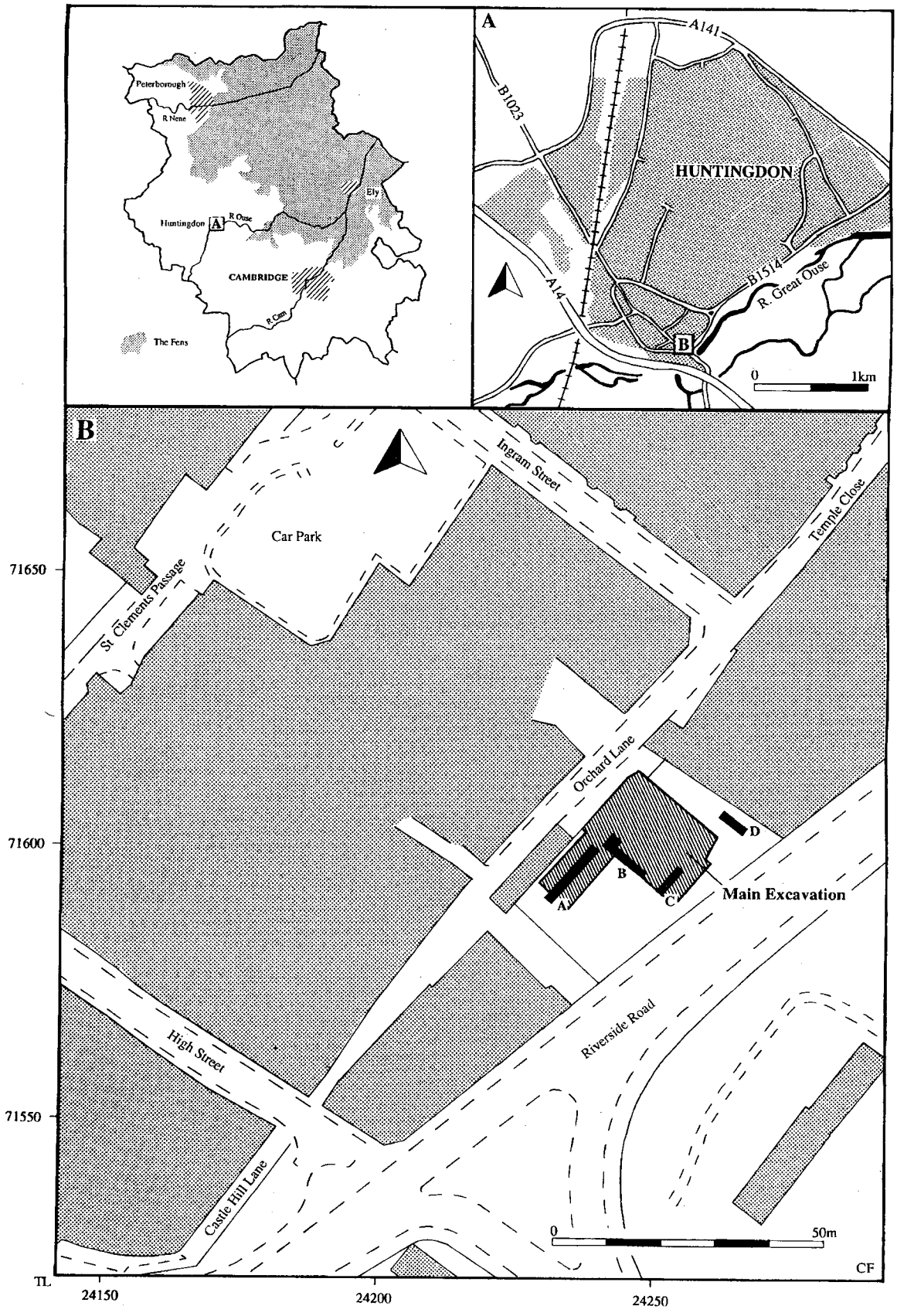


Figure 1. *Orchard Lane, Huntingdon. Location of excavation.*

dred metres beyond the river crossing (Dunn 1972: 13–14). Its location, controlling the bridgehead, gave a settlement at Huntingdon considerable strategic importance as the Ouse represented the first barrier or defensible line along Ermine Street as it ran north from London and before the erection of a bridge at St Ives in the twelfth century it was probably the lowest crossing point on the Ouse.

Discounting a dubious reference in a putative Peterborough foundation charter in the E Manuscript of the Anglo-Saxon Chronicle under the year 656 (12th century) (Earle & Plummer 1892: 30–31), the first documentary reference to Huntingdon occurs in Manuscript A of the Anglo-Saxon Chronicle, which states that in 917 Edward the Elder captured the 'burh' of Huntingdon from the Danes and repaired and restored it.[1] Presumably the area's strategic importance had attracted one of the Danish armies or warbands of the late ninth century to settle and probably fortify it, but there is no evidence at present to suggest the precise location of the 'burh'. It is probable that the old line of Ermine Street was perpetuated, crossing the river *c.* 150 m upstream of the current bridge, and that the Saxon and Danish settlements were focused on the area now occupied by the earthworks of the Norman castle.

Edward the Elder established Huntingdon as the centre of a territory conforming to later Huntingdonshire and the town entered a period of prosperity which lasted into the fourteenth century. A mint was established in the tenth century and endured for nearly two hundred years, with the earliest surviving coins dating from the reign of Eadwig (955–9) and the last belonging to the last issue of Stephen (VCH 1932: 121–2). Domesday records that at Huntingdon in 1066 there were 256 burgesses and at least 100 freemen in four wards (Morris 1975: 203a). This compares with totals of 60 in Northampton (Morris 1979: 219a) and 29 in Cambridge (Morris 1981: 189a). It is possible that the term 'burgess' was used more loosely in Huntingdon than elsewhere, but if all are assumed to be heads of households it indicates a flourishing urban settlement. At least 133 residences that were occupied before 1066 are described as unoccupied in 1086 and these include 21 residences which had been removed to make way for the castle.

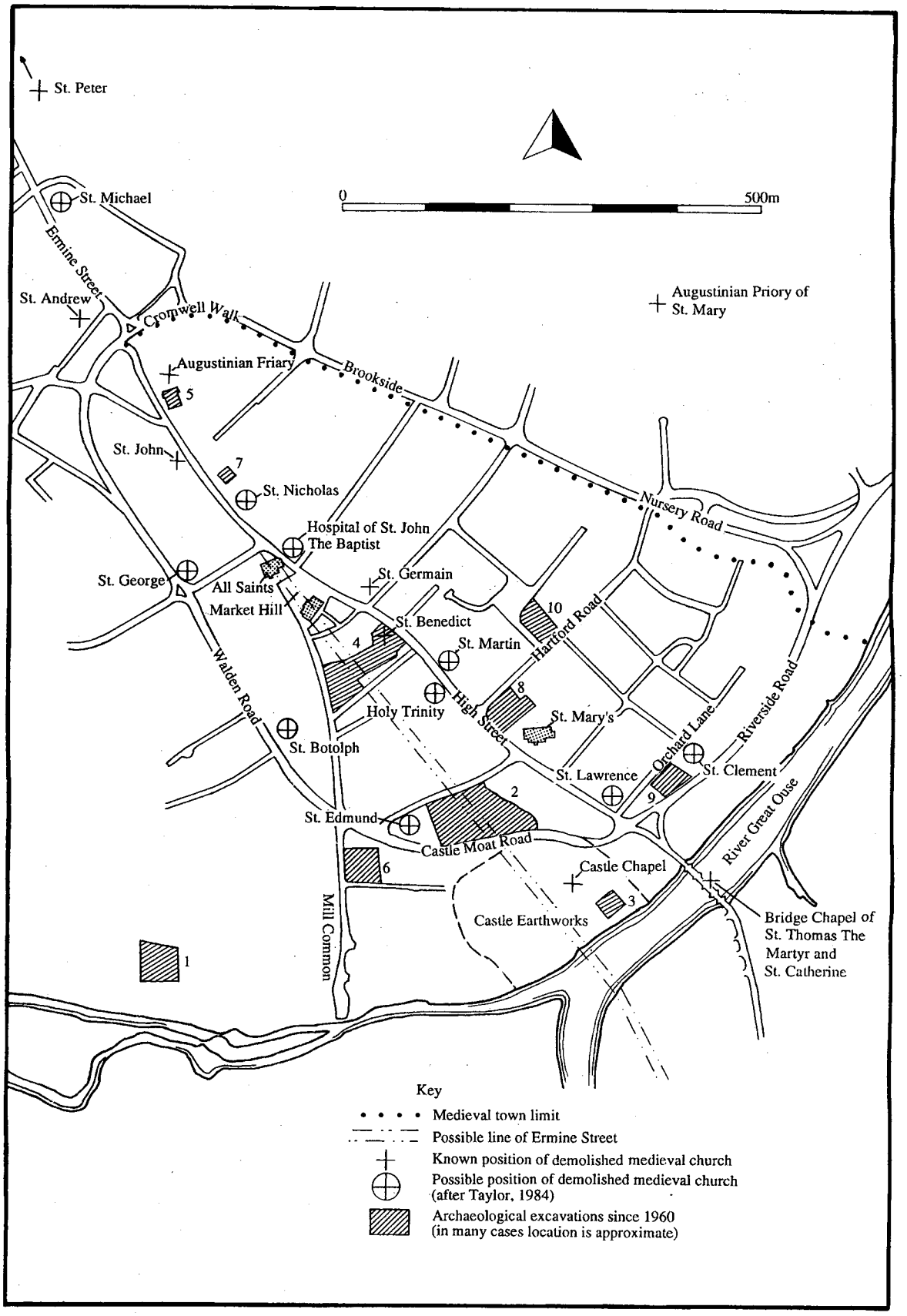
The castle would have had a major impact on the topography of the town, as it blocked the route of Ermine Street and may have caused the movement of the bridging point to its current location. A timber bridge was replaced by the present stone structure, which leads onto the existing High Street, in *c.* 1332 (VCH 1932: 125). This formed the focus of medieval Huntingdon, which spread north-westwards past the surviving medieval church of St Mary to the Market Place and beyond along the road to Stamford (Figure 2). The existing alignment of Nursery Road/Brookside/Cromwell Walk is suggestive of a linear, curving feature, possibly a ditch or bank forming the northern boundary of the town, but no alignment survives to indicate a corresponding feature to the west.[2] St Mary's Priory was built north of the possible boundary in 1086 and may have been located within a detached cemetery of the pre-Conquest collegiate church of St Mary. This was one of six monastic houses and hospitals which existed in Huntingdon by the thirteenth century (Haigh 1988: 40–44), and seventeen other priories and abbeys owned small properties within the town (VCH 1932: 123). Sixteen parish churches are recorded at the same date (VCH 1932: 122), but the exact locations of many of them are not known (Taylor 1982–83a).

The thirteenth century represented the apogee of Huntingdon's fortunes in the medieval period. In the next century it went into an abrupt and marked decline, so that by 1364 three parish churches had become derelict due to lack of parishioners and no incumbents were appointed to eight others after the fourteenth century (VCH 1932: 145–6). Even allowing for the special pleading probably used by burgesses keen to paint a bleak picture, the preamble of the charter of 1363 is eloquent in its testimony to the privations of the town (*Calendar of Charter Rolls* vol. V: 179 (15 October, 37 Edward III), quoted in Carruthers 1824: 81):

> considering that the said town of Huntyngdon, as well by mortal pestilences as from various other adversities thereunto coming, is so impoverished and injured that the fourth part of the said town is not inhabited, and the remaining few have scarcely wherewith to live...

The sequence of lethal epidemics of the fourteenth century, typified by the Black Death, is cited as one cause of the decline, but another reason was interruption of river communications to the sea at Lynn. This was caused by various diversions and obstructions to the Ouse and was a matter of incessant recorded complaints by the burgesses of Huntingdon. Also partially responsible was the decline and cessation of St Ives Fair before the middle of the fourteenth century. Huntingdon had the right to collect tolls on items brought to the fair (valued at £100 per annum in 1260), but the disruption to the wool and cloth trade occasioned by the Hundred Years Wars and the establishment of the Staple dealt a mortal blow to the nationally important fair (VCH 1932: 123).

Complaints of decay and the burden of taxation were frequent in the fifteenth and sixteenth


St. Peter
St. Michael
0
500m
Ermine Street
St. Andrew
Cromwell Walk
Augustinian Priory of St. Mary
Augustinian Friary
Brookside
5
St. John
7
St. Nicholas
Nursery Road
Hospital of St. John The Baptist
St. George
All Saints
St. Germain
Market Hill
10
St. Benedict
4
St. Martin
Hartford Road
Walden Road
8
Holy Trinity
High Street
St. Mary's
Riverside Road
St. Botolph
Orchard Lane
St. Lawrence
St. Clement
2
9
St. Edmund
Castle Moat Road
River Great Ouse
6
Castle Chapel
3
Mill Common
Castle Earthworks
Bridge Chapel of St. Thomas The Martyr and St. Catherine
1
Key
Medieval town limit
Possible line of Ermine Street
Known position of demolished medieval church
Possible position of demolished medieval church (after Taylor, 1984)
Archaeological excavations since 1960 (in many cases location is approximate)

century, burgesses avoided office, and by the beginning of the reign of Henry VIII only four parish churches survived and half the dwelling houses were empty (VCH 1932: 124). The strategic position of Huntingdon had proved to be a liability in 1461, when it was sacked by a Lancastrian army, and again in August 1645 when it was taken by the King's army, at the cost of considerable physical damage to the churches of St John and St Benedict and other buildings, and to the purses of the town through the demand for quarter and provisions.

The later seventeenth century saw the beginning of a recovery which lasted until the middle of the nineteenth century, as Huntingdon's location made it an important coaching centre on the road north from London. However, this trade was killed by the advent of the railway in 1850. This brought little commercial benefit to Huntingdon, and since that time it has functioned as a local administrative, social and market centre with a little light industry.

Speed's map of 1610 suggested that the town was concentrated along the High Street and around the Market Place, with a little development along the streets and lanes which led off the major thoroughfare. Between the built-up area and the putative medieval northern boundary, open land is shown divided into closes and larger fields. Little had changed by 1768 when Jefferys' map was published. It is only with the Ordnance Survey maps of 1885 that the spaces fill with terraced houses, and this process speeded up in the twentieth century as housing and industrial estates spread well beyond the probable boundary.

Unfortunately, there have been few opportunities for archaeology to contribute to knowledge of Huntingdon. Like many other English towns, Huntingdon was the scene of considerable development between the 1960s and 1980s, much of it in archaeologically sensitive areas along the spine of the High Street, but the archaeological response was uneven and incomplete. Various excavations took place between the late 1960s and 1980s near the castle, in St Benedict's Court, on St Mary's Street, and at Cromwell House on the site of a friary, but only one has been fully published (Haigh 1984).[3] Further redevelopment at the start of the 1980s on the site of St Benedict's church met with limited archaeological response, although the results from a small trench have been published (Taylor 1982–83b). A recent small-scale evaluation has revealed intensive digging of rubbish and cess pits behind 90/91 High Street in the eleventh and twelfth centuries (Heawood 1994), with possible structures and pits of twelfth or thirteenth century date found along the modern Hartford Road (Aileen Connor, personal communication). A site on the corner of High Street and Hartford Road produced evidence of pits and a gravel surface dating to the thirteenth or fourteenth century. After an episode of deliberate dumping, a cellared building was erected on the High Street frontage in *c.* 1500 and was replaced or partially replaced in the seventeenth century by a structure fronting on to Hartford Road (Welsh 1994). These findings seem to confirm the focusing of medieval occupation along the High Street spine, but a ditch of possible Saxo-Norman date (tenth to eleventh century) has been found on Mill Common (Leith 1992).

The site described here lay south east of Orchard Lane (formerly St Laurence's Lane, Jail Yard Lane, and Gaol Lane), *c.* 70 m north-east of the High Street and 100 m north of the bridge across the Ouse. The medieval church of St Clement is known to have been in the south of Huntingdon as, in 1334, the parson claimed that the chapel on the bridge was in his parish. It may have stood on the south side of Orchard Lane, but it is not mentioned in records after 1372 (VCH 1932: 145). In 1824 it was stated to have been 'on or near the site of the house belonging to William Margetts Esq. in whose garden great quantities of human bones have been dug up' (Carruthers 1824: 134). In 1843 Mr Charles Margetts lived at Orchard House, an eighteenth-century house on the south-eastern corner of Orchard Lane and High Street (VCH 1932: 126). On the north-western corner of the lane, the house (155) is built upon the foundations of the old County Gaol (VCH 1932: 126), and Carruthers states that 'A church is also said to have stood in the Close behind the Gaol' (Carruthers 1824: 134). Orchard Lane is referred to as St Laurence's Lane in sixteenth-century documents, but, although a church of this name is recorded in the thirteenth century, no details of its location are known (VCH 1932: 146).

Figure 2. *Medieval Huntingdon and sites mentioned in the text. The locations of archaeological excavations are numbered as follows:* 1. *Mill Common 1973;* 2. *Pathfinder House 1973;* 3. *Castle Hills 1975;* 4. *St Benedict's Court 1975 and 1980;* 5. *Cromwell House 1984;* 6. *Mill Common 1992;* 7. *90/91 High Street 1993;* 8. *Marshall's Garage 1993;* 9. *Orchard Lane 1994;* 10. *12 Hartford Road 1996.*
The shaded areas refer to the properties under investigation and are not an accurate portrayal of the excavated areas.

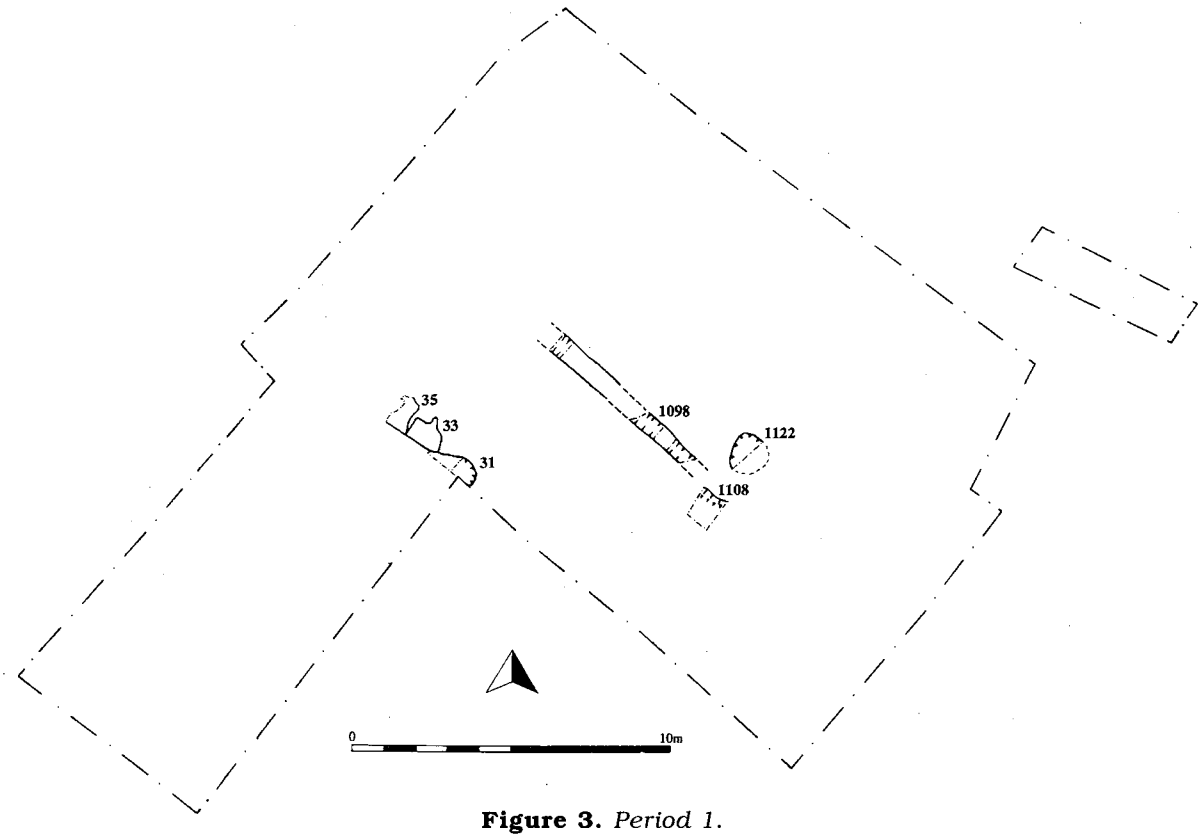


Figure 3. *Period 1.*

A 1572 survey of Huntingdon enumerates properties on the right (south-eastern) side of St Lawrence Lane as

> ITEM a litle Close extending downe to ye Riverside being parcell of St. Johns.
> ITEM next ye same a Close in the tenure of Sr Hen: Cromwell.

A series of closes continue to the Common Fields (Dickinson 1972: 16).[4] A further survey survives from 1598, which again refers to the land belonging to St John's Hospital and a series of closes

> ITEM the hospitall one Toft.
> ITEM the water Close.[5]

A plan of the Hospital lands in Huntingdon in 1752 shows the site (now on Jail Yard Lane) occupied by (from the south) Colt Close, a narrow parcel of land leading from the lane to the river, and land belonging to Lord Sandwich (the Earls of Sandwich, then the Montagues, bought much of the Cromwell's Huntingdon estates in the early seventeenth century).[6] No buildings are shown on the site in 1752, but a map published by Jefferys in 1768 shows a building on the frontage to 'Gaol Lane'. This is probably the brick coach house or stable which survives to the north of the excavations. The Tithe Map of 1850 has a schematic representation of this same building, shown bordering the narrow parcel of land running to the river in 1752.[7] On the Ordnance Survey map of 1885 a number of small buildings or sheds surround the eighteenth-century building and encroach onto the area excavated, but most of the site was open, narrow closes leading from Orchard Lane to the river. By the early twentieth century the property had assumed its present boundaries to north, west and south and had become a builders' yard containing one small building. It maintained this function until the 1990s, but in recent times Riverside Road was constructed to the south-east, cutting the site off from the river and creating the existing eastern boundary of the property. When archaeological investigation began the site was derelict and overgrown and the only structure was a temporary building serving as a scout hut. This was demolished between the evaluation (Phase 1) and the ensuing excavation (Phase 2).

Methodology

The evaluation phase of the project (Phase 1) comprised four linear trenches totalling *c.* 55 sq m (Trenches A–D), and as a consequence of

the results from these, an area of *c.* 385 sq m (Phase 2) was opened. In both phases a mechanical excavator was used to remove most of the post-medieval and modern overburden. All exposed contexts were then cleaned and recorded before a representative sample was excavated. The results of Phase 1 meant that efforts in Phase 2 were concentrated on the investigation of the earliest remains and the removal of all human skeletal material. During Phase 1 many later medieval and post-medieval deposits were excavated; and so hand-excavation of these deposits in Phase 2 was more selective, often taking the form of sampling.

In both phases the Archaeological Field Unit's standard single-context recording procedure was followed and records were produced for contexts 1–163 in Phase 1 and 1001–1158 in Phase 2. All site records, databases and specialist reports are retained and available for consultation in the archives of Cambridgeshire County Council Archaeological Field Unit, while the artefacts and ecofacts are stored in the County Archaeological Store.

The activities on the site had involved a great deal of disturbance and redeposition of deposits and their contents. This was highlighted by the distribution of human skeletal material and pottery. The site was used for burials in Period 2 (eleventh to fourteenth centuries), but disturbed human bones were found in all subsequent periods, while wares dating to 900–1150 formed the major component in pottery assemblages of all periods. Only deposits from Period 1 (tenth to early twelfth centuries) had escaped large-scale contamination by redeposited material, and for this reason animal bone and environmental samples from this period alone were selected for further detailed research. No large groups of pottery, ceramic building material and human skeletal material from Huntingdon have been published before, so these categories were examined in more detail.

Results

Period 1 Tenth and eleventh centuries (Figure 3)

Description

Contexts of this period survived as the fills of truncated features cut into the natural. Shallow linear feature 1098 was over 5 m long and up to 0.80 m wide, but later truncation meant that its depth varied from 0.20 to 0.55 m. No evidence for posts and stakes was seen in its base or in fill 1097. Its relationship to cut 1108 had been destroyed, but the latter was seen to have vertical sides and was at least 1.35 m deep. Circular pit 1122 was only 0.55 m deep, but had a flat base and the concave and undercut character of the sides indicated that either it had held liquid or had stood open for some time. A lens of redeposited natural clay and gravel within its fill (1114) suggested an attempt to seal the contents.

To the north west was a group of truncated sub-rectangular pits with vertical or very steep sides. The earliest, 33, contained lenses of ash (32) and was cut by 31 which, in turn, was cut by 1102, containing fill 1084. The latter was heavily truncated and is too small to be shown here on plan. Another pit, 35, was located to the north west.

Interpretation

Although some Romano-British pottery and a piece of box flue of similar date were recovered, most of the sherds from this period date from the Saxo-Norman period (AD 900–1150).

The recovery of mineralised plant remains and fly puparia from contexts 1093 and 1114 indicated that both 1108 and 1122 had functioned as cess pits. The amount of animal bone recovered implied that each had also been used for the disposal of domestic rubbish, and this was probably the primary function of all the other pits of this period. Charred cereal grains and other plant materials were found, but there was no evidence for on-site crop processing, and the deposits probably result from domestic consumption. However, a high proportion of the intact marine mollusc shells and valves recovered was derived from immature specimens with little nutritious or commercial value. They may result from the processing on this riverside site of a shellfish catch brought up the Ouse and the disposal of unsaleable material (Murphy 1996; summarised below, pp. 149–53). A similar operation may account for the predominance of either small species or small examples of larger species within the fish recovered from Period 1 contexts. Eel bones derived from medium-sized specimens, but none of the fish-bones displayed evidence of having passed through the gut of humans or any other animal (Smith, unpublished report, summarised below, p. 149). Frog and toad specimens are more likely to indicate the proximity of a wet environment than be food refuse.

The animal bone from this period was dominated by domesticated livestock, with the exception of a fragment of roe deer pelvis. Some butchery marks were noticed, but *c.* 15% of the bones bore evidence of gnawing by carnivores

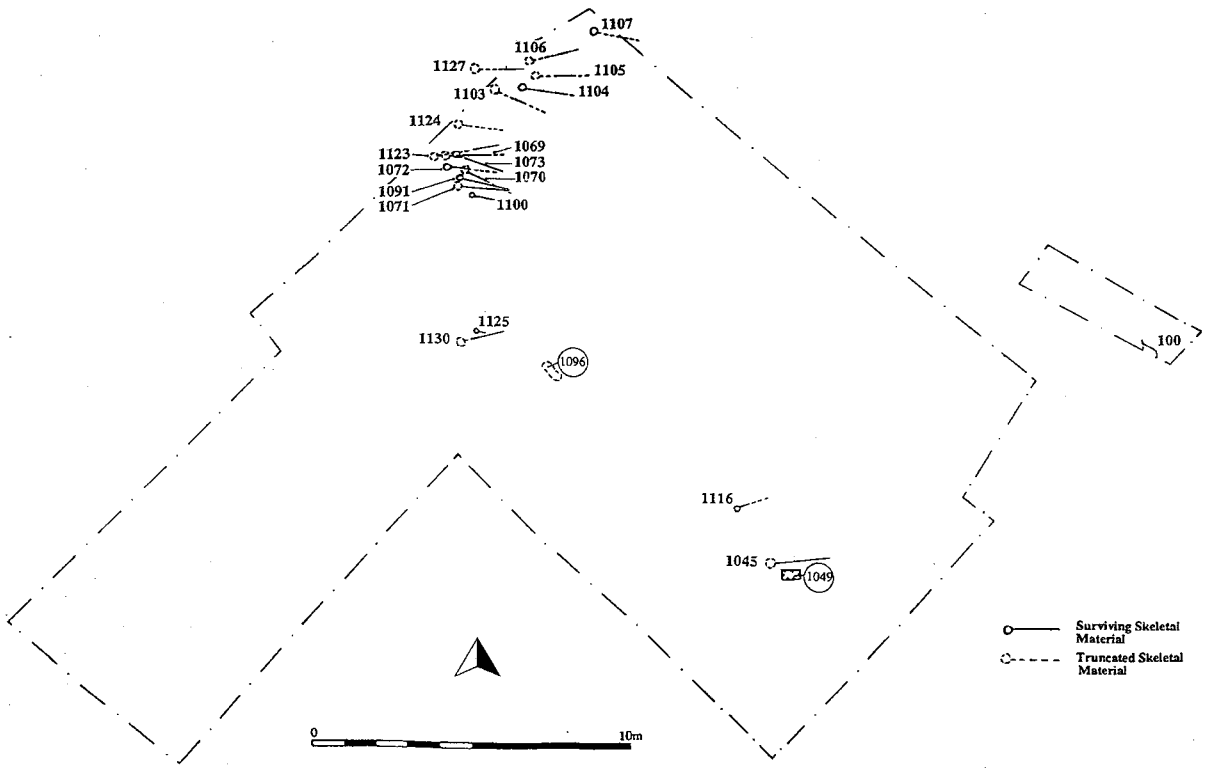


Figure 4. *Period 2.*

(Albarella, unpublished report, summarised below, pp. 147–9). This may represent bones being deliberately fed to dogs or it may indicate that the bones had formed part of an exposed rubbish dump or midden before they were buried. The scale of the pits suggests a domestic context, rather than a civic or co-operative operation for the bulk collection and disposal of rubbish.

There was no evidence to suggest that the linear feature 1098 formed the foundation of a building, and it may have been a ditch or gully, functioning as a property boundary running towards the river. Although no traces of a structure were uncovered, the presence of pieces of daub (one with wattle impressions) in pit fills 32 and 1114 suggests that buildings existed in the proximity (Garside-Neville, unpublished report, summarised below, pp. 142–3). Any Period 1 deposits nearer to Orchard Lane had been destroyed by later activity in Periods 2 and 3, but the recovery of so much Saxo-Norman pottery from later contexts (*c.* 5.4 kg) confirms domestic activity on or near the site. Gully 1098 ran at right angles to Orchard Lane and may indicate that this thoroughfare already existed in the Saxo-Norman period. Remains of buildings of this date may have stood along the Lane, fronting yards running down towards the Ouse. Pits in these yards were used for the disposal of human cess and domestic refuse, and also for the unsaleable or non-consumable elements of shellfish and fish catches. The presence of the latter may point to the presence of contemporary wharves or landing places on the riverfronts of these properties.

Period 2 Eleventh to fourteenth centuries (Figure 4)

Description

Remains of 21 articulated human skeletons were recovered. One of these, 1089, had been disturbed and reburied in cut 1088 (Period 2/3), while 1049 was a charnel deposit of at least three individuals and probably represents redeposition after disturbance of 1045 and other skeletons. Disturbed human bones were found in many Period 3 and subsequent contexts.

Context 100 may be a severely truncated grave cut and truncation elsewhere meant that it was impossible to isolate grave cuts for more than half of the burials. There was little evidence of coffins using metal fittings (four iron nails were found with skeleton 1073) and soil conditions would have prevented the preserva-

tion of wooden coffins. No grave goods were present. Where sufficient articulated bone survived all burials were extended and supine and were aligned within ±10 degrees of west–east, with heads to the west.

At the northern end of the site, burials had been intensive and superimposition had taken place, with limited disturbance to earlier inhumations. No individual grave cuts could be distinguished for skeletons 1069–72, but 1069 was above 1070 which, in turn, lay above 1071 and 1072. These four individuals may have been interred at one time in a single large grave 1040, but 1070 was not on the same alignment as the other three and individual grave cuts may have been obscured by the disturbed soil. Examination of the skeletal material from this group did not reveal any traits to indicate that they were related, but 1069 and 1073 both displayed sternal aperture, which can be inherited (Corinne Duhig, personal communication).

The grave of infant 1125 cut the grave fill (1131) around a female aged 19–25 (1130), a placement which may indicate a family relationship.

Skeletal remains were concentrated near the Orchard Lane frontage, with other scattered remains within a strip running north west to south east. Many of the skeletons directly underlay nineteenth and twentieth–century dumps and it is likely that the absence of articulated human remains from the north-eastern part of the site reflects the truncation of deposits in Periods 3–5. Redeposited, disarticulated human bone was found in this area and between skeletons 1125 and 1100. A number of casual visitors to the site remembered seeing large quantities of 'human bone' during the construction of Riverside Road, suggesting that burials continued to the south east of the site. However, the south-western part of the site, although thoroughly disturbed in Period 3, produced negligible redeposited skeletal material and it is probable that either the cemetery did not extend to this area or burials were much less intense.

Interpretation

The alignments and method of burial are consistent with a Christian cemetery. The majority of the pottery from the grave fills was of Saxo-Norman date, but a few sherds of medieval sandy ware were also found. The Period 1 settlement was probably superseded by the cemetery late in the Saxo-Norman period, but burials had ceased by the fifteenth or sixteenth century when Period 3 quarries and pits disturbed some of the skeletons.

The intensity and superimposition of burials 1069–73, 1091, 1100 and 1123 suggest that burials took place over a long period, but there may have been special circumstances for this concentration. No common skeletal traits were detected, but this need not necessarily mean that the individuals were unrelated (Corinne Duhig, personal communication). Very little disturbance of the earlier burials was caused by this later superimposition. This may indicate that care was taken (particularly of larger bones) because earlier interments were expected and their disturbance would be a sign of disrespect. Such an attitude would not have been exclusive to the remains of close family, and the proximity of this spot to Orchard Lane and, possibly, to an access point into the burial ground may have made it a particularly popular or prestigious location for interment.

The limit of the intact burials to the south west coincides with the boundary of a narrow parcel of land shown running from Orchard Lane to the river in 1752, and the exposure of skeletons during the construction of Riverside Road indicates that the cemetery also extended towards the river.

Although no structural remains were recovered, and the documentary evidence is equivocal at best, it seems likely that the burials were within the churchyard of one of the medieval churches of Huntingdon. The sixteenth-century references to Orchard Lane as St Laurence's Lane indicate that this church was located in the area, but tradition also places St Clement's in this lane. The evidence of Carruthers suggests that there were churches on both sides of Orchard Lane (see above, p. 127). St Laurence's and St Clement's fail to appear in the documentary record after the thirteenth and fourteenth centuries respectively, so they both fit with the limited dating evidence recovered by excavation. St Clement's claimed that the chapel on the bridge was within its parish, and the way in which the cemetery extended towards the river may be significant in this respect. St Clement was a popular dedication for churches in Scandinavia and occurs in Anglo-Scandinavian towns such as Ipswich, London, Cambridge, Bedford and Norwich, often (as in the last three cases) near main river crossings (Ayers 1994: 26–7). The saint was associated with sea travel and commerce (Morris 1989: 175–6), which would also support a riverfront location, but the available evidence is not sufficient to unequivocably assign the excavated cemetery to either the church of St Clement or of St Laurence.

The number of skeletons recovered was insufficient to draw any conclusions on the life

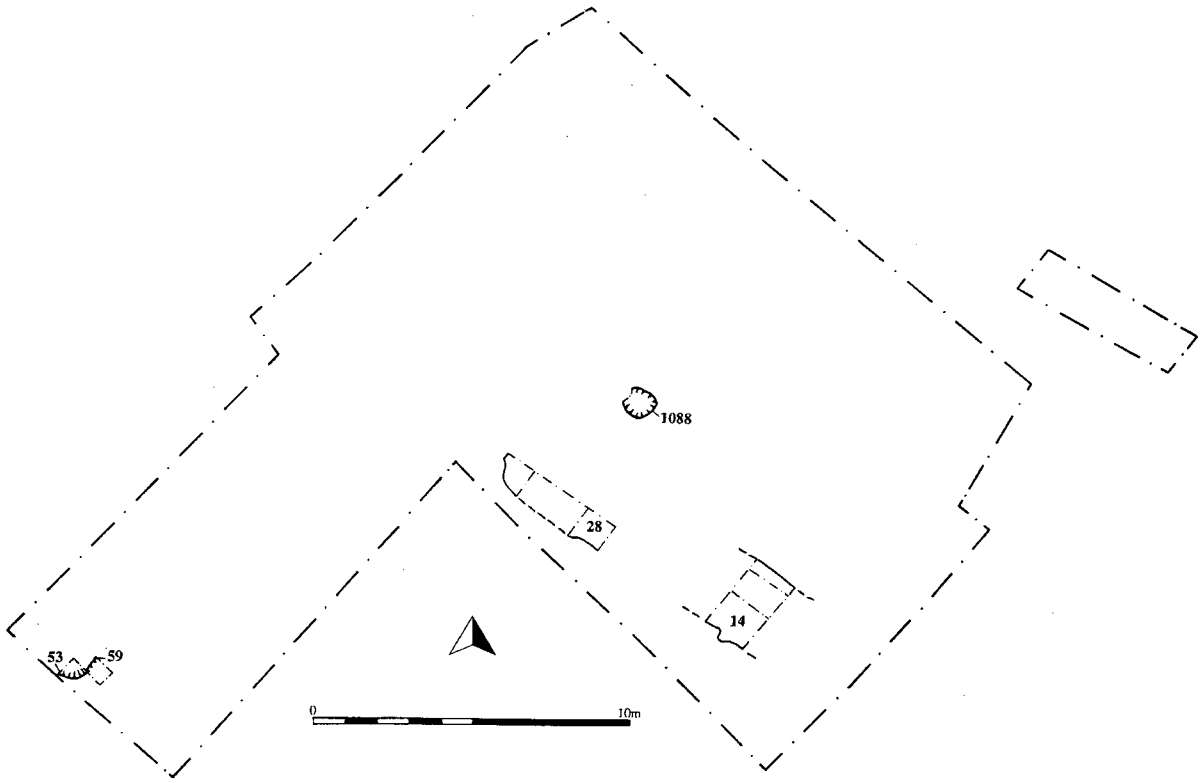


Figure 5. *Period 2/3.*

expectancy or age structure of the population, but the pathology of the remains is consistent with an urban population (see below, p. 145). The prevalence of platymeria and squatting facets suggests that many of the individuals were involved in repetitive tasks such as might be characteristic of trades and crafts found in a medieval town. The individuals buried on this site seem to have lived in some privation, exhibiting symptoms of exposure to infection, parasites and food shortages or a combination of all three. If all four adult individuals (1069–72), or even only three of them had been interred in one episode, this may indicate that they were victims of a single catastrophic event such as one of the particularly virulent epidemics of the fourteenth century which caused so much distress to Huntingdon.

Period 2/3 Eleventh to eighteenth centuries (Figure 5)

Description

Insufficient evidence survived to allocate these contexts positively to Period 2 or 3. Circular, flat-bottomed pit 1088 contained the disarticulated skeleton of adult male 1089. Some care had been invested in the reburial, as some of the small bones of the hands and feet were included.

A cut (28), at least 4.5 m long and 1 m wide, was backfilled with fill 45 which contained pottery dating to 1150–1250. This was recut as 55 (not illustrated) which was backfilled in the fifteenth or early sixteenth century. Ditch 14 (2.6 m wide and 0.38 m deep) may be a continuation of either 28 or 55.

Pits 53 and 59 were only partially excavated. Each had steep sides and 53 cut the backfill (60) of 59. Pottery in context 60 dated from 900–1200, while the fills of cut 53 were mid-fourteenth century or later in date.

Interpretation

Cut 1088 had been dug to contain a disturbed skeleton. The evident care taken to collect some of the small bones for redeposition may indicate that it took place while the cemetery was in use, or whilst its memory was still respected.

The full width of 28 and its recut 55 was not recovered, although an apparent butt end was found to the north-west. The fill of 14 was similar to that of 28 and 55, and they may form part of one ditch, at least ten metres long and 2.60 m wide. Ditch 14 truncated the fill around skeleton 1045, may have been the cause of

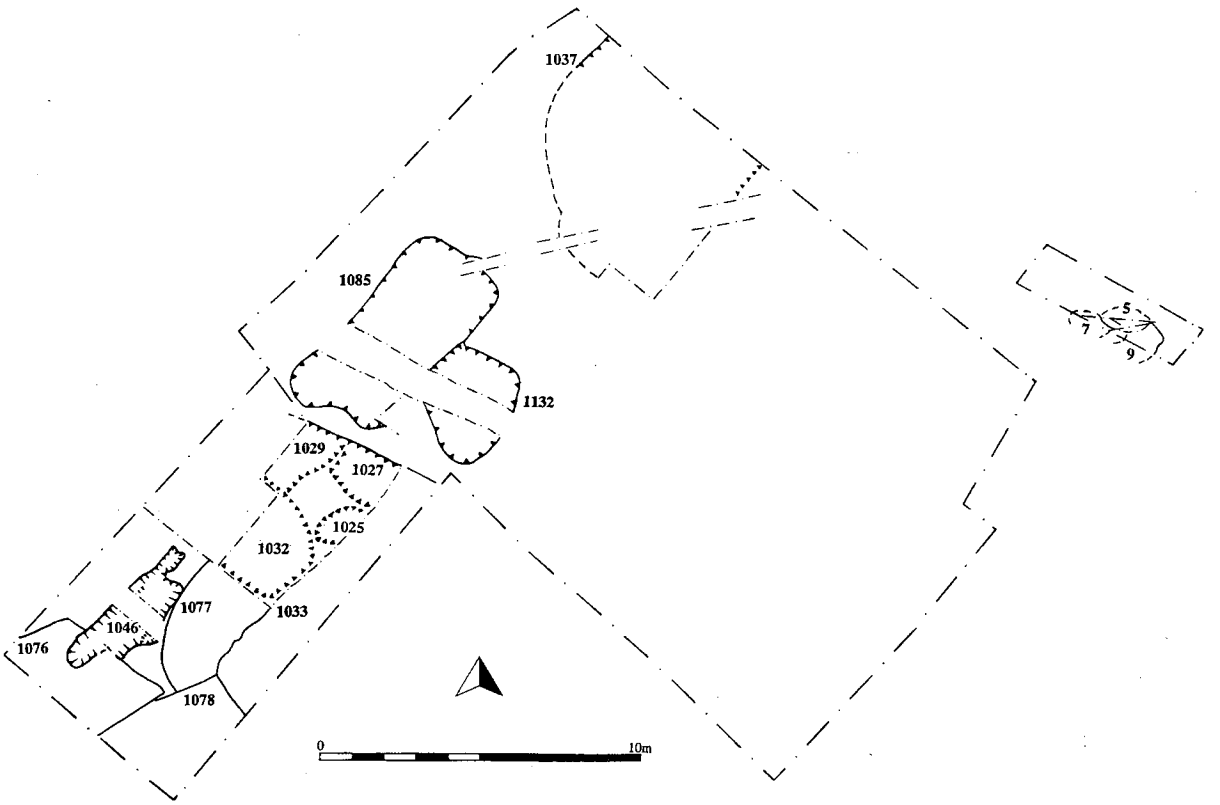


Figure 6. *Period 3.*

charnel deposit 1049, and formed a south-western limit to the burials. It coincided with a boundary shown on eighteenth and nineteenth-century maps, but it had been backfilled at some point after the early sixteenth century. It was impossible to prove whether it formed a boundary to the Period 2 cemetery or was a later feature.

Pits 53 and 59 were cut by quarries and pits of Period 3, but it was difficult to prove their contemporaneity with the cemetery. Only a very small proportion of each was investigated, but they seemed to be rubbish pits of the later medieval period and, if this is an accurate interpretation, show a different type of activity on the property adjacent to the cemetery.

Period 3 Fifteenth to eighteenth centuries (Figure 6)

Description

This period is characterised by the excavation of a series of large pits and their subsequent backfilling with spoil and bricks. Trenches A and B had cut the backfills of these pits, but the restricted size of these excavations had led to the erroneous conclusion that each fill represented a small, discrete pit. Thus the partially excavated sequence of pits 7, 5, 9 and 95 (not illustrated) in Trench D may form fills within a single large pit. With these exceptions, all the pits are located near the Orchard Lane frontage. Their shapes varied but they all had steep or vertical sides.

1037 was sub-circular, had a diameter of at least 6.30 m and was over 1.45 m deep. It was not bottomed, but the backfills included redeposited spoil from its excavation (1151, 1038) and a thick (1.20 m+) layer of compacted bricks degrading into brick dust (1041). The fill had slumped and in the eighteenth century levelling deposits (1146–8) were dumped into the resultant depression.

Cut 1085 was sub-rectangular with rounded corners, measured 6.80 by 3.30 m and adjoined 1132. Neither was fully excavated, but in both cases the lowest deposits encountered comprised thin layers which contained a high proportion of redeposited natural silty clay and sand. They may represent slumping from the sides or dumping, but in both 1085 and 1132 they were sealed by a 0.45–1 m thick layer of broken, degrading bricks and brick-dust (1034). This had probably been deposited while hot, as the surface of underlying layer 1068 in cut 1132 had been baked, and pottery burnt.

To the south west, a sondage was excavated by machine and hand through quarry complex

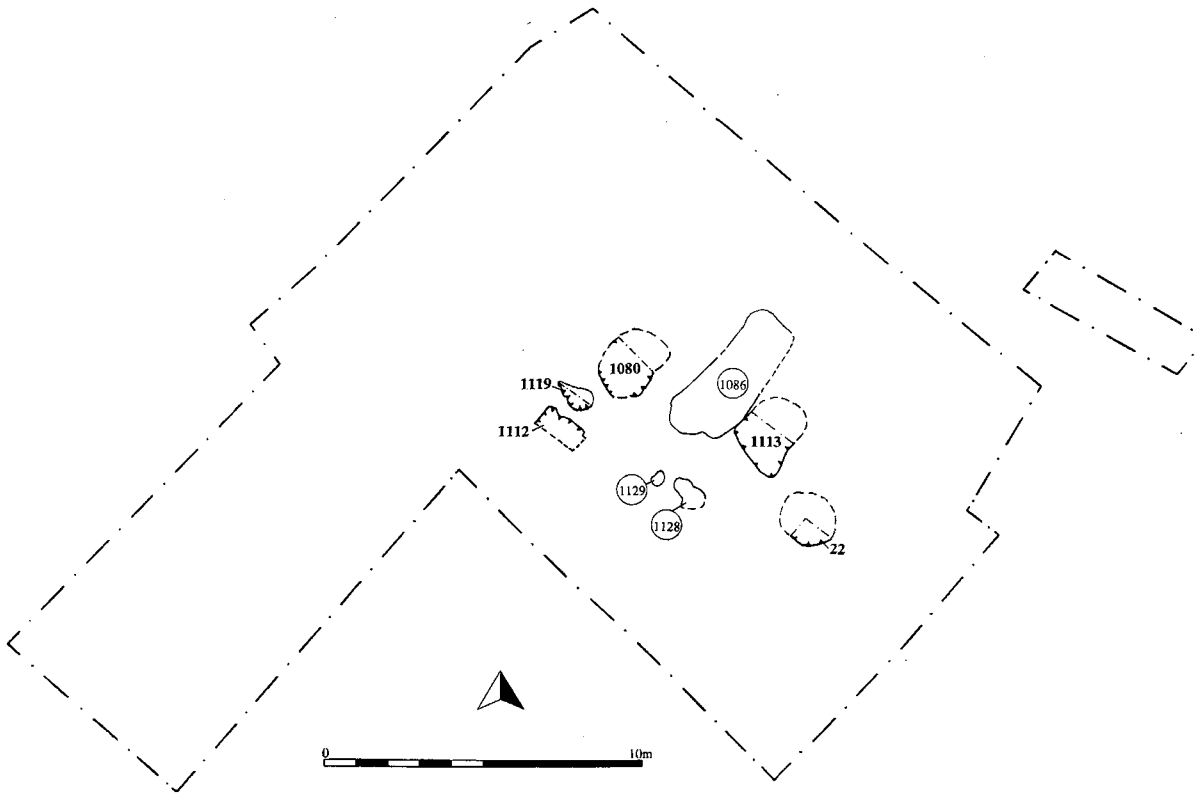


Figure 7. *Period 4.*

1033. To the north east, a vertical face fell 0.72 m to an uneven base, formed by a series of scoops (1025, 1027, 1029 and 1032) cut into the natural sand and clay. Each of these scoops had flat bases, and in the base of 1027 a series of shallow spade or shovel cuts were seen. These discrete cuts could only be isolated where they cut the natural, and different fills seen in the north-west facing section were separate dumps backfilling the overall complex. Only the north-eastern edge of 1033 was visible within the Phase 2 excavations, and unexcavated cuts 1076–8, although interpreted as separate quarries during excavation, may be part of the same complex and were seen to cut undisturbed natural to the north west. The fills of the complex were similar to the other pits of this period, comprising a mix of redeposited natural and layers of dumped brick, or in some cases tile. Context 1054, a deposit in 1078, had degraded to such an extent that it had reverted to a dark red sandy clay.

An irregular pit 1046 cut the backfills of complex 1033, but its function and date are unclear.

Interpretation

All the cuts of Period 3 penetrated into the natural and are interpreted as quarries dug to extract the clays and sands present on the site. The presence of mortar among the deposit of degraded bricks backfilling the pits indicates that many of the bricks derived from demolished structures (Garside-Neville, unpublished report). There was no evidence recovered from the excavation to indicate what purpose the extracted clay and sand served. However, it is clear that the pits were not used for dumping domestic rubbish. Most of the backfill material seemed to be the spoil from their excavation, as it included redeposited human bone from disturbed burials, and *c.* 60% of the pottery dated from Period 1. A further *c.* 20% was redeposited from Period 2 and the remainder was of sixteenth-century or later date. Backfill 1051 in quarry 1085 contained sixteenth-century pottery, while the levelling of the slump into quarry 1037 took place in the eighteenth century. The lack of introduced or casual rubbish indicates that access to the site was restricted, but the spread of the quarries across the whole frontage and the absence of any sort of boundary feature suggests that the exacavated area was part of a single property at this time, although this conclusion is not supported by the documentary evidence for the sixteenth to eighteenth centuries.

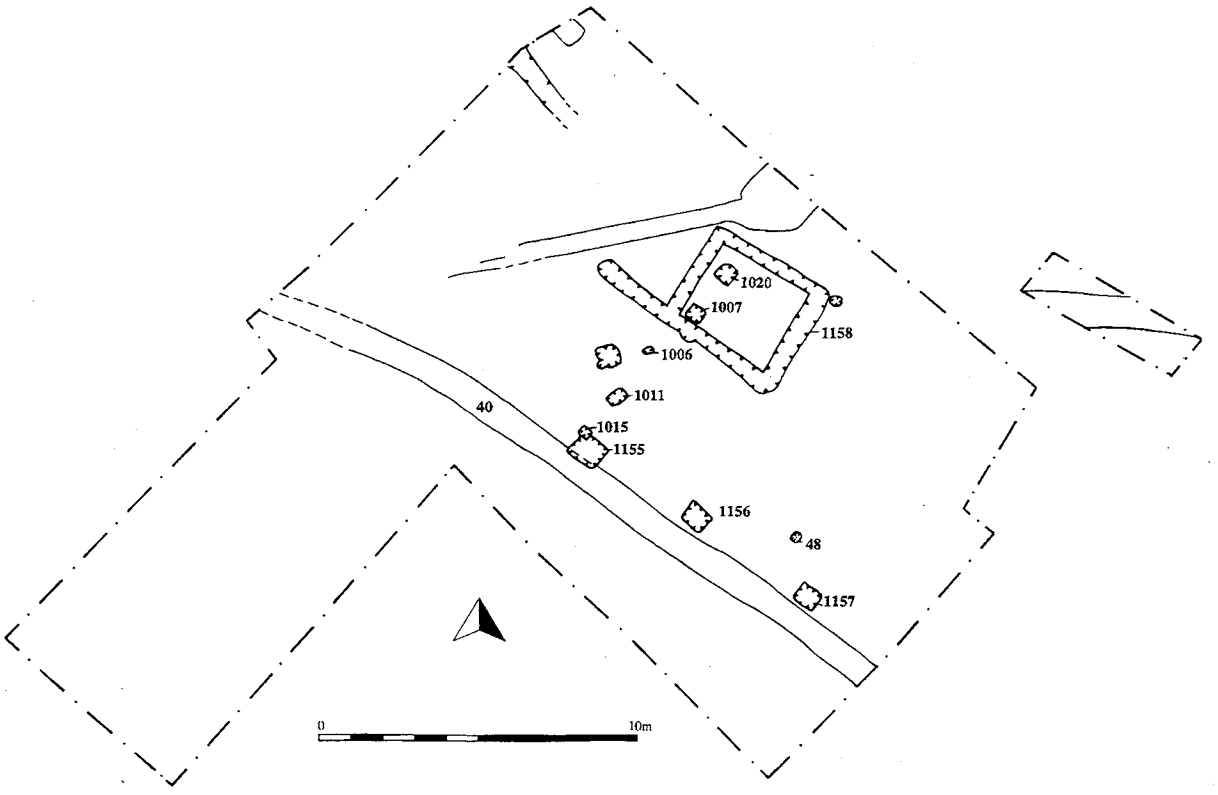


Figure 8. *Period 5.*

The major component of introduced material was the dumps of brick and tile, but these comprised only *c.* 30% of the total material and therefore it is unlikely that the pits were dug deliberately for their disposal. They seem to have derived from a brick building or buildings of late medieval date, but the evidence that at least some of them were deposited while hot is intriguing. The building may have been destroyed by fire, but no sign of smoke-blackening or traces of charcoal from burnt wood was seen during excavation. There is no documentary record of a major fire in Huntingdon in the sixteenth or seventeenth century, although the siege of 1645 is known to have caused considerable structural damage. An alternative source for the hot bricks may be an industrial structure such as a kiln or forge. There was no evidence that any building or structure had existed on the site in Period 3.

Period 4 Nineteenth century (Figure 7)

Description

A series of irregular, shallow cuts and unexcavated fills formed two north west–south east alignments: 1080, 1086, 1113 and 22; 1112, 1119, 1129 and 1128. These were identified where they cut into underlying deposits; the fills were indistinguishable from the sealing layer of cultivated soil 1/65/88/116/120/1008, which sealed them and covered the whole site. Much of this deposit was removed by machine.

Interpretation

Where the cultivated soil was hand-excavated it produced pottery of nineteenth century date.[8] It can be seen as the result of agricultural or horticultural activity and the rows of cuts probably indicate the position of trees within an orchard, pre-dating the use of the site as a builder's yard in the later nineteenth and twentieth centuries (Period 5). Any traces of the orchard nearer to the Orchard Lane frontage would have either been destroyed by later activity or removed during machining of the site prior to excavation.

Period 5 Nineteenth and twentieth centuries (Figure 8)

Description

Many of the contexts of this period were removed by machine and only seen in section.

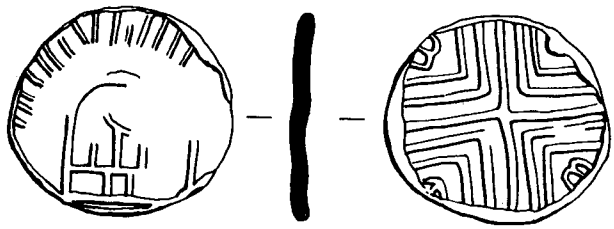


Figure 9. *Coin **103**. Seventeenth or eighteenth-century token. Full size.*

Cuts and fills of Period 5 were seen in plan only where they cut the deposits of earlier periods. Research priorities dictated that their excavation and recording was rapid.

Cuts 40 and 3 contained brick drains and probably form part of the same drainage system as an unnumbered east–west drain (Figure 8). Cut 1158 formed the foundation for a brick building which probably pre-dated an alignment (1023) of post-holes 1020, 1007, 1006, 1011 and 1015 running parallel to Orchard Lane. The backfill (1014) of 1015 was cut by rectangular pit or foundation cut 1155. This formed a north west–south east alignment with pits 1156 and 1157.

Before excavation began, it was apparent that up to 0.75 m depth of material had been removed from the north-western corner of the property, in order to provide a flat surface, partially floored with concrete, but the south-west facing section of the site showed that material had been dumped here in order to provide an even slope down from the Orchard Lane frontage of the property.

Mechanical excavation of Trench A had removed the floors, walls and foundations of a number of brick buildings, and these were recorded in section.

Interpretation

The contexts assigned to this period are all associated with use of the site as a builder's yard and are mapped by the Ordnance Survey. The 1885 map shows a complex of buildings in the south-western part of the site and these are probably the brick structures seen in section in Trench A. This and later maps also show a building which corresponds with the position of foundation 1158, and a number of visitors to the site remembered it as a small smithy. The date of its demolition is unknown, but the later alignment 1023 is dated by pottery to the second half of the twentieth century. It was probably a fence, but larger pits 1155–7 held the supports for a corrugated iron fence demolished at the beginning of the Phase 2 excavation. Material had been deliberately dumped to form a surface to enable wagons or lorries to deliver material to the yard through gates on Orchard Lane.

Metalwork

A catalogue and X-rays of all metalwork from the site are available in archive. The majority of the material consisted of nails or unidentified objects and was recovered from contexts of Period 4 or 5.

Coins and tokens

All the coins recovered were from Period 4 or later unstratified contexts. After cleaning and conservation, identifications were made by Dr Mark Blackburn, Keeper of Coins at the Fitzwilliam Museum, Cambridge.

Roman

102. ?4th century, very badly corroded. Diameter 17 mm. Weight (with corrosion) 2 g. Unstratified. Not illustrated.

Medieval

108. Henry III long-cross cut halfpenny, 1248–50, by the moneyer Willum at Wilton. Diameter 18 mm. Weight 0.67 g. Legend reads WIL [LUM ON] WIL Unstratified. Not illustrated.
133. 15th century (?Edward IV) penny. Legend corroded and worn. Diameter 17 mm. Weight 0.68 g. Context 1008 (Period 4). Not illustrated.

Post-medieval

101. George II halfpenny, 1748. Diameter 28 mm. Weight 9.10 g. Unstratified. Not illustrated.
103. 17th or 18th century unidentified token. ?Local. Diameter 28.5 mm. Weight 11.01 g. Very worn, and deformed by impact(s) on obverse. Obverse has radiate lines above a vague and damaged design, possibly depicting a building (Figure 9). Reverse bears cross design with possible lobes on border in each quarter. Context 1008 (Period 4).

Pottery

Paul Spoerry[9]

Introduction

This report describes all the post-Roman pottery recovered from Period 1 to Period 3 contexts, plus re-deposited pottery from Period 4 contexts, but not the nineteenth century ceramics that provide the true dating of this period. Period 5 ceramics are not included and, after identification as being of nineteenth–twentieth century date, this material was discarded on site. The assemblage is thus full for Periods 1 to 3, and only representative of residual material from Period 4. Residuality and redeposition were identified as a potentially significant problem early on in excavation Phase 2. The inclusion of Period 4 residual material in this analysis allows a greater breadth of temporal and spatial study for the site, while addressing the problem of residuality.

Published work on late Saxon and medieval pottery from Huntingdon and its immediate surroundings is almost non-existent. The most pertinent published works all deal with ceramics from either the St Neots–Paxton area of south Huntingdonshire (Addyman 1969; 1973), or from Cambridge (Addyman & Biddle 1965; Hurst 1956; 1957; 1958). Other published groups from the historic county of Huntingdonshire are rare, the only notable examples being from excavation of manorial or moated sites at Ellington (Tebbutt *et al.* 1971) and Wintringham (Beresford 1977).

One of the aims of this excavation project was to provide a dated sequence of ceramics from this part of Huntingdon over several centuries. It was hoped that division of the assemblage into pre-burials and post-burials groups, and characterisation of these groups, might provide a basis from which knowledge of the pottery sequence and assemblage profile in Huntingdon could develop further. Those aims have been borne in mind throughout this study, but the high residual component in later groups has made the production of a clear sequence impossible.

Due to the high levels of residuality and abrasion, individual context-groups are not described and most individual vessels or sherds have not been extensively described here.

Pottery types

Twenty-five 'types' of pottery were identified across the whole post-Roman assemblage of 699 sherds (6308 g) of pottery. 184 g (2.9%) of the assemblage was classified as 'unknown'.

Pottery types are defined using simple ware identifiers (letter codes) which represent a recognised ware from a known source, or with a known occurrence. The type codes and descriptions derive from a County-wide 'type series' currently being developed. The detail of the type series will not be provided here, but a list of macroscopic descriptions of new types, mostly of fairly local origin, is presented below.

In the whole post-Roman assemblage, St Neots-type ware is by far the most common, accounting for 42.4% of the assemblage by weight. Thetford-type ware comprised 15.4% while Sandy Shelly ware (8.8%) and Sandy ware (8.2%) are the most common of the locally-defined types. Medieval Lyveden–Stanion decorated and/or oolitic-tempered wares make up 6.5% of the whole assemblage, whilst no other type of pottery is present as more than 3.5% of the whole assemblage. Imported pottery accounts for only 0.25% of the total.

These figures indicate that the two major eastern English late Saxon wares dominate the assemblage suggesting that, as a whole, it is dominated by material from the period AD 900–1150.

Roman material

The residual Roman material represents 6.75% of the Period 1 assemblage, around 3% of the Period 2 and 2/3 assemblages, and about 5.75% of the Period 3 assemblage. With the site being located within a few hundred metres of a major Roman river crossing, some residual material of this date would be expected.

Late Saxon material

If the three known characteristic late Saxon pottery types are taken as an index of the pre-1150 assemblage, then their presence in later periods can be used to indicate the degree of residuality.

Table 1. *The presence of late Saxon pottery (by period).*

Period	Percentage of assemblage as St Neots, Thetford and Stamford wares
1	91.3%
2	73.6%
2/3	43.0%
3	55.4%
4*	49.9%

* NB All Period 4 material is deemed residual as the dating component (19th century pottery) was identified but not retained.

Table 1 indicates that a major residual pre-1150 component exists in all period assemblages and roughly half of the Period 2/3 and 3 assem-

blages are identifiable as residual late Saxon material.

Just under 74% of the Period 2 assemblage comprises the three named late Saxon wares. If a previous period of late Saxon/post-Conquest activity was disturbed by a medieval graveyard, it might be expected that the larger part of the graveyard-period assemblage would be residual material. Whether three quarters of this assemblage is residual is a moot point, bearing in mind that later periods which disturb late Saxon activity appear to have resulted in assemblages only half of which contain residual Saxon material. The explanation for more late Saxon pottery in Period 2 (compared to Periods 2/3 and 3) may be that these types, particularly St Neots type ware, continued in use during at least part of the period of burials. It is generally acknowledged that St Neots type ware has greater longevity and develops into later medieval shelly types elsewhere (Hunter 1979), but this assemblage is so fragmentary that it is difficult to identify whether 'developed' versions of St Neots-type ware forms are present in any period.

Examination of mean sherd size and sherd abrasion indicated little reworking of the residual pottery in Periods 2/3 and 3. However, increased abrasion and significantly smaller sherd size in Period 2 implies that reworking in successive grave fills was having a greater effect on the residual pottery.

Period Assemblages

Period 1

The Period 1 assemblage is probably the one period group that, excepting a few Roman sherds, exhibits little residuality. Thus, if the Orchard Lane assemblage is to provide a basis for a wider Huntingdon assemblage at any point, then this is the group with most potential.

Table 2. *Period 1 pottery assemblage.*

Type	No. sherds	Weight (g)	Weight as %
St Neots type ware	64	592	66
Thetford type ware	22	218	24.3
Stamford ware	2	9	1
Sandy Shelly ware	6	27	3
Sandy wares	9	37	4.1
Other	2	14	1.5

St Neots-type ware dominates this group. Almost all sherds for which a vessel type could be assigned are cooking pots; the rims (Figure 10, 4–5) are all out-turned, with one everted, and have diameters in the 16–19 cm bracket. One flattened rim from a bowl with rounded profile is present (16), whilst one piece of particular interest appears to be a lamp base (Figure 10, 25).

Thetford-type ware pieces include one externally thickened cooking pot rim and several sherds that are probably from pitchers, one with external rouletting. Locally made types are barely present, Sandy Shelly ware and sandy wares only providing 15 sherds. Overall, St Neots-type ware cooking pots and bowls, plus Thetford type ware pitchers, predominate.

Period 2

In Period 2, St Neots-type ware is again very dominant, although there is less Thetford-type ware. A wider variety of other types appear, supporting the suggestion that this group represents both residual Period 1 ceramics and new material of the period 1200–1350 introduced during use of the site as a cemetery.

The St Neots-type ware is again dominated by cooking pots with out-turned or everted rims, almost all of fairly small size (rim diameters of less than 20 cm), but including several bowls with rim diameters of 26–37 cm. These bowls all have rounded profiles and the rims are thickened in a variety of shapes (e.g. Figure 10, 20). In addition there is a rim or handle sherd from a St Neots-type ware jug (24).

There is much less Thetford-type ware in this assemblage. Where vessel type is identifiable, most sherds seem to be from cooking pots, rather than pitchers. The local coarsewares are also mostly apparent as cooking pot sherds, with one bowl rim in a Shelly ware also being present, whilst the regional finewares include Lyveden–Stanion and Brill glazed jug sherds.

Period 2/3

This period represents features that cannot be assigned definitively to either Period 2 or 3. It may well be a composite of two period assemblages; with the added factor of Period 1 residuality, it was not deemed worthy of detailed consideration here. It is worth noting, however, that this assemblage included a few sherds of Lyveden–Stanion and Brill glazed jugs, some probable medieval Bourne products and two sherds of probable Saintonge green glazed ware.

Period 3

Period 3 is also characterised by much residuality, with almost 56% of this assemblage by weight represented by known 'late Saxon' types.

One feature of this group is the large number of St Neots-type ware cooking pot and bowl rims represented (twenty in all). These, with other examples from the earlier periods, provide the only group of St Neots-type ware from Huntingdon to be published to date.

Ten of the twelve St Neots-type ware cooking pot rims have diameters of less than 20 cm. All have out-turned rims, bar one which is everted, whilst a few rims are thickened or have piecrust decoration.

The eight St Neots-type ware bowls include three with angled profiles; three with rounded profiles (e.g. Figure 10, 15), one of which has an in-turned, flanged rim in classic St Neots-type style (Figure 10, 22); one straight-sided; and one rounded and slightly in-turned (23).

Other form types identifiable from this assemblage include two rims from Thetford-type ware vessels (27, 28) and rims from both Lyveden–Stanion and, probably, Brill glazed jugs.

Period 4

The retained assemblage is completely residual and little statistical analysis has been carried out. It is wholly in keeping with that seen in Period 3.

Conclusions

Almost all of the late Saxon and medieval assemblage has been recovered from contexts where it is residual. Despite this, the fact that most of the earlier sherds appear to have been abraded means that, provided the few later sherds can be identified, some general trends can still be observed.

The late Saxon and early post-Conquest assemblage in Huntingdon is dominated by St Neots-type ware and, to a lesser extent, Thetford-type ware. It can be tentatively suggested that the former was mostly used for cooking pots and bowls, whilst the latter was utilised more for pitchers. With regard to St Neots-type ware, this appears to be in accordance with the majority of assemblages from the region. Thetford-type ware is also produced in a variety of vessel types, but it seems that the pitchers and storage vessels are most commonly found at a distance from the production source area. The Orchard Lane assemblage fits this pattern with regard to pitchers, but only a few storage vessel sherds have been recorded. The relative absence of Stamford wares is quite surprising and cannot be adequately explained.

This assemblage suggests that only a very small proportion of the vessels in use before 1200 comprises other local coarseware products. This is almost certainly because St Neots-type ware is the local utilitarian product. Its main distribution zone appears to be the Cambridgeshire–Huntingdonshire–Northamptonshire region. It is possible that it was made at more than one location within Huntingdonshire; although the burnt pits observed at both St Neots (Addyman 1973: 75) and Buckden (McCarthy & Brooks 1988: 176) may or may not be evidence for clamp or bonfire firings. It is the soft nature of St Neots-type ware resulting from low-temperature firing that probably rendered it unfit for containing liquids (Hurst 1976: 323), and this may explain the need to use Thetford-type ware containers in Huntingdon. Local St Neots-type products were more than adequate for most other uses. The Period 1 assemblage includes a small amount of Sandy Shelly ware, Sandy ware and Hard Sandy ware. It is not certain whether any or all of these are of local origin, although this must be quite likely for the shelly material which has affinities with St Neots-type ware.

From Period 2 onwards, the assemblage includes increased amounts of all these minor types and it seems likely that their main period of use in Huntingdon was in the post-Conquest to medieval period. The sandy wares may originate either with the Colne sandy and calcareous products of the Huntingdonshire Fen Edge (Watson *et al.* forthcoming), or they may be a variant of the Northamptonshire Rockingham Forest industries (Lyveden, Stanion etc.).

As there are so few of them, the glazed ware imports from around the greater eastern region can only be considered across the assemblage in general. The relative lack of Stamford and Developed Stamford wares, especially when compared to the large influx of Thetford type wares, is surprising and cannot easily be explained. The fact that Lyveden-Stanion finewares are the most common medieval glazed type is not suprising as this industry was based only about twenty miles west of Huntingdon. The presence of a few, probably Bourne, glazed medieval sherds, and one from Grimston is not unexpected, whilst the presence of a few Brill–Boarstall glazed ware sherds in most period groups points to a trickle of vessels into Huntingdon from the area to the south west. There are also occasional sherds of imported Saintonge medieval glazed wares and one piece of late medieval German stoneware from Siegburg.

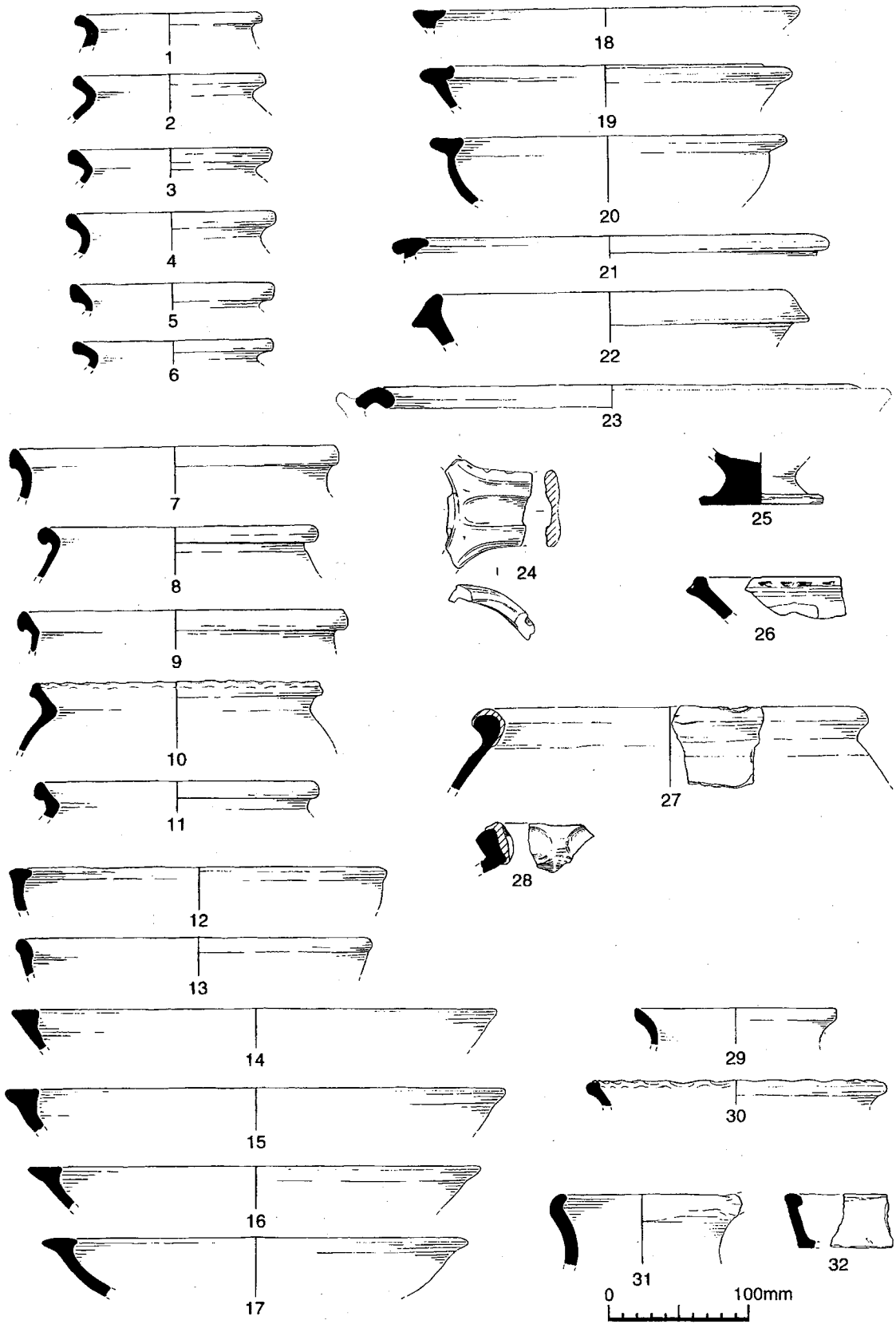


Figure 10. *Pottery from Orchard Lane.*

Illustrated sherds (Figure 10)

St Neots-type ware

1 Small cooking pot with rounded, out-turned rim. Smooth brown–pink surfaces with grey core.
2 Small cooking pot with slightly beaded, out-turned rim. Black throughout with smoothed surfaces.
3 Small cooking pot with slightly thickened, everted rim. Dark brown to black with smoothed surfaces.
4 Small cooking pot with everted, thickened rim with upright section. Smoothed brown–pink surfaces with grey core.
5 Cooking pot with out-turned, bevelled rim. Dark grey to black surfaces with grey core.
6 Cooking pot with everted, thickened rim. Smoothed black to brown surfaces with grey core.
7 Cooking pot with upright, thickened rim. Smoothed buff–orange surfaces with light grey core.
8 Cooking pot with out-turned, thickened rim. Light grey–brown fabric throughout.
9 Cooking pot with in-turned body and externally rolled rim. Brown surfaces with light grey core.
10 Cooking pot with out-turned rim with external beading and pie-crust decoration. Orange–brown surfaces with grey core.
11 Cooking pot with out-turned, thickened rim. Brown surfaces, blackened externally, with dark grey core.
12 Deep bowl, slightly in-turned profile with internally thickened, rounded rim. Fabric is mid-grey throughout.
13 Straight-sided bowl with externally beaded, rounded, rim. Red–brown surfaces with dark grey core.
14 Bowl with rounded profile and thickened, triangular rim. Fabric is grey throughout except for the external surface which is brown–grey.
15 Bowl with rounded profile and flat topped, externally thickened rim. Purple–brown surfaces with grey core.
16 Bowl with rounded profile and flat topped, externally thickened rim. Mid-brown surfaces and grey core.
17 Bowl with rounded profile and flat-topped, hammerhead rim. Purple–brown and dark grey surfaces with grey core.
18 Bowl with probable rounded profile and flat-topped, internal thickened rim. Smoothed brown surfaces with grey core.
19 Bowl with rounded profile and flat-topped hammerhead rim with internal lid-seating. Smoothed light brown surfaces with grey core.
20 Bowl with rounded profile and flat-topped hammerhead rim with internal lid-seating. Smoothed light brown surfaces with grey core.
21 Bowl with probable rounded profile and flat-topped, hammerhead rim. Surfaces are possibly smoothed and light brown with a dark grey core.
22 Inturned, carinated bowl rim with external flange on body. Brown–grey surfaces, possibly smoothed internally, with dark grey core.
23 Inturned and rounded bowl rim, probably from a shallow vessel. Rough surfaces with a grey fabric throughout.
24 Strap handle with rim segment from jug. Orange–brown to pink–brown surfaces with grey core. This fabric has less, and coarser, shell than all other St Neots-type ware listed here. It has been classified as St Neots type, but is undoubtedly a different variant and, from the form, of later date.
25 Base, probably from a lamp. Brown surfaces and dark grey core.

Other fabrics

26 Flat-topped Shelly ware bowl rim with external bevel and stabbed decoration. Sooting internally and externally. Has affinities, in both fabric and form, with twelfth to fourteenth century types from Stanion, Northants. Fabric has orange-brown surfaces, brown margins and a grey core.
27 Externally rolled and thumbed rim from a Thetford-type ware storage jar. The fabric has abundant fine quartz sand temper and is grey with grey–brown surfaces. Similar examples have been recorded both in Norfolk and at Cambridge.
28 Upright rim of Thetford-type ware vessel of uncertain form. The rim is wholly covered by an applied, thumbed strip. The vessel may be a storage vessel variant. The fabric contains abundant fine quartz temper and is mid-grey throughout.
29 Slightly out-turned and externally bevelled rim from a small, upright Sandy ware cooking pot. The fabric is dark grey throughout and contains a small amount of oolitic limestone temper in addition to abundant quartz sand.
30 Rim with pie-crust decoration from a bowl with a probable rounded profile in a Sandy ware fabric. The external surfaces are blackened, but the fabric has a grey core and red–brown internal surface.
31 Rounded, cupped rim, with part of pinched and pulled lip, from a jug in Colne medieval ware. The fabric is hard with abundant fine quartz sand and a little crushed limestone. The colour is dark grey with lighter grey surfaces.
32 Internally rolled, flattened rim from a shallow bowl (dish) in Colne medieval ware. The fabric, which contains abundant fine quartz sand and some crushed limestone and flint, is mostly black, but with a red–brown outer surface.

Macroscopic fabric descriptions

Only those fabrics that are not defined as a known, named 'type' are described here. For example, St Neots-type ware, Thetford-type ware, Lyveden–Stanion glazed wares, and Colne medieval ware are all present in the assemblage, but defined elswhere. In the main, the types listed here are defined by their fabric, with only limited information currently available on forms and decoration.

Sandy Shelly ware (code SSHW)
A fairly hard-fired fabric that usually has a reduced core with red-brown or olive oxidised surfaces and (often) margins. It contains abundant quartz sand (mostly much less than 0.5 mm diameter), usually well sorted, and occasional to common shell fragments of varying size (up to 2 mm, but usually smaller). The shell is often ill sorted and sometimes accompanied by small amounts of crushed limestone and small ooliths.

It usually appears as cooking pots, but also occurs at Orchard Lane as storage vessels and angled bowls. Some of the material at this site may derive from Northamptonshire and be a Lyveden–Stanion coarseware type.

Sandy ware (code SW)
A fairly hard-fired, usually reduced fabric, commonly having dark grey surfaces and a lighter grey core and margins. It contains abundant quartz grains up to 0.5 mm in diameter and, less commonly, occasional larger quartz grains.

The vessels are wheel-made and are found at Orchard Lane predominantly as cooking pots, but with occasional jugs and bowls.

Hard Sandy ware (code HSW)
A very hard-fired fabric, often with oxidised buff, orange or red-brown surfaces and a reduced grey core. It contains abundant quartz grains, usually much less than 0.5 mm in diameter.

Vessels are wheel-made and often show signs of turning. Occasionally they have a splashed green or clear glaze. At Orchard Lane this fabric is present as cooking pots.

Shelly ware (code SHW)
At Orchard Lane this has been used to describe shelly ware sherds that are definitely unlike St Neots-type ware. In most cases the amount of shell is less than occurs in St Neots-type ware and is present either as rather larger fragments or as more angular, less plate-like, pieces.

This type is present as cooking pots and bowls.

Ceramic Building Materials

Sandra Garside-Neville[10]

Introduction

The total amount of ceramic building materials, including daub, from the excavations was 51.41 kg. The material was collected as a representative sample of brick, roofing tile, daub and plaster from each context, designed to demonstrate the various fabrics and degrees of firing. After recording, pieces that were unusual in some way or served as a good example of a fabric or form were retained as part of a reference collection.

Roofing material

At Orchard Lane, the only method of suspension found on medieval plain roofing tile was pegholes, which were often roughly punched through, with the peghole flared outwards. Where a piece of medieval roofing tile had no diagnostic feature showing method of suspension, it was classified as 'plain', but the material was so fragmentary that few complete measurements of dimensions other than thickness could be made. Dobson refers to a statute of Edward IV of 1477 that stipulates the minimum dimensions for plain tile as ten and a half inches by six and a quarter inches by five eighths of an inch (Dobson 1960: 12). The complete plain tile from context 1003 (Period 5) is slightly larger than this.

Three fragments of ridge tile were found, amongst them a dark green glazed fragment (context 1001) which clearly led up to some sort of decorated crest. The fabric was notably pottery-like in consistency, and there is evidence that in the medieval period ridge tiles could be made by potters rather than tilers (Cherry 1991: 193). The other two fragments are unglazed and have recognisable tile fabrics.

Other forms of roofing tile on the site were Roman (*tegula* and *imbrex*) and pan tile. The latter was made in England from about the seventeenth century, although it may have been imported from the Netherlands earlier (Dobson 1960: 18). The examples from this site show evidence of mechanised production and probably date from the nineteenth century or later.

Brick

There were several varieties of brick differing in size, fabric and method of manufacture. Some fabrics were clearly made on a sanded surface, and it is likely that a sanded mould was also used. The products of these fabrics are generally well-made with sharp edges. One example from 1008 (Period 4) shows an indented edge, a medieval trait, the causes of which are a matter of debate (Smith 1985: 42).

Other fabrics were made on a straw or grass surface. Although two examples have sanded surfaces the norm appears to be frame made (Smith 1985: 42). This method of manufacture entailed a dollop of clay being put onto a straw or grass bed and a wetted mould placed over the clay. This can result in a thickening at the bottom of the brick, evident in the Orchard Lane examples. Perhaps to counteract rough edges, some examples are knife-trimmed along the edges and, occasionally, the bottom surface.

The size of bricks can be used as a rough guide to their date, but comparative data from the locality is needed, as brick sizes are subject to regional trends (Lloyd 1983: 10–12; Betts 1985: 451–2). Although breadth and thickness measurements were taken for medieval bricks, there were no complete lengths. The widest breadth of 132 mm may indicate a fourteenth to fifteenth-century date, but other breadth and thickness measurements probably indicate later dates (Lloyd 1983: 96).

Some fragments of Roman material were found in contexts of Periods 1–3. These may originate as bricks used for hypocausts, arches or brick courses, but they were so fragmentary that they may be from roof tiles.

Floor tiles

There is a distinctive group of tiles, appearing in Period 3 and occurring only in one fabric. No complete example survived, but thickness varied between 32 and 39 mm. Some examples had a distinct bevel, occurring only on one edge, and the tiles are moulded, showing no sign of knife trimming. The identification of this material as floor tile is tentative and based on thickness and also the presence of bevelling, which is common in floor tiles to aid the spread of mortar on a laid floor. It is possible that this group was used as kiln flooring, although none of the examples in the sample shows signs of exposure to intense heat. Another use may have been for a specialised function such as a fire-place.

Daub

A small amount of daub (435 g) was recovered from the site. A piece from Period 1 showed impressions of wooden rods (*c.* 20 mm wide) at right-angles to each other. A fabric which occurred in Period 2 and 3 contexts may be brick as, despite a high organic content and friability, it had a flat surface (possibly with a limewash) and was quite thick. Daub from 1086 (Period 4), has a flat surface with three uniformly curving wattles (9 mm wide) behind it and is typical of wattle infill (Goffin 1989).

The daub sample is too small to identify the appearance of the structures from which the fragments derive, but the distinctive fabrics and variations in impressions suggest that they came from different buildings, possibly of different dates.

Plaster

One fragment, from 1008 (Period 4), was found and had a plain, roughly finished surface on a layer of daub or pink mortar.

Fabrics

Twenty-four fabrics of building material and daub were identified, and descriptions are available in the site archive. They were identified and described with the aid of a x10 hand lens.

In broad terms, the building material can be divided into two fabric groups. One has a high quartz content and fires to a deep red colour, while the other has a high limestone and shell content which leads to a firing colour between white and pink–brown. The latter group accounts for the bulk of the sample and is probably the typical choice of product for the area (Hughes 1935–36: 10). The two distinctive groups of fabrics may indicate that different clay sources or clay mixes were used, possibly at different times. Alternatively, the two types may have been intended for different markets or uses and some bricks may have been manufactured in Huntingdon itself while others came from further afield.

Conclusions

A total of 1.485 kg of Roman ceramic building material suggests that a building or buildings existed in the locality. The combed keying found on the box flue tile is thought to be a later Roman technique (Crowley 1992: 150).

Ceramic building material appears on the site in Period 2. Peg tile is generally thought to have come into use around the thirteenth century (Lewis 1987: 7), and manufacture of brick became widespread in the fourteenth century (Lloyd 1983: 5), so a Period 2 appearance is not surprising.

Most of the ceramic building material derives from the backfill of quarries and pits and is not associated with buildings on the site itself. However, some examples show signs of mortar and of re-use (in the form of mortar along broken edges), indicative of use in a building or buildings. The sample does not show much evidence of being poorly fired or over-fired.

The sample from this site has laid the foundations of a ceramic building material typology for Huntingdon and district.

Human Skeletal Remains

Corinne Duhig[11]

The material and its recording

The material consists of 23 Phase 2 'skeletons', variously preserved, a box of Phase 1 contexts and two boxes of disturbed and redeposited bone. Most of the bone was broken, some badly shattered, but there was little erosion, and cortices were intact. Some bones are springy and greasy to the touch, indicating considerable collagen present, and a few long bones are spirally fractured, showing that they have been broken whilst in this 'green' state; blackening might be charring or fungal discoloration. The basic methods of recording and analysis used are as found in Bass (1987), Steele & Bramblett (1988) and Ubelaker (1989). Ubelaker's method for dental ageing of immatures varies slightly from European methods, but is used here for convenience, where suggestions as to demography are tentative at best.

In Table 3, the Phase 1 contexts are shown individually and then (after the dotted line) grouped as a minimum number of individuals, because some fragments refit between contexts. At the end of the table (after the second dotted line) the minimum number of individuals is shown for the 'disturbed/redeposited' contexts, which also have some refits. Sex and height is 'not applicable' for immature skeletons; sex is 'not determinable' for many of the adults and height for most of them, and as 1073B cannot be sexed the height is calculated from both the female and the male formulae. Pathological terms are discussed in the text or described in the glossary .

Preservation is coded as: 1, <25%; 2, 25–50%; 3, 50–75%; 4, >75%. In many contexts presence of multiple individuals is shown by duplication of bones, frequently only one or two – for example, the three adults of 1127 are identified from three right femora. In four contexts, however, most of the bones cannot be attributed to any one individual from that context, and this is shown in the notes to Table 3.

Demography

The number of individuals, assuming that the bone from the redeposited contexts is independent of the identifiable graves (i.e. that it derives from other graves from this cemetery that have not been excavated or have been substantially destroyed), is 51, 33 adults and 18 immatures. If, however, it is assumed that the redeposited bone and 'individuals' represented by four bones or less are part of the more-complete burials analysed here, the number reduces to 24, 18 of which are adults and 6 immature. There are thus 35% or 25% immatures, a not unusual situation for the ancient world or for modern undeveloped countries (average about 30%) (Waldron 1994: 23). Infants – that is, below one year of age – tend to be absent from pre-modern cemeteries (Molleson 1993: 210–14), and here we have a similar pattern, with only one definite infant.

There are five definite females and nine males amongst the adults, a sex ratio of nearly 1:2, which would, if it truly represented the cemetery, require explanation. The number of sexed individuals, however, is so small that the ratio is easily distorted by random effects. If the probable females (4) and males (4) and the one possible female are added the ratio is 1:1.3, which is unsurprising.

Disease

Fortunately, the number of individuals does not affect the prevalences of pathological conditions, as these are determined from the number of appropriate bone-parts present; to facilitate inter-site comparisons (Waldron 1994: 23); the figures for prevalence are shown in parentheses as: number of cases of the disorder/number of relevant bones or bone-parts recovered/percentage. Despite the disturbed nature of much of the material, the size of the sample and good cortical preservation has provided valuable direct and comparable data on the health of one medieval urban group.

Caries increases throughout English populations from the Neolithic to the present day, due to dietary change from abrasive food, which produced severe attrition but scoured away decay patches, to an acid-producing and sticky diet. Dental caries is present in one third of all our preserved dentitions (5/16/31.3%). Brothwell's maximum figure for carious teeth in the medieval period is approximately 25% (Brothwell 1972: Fig. 55), which would be considerably less if affected dentitions rather than individual teeth were used, so our prevalence is relatively high. The prevalence is similar to that of a local Saxon site (30.9% in a population of 148) (Duhig forthcoming), but lower than that of a fifteenth to sixteenth-century monastic graveyard (13/29/44.9%) (Duhig 1994). Only two possible dental abscesses were found. Dental enamel hypoplasia is found in nearly one-third of dentitions (5/16/31.3%), more

than double the local Saxon prevalence and exceeding the quarter affected in the medieval group. The additional fact that half the skulls which had at least one orbit had *cribra orbitalia* (5/10/50.0) suggests that life was particularly hard for this group, with food shortage, parasitism, infections, or any of these in combination; the medieval monastics had less than a third the amount of *cribra*, perhaps because town life was more cramped and insanitary than that of a monastic community (but these two medieval groups are not necessarily even roughly contemporaneous and children — who manifest *cribra* more commonly — are absent from the monastic community, so comparison must be cautious).

More than half the adult spines (10/17/58.8) have Schmorl's nodes, vertebral osteoarthritis or osteophytosis, all resulting from the wear and tear of weight bearing and heavy work (Rogers & Waldron 1995: 33, fig. 4.1), and osteoarthritic changes in other areas of the skeleton in 15% of adults (5/33/15.2; this figure is presented because prevalences by joint are not calculable due to disarticulation). The hip is affected in two cases, the shoulder and knee in one case each and the final case is that of an older man (1073) with osteoarthritis or related changes of sterno-clavicular joint, shoulder, elbow, knee and foot. Waldron finds the shoulder and spine the joints most affected in medieval skeletons, with hand, hip and knee following, and, although the rank order of the areas has not been calculated according to Waldron's method (Waldron 1995), the absence of osteoarthritic change in any hands from this site certainly results from the paucity of small hand bones in the assemblage. Comparable figures for earlier local populations are 85% spinal arthritic disorders and 37% non-spinal among Saxons, 51% and 27% among medieval monastics. Our population appears to have been doing less, or less severe, physical work than the Saxons and even, considering the non-spinal areas of the skeleton, less than the monks, but our inability to age most of the Orchard Lane adults prevents consideration of age effects, which can be significant.

The conditions of platymeria and squatting facets are particularly prevalent at this site (6/19/31.6 and 3/12/25.0), although only one case of platycnemia was present (1/12/8.3). Two cases of platymeria were extremely marked (hyperplatymeria). Whatever activity has produced these changes, it appears to have been widespread in the population, and no clear sex differentiation can be seen, given the large number of unsexed skeletons.

Three bones with pathological changes are of particular interest. Skeleton 1070 has lost the right femoral head at the level of the epiphyseal line, the surface being deeply pitted and covered with new bone. An aseptic necrosis following trauma during the growing period is probable (Ortner & Putschar 1985: 236–8, Figs. 371–4), but tuberculous destruction (tuberculous coxitis) cannot be excluded, although little reparative bone is to be expected in these cases. Unfortunately the greater trochanter is broken, so the extent of the disorder cannot be determined and the second diagnosis cannot be tested; a fragment of the hip socket is present, severely osteoarthritic, which would be the case whatever the cause of the femoral damage. The second case is an axis vertebra, which is cleft horizontally through the body and vertically through the dens, the clefts having smooth edges and the absence of any resorption or new bone formation, showing they are not the result of disease. This developmental anomaly resulting in non-fusion of the elements which make up the mature axis is mentioned by Anderson in his review of disorders of the dens (Anderson 1988: esp. Fig. 5); normally the horizontal cleft is closed by three to four years of age. The third case is an erosion of the *dorsum sellae* which is unlikely to have been produced by infection – because an infection within the skull vault would have been fatal before bone changes appeared – and presumably derives from the pressure of a growing tumour or cerebro-spinal fluid at a raised pressure.

A relationship between the two individuals with *foramen cœcum molare* should be considered, because Capasso and Di Tota have determined that the genetic element in its development is nearly 100% (Capasso & Di Tota 1992). However, the bones were recovered from contexts which were *c.* 20 m apart.

Glossary

Cribra orbitalia: a 'sieve-like' appearance in the upper eye orbit, caused by iron-deficiency anaemia (from food shortage malabsorption, infection, or bleeding due to internal parasites).

Dens: the peg on the top of the second cervical vertebra, the axis, on which the first cervical vertebra turns to produce rotational movement of the head.

Dental enamel hypoplasia: poorly formed bands of enamel on the teeth indicating starvation or severe illness during the development period.

Dorsum sellae: within the base of the skull is a saddle-shaped depression which, in life, contains the pituitary gland, the *dorsum sellae* ('back of the saddle') being its posterior edge.

Entheses: areas of a bone where ligaments and tendons

Table 3. *Human skeletal material*

Context	Individual	Sex	Age	Height (cm)	Pathological conditions and anatomical variants	Preservation
6	A	N/A	<12	N/A		1
	B	N/D	A	N/D	cribra 1, o/a ribs	1
8		M	35–45	N/D	TMJ disease, dental abscess or cyst, caries	1
13		M	A	N/D		1 bone
19		N/D	A	N/D	Schmorl's nodes	1
21		N/A	imm	N/A		1 bone
27		N/D	A	N/D		1
42	A	N/D	A	N/D		1
	B	N/A	imm	N/A		1
61	A	M	17–25	N/D		1
	B	N/A	15	N/A	foramen cœcum molare	1
Ph1 MNI (skull 8)	A	M	35–45	N/D	TMJ disease, dental abscess or cyst, caries, Schmorl's nodes (vertebrae might be A or B), o/a ribs (ribs might be A or B)	
	B (mandible 61A, frontal 6B)	M	17–25	N/D	cribra 1	
	C (mandible 61B)	N/A	15	N/D	foramen cœcum molare	
	D (ilium 6A)	N/A	<12	N/A		
1045		?M	A	N/D	Schmorl's nodes, infection of tibial head	2[ab]
1049	A	??F	A	N/D	platymeric, Schmorl's nodes (vertebrae might be A, B or C)	2[ab]
	B	N/D	A	N/D		2 bones[b]
	C	N/D	A	N/D		1 bone[b]
1069		?M	A	N/D	o/a spine, sternal aperture	2
1070	A	?F	45–49	N/D	necrosis of femoral head	3
	B	N/A	7.5–8	N/D		1 bone
1071	A	?F	17–18	N/D		3
	B	N/D	A	N/D		1 bone
	C	N/D	A	N/D		1 bone
	D	N/A	imm	N/A		1 bone
1072	A	F	23	151	hypoplasia, sternal aperture, septal aperture, platycnemic	4
	B	M	18–23	N/D		1 pelvis
1073	A	M	50+	169	caries, o/a throughout skeleton	4
	B	N/D	A	166/170	lateral squatting facet, tibial exostosis	2 bones
	C	N/A	child	N/A		1 bone
	D	N/A	child	N/A		1 bone
1089		M	45+	N/D	caries, ?abscess, hypoplasia, erosion of dorsum sellae, cribra 1, pitted palate, Schmorl's nodes, hip o/a, hyperplatymeric	3

(and thus, muscles) are attached.

Epiphyseal line: the point at which the ends of a long bone (the epiphyses) fuse to the shaft when growth is completed at the end of adolescence; the gap between shaft and epiphysis is filled with bone-producing cartilage until this time, so allowing the length of the long bone to increase.

Erosion: loss of bone from an area due, for example, to certain infections, neoplasias (benign and malignant cancers) or pressure from an organ or other object.

Exostosis: new bone formed on the surface of a bone (by its surrounding membrane) because of inflammation, infection or other, often indeterminable, cause which increases blood supply to the area; shape and form varies according to cause and time span of development.

Foramen cœcum molare: small pits on the molar tooth crowns, having a strong genetic component in their development and thus useful for determining relatedness of individuals in a cemetery.

Platycnemia, platymeria and squatting facets: respectively, side-to-side flattening of the tibial shaft, front-to-back flattening of the femoral shaft and small facets on the lower tibia at the ankle; poorly understood but possibly associated with habitual squatting.

Schmorl's nodes: indentations in the vertebral bodies caused by pressure from damaged intervertebral discs due to weight bearing and heavy work (Resnick & Niwayama: 1988).

Septal aperture: hole through the olecranon fossa immediately above the elbow articulation of the humerus; more common in females and persons with slender bones (Saunders 1989).

Shovelling: a distinctive form of front tooth, in which

Table 3 (continued). *Human skeletal material*

Context	Individual	Sex	Age	Height (cm)	Pathological conditions and anatomical variants	Preservation
1091		N/A	11y ± 30m	N/A	hypoplasia, cribra 3	4
1096		M	45+	N/D	occipital 'bun', caries, abscesses, o/a spine	2
1100		N/A	18m ± 6m	N/A	cribra 2, new bone at entheses	3
1103		N/D	A	N/D		1
1104	A	F	25–35	163	cribra 4, TMJ disease, caries, hypoplasia, foramen cœcum molare, o/a shoulder,septal aperture, tibial exostosis, lateral squatting facet	4
	B	N/D	A	N/D		1 bone
1105		N/D	A	N/D	Schmorl's nodes, platymeric, o/a knee	1
1106		M	A	174	o/a hip and knee	4 bones
1107	A	N/D	A	N/D		1
	B	N/A	child	N/A		2 bones
1116		?F	25–35	154	maxillary incisor shovelling, absent C7, Schmorl's nodes	2
1123		N/A	7–8	N/A		2
1124		?M	A	N/D		1
1125		N/A	2y ± 8m	N/A		3
1126		N/A	18–24m	N/A		1
1127	A	?M	A	N/D		1 bone[c]
	B	F	A	N/D	platymeric	1 bone[c]
	C	?F	A	N/D	hyperplatymeric	1 bone[c]
	D	N/A	imm	N/A		2 bones
1130	A	F	19–25	162	hypoplasia, Schmorl's nodes	4
	B	N/A	2.5–3.5	N/A		1 bone
	C	N/A	2.5–3.5	N/A		1 bone
D/R MNI	A	M	17–25	N/D		1 bone[d]
	B	M	A	N/D		1 bone[d]
	C	F	A	N/D		1 bone[d]
	D	N/D	A	N/D		1 bone[d]
	E	N/A	<1y	N/A		2 bones
	F	N/A	5y ±16m	N/A		1 bone[e]
	G	N/A	older child	N/A		e
	H	N/A	adolescent	N/A		1 bone
	A–H				transitional T/L vertebra, o/a spine, Schmorl's node, 'third trochanter', platymeria, infection of tibial shaft, medial and lateral squatting facets	

a refit of bone fragments between 1045 and 1049
b most bones from 1045 and 1049 could belong to any of the four individuals
c most adult bones from 1127 could belong to any of the three adult individuals
d many adult bones from these contexts could belong to any of the the three adult individuals
e many immature bones from these contexts could belong to either of the two immature individuals

the sides of the crown are thicker than the centre, and/or curved inwards, producing the 'shovel' shape; common in certain populations.

Sternal aperture: hole at the midline in the body of the sternum, having some heritable element in its production (Barnes 1994: 223).

TMJ disease: temporo-mandibular joint disease, that is, osteoarthritis of the jaw joint.

Transitional vertebra: a vertebra which partly or fully resembles that of the adjacent type, for example, a vertebra which has rib facets (normal for thoracics) but the form of a lumbar vertebra is called transitional thoracic/lumbar; family groups in some cemeteries have been suggested by the clustering of these conditions, which have some heritable element (Barnes 1994: 14–34).

The Mammal, Bird and Amphibian Bones

Umberto Albarella[12]

Methods

Animal bones were partly hand-collected and partly recovered from bulk samples, wet sieved through a 0.5 mm mesh. They were recovered from contexts of all periods, but only those from Period 1 (900–1150) were considered worthy of study, as severe problems of residuality made the dating of bones from later contexts uncertain.

Table 4. *Bones of mammals, birds and amphibians.*

	hand-collected	from sieving	total
Cattle (*Bos taurus*)	24	2	26
Caprine (*Ovis/Capra*)	20	2	22
(sheep (*Ovis aries*)	(5)	(–)	(5)
Pig (*Sus scrofa*)	15	1	16
Equid (Equidae)	3	–	3
Cat (*Felis catus*)	–	1	1
Roe deer (*Capreolus capreolus*)	1	–	1
House/wood mouse (*Mus/Apodemus*)	–	1	1
Small rodent (Rodentia)	–	4	4
Mole (*Talpa europaea*)	–	1	1
Domestic fowl (*Gallus gallus*)	1	1	2
Amphibian (Amphibia)	–	27	27
(toad (*Bufo sp.*))	(–)	(2)	(2)
(frog (*Rana sp.*))	(–)	(8)	(8)
total	**64**	**40**	**104**

The mammal bones were recorded following a modified version of the method described in Davis (1992) and Albarella & Davis (1994). In brief, all teeth and a restricted suite of parts of the skeleton were recorded and used in counts. These were skull (zygomaticus), scapula (glenoid articulation), distal humerus, distal radius, proximal ulna, carpal 2–3, distal metacarpal, pelvis (ischial part of acetabulum), distal femur, distal tibia, calcaneum (sustentaculum), lateral astragalus, naviculocuboid, distal metatarsal, proximal phalanges. At least 50% of a given part had to be present for it to be counted. For birds, the following were always recorded; scapula (articular end), proximal coracoid, distal humerus, proximal ulna, proximal carpometacarpus, distal femur, distal tibiotarsus, distal tarsometatarsus. Horncores with a complete transverse section and 'non-countable' elements of particular interest were recorded, but not included in the counts.

Due to the small size of the assemblages, the number of identified specimens was the only method used for calculating the frequencies of species and parts of the skeleton. The minimum number of individual (MNI) count is not recommended for small assemblages and was thus ignored. Wear stages were recorded for all permanent and deciduous lower fourth premolars (P_4 and dP_4) as well as for the lower molars of cattle, caprines and pig, both isolated and in mandibles. Tooth wear stages follow Grant (1982) for cattle and pig, and Payne (1973; 1987) for caprines. Measurements were taken following the recommendations of Payne & Bull (1988) for pig bones, and von den Driesch (1976) for the other taxa. The few metric and ageing data which could be recorded from this assemblage form part of the archive.

Results

All bones from Period 1 derive from pit fills, with the exception of a few examples from the fill of gully 1098. The preservation of the bone surface was rather uneven, as is typical for pit fills. Gnawing marks caused by carnivores were noticed on 15% of the bones which, together with the absence of any bones in articulation, suggests that the bones were not in a primary deposit and may have lain elsewhere before final deposition.

The list of species found at Orchard Lane is shown in Table 4. The assemblage is typical of urban sites of this period, being dominated by domestic livestock. The presence of a roe deer pelvic fragment suggests that some wild game arrived at the site.

Sieved samples were too small and few to assess the loss of small anatomical elements from the hand-collected assemblage, but they permitted the identification of some smaller species which were not recovered during excavation. In particular, small mammal, amphibian and fish bones were recovered from sieved samples. Mice are typical commensal species and are commonly found in towns. The presence of frog and toad bones is consistent with a riverside environment.

Insufficient data about body parts, age and size was recovered, but it is worth noting that most cattle teeth and bones belong to fully adult animals, although a few immature bones were also found. This is consistent with the type of cattle exploitation expected from this period, namely their primary use as draught animals with the occasional slaughter of calves for veal. A few butchery marks were noted on cattle and sheep bones. These

are all a consequence of dismembering of the carcase, but chop marks at the base of a cattle horncore suggest some interest in horn-working.

The information derived from this assemblage of animal bone is restricted by its small size. However, data relating to disposal practices, use of animals and presence of wild game may stimulate further research into the animal economy of this important Saxon and Norman town.

The Fish Bone

Pippa Smith[13]

Methods

The fish bones were retrieved from samples of Period 1 contexts, wet sieved through a 0.5 mm mesh, thus ensuring excellent retrieval of small elements and species. The bones were identified using a binocular microscope at magnification x10, with magnification x20 used for study of the pharyngeal bone of small Cyprinids. Taphonomic detail such as evidence for digestion was looked for. The size of the specimens was estimated by reference to modern comparative specimens of known size, but due to the small number of bones in this group, and the predominance of vertebrae, it is inappropriate to calculate the minimum number of individuals. Fish were identified to species where possible but only to family level if reliable distinctions could not be made. Thus bones from the head of cyprinids were identified to species but the vertebrae were taken only to family level as further identification is not possible.

Results

Eel (*Anguilla anguilla*) and a number of cyprinids, dace (*Leuciscus leuciscus*), roach (*Rutilus rutilus*) and bream (*Abramis brama*), were all identified. One salmonid vertebra was also present and from its size this is more likely to be from trout (*Salmo trutta*) than salmon (*Salmo salar*). The cyprinids and salmonid are unquestionably freshwater species, whereas eel inhabits both sea and rivers. Eels metamorphose from larvae to elvers in coastal waters and then migrate to fresh water to feed and grow, and it is likely that the eels represented here are at that stage. The eel vertebrae present come from medium sized individuals falling within the range 450 mm to 800 mm predicted by modern specimens.

Although 119 bones were examined, these may represent very few fish. As noted above it is inappropriate to calculate the minimum number of individuals on a small group of fish bones. However, when we consider that eel have 112–117 vertebrae, it can be seen that a group of 86 vertebrae may represent only one specimen.

The specimens represented in the samples are small species or small examples of larger species and would not have provided people with much to eat. Dace and roach are small members of the Cyprinid family, and the bream is consistent in size with small comparative specimens, between 140 and 170 mm in length.

Coy identified a large number of small cyprinids from the Saxon site of Wraysbury, Berkshire and suggests that they may have become trapped after periodic flooding (Coy 1987). However, it is thought unlikely that flooding of the Ouse would have reached the site and no flood deposits were recognised during excavation (Niall Oakey, personal communication). The bones come from sealed pits, including cess pits, but the fact that the number of fish bones was small and that they were recovered from a limited context type may suggest that other fish bone did not survive to be recovered. Cess pits provide a particularly good environment for the survival of small and fragile bone. The predominance of small freshwater fish may reflect the route by which the remains arrived in the pits. Although there was no direct evidence on the bones to indicate that they had passed through the gut, if this was the route into the pit it would explain why large freshwater and sea fish were absent. Alternatively, it may be that these fish were served at table whole and table waste was incorporated into rubbish thrown into the cess pits. The waste from the larger fish may have been deposited elsewhere.

Plant Macrofossils and Invertebrates: Summary

Peter Murphy[14]

Methods

Samples from Phases 1 and 2 of the excavation were processed in a bulk sieving and flotation tank, using 0.5 mm collecting meshes. The dried flots and residues were sorted, extracting artefacts, concretions, plant macrofossils, mineral-replaced arthropods, molluscs and bones of fish, amphibians and mammals. After an assessment of all samples, full analysis of those from Period 1 contexts was recommended.

Table 5. *Charred and mineral-replaced plant macrofossils, etc.*

sample no.	**1**	**2**	**3**	**4**	**5**	**7**	**8**	**9**	**10**
context no.	**19 (20)**	**42 (5)**	**61 (7)**	**8 (9)**	**30 (31)**	**32 (31)**	**127 (33)**	**21 (22)**	**27 (28)**
charred plant material									
Cereals									
Indeterminate cereal (ca)	18	19	13	11	27	21	1	6	10
Avena sativa L. (flo)	1								
Avena sp. (ca)			13		2	6		1	4
Hordeum sp.	1	3	1	2	5	4		1	4
Secale cereale L. (ca)	2	3	4	1	9	8			2
Triticum aestivum s.l. (ca)	15	6	4	18	23	8	1	10	15
Pulses									
Vicia/Pisum sp(p)	1					1+1fr			1+1co
Herbs (weeds/grassland plants)									
Agrostemma githago L.									
Anthemis cotula L.			2						
Avena/Bromus sp.	4	3	2	2	2	2		1	3
Beta vulgaris L.					1s (a)				
Brassica sp.			1 c.f.						
Bromus mollis/secalinus	1			2	2	1			
Centaurea sp.					1				
Galium aparine L.		1							
Medicago lupulina-type									
Poaceae indet. (small)									
Polygonaceae indet.			1	1					
Raphanus raphanistrum L.	1								
Rumex sp.				1	1				
Sherardia arvensis L.									
Vicia/Lathyrus sp.				2+1ca					
Wetland taxa									
Cladium mariscus (L.) Pohl									
Trees/shrubs									
Corylus avellana L. (ns.fr.)	x	x	x		x	x			x
Indeterminate seeds etc.				1	1	1			
Vegetative material									
Cyperaceae indet. (st. fr.)									
Poaceae indet. (cn)						1			
Monocot. stem/leaf									
Thorn		x							
mineral-replaced plant material									
Cereals									
Avena sp.									
Fruitstones/seeds									
Malus sylvestris L.									
Prunus cf. *domestica* s.l.									
Prunus spinosa-type									
Rubus fruticosus agg									
Sambucus nigra L.									
Herbs (grassland/weeds)									
Agrostemma githago L.									
Apiaceae cf. *Conium maculatum* L.									
Centaurea sp.									
Chenopodiaceae indet.			1						
Fallopia convolvulus (L.) A. Love									
Ranunculus sp.									
Rumex sp.									
Stellaria media-type									
Wetland plants									
Eleocharis sp.									
Indeterminate seeds etc.									
Other mineral-replaced material									
Arthropods									
Faecal concretions						1 (b)			
Poaceae indet. (cn)									
Sub-spherical 'nodules'									
Thorn									
Sample volume/wt	**3 kg**	**6 kg**	**6 kg**	**6 kg**	**20 l**	**10 l**	**10 l**	**10 l**	**10 l**

Notes: (a) seed and fruit fragments; (b) including impressions of *Agrostemma* testa.

Table 5 (continued). *Charred and mineral-replaced plant macrofossils, etc.*

sample no.	**11**	**12**	**13**	**14**	**15**	**16**	**102**	**103**	**104**	**105**
context no.	**68 (70)**	**71 (31)**	**34 (35)**	**57 (53)**	**153 (160)**	**154 (155)**	**1073**	**1094**	**1093**	**1114**
charred plant material										
Cereals										
Indeterminate cereal (ca)	2	8	1	2	1	3	1	2	19	9
Avena sativa L. (flo)										
Avena sp. (ca)		3							20	4
Hordeum sp.	1					1	2		3	1
Secale cereale L. (ca)	1	8				1			5	5
Triticum aestivum s.l. (ca)		6		10	2	8	8	3	12	7
Pulses										
Vicia/Pisum sp(p)										
Herbs (weeds/grassland plants)										
Agrostemma githago L.										1
Anthemis cotula L.						1				
Avena/Bromus sp.				1		2				
Beta vulgaris L.										
Brassica sp.										
Bromus mollis/secalinus				1					2	
Centaurea sp.										
Galium aparine L.						1				
Medicago lupulina-type						1				
Poaceae indet. (small)						1				
Polygonaceae indet.										
Raphanus raphanistrum L.		1								
Rumex sp.									1	
Sherardia arvensis L.				1						
Vicia/Lathyrus sp.				1			fr		2co	
Wetland taxa										
Cladium mariscus (L.) Pohl			2							
Trees/shrubs										
Corylus avellana L. (ns.fr.)	x	x		x		x		x	x	
Indeterminate seeds etc.				1	1					1
Vegetative material										
Cyperaceae indet. (st. fr.)					x					
Poaceae indet. (cn)					1					
Monocot. stem/leaf			x							
Thorn										
mineral-replaced plant material										
Cereals										
Avena sp.										1
Fruitstones/seeds										
Malus sylvestris L.									4	7
Prunus cf. *domestica* s.l.									2	
Prunus spinosa-type									15	2
Rubus fruticosus agg									5	
Sambucus nigra L.									1	1
Herbs (grassland/weeds)										
Agrostemma githago L.									1 c.f.	
Apiaceae cf. *Conium maculatum* L.									7	1
Centaurea sp.									1 c.f.	
Chenopodiaceae indet.									4	
Fallopia convolvulus (L.) A. Love										1
Ranunculus sp.									1 c.f.	
Rumex sp.										2
Stellaria media-type									1 c.f.	
Wetland plants										
Eleocharis sp.									1	
Indeterminate seeds etc.									26	6
Other mineral-replaced material										
Arthropods									xxx	x
Faecal concretions									xxx	x
Poaceae indet. (cn)									4	
Sub-spherical 'nodules'									x	x
Thorn									1	
Sample volume/wt	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**

Table 6. *Marine molluscs.*

sample no.	**1**	**2**	**3**	**4**	**5**	**9**	**10**	**11**
context no.	**19 (20)**	**42 (5)**	**61 (7)**	**8 (9)**	**30 (31)**	**21 (22)**	**27 (28)**	**68 (70)**
Cerastoderma sp.								
Cerastoderma edule L.								
Mytilus edulis L.	x	x	1	x	x	x	1	1
Ostrea edulis L.						1		
Littorina sp.								
Gastropod whorl fragments								
sample volume/wt.	**3 kg**	**6 kg**	**6 kg**	**6 kg**	**20 l**	**10 l**	**10 l**	**10 l**

Notes: x = non-hinge or non-apical fragments.

Results

Plant macrofossils

Charred cereal grains were present in most samples, but in small quantities. Preservation was, in general, poor: most grains had porous and abraded surfaces. There was a high proportion of unidentifiable fragments. Several samples included slag-like fused siliceous concretions and globules, formed from silica-containing plant material burnt at high temperatures.

Wheat grains (*Triticum aestivum* s. l.) predominated and were of a form characteristic of early medieval contexts. Grains of barley (*Hordeum* sp.), rye (*Secale cereale*) and oats (*Avena* sp.) were also recovered. A single floret base of *Avena sativa* was identified. No other chaff fragments were noted, although there were some large Poaceae culm nodes, possibly cereal straw. Preservation of pulse seeds and cotyledon fragments was poor but there were probable examples of pea (*Pisum sativum*), with large-seeded vetches (e.g. *Vicia sativa*) or small horsebeans (*Vicia faba* var. *minor*) possibly also represented. Charred fragments of hazel-nut shell (*Corylus avellana*) were frequent.

The samples also included small numbers of charred seeds of weeds and grassland plants, mainly segetals which are commonly associated with medieval cereal crops. A record of *Beta vulgaris* (beet) is more unusual, having hitherto only been reported in East Anglia from medieval deposits at Fishergate, Norwich (Murphy 1985). The charred material from Orchard Lane comprised a seed and fruit fragments, so it could represent either cultivated beet (ssp. *vulgaris*) or the wild sea beet (ssp. *maritima*). The latter is perhaps more probable and, if so, would represent an accidental import from a coastal area.

Context 34 included fruits of saw-sedge (*Cladium mariscus*) associated with unidentified monocotyledonous stem and leaf. This material could be derived either from sedge peat, imported as fuel, or from thatching material.

In view of the generally poor preservation of grains, the absence of cereal chaff could be a result of differential preservation during charring. However, there is no evidence for on-site crop processing and no reason to think that the charred assemblages represent anything other than domestic consumption of foodstuffs and use of other plant materials.

Context 32 included fragments of phosphatic concretions with impressions of testas of corn cockle (*Agrostemma githago*), but mineral-replaced plant material was most common in the pit fills 1093 and 1114. Macrofossils of edible fruits included internal casts of *Prunus* fruitstones (probably *Prunus spinosa*, sloe, and *P. domestica* s.l., plum/bullace), internal casts probably of bramble (*Rubus fruticosus*), seeds of apple (*Malus sylvestris*) and elder (*Sambucus nigra*). A single mineral-replaced oat grain came from 1114. Identification of small seeds and fruits of wild taxa proved difficult, but weeds, grassland and wetland plants were represented. Both samples indicate use of these pits for disposal of human sewage, together with other types of refuse.

Arthropods

Mineral-replaced arthropod remains were abundant in the latrine pit fills (1093, 1114), mostly comprising fly puparia with occasional Isopods (wood-lice). Other remains were undoubtedly recent contaminants.

Molluscs

Shells of terrestrial and freshwater snails occurred in small numbers, but there were some obvious modern contaminants. Consequently full quantification of these species was not undertaken.

Marine mollusc shell was thought less likely to include intrusive material, for there was no significant domestic activity on the site after Period 1. *Mytilus edulis* (mussel), represented mainly by non-hinge fragments, was most frequent, but cockle (including *Cerastoderma edule*) and oyster (*Ostrea edulis*) were also represented. The intact valves and shells included

Table 6 (continued). *Marine molluscs.*

sample no.	**13**	**14**	**15**	**16**	**102**	**103**	**104**
context no.	**34 (35)**	**57 (53)**	**53 (160)**	**54 (155)**	**1073**	**1094**	**1093**
Cerastoderma sp.				x		x	2*
Cerastoderma edule L.							1
Mytilus edulis L.	x	x	x	x	8	5	31
Ostrea edulis L.	x				1		
Littorina sp.		1					
Gastropod whorl fragments						x	
sample volume/wt.	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**	**10 l**

Notes: x = non-hinge or non-apical fragments; * = paired articulating valves.

a high proportion of very immature specimens. This might indicate that the shell from the site was not simply domestic food refuse for very small shellfish are not, practically speaking, edible. The small shells may represent unsaleable material separated by riddling from a shellfish catch shipped up-river.

Scraps of avian eggshell were noted in some contexts.

Discussion

The Orchard Lane site and the topography of Huntingdon

A limited amount of pottery and building material suggested activity nearby in the Romano-British period, supporting previous evidence for a minor settlement lining Ermine Street as it ran north from the Roman bridgehead.

Period 1 included pits and other evidence of domestic activity in Saxo-Norman times (AD 900–1150). This indicates that by this time the settlement had spread along streets or lanes running off the High Street towards the putative northern boundary or defences of Huntingdon (Figure 2). The location of rubbish and cess pits at Orchard Lane may point to an additional focus of settlement along the waterfront. Unfortunately, the pottery is incapable of more precise dating than a broad range of several centuries, and so it is impossible to identify when occupation began on the site or whether the truncated remains represent multiple phases of activity.

The problem recurs when attempts are made to date the change of use from domestic activity to burial (Period 2). The pottery assemblage indicates that the cemetery was in use until the fourteenth century, but it is impossible to tell whether it was established before or after the Norman Conquest. No church structure or architectural fragments that might have helped with dating were found on site and the documentary evidence is not helpful.

The circumstances of the establishment of a cemetery upon the site can be explained in one of two ways; either it represented an extension of an existing burial ground or churchyard, or it was part of a newly created church and yard. It is probable that at least 75% of the churches in a flourishing pre-Conquest town such as Huntingdon were established before the end of the eleventh century, especially in a location so close to the centre of the settlement (Morris 1989: 169). Archaeological excavation of urban churches seldom reveals evidence of earlier domestic activity pre-dating the medieval church foundation; St Mary-le-Port, Bristol being a rare exception (Watts & Rahtz 1985: 192). However, houses and early churches in late ninth and tenth century towns are usually concentrated along the main thoroughfare and around the market place (Morris 1989: 192, 204). The Orchard Lane cemetery may be associated with a new church founded to serve an expanding population and, if a date of establishment could be determined, it might indicate the period at which Huntingdon began to outgrow its 'spinal' phase. Increased prosperity and population in this locale may have followed from the movement of the bridge nearer to the Orchard Lane site, but, again, it is difficult to specify whether this took place before or at the time of the construction of the Norman castle.

Most churches in pre-Conquest towns were founded by laypeople (Morris 1989: 171), and the stimulus for the establishment of the cemetery may have been the conversion of a private chapel into a parish church. A church in this location may have had extra prestige as it would have been visible to everyone crossing the river from the south, acting as a visual balance to the castle.

The cemetery (and, presumably, any associated church) was not used after the fourteenth century, reflecting a trend in pre-Conquest towns, which experienced ecclesiastical overcrowding in the later medieval period. This occurred in cities such as York, Lincoln and Norwich, but was also common in smaller towns

more comparable to Huntingdon, such as Thetford and Wallingford (Morris 1989: 335).

In the larger, more prosperous settlements the disused churchyards disappeared under secular buildings,[15] and this, presumably, has been the case with many of Huntingdon's churches. However, the cessation of burials at Orchard Lane in the late medieval period and the subsequent history of the site as open ground indicates little demand for building land and suggests that this site had become peripheral to the settlement despite being only 70 m from the High Street. This reflects Huntingdon's documented problems in the late medieval period and the subsequent failure to fully recover.

Although predominantly used for cultivation or open storage (Periods 4 and 5), the site did experience a short-lived quarrying episode (Period 3) in the sixteenth or seventeenth century. The pits and quarries were restricted to the Orchard Lane frontage and penetrated and extracted the natural clays and sands before almost immediate backfilling. The quarried material may have been used to make bricks, possibly for only one building, but there was no evidence on site for this process. The dumping of hot bricks into the quarries remains intriguing, but may be associated with demolition of buildings damaged in the Civil War.

The commercial profit derived from the quarrying overcame any feelings of respect or superstition concerning the burials. The previous use of the site as a Christian cemetery may have been forgotten, but skeletons were certainly encountered, disturbed and redeposited with little evidence of any concern for the human remains.

Huntingdon and its hinterland

The evidence for the relationship between Huntingdon and its hinterland is largely restricted to Period 1 and, unsurprisingly, depicts a town relying on the surrounding countryside to supply its food. Domestic livestock such as cattle and sheep were probably raised nearby, while pig and domestic fowl could have been raised in backyards within the town. There was insufficient evidence to comment meaningfully on butchery patterns or age structures, except to say that both mature cattle and calves were being consumed. A piece of cattle horncore showed signs of having been worked.

The presence of roe deer suggests that hunting was used to supplement meat supplies, while the freshwater fish specimens indicate exploitation of the Ouse or the nearby Fens as a food source. The small species or small examples of larger species which make up the corpus of fish bones may represent discarded specimens from a catch made with nets or traps.

The cereal grains recovered from the site are assumed to come from cultivation within a short distance of Huntingdon, but the plums, apples, elder and hazel-nut also found may have been grown within the town limits.

Remains of peat for either fuel or thatching probably derive from the nearby Fens, but the marine molluscs have certainly come a longer distance. The nearest source and point of access to the sea is the Wash, down the Ouse. The presence of discarded immature shellfish suggests that catches were being imported into Huntingdon in bulk and not sorted until they reached the town.

Although studies of the local ceramic industry and its markets are in their infancy, most of the pottery recovered from the site derives from production within a 15–20 mile radius of Huntingdon and is dominated by St Neots types. The major exception are Thetford-type wares imported from Norfolk, which may have fulfilled a specialist function as pitchers.

Huntingdon as an archaeological resource

The Orchard Lane site has proved that good archaeological sequences survive in Huntingdon with useful artefactual and ecofactual databases. Incidentally, it has also indicated the quality of information that may have been lost during development over the last four decades.

It is an archaeological truism that each excavation poses as many questions as it answers, and a number of topics for future archaeological research in Huntingdon have been highlighted by this piece of work. These include investigations into the extent, density and character of the town in the late Saxon and early Norman period; the establishment of the parochial system and how it reflected population growth or other factors; the extent of late medieval depopulation and economic depression as evidenced by declining pressures on land; and the effect on the town of the Civil War and the subsequent economic recovery in the later seventeenth and early eighteenth centuries. Little is known of the relationship of the town to the River Ouse and the degree to which it was exploited and served as a trade artery. The potential of Huntingdon's waterfront as a location of preserved wooden structures and artefacts of organic materials has not been explored. As these more general considerations become better understood they will provide a context within which to address more specific issues such as the impact of the construction of the

castle; the date and effect of the movement of the bridging point; the location and nature of the town boundaries, including whether they ever fulfilled a defensive function; whether the built-up area of the town ever completey filled the area defined by the postulated boundary; and whether the hospitals, friary and other medieval religious establishments were built on sites previously occupied by houses. At the moment it is difficult to provide very precise dates for the pottery recovered from Orchard Lane and further excavation of datable groups of ceramics from Huntingdon or other settlements in the mid-Anglia or East Midlands area is necessary for a more tightly dated sequence.

More topics for research could be listed, but it is already apparent that future development within the historic core of Huntingdon is likely to have an impact upon archaeological deposits vital for understanding and presenting the history of the town. The Orchard Lane excavation can be regarded as a sample of the wider archaeological site represented by Huntingdon as a whole, and this report is offered as a preliminary statement upon which further research should build. Huntingdon is representative of a class of settlement, the smaller county towns, that have not benefitted from adequate archaeological attention in the past. It has sufficient importance and potential in itself to justify a structured appraisal of its archaeology and, where possible, this process should include the preparation and full publication of the results of excavations that took place between 1960 and 1990.

Acknowledgements

The excavations took place in response to a development proposal by Matthew Robotham Associates on behalf of Mencap. Specifications for the archaeological work were produced by the Archaeology Section of Cambridgeshire County Council who also provided advice and support during the project. The excavation and all the work leading to this report were funded by English Heritage, who also provided a grant towards publication, and thanks are due to their representatives for monitoring the project and providing advice at all stages of its progress.

The project was managed on behalf of the Archaeological Field Unit of Cambridgeshire County Council by Paul Spoerry and the excavation was directed by Niall Oakey.[16] Phase 1 was carried out by Scott Kenney, who also assisted with Phase 2 and the initial post-excavation analysis. Many archaeological assistants and volunteers worked on the excavation and are thanked for their hard work and perseverance in unpleasant weather. Melodie Paice of the AFU prepared all the drawings for publication and other staff at the AFU have provided help and encouragement.

The authors wish to thank Umberto Albarella, Corinne Duhig, Sandra Garside-Neville, Peter Murphy and Pippa Smith for their specialist reports and to acknowledge that the published reports represent only a small part of their contributions to the project. The metalwork was X-rayed, cleaned and conserved by Celia Honeycombe, and Dr Mark Blackburn of the Fitzwilliam Museum, Cambridge, identified the coins and token.

The staff of the County Record Office at Huntingdon provided help with the documentary background to the site and various staff at the Cambridgeshire County Council SMR also provided information.

Endnotes

1 Earle & Plummer 1892: 101–2 (dated there 921, actually 917 according to more recent studies).

2 Walden Road and its continuation to the north are recent alignments.

3 A summary of the excavations at Mill Common between 1967 and 1969 are retained by the Cambridgeshire SMR, together with notes on the other excavations. Location of the records and artefacts from these excavations and their eventual publication should be seen as a priority for a fuller understanding of Huntingdon's past.

4 Huntingdon Record Office (hereafter *HRO*) H26–Acc 926 and 3991/1, published as Dickinson 1972.

5 HRO M 58/3, Hagable assessment for Huntingdon Borough, 1598.

6 HRO SM 11/71, Plan of the Hospital lands in Huntingdon, 1752.

7 HRO 2196/27 I, Huntingdon St Mary tithe map, 1850.

8 Much of this late pottery was not retained, but its presence was noted in the site records.

9 Archaeological Field Unit, Cambridgeshire County Council, Fulbourn Community Centre, Haggis Gap, Fulbourn, Cambridge. A fuller report and database forms part of the site archive.

10 Brick and Tile Services, 63 Wilton Rise, York. A fuller report, database and reference collection form part of the site archive.

11 109 Sturton Street, Cambridge.

12 Department of Ancient History and Archaeology, University of Birmingham. A fuller report and database is available in the site archive.

13 Wessex Archaeology, Portway House, Old Sarum Park, Salisbury. A fuller version of the report and database is available in the site archive.

14 Centre of East Anglian Studies, University of East Anglia, Norwich. A fuller version will be published in the Ancient Monuments Laboratory Report series.

15 An example is the churchyard of St Benets, York (Pearson 1990: 7).

16 Wessex Archaeology, Portway House, Old Sarum Park, Salisbury.

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The Field called 'Augey' in Ickleton: an Anglo-Saxon Enclosure?

Mary Hesse

In a recent article in this journal, I sought to trace the early charter bounds of Littlebury, Essex (acceptably dated not later than 1008), and to identify on the ground the features mentioned in the charter.[1] The northern part of these bounds forms the county boundary with Ickleton, Cambridgeshire. Further consideration of etymology has suggested that one of the features identified tentatively in the paper can now be established more firmly. The feature is 'the old enclosure' (OE *þam ealdan gehæge*), which was identified with the 84-acre field variously called 'Augey', 'Awgey' or 'Argey' in an Ickleton terrier of 1545 (Cambridgeshire R. O. DDB 1115), and 'Archers' or 'Argers' in OS maps from 1885. The purpose of this note is to suggest that the various forms of 'Augey' may actually derive from OE [*þam*] *ealdan gehæge*, thus confirming the identification.

The steps by which this derivation may have taken place can be reconstructed as follows (Carole Hough and Audrey Meaney, personal communications). The phrase *þam ealdan gehæge* is the dative singular of the neuter nominative *þæt ealde gehæg*, or without the article *ealde gehæg*. The *ge-* element is an unstressed prefix, which would have been lost at an early stage. So the question is whether *eald-hæg* could develop into 'Augey'. A final '-ay' or '-ey' in place-names is commonly derived from *-hæg*. Examples in E. Ekwall, *English Place-names* (Oxford University Press, 1960: 210) include Oxhey, an 'enclosure for oxen', and in P. H. Reaney, *The Place-names of Cambridgeshire and the Isle of Ely* (Cambridge: English Place-name Society, 1943: 328) there is Scephey, an 'enclosure for sheep', and Templehay, a 'Templars' enclosure'.

The case of the first element, 'Aug-', is more complex. As written in the charter bounds, *eald* is standard OE. According to A. H. Smith (*English Place-name Elements*, part I, Cambridge: English Place-name Society, 1956: 8), this was normally represented in Anglian dialects by *ald* or *old*, as in Aldham in Essex and Suffolk. So *eald-hæg* may have been 'Aldhey' in local pronunciation. In *A Dictionary of English Surnames* (Oxford, 1995: 6–7), Reaney has an example of the elision of the *-d* of *eald* in the personal name *Ealdgar* ('old spear') becoming the Domesday 'Ealgarus'. He also has an example of Anglo-Norman vocalisation of *l*, giving a change from *-lh* to *-ch*: the personal name *Ealhhere* ('temple-army') became 'Aucher' (with voiceless *-ch*) or 'Auger' (with voiced (soft) *-g*). This presents a suggestive analogy with the field-name 'Augey', probably with voiced *-g*, later becoming 'Argers' or 'Archers'. In his *Place-names of Essex* (Cambridge: English Place-name Society, 1969: 484), Reaney has an example from High Easter of the field 'Aldgatelond' (1610) becoming 'Augerland'. In J. Field, *A History of English Field-names* (London: Longman, 1993: 215), there are examples of the element 'Au-' deriving from earlier *ald-*, meaning 'old', in 'Aulbury Field' from *Aldbere* (thirteenth century), and 'The Aubreys' from *Aldeburys* (1529), both in Hertfordshire.

The sequence of forms would then have been: *eald-hæg* to *aldhæg* to *alhey* to 'Augey', and finally to 'Argers' or 'Archers' as somewhat distorted and emphatic versions of 'Augey'.

This additional evidence for the identification of 'Augey' with 'the old enclosure' in Ickleton, Cambridgeshire, is of particular interest, because the field is a curious rectangular incursion into Strethall and Elmdon, Essex (see my 'Anglo-Saxon bounds', Map 2). Arguments given in the previous paper show that if 'Augey' is indeed 'the old enclosure' of the

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bounds, then it was 'old' in 1008, and has been in Ickleton on the Cambridgeshire side of the boundary from at least that date. It is well watered by 'Sawston Ditch', which runs through it, and it may well have been associated with earlier dwellings. The neighbourhood might repay some intensive field-walking.

Postscript
The interpretation of 'Auger' as 'old enclosure' may also explain the nearby 'Augurs' or 'Archers' Lane in *The Field Book of [Saffron] Walden* (1605, translated by E. Emson from a copy of 1758: 165; Essex R. O. T/A 86), and 'Auger Lane' on the Ickworth–Horringer boundary in Suffolk (T. Cowell, *The Ickworth Survey Book*, 1665, ed. J. Hervey, 1893: 69; original in Bury R. O. 941/83/1).

Acknowledgements

I am grateful to Carole Hough and Audrey Meaney for essential help with etymology. All errors are my own.

Endnote

[1] M. Hesse. 1994. The Anglo-Saxon bounds of Littlebury. *Proceedings of the Cambridge Antiquarian Society* 83: 129–139. The clause containing the bounds is in Old English; the charter is no. 907 in P.H. Sawyer, *Anglo-Saxon Charters: an Annotated List and Bibliography*, London: Royal Historical Society, 1968.

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An Archaeological Field Survey of Wothorpe, Cambridgeshire

C.C. Taylor

Introduction

In February 1994 the writer ran an archaeological survey training course for staff employed by Northamptonshire Archaeology at Wothorpe, Cambridgeshire. This paper summarises the results of that survey.

Wothorpe is best known for the remarkable, though now ruinous, house built there between 1615 and 1623 by Thomas Cecil, first Earl of Exeter. Less well known are the extensive earthworks that surround the house. These, together with a number of associated buildings, help to place Wothorpe House in its immediate context and give a much better understanding of the whole history of the settlement, both before and after the erection of the house itself. The entire complex is a remarkable survival of a historical landscape which perhaps deserves a much more detailed study than that given here. It is hoped, by publishing the results of the survey at Wothorpe, to encourage others to re-examine the area, and in particular the buildings there. The latter did not come within the remit of the survey course and are treated only summarily.

Topography and Communications

Wothorpe lies just south-west of Stamford on the southern edge of the Welland valley between 45 m and 90 m above OD (Fig. 1; TF 023053). Most of the site is on Northampton Sand although the underlying Upper Lias Clay is exposed in the small valley to the north east of the House.

Since the construction of the A1 Stamford bypass and the realignment of the A43 in the early 1960s, Wothorpe has been in a cul-de-sac. Before then the A43 from Stamford to Northampton passed across the northern end of the village. At an earlier date this road formed one of the major routes of medieval times (Taylor 1979: 115–19). At the point where the old main road meets a lane coming from the south, there is a small triangular green (west of *d* on Fig. 1). This lane now curves south around Wothorpe Farm (*n* and *w* on Fig. 1), but it once ran closer to the south-west side of Wothorpe House. Indeed, it is still shown on roughly this alignment on a map of 1615 of Wothorpe parish, in the archives at Burghley House, and there depicted as blocked by the walled courts of the old Wothorpe manor house (Fig. 2). It presumably once continued south across Wittering Heath.

Documentary History

Wothorpe is first recorded in the eleventh century, although there is a tradition that it was one of a number of manors inherited in the tenth century by Abbot Turketel, who gave it to the Abbey of Crowland. By 1086 Wothorpe was divided into two manors. The larger, with a mill and a recorded population of thirteen, was held by Crowland Abbey. The smaller manor, held by the Abbot of Peterborough, was worked by three sokemen. This latter holding is said to be part of a larger estate at Wittering, held by the Abbot, and thus it is possible that not all of it was actually located at Wothorpe (Thorn 1979: 6a,9; 11,1). In 1086, therefore, Wothorpe had a recorded population of between thirteen and sixteen, perhaps comprising twelve to seventeen households, giving an actual population of between 65 and 80 people.

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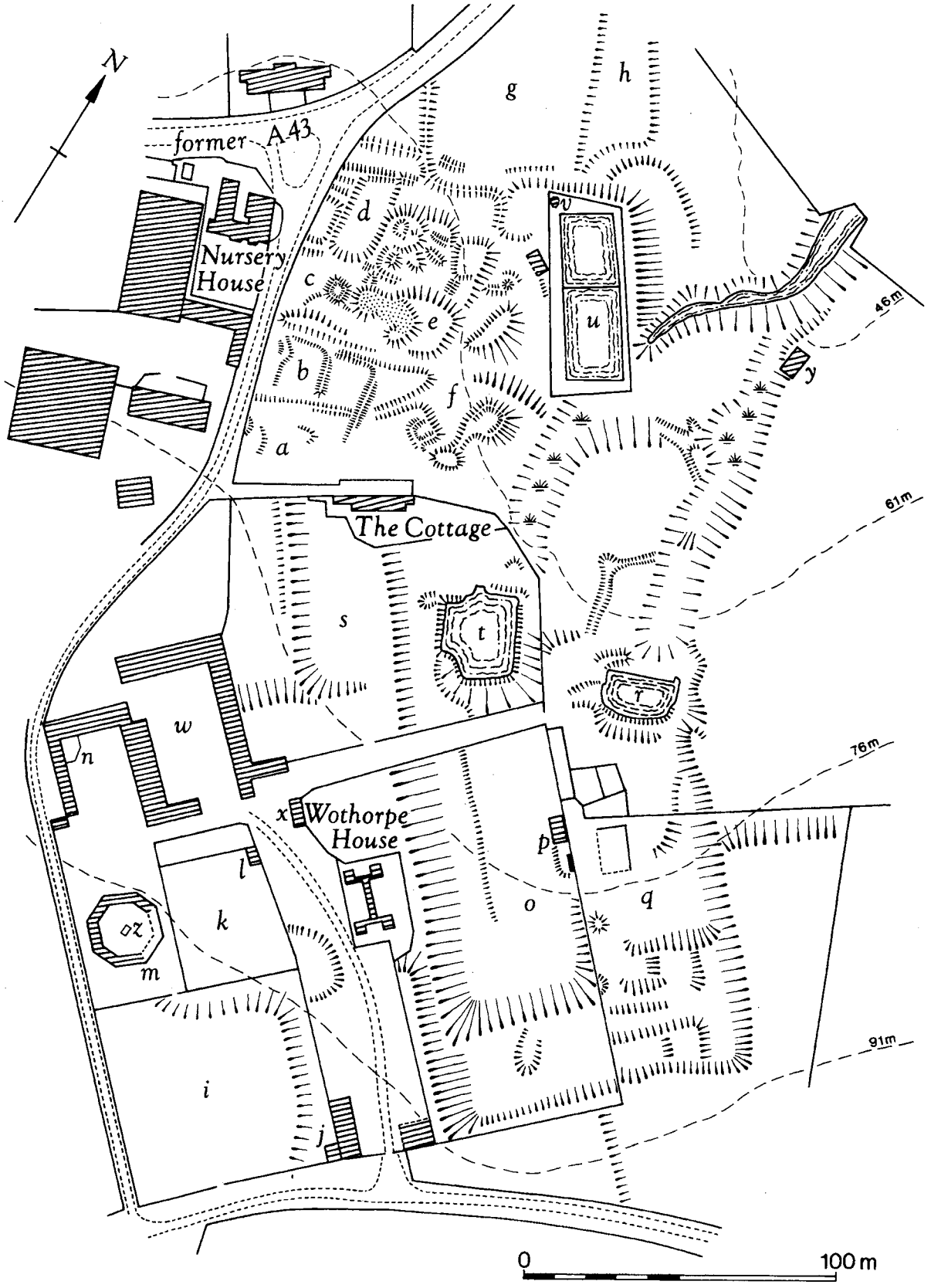

Figure 1. *Archaeological survey of Wothorpe.*

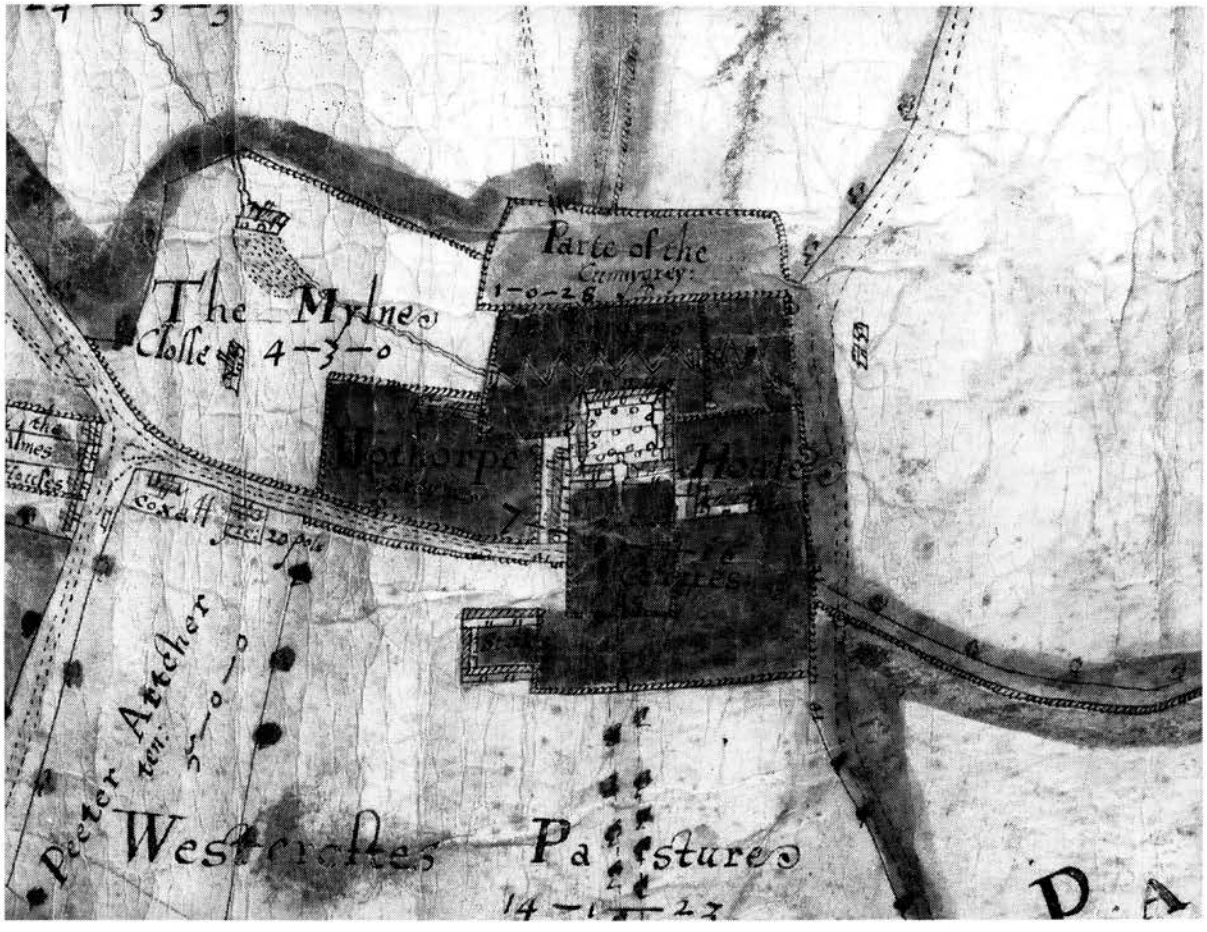

Figure 2. *Detail of a plan of Wothorpe, 1615, Burghley Estate Archives.*

Little is known of its size in later centuries. In 1301 there were nineteen taxpayers, suggesting perhaps 20 to 25 households, a fairly typical rise since 1086 (Allison *et al.* 1966: 48). The Black Death in 1349 may have reduced the population, but there is only indirect evidence for this. After the Plague, it was recorded that the small nunnery at Wothorpe 'being poorly endowed was by the pestilence which lately prevails reduced to such poverty that all the nuns but one on account of their penury have dispersed' (Steane 1974: 169). However, by 1377 the village, if it had been devastated by the Plague, had recovered. The Poll Tax Returns of that year list 40 people over the age of fourteen paying tax, giving a population of perhaps thirteen to eighteen households. The population must have fallen subsequently, for in 1524 only 22 taxpayers are listed, which probably means less than ten households. Further, the vicarage of the parish church, which had in any case been united with that of St Michael in Stamford in 1354, was worth nothing in 1535. The church itself was pulled down in 1585. This all indicates a low and declining population.

The cause of this decline is unknown. It is unlikely that Crowland Abbey converted the parish to sheep in the late fourteenth or fifteenth centuries, as happened so often elsewhere, as the common fields of Wothorpe were still in existence in 1533, when 200 acres of arable are recorded (Allison *et al.*, *op. cit.*). On the other hand the earthwork evidence of a late medieval courtyard farm (*e* on Fig. 1, see below) might suggest that cattle were important then. The site of this farm also indicates that at least four former village properties had been abandoned before it was constructed. Certainly, by 1615, the former open fields had been enclosed. This could mean that the Cecils completed the depopulation of the village after their acquisition of the manor in 1540. By 1615, as the map of that date shows, in addition to the manor house on the site of Wothorpe House there were eight or nine houses in the village: four dwellings with long closes behind them and called 'The Alms Houses' standing at the

northern end of the green, two houses on the western side of the lane just south of the green, an isolated house in the field to the east and the water-mill to the east again (Fig. 2).

The population of Wothorpe appears to have remained low, for in 1674 only seven households are listed there. The abandonment of Wothorpe House in the late eighteenth century must have reduced it further, although Wothorpe Farm continued on the site. The mill and the isolated house had both disappeared by the early nineteenth century (OS 1824). Today only six dwellings are occupied at Wothorpe itself, although the population of the parish has much increased as a result of the development from the middle of the nineteenth century of the new settlement of Wothorpe, further east towards Stamford.

Of the two eleventh-century manors, the Crowland holding remained with the Abbey until the Dissolution. Then in 1540 it was acquired by Richard Cecil. Cecil was the son of David Cecil, the youngest son of a Herefordshire yeoman family, who settled in Stamford in the late fifteenth century. David Cecil married the daughter of a rich Stamford merchant, and was alderman of Stamford three times. By the early sixteenth century he held a number of important Crown offices. His son Richard bought large areas of former monastic land between 1539 and 1545, including Wothorpe. It was Richard's son William, Lord Burghley, who became Queen Elizabeth's Principal Secretary and who began building Burghley House in the 1550s. Wothorpe has remained part of the Burghley estate ever since.

The second manor, held by the Abbot of Peterborough in 1086 together with the advowson of the parish church, seems to have been used to endow a nunnery at Wothorpe before 1300 (VCH 1906: 101). This nunnery is ill documented and was certainly small and poor. It may have been located near the parish church, which itself is traditionally said to have stood at the northern end of the green. Its lands, together with the advowson of the church, passed to Richard Cecil in 1540, thus placing the entire parish in single ownership. The church was pulled down in 1585, presumably by William Cecil.

The Village

Wothorpe village consists of an existing road system, a small number of dwellings, an abandoned farmstead and an extensive area of earthworks. At the head of the green, on its northern side, and on the site of the almshouses and possibly that of the church and nunnery (north-west of *d* on Fig. 1), is a terrace of four cottages of mid to late nineteenth-century date in the standard style of the Burghley estate. Their predecessors are marked on the first edition OS 1-in. map of 1824, and the site may thus have been occupied continuously since medieval times. On the western side of the lane that runs south is Nursery House which has a datestone of 1658. It apparently incorporates sixteenth-century material, and it seems to be the house marked here on the 1615 plan. To the south of this house is a collection of recent buildings now part of a commercial nursery. Those close to the lane seem to occupy the site of another house shown here on the 1615 plan. To the east is a small stone-built dwelling called The Cottage, probably eighteenth-century in date. It may have been a gardener's cottage built towards the end of the period of occupation of Wothorpe House.

To the north of The Cottage and in the field to the east of the lane are the earthworks of the former village. They are in poor condition as a result of later activities but they are the remains of four properties (Fig. 1, *a–d*). Each once consisted of a house site close to the lane, a rectangular yard or croft behind it and a similar sized garden or toft at the rear. However, the crofts and tofts of the two northernmost (*c* and *d*) have been altered and overlain by other features. In addition, between two of the properties (*b* and *c*), cutting into them, there is a former narrow track leading from the existing lane to the site of a later farmstead (*e*) to the east, and possibly to the site of the mill.

These four earthwork village properties are typical of the arrangements found on many deserted medieval villages and should date from the twelfth to fourteenth centuries. They all appear once to have been of the same form, shape and size which might suggest that the village originally had a regular layout with equal-sized plots on either side of a straight street. That is, it was a regular double-row settlement. If this was so it means that the four earthwork properties on the east of the lane would have been matched by four on the west. One of these would have been occupied by the predecessor of the existing Nursery House and another by the house which is shown to the south of it on the 1615 plan.

It is perhaps possible to speculate on this plan a little further. If the documentary sources are correct and there were anywhere between 12 and 25 households at Wothorpe at various times between 1086 and 1377, then the four properties, plus the suggested four on the west, are too few. The sites of at least four more, and

possibly up to seventeen more, are missing. The four and perhaps more could have been accommodated north of the green, if the church and the nunnery were elsewhere, but most must surely have lain further south along the original course of the lane in the area now occupied by Wothorpe Farm. There is room for at least ten properties, five on each side of the lane, of similar size to those surviving, between them and the position of Wothorpe House. The name of the field to the west of Wothorpe Farm and the lane on the 1615 plan is Westcroftes Pastures, which may be significant in this context. Assuming that the manor house of the Crowland holding lay at or near the site of the later Wothorpe House, then a line of village properties extending up to that manor house would not be unusual. Nor indeed would be their replacement by closes of an extended manor house following their abandonment.

The surviving earthworks of the village are, as has been noted, overlain on the east by a number of later features. These include a raised platform up to 1.5 m high, of generally rectangular form, but subdivided into a number of small roughly square plots and an area of stone rubble (*e*). There is no doubt that the rubble marks the position of the single house depicted in this field, then called The Mylne Close, on the 1615 plan. However, the earthworks indicate not only that this house once had a series of rectangular plots around it, but also that below it to the east was a large sunken yard, bounded on the south and east by stone buildings (*f*). This yard survives as a broad depression and at least three almost square buildings are marked by low stone foundations. Further, the whole complex is approached from the lane, or former village street, by a track visible as a terraceway, passing between and partly overlying the older properties (*b* and *c*) to the west, and perhaps continuing as a hollow-way towards the site of the mill. The site of this house, its plots, yard and other buildings, overlie the medieval village properties. The form of the earthworks, with a sunken yard surrounded by buildings, indicates that it is a typical late medieval courtyard farmstead, the yard being a 'crew yard' developed into its present form by the overwintering of cattle there. As such it should date from the late fourteenth or the fifteenth century, and was certainly laid out after at least part of the earlier village had been abandoned. Although this is again speculative, it might be suggested that this farmstead, together with the two dwellings shown on the opposite side of the village street on the 1615 plan, were post-desertion farmsteads resulting from engrossing – the gradual consolidation of small peasant holdings into larger farms.

To the north east of the village are the remains of two or perhaps three plots, bounded by lynchets and banks which may be medieval in origin. The western one (*g*) is a large roughly triangular area which extends south-east from the edge of the old road to the side of the village properties. Its south-east end crosses into, and its western embanked boundary blocks, an earlier trackway. This trackway once ran from the village green, on the projected alignment of the old A43 to the west, down the slope in an east-north-easterly direction. The second field or plot (*h*) is a long narrow one, edged on the east and west by lynchets. At its south end the former track, here a slight hollow-way, seems to have been respected. A third plot may once have existed further north-east.

The Mill

Although documented in Domesday Book and depicted on the 1615 plan, the site of Wothorpe mill cannot be accurately located. The area of the pond is partly occupied by the later reservoir (*u*). The mill itself is likely to have stood near the south-eastern corner of the reservoir, close to the point where the present stream has cut a deep channel in the underlying clay.

Wothorpe House

There was, presumably, a manor house on the site of Wothorpe House during the medieval period, the centre of the Crowland holding. Nothing is known of it. On the 1615 plan the site is shown as occupied by a large establishment comprising a house, lodgings, courtyards, closes, gardens and stables. All these were perhaps erected after 1540 by the Cecils when they acquired Wothorpe. The arrangement of these structures is important for they conditioned the early seventeenth-century layout, much of which still survives.

The house stood on the site of the later Wothorpe House and consisted of four ranges set around a courtyard. The south-west range had a central gatehouse. In front of the gatehouse, on its south west, was another courtyard with a range of buildings, perhaps lodgings, on the north west. A central drive led from the gatehouse, across this courtyard, and thence south-west, first across another court and then across the north-western part of a large L-shaped court. On the north-west side of the latter were stables, so-named, U-shaped

in plan and on the site of the present stables (*n*). The drive passed from the outer court, through what appears to be another gateway and continued across the field named Westcroftes Pasture. Here the drive was lined with trees. The main approach to the house was thus from the west.

In addition, the 1615 plan shows other enclosures around the house. Immediately south-east of the house lay another court with, on its western boundary, a large long building, perhaps a barn. To the north east of the house lay two more closes. There was a long rectangular one near the house and another square one on the south-east side of the latter. Both these closes are called The Gardyns on the plan, which also shows a zigzag feature extending axially across both gardens and, at the northern end, becoming the stream flowing north to the mill. As these gardens occupied the walled upper part of the shallow valley to the north-east of the present house (*o*), this zigzag feature in the bed of the stream must have been an ornamental watercourse. At its extreme south-east end, and thus at the head of the valley, the plan shows an indeterminate feature which might be a pond or perhaps a structure such as a conduit head.

To the north west of the house and in the area of the walled close (*s*), the plan shows a further large L-shaped walled court, also labelled Gardynes. In the eastern corner of this court the plan shows some indistinct features which seem to include walls and perhaps buildings. To the north east of the main garden, below the house, a long narrow walled close (*q*) is shown and called Parte of the Cunnygrey. One final important feature shown on the 1615 plan is the complete blocking of the north to south village street and its southern continuation by the walled courts on the south-west of the house. This may suggest that the blocking was not an ancient occurrence but had taken place not long before the plan was made, perhaps at the same time as the house was built, after 1540.

The house shown on the 1615 plan was replaced very soon afterwards and before 1623 by the present Wothorpe House. This is not the place for a full description of that building, nor for a discussion of its wider architectural significance. It was built, so it was said, to enable Cecil 'to retire out of the dust while his great house of Burghley was a-sweeping'. In fact the house belongs to that group of sixteenth and early seventeenth-century structures called lodges, which in modern parlance were a kind of holiday home (Girouard 1978: 106–9). They often had fanciful architecture, were frequently built in secluded places, and were thus regarded as both secret and romantic. More practically, their separation from the comings and goings of the big house made them useful places for private meetings. By their very nature such buildings were not designed to accommodate large numbers of people. Wothorpe House, despite being ruinous, demonstrates all these characteristics.

What survives consists of four square towers of four storeys, with octagonal top storeys. They all have long narrow single-light windows surmounted by curious square openings with volute decoration around them. Pevsner (1973: 470–1) says that these are reminiscent of Italian Mannerism. Originally, these towers were set in the angles of the main cross-shaped building, of which only the internal spine wall remains, three storeys high and with a basement. A drawing by John Thorpe (Summerson 1966: Plate 26) shows what purports to be the original plan. However, investigation has indicated that the house was not built exactly as the Thorpe plan shows. What is clear is that the main entrance was on the south east, approached via a flight of steps, the cellar being a half-basement because of the sloping ground. On the ground floor was the hall, as well as the kitchen (*contra* Thorpe), with the parlour above looking out and down over the main garden to the north east.

Thomas Cecil did not enjoy his new house for long, for he died in 1623. Its later history is uncertain. It was modernised in the mid or late seventeenth century and by the middle of the eighteenth century it was used as a Dower House. It was abandoned before 1790, when the outer walls were pulled down.

The Gardens, Courts and Stables

The arrangement of the gardens and courts in 1615 has already been described. It was altered when the new house was built, but most of the original layout seems to have survived. The area of the main garden to the north east of the earlier house was retained as the principal garden to the new one, although it was extended further east into the area of the walled close called Parte of the Cunnygrey in 1615. The garden to the north west of the house was also retained, although it too may have been enlarged. The form of the courts to the south west of the old house also remained broadly the same but was altered in detail. This was principally because the main approach to the new house was turned through 180 degrees to that of the older one. In effect the approach was made to come from the east, from the direction of Burghley House.

The drive lay along the present track to the south-east of the house and gardens. As it neared the house it crossed the head of the small valley in which the gardens lay. In order to achieve the maximum visual impact for visitors, the track itself was, and still is, embanked and revetted in stone some 2 m above the land to the north, while the height of the walls around the main garden on its south east were kept lower than those elsewhere. The result was that approaching visitors saw the house in full view with its gardens below it.

The drive then turned north-west through what is now a plain gateway with no decorative features, and entered an elongated court with the house in the north corner at its north-western end. The walls of this court are undatable and have in any case been much rebuilt. However, they seem to reflect some of the early seventeenth-century arrangement. This courtyard appears in part to have been cut out of the earlier courts shown on the 1615 plan. It now has modern sheds at its southern end and a former pond on its south-western side. The pond may be part of the seventeenth-century layout, set to one side of the house entrance, but is more likely to have been a later stock drinking-pond. To the south west of this approach courtyard are three walled courts. The largest (*i*), coincides with the southern part of the L-shaped court shown here on the 1615 plan. Although the original ground surface of this court presumably sloped north-east, it has been deliberately levelled to roughly match the higher ground outside the court to the south west. The result is that there are scarps up to 2 m high along the inner north-western and north-eastern sides of the court. It is not clear what this court was used for, but its near-level surface suggests that it was intended as a bowling green and thus perhaps belongs to the same period as the later house and gardens. In the eastern corner of this court is a small building of stone rubble, roofed with stone slates (*j*). It has a plain door opening on its south-western side and no windows. It cannot be closely dated but as it stands is probably eighteenth-century and connected with animals. However it may be on the site of an earlier building, perhaps a summer-house.

To the north west of this court are two others, similarly walled in stone. The northern one (*k*) seems to coincide with the south-western two thirds of the middle court outside the house on the 1615 plan. In its northern corner is a small building (*l*), identical to that in the eastern corner of the court to the south east, and presumably of the same date and function and perhaps origin. To its south east is the last court (*m*), also walled, but open to the north west. It seems to be identical in position to the north-western end of the large L-shaped court of the 1615 plan. Within it stands a ninteenth-century structure locally known as the Cockpit (see below).

In the north-western corner of this area is a U-shaped block of buildings (*n*) whose history is by no means clear. The overall shape is identical to that on the 1615 plan, there called Stables. The block on the north-western side may indeed have been stables, but seems to have been altered. Apart from a simple doorway at the north-eastern end, it has no openings except on the main, south-eastern, elevation. Here there is a line of seven windows, similar to if cruder than those on Wothorpe House itself. This suggests that the building is either of the same date as the main house or was remodelled when the latter was built. The elaborate stone central doorcase is early seventeenth-century. It is very battered and is perhaps reset from elsewhere. Certainly its low height would have prevented the building being used as a stable.

The south-west wing of the U-shaped block was once a row of three or four cottages perhaps of mid seventeenth-century date. It has been altered and added to, apparently in the eighteenth and nineteenth centuries when it was a farmhouse. It was abandoned after the Second World War. The north-western wing consists of a large stone rubble barn, probably seventeenth-century in origin, but later than the stable block and with various additions.

The former gardens at Wothorpe House survive mainly as earthworks and fall into three sections. The main garden (*o*) lies immediately north east of the house and covers almost 1 ha. It is bounded on all sides by stone walls of various dates. A broad, slightly splayed farm track, revetted in stone rubble 1.25 m above the ground to the south east, runs along the north-western side of the area. This is may be a later addition of the ninteenth century, although it is possible that it fossilises a former raised terrace at this end of the garden. The rest of the area is under pasture and contains the slight remains of the former seventeenth-century arrangement, although these are in very poor condition as a result of the land here having been ploughed at some time.

On the south-western side are traces of what was probably a massive terrace extending from the eastern corner of the house to the southern corner of the garden. It consists of a walkway adjacent to the wall with a large scarp still up to 2 m high. At the southern corner this terrace turns and runs along the south-eastern side of the garden, here very slight, less than 0.25 m high. Below the house is another broad, very degraded scarp. It presumably rep-

resents another raised terrace which formerly lay against the house. At its south-east end it turns and extends north-east across the area as a much spread cross-scarp up to 1.5 m high. The main part of the garden is thus divided into two parts. The upper south-eastern third is featureless except for a slight depression near the centre, which might mark a former pond. The lower north-western two-thirds are also featureless apart from a very slight scarp running north-west. This again may dimly reflect some original division.

On the north-eastern side of this garden area is an elaborate masonry doorway (*p*) of early seventeenth-century date. It has a moulded doorcase, surmounted by a stepped gable, which once had balls or finials on the steps and which is pierced by a circular opening at the top. The doorway is flanked on each side by a pair of plain roundheaded niches. The whole is positioned axially to the centre of the house on the opposite side of the garden and has a slight raised scarped projection in front of it, perhaps marking a former paved area or steps. Its function was presumably to give access to the garden compartment beyond.

The area of this garden is apparently identical to the two walled closes shown here on the 1615 plan. Indeed, the division between the two walled closes seems to coincide with the north east to south west dividing scarp on the ground. If so, this might mean that the garden remained divided into two parts after the building of the new house, with the latter in the centre of the south-western side of the large compartment opposite the gate (*p*). The earthwork remains of this garden are too slight to allow a reconstruction of it, beyond suggesting that it had a fairly typical early seventeenth-century form with terraces, walks, knots and possibly ponds.

The second part of the garden (*q*) lay to the north east of the last, presumably approached by the gateway described above. It seems to have occupied roughly the area described on the 1615 plan as Parte of the Cunnygrey. However, except on the south-western side no walls survive and the area now lies within a large field bounded on the other three sides by walls of eighteenth or ninteenth-century date. The field has been ploughed and reseeded and, as a result, the surviving earthworks are very slight and difficult to interpret. The main feature is a large degraded scarp still up to 1.5 m high running north west to south east. At its north-western end it extends into the next field and terminates close to the pond (*r*) there. At its south-eastern end it turns and runs south-west to meet the corner of the garden compartment already described. Within the angle formed by this turn are a series of low scarps nowhere more than 0.2 m high, forming a generally rectangular pattern and coinciding with an area of unusually dark soil exposed in the molehills. It is difficult to give a detailed interpretation of these scarps beyond suggesting that they again represent some form of terraces, paths or flowerbeds typical of the early seventeenth century. The major outer scarp may mark a terrace walk which was backed by a perimeter wall.

The fact that the large boundary scarp on the north east extends north-west to the adjacent pond might indicate that the gardens also extended to this point. The earlier walled field, shown on the 1615 plan, certainly did. This in turn suggests that the pond itself may have been constructed as a garden feature. While this may be so, its later use as a collection reservoir for a water-supply system makes any earlier usage impossible to ascertain.

The third and last part of the gardens (*s*) lay north of the house in the area also called gardens on the 1615 plan. These 1615 gardens occupied only a central rectangular strip of the present field and it is difficult to explain the earthworks which seem to belong to the post-1615 garden. The problem is exacerbated by a number of factors. Again, the field has been ploughed in recent times. In addition, the later pond (*t*) at the eastern corner of the field, another collecting reservoir, has led to alterations there. Further, both the wall and the farm buildings on the south-western side have been rebuilt in the nineteenth century and later. Finally, the lane running south-east from the northern part of the village, and shown on the 1615 plan as being blocked by the courtyards further south-east, appears to have crossed the south-western edge of this field. The best interpretation therefore is that the two degraded scarps running north west to south east across the field are former garden terraces and that the lower one also marks the north-eastern boundary of the earlier garden. Whether the pond (*t*) could have been part of the later gardens remains unclear.

The Reservoirs

In the field to the north east of the village remains and probably occupying the site of the medieval mill pond is a large rectangular pond (*u*). It is cut back into the hillside and has retaining banks up to 3m high on its north-east and north-west sides. It is marked as Reservoir (disused) on modern Ordnance Survey plans. Although apparently relatively recent, it seems to be part of a complex eighteenth or

ninteenth-century system of water collection and storage. Water coming down the stream in the shallow valley north-east of Wothorpe House, and presumably culverted since the seventeenth century, passed into the rectangular pond (*t*) which lies to the north of the former garden, at the point where the valley deepens considerably. This pond is revetted on its downslope side by a wall of thin limestone slabs set into the back of its low dam.

Further water is ponded in a similar rectangular pond (*r*) to the east. Water from this pond flows in a culvert either into the lower pond or into the stream just below it. The combined flow from both ponds, still culverted in the bottom of the valley, runs into the top of the large rectangular reservoir (*u*). The water from the reservoir now cascades down the ravine of the natural stream to the east. Originally, however, at least some of the water left the reservoir in its north-western corner and entered a system of underground pipes via a conduit head. This is a small octagonal structure (*v*) 2 m across and set over a deep stone-lined shaft. It is constructed of limestone rubble, with ashlar dressings and a doorway with a four-centred head of late seventeenth-century type. It is said to have been built in 1719 but is actually of ninteenth-century date; 1719 may be the date of the construction of the whole system. No details of the rest of the water distribution have been found but it may be significant that the height of the reservoir is some 16 m above the centre of Stamford and slightly less above Burghley House.

Recent Farm Buildings

Since the abandonment of Wothorpe House in the late eighteenth century, the area around it has been a working farm. As a result, many of the older structures have been altered and new ones erected. Among the new buildings are a stable block north-east of the earlier stables and another further south-east which, together with some piggeries of the 1940s or 1950s built into earlier structures, form a second yard (*w*) to the north east of the seventeenth-century one. There is also a late ninteenth-century shed (*x*) immediately north-west of Wothorpe House, a stock shed (*y*) of similar date in the field east of the reservoir and a curious octagonal structure (*z*), also of late ninteenth-century date, set in the court (*m*) to the south of the main farm buildings. This last building consists of an outer wall of limestone, with a range of brick and timber lean-tos around its inside. In the centre is a rectangular dry-stone walled pit about 2 m across. This is called a Cockpit locally but is unlikely to have been one. Its real function is unknown.

Conclusion

The Wothorpe landscape is not unusual but the details are particularly well preserved and the story clear. A small, undistinguished yet prosperous village, owned by a monastic house, declined in the later middle ages. After the Dissolution it was acquired by a family of the rising gentry who completed the depopulation of the village and built a fine new manor house and gardens. After the further rise of the family into the aristocracy, the house was replaced in the early seventeenth century by a much more sophisticated structure intended for use as a detached lodge and which was provided with new gardens. This lodge was succeeded by a working farm in the late eighteenth century. Today the farmhouse has been abandoned in turn and only six dwellings remain at Wothorpe.

More specifically, the survey has identified a number of features which have significance beyond Wothorpe itself. It is possible that the medieval village was once a regular double-row settlement. If this is so, it is yet one more example of this form, which suggests that the type was once much more common than has previously seemed likely (Taylor 1994). The direct stratigraphical relationship between the peasant-type tofts and crofts and the late medieval courtyard farm is of considerable interest and again confirms what has been discovered elsewhere by excavation (Beresford and Hurst 1971: 107). In addition, the discovery and elucidation of the former gardens surrounding Wothorpe House is significant in terms of seventeenth-century garden history and especially for the settings of sixteenth and seventeenth-century lodges, of which Wothorpe is a fine example.

Acknowledgements

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Field-Work in Cambridgeshire: April 96–July 97

Christopher Evans, Gavin Lucas, Tim Malim,
Tim Reynolds & Twigs Way

Introduction

For the first time, the field-work summary is in alphabetical order (of town or parish) this year, instead of being listed under the units which carried out the work. We hope that this will make it easier to find and compare information on specific sites.

The field-work listed has been carried out by the following units and individuals:

- Archaeological Field Unit, Cambridgeshire County Council (AFU)
- Birmingham University Field Archaeology Unit (BUFAU)
- Cambridge Archaeological Unit (CAU)
- Cambridge Mesolithic Project (CMP)
- Adrian Challands
- Kate Fearn
- Hertfordshire Archaeological Trust (HAT)
- Royal Commission on the Historic Monuments of England (RCHME)
- Tempvs Reparatvm
- Trust for Wessex Archaeology/English Heritage

Information on work by AFU was compiled by Tim Malim and Twigs Way, that for CAU by Christopher Evans and Gavin Lucas, and all other information by Tim Reynolds. Please note that not all summaries cover the same period, so some work carried out up to July 1997 will appear in the next issue.

Summaries

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TL 5108 5070 (Report no. A109)

Andrew Hatton for AFU

During the laying of a water main to the north east of Babraham Hall human remains were encountered, necessitating emergency excavations, which resulted in the recovery of further archaeological material and the excavation of a number of pits and ditches. Artefacts included animal bone and pottery sherds with a date range 1200–1550 AD. This evidence may be associated with the original village prior to emparkment in the 16th century. The burial was of an adult female; the date remains unknown, but was not Christian.

Barnack TF 055 068

AFU

A geophysical survey was conducted.

Barrington, Challis Green
TL 3990 5000 (Report no. A101)

Judith Roberts for AFU

Archaeological evaluation in October 1996 indicated that the western part of this area was occupied between the 12th and early 16th centuries, with evidence for considerable activity, including building materials and a cobbled yard, together with pits, ditches and dumps. The bulk of pottery dated to between the mid-

13th and late 14th centuries. The northern part of the site was quarried for coprolites in the late 19th century.

Bassingbourn, Church Close
TL 330442 (BUFAU Project no. 456)

H. Roberts for BUFAU

Trial trenching revealed 13th to 14th-century ditches, pits and gullies, despite unsuccessful geophysical survey. A single stray Roman sherd might suggest activities of that period nearby, but all features recovered were medieval. No evidence post-dated the fifteenth century, suggesting the site was permanently abandoned then. The features suggest a settlement, and environmental data show both domestic refuse and grassland (possibly pasture) nearby.

Bourn, Bourn Hall
TL 3219 5624 (Report no. B5)

AFU

Assessment revealed archaeological remains of little or no significance.

Brampton, The Old Rectory
TL 214 708 (Report no. 188)

P. Whittaker for CAU

A watching brief revealed nothing of significance.

Burghley House, Ash Yard
TF 0495 0611 (Report no. A98)

AFU

Assessment revealed archaeological remains of little or no significance.

Burwell, Pembroke Farm
TL 6602 5897

AFU

Assessment revealed archaeological remains of little or no significance.

Caldecote, Highfields
TL 349 583 (Report forthcoming)

Stephanie Leith for AFU

In November and December 1996, open area excavations were undertaken to the west of Highfields, south of Caldecote Community School, designed to investigate features revealed during earlier evaluation (Oakey 1996).

Four main periods of activity were recovered: late Iron Age, Roman, medieval, and post-medieval. Features attributed to the late Iron Age included a number of ditches, a pit, and a group of post-holes which probably represent part of a structure. A Roman field system identified during the evaluation was investigated and it was discovered that the system was relatively long-lived, with ditches re-cut and realigned in several areas. The pottery recovered from these ditches spanned the 2nd–4th centuries.

An area of medieval activity (1200–1350) was in the south-east corner of the site, represented by a boundary ditch, a possible fence line running beside it, several pits, and part of a timber structure with post-in-trench foundations. The structure, parallel to the ditch, continued out of the excavation area.

Cambridge, Adams Road TL 438 585

Mark Hinman for AFU

Part of an articulated human skeleton (possibly a shroud burial) was found during building works at 17 Adams Rd at *c.* 0.5 m below present ground surface, but with no accompanying grave goods. Proximity to an extramural Roman road suggests a contemporary date.

Cambridge, Addenbrooke's Hospital
TL 463 551 (Report no. 189)

R. Regan for CAU

Evaluation trenching in advance of a new Clinical Research Unit found no evidence of any archaeological remains.

Cambridge, 19–37 Castle Street
TL 444 592 (Report no. 191)

M. Alexander for CAU

Evaluation trenching beside the Methodist church showed that the archaeology was severely truncated, only the deeper features having survived; the majority were interpreted as quarry pits for sands and gravels, a practice widespread in the city. Most of the features appear to be medieval or post-medieval, although the discovery of Saxon pottery is evidence for limited activity in the period, and establishes for the first time a middle Saxon presence on Castle Hill; middle Saxon occupation in Cambridge had previously remained elusive.

A high proportion of Roman pottery in many fills indicated that the pits were dug through a considerable build-up of Roman material. Even the latest features contain a large quantity, suggesting that truncation to natural sands and gravels was post-medieval. It is possible that the site suffered earlier episodes of (less severe) truncation, associated with Roman terracing or Norman castle construction. These findings indicate a previously unrecorded focus of first-century Roman occupation.

Cambridge, Chesterton Park
TL 475 615 (Report no. 138)

AFU

An archaeological study, including archaeological and historical research, field visits and geophysical survey, was carried out as part of the planning process for development proposals.

Cambridge, Corpus Christi College – The Master's Garden
TL 4489 5815 (Report no. 185)

D. Edwards for CAU

Excavations in the Master's Garden at Corpus Christi College were carried out to assess the archaeological impact of a possible development along its west side. Test trenches revealed the relatively well preserved floor levels of the 16th century tennis court known to have occupied the site. Below this, less than a metre of medieval deposits survived, most of which seemed to relate to use of this area as gardens after the College acquired it. A gravel surface within these deposits seems likely to be 15th-century. The garden soils directly overlay one or more early medieval pits, probably relating to gravel extraction. Their fills included significant quantities of well preserved Saxo-Norman pottery, the earliest likely to be 10th-century, as well as bones and botanical remains, indicating early medieval domestic activity, although it is unclear what impact gravel extraction may have had (for instance, truncation of earlier deposits).

Cambridge, Homerton College
TL 460 562 (Report no. 198)

M. Alexander for CAU

Evaluation trenches revealed several linear features of uncertain date, including one ditch which may be prehistoric and others which are probably medieval.

Cambridge, 138 Huntingdon Road
TL 4377 5990 (Report no. 203)

R. Mortimer for CAU

A watching brief led to a rapid response excavation of a sequence of middle and later Iron Age ditches, which appeared to form part of a large enclosure with internal banks. No interior settlement features were recovered, but such activity was attested by the quantity of finds from the ditches, including pottery, fired clay and bone. The significance of the site lies in its size and proximity to Iron Age settlement on Castle Hill and contemporary activity at New Hall.

Cambridge, Sydney Street – Joshua Taylor TL 5451 2586

AFU

Assessment revealed archaeological remains of little or no significance.

Cambridge, Trinity College – Angel Court
TL 4489 5861 (Report no. 171/199)

R. Regan for CAU

Excavation revealed two (possibly three) truncated Saxo-Norman pits, reflecting domestic activity. From the 13th to the 16th century, the land to the east of the existing Bursary Range had been open plots and had evidently been cut through periodically to extract gravel.

Cambridge, University Library – Western Bookstack Range
TL 4405 5846 (Report no. 172)

D. Gibson for CAU

Evaluation trenching uncovered one ditch of unspecified date, which could be associated with the Iron Age or Romano-British field system in Burrell's Field.

Cambridge, Willow Walk and Fair Street
TL 455 586 (Report no. 200)

P. Whittaker for CAU

Evaluation trenching revealed only a few 18th or 19th-century features including a rubbish pit, garden wall foundation and ditch.

Castor, Clay Lane
TL 1226 9877 (Report no. A113)

Stephen Macaulay for AFU

Evaluation trenching in April 1997 produced evidence of some Roman, late Saxon, medieval and post-medieval archaeology. Roman remains were two ditches, several pits and post-holes. The evidence of late Saxon/Norman occupation was confined to a deep, steep sided pit (well?). The medieval and post-medieval archaeological remains included a large boundary ditch and disturbed ridge and furrow. Artefactual recovery was poor, suggesting that the area was outside Roman Castor.

Castor, Salters Tree TL 1367 9938

Adrian Challands

Proposals for a hangar and agricultural building prompted archaeological investigations. Geophysical surveys identified a single linear feature, which trial trenching suggested is of modern agricultural origin. No other features were identified.

Cottenham, Broad Lane
TL 4493 6829 (Report no. B2)

AFU

Assessment revealed archaeological remains of little or no significance.

Cottenham, Crowlands
TL 449 681 (Report forthcoming)

R. Mortimer for CAU

Excavation was carried out in advance of housing development on a ten hectare site immediately north-west of the village centre, alongside Crowlands Moat, a Scheduled Ancient Monument. Initial excavation in late summer 1996 was supplemented by a second phase in early 1997.

The appearance of the site-plan, crossed by a dense network of ditches, tells of re-organisation on a grand scale and dynamic interaction between manor and village. Against a background of later Mesolithic activity and a scatter of early Iron Age features, the site was essentially early Saxon to medieval. The earliest occupation, of the later 5th or early 6th century, consisted of square-plan post-hole buildings in small ditched enclosures, with a ditched boundary on the fenward side; the same line, with slight variations, was kept as a major village–fen-edge divide through to the 13th or 14th century. This basic plan, with an extensive and sinuous ditch system containing post buildings, pits, wells and sunken-floored buildings, continued into the middle Saxon period, extending south and east from the earliest nuclei to cover *c.* 1.5 ha. The settlement developed both internal divisions and extensions; unfortunately its 'heart' lies beneath two occupied houses and thus remains unexcavated.

In the later Saxon period (9th and 10th centuries) the focus of the village shifted south. The alignments of the majority of the ditched features and structures converge on a point just south-east of the site. This larger paddock system continued in use after the Conquest (12 or 13th century), and lay off the modern street alignment. Several ditches have deep V-shaped profiles of characteristically defensive type, and may reflect attempts to protect the town from attack in either the later Viking or Conquest period. By the 12th or 13th century, settlement had thinned out and was aligned closer to the modern High Street. By the 14th century, features are reduced to a few large-scale field boundaries linked with the manorial lands of Crowlands to the east. After the establishment of the new Manor house, the layout appears to have altered little.

A wealth of artefacts was recovered, including evidence of craft specialisation such as metalworking. With its uninterrupted sequence spanning the 6th to 13th centuries, the site will improve our understanding of the region's pottery assemblage, and the animal bone and plant remains will increase our knowledge of the early fen-edge economy.

Cottenham, Denmark Road
TL 452 673 (Report no. 140)

Richard Heawood for AFU

Three phases of archaeological evaluation were conducted along the south side of Denmark Road between July 1996 and February 1997 in advance of a proposed housing development. Areas of greatest interest were concentrated in St John's College Field (TL 4515 6730) and the northwest part of Graves' land (TL 4505 6727). In St John's College Field a variety of pits, ditches, and gullies were recorded, most of which were medieval. An enclosure ditch and the foundations of a timber building were located, as well as boundary ditches and evidence for quarrying and rubbish disposal. The remains may be associated with the medieval Jacque's Manor known from documentary sources, although the quantities of pottery and animal bone found were not substantial. More medieval pits were revealed near the street front on Graves' land (TL 4505 6727) as well as a small oven and a possible timber structure, not yet dated. A number of boundary ditches were located, many of which tied in with cartographic evidence; the finds from these features confirmed their date as mostly post-medieval. Further back from Denmark Road, the density of archaeological features declined.

Diddington, Little Paxton Field 2
TL203 656 (BUFAU Project no. 219.08)

L. Bevan for BUFAU

Test pitting in advance of quarrying recovered late Neolithic to early Bronze Age flints in the north of the field. Pot sherds of Iron Age and Roman date were also recovered.

Duxford, Heathfield Estate
TL 455 463 (Report no. 210/216)

A. Dickens and N. Dodwell for CAU

Mitigation excavation was carried out on land near Duxford Airfield. Previous evaluation had revealed a low background density of flint with a concentration of worked and burnt pieces at the north-west end of the field. A later Neolithic pit, with highly decorated sherds of pottery derived from six or seven vessels, was excavated, and an unrelated large ditch located running roughly east to west across the south-western corner of the site. The second phase of excavation revealed that the flint spread was concentrated around a natural feature, probably a solution hollow, which had served as a source of raw lithic material and a focus for primary processing from at least the early Neolithic. Similar activity had taken place in the later Neolithic, and the spread of pottery already found around the pit suggested either domestic or midden activity. The ditch produced ambiguous dating evidence, but was certainly pre-Conquest, probably Roman or Saxon. In the course of investigating its line, a large subterranean structure (probably an air-raid shelter) was discovered, dating to the end of the Second World War or shortly afterwards.

Earith, Colne Fen
TL 3757 8825 (Report forthcoming)

R. Regan for CAU

Evaluation trenching on the site of a Romano-British settlement known from aerial photographic records, in advance of an ARC gravel quarry, confirmed the density of crop-marks in the field. The NE–SW oriented system consists mainly of interlinked sub-rectangular enclosures approached from the SW by a major droveway or minor road, whose orientation the system respects. The site was extensively plough-damaged, with no horizontal stratigraphy surviving. Apart from several modern features, the overwhelming majority date to the Roman period. These mainly comprised linear ditches or slots with pits and post-holes; no upstanding walls were noted, although rough Barnack stone blocks suggest the possibility of robbed masonry foundations. Several ditches and pits were, however, filled with a sandy matrix much lighter than the very dark organic material in the definitely Roman features, and may represent an earlier phase of activity (?Bronze Age). The most striking feature was a possible canal inlet, perhaps leading to the Cranbrook Drain.

Easton, Grange Farm
TL 139 715 (Report no. 220)

M. Alexander for CAU

Evaluation trenching uncovered a 12th or 13th-century channel, possibly a boundary ditch or moat surrounding a medieval building of high status. At least two further phases of activity were found: the channel was cut by a deep pit with waterlogged fills containing early 15th-

century pottery, and this was backfilled before the foundations of an 18th or early 19th-century building were laid. Post-holes suggested other fairly substantial structures, although they formed no obvious pattern and were not necessarily contemporary; a tile fragment in one indicated a date in the 15th century or later, and two post-holes post-dated the channel. A fence line was also undateable, although the preservation of the wood suggests a relatively recent date, possibly contemporary with a 19th-century cesspit; two linear features were of unspecified date.

Ellington, Yew Tree Farm
TL 161 718 (Report no. N1)

AFU

Assessment revealed archaeological remains of little or no significance.

Elsworth, Brockleys Farm
TL3160 6355 (HAT Report no. 222)

J. Murray for HAT

A recording brief in advance of house construction did not identify any archaeological features in the foundation trenches. A single late Saxon or early medieval sherd was recovered from stockpiled spoil. The site is on the western edge of the historic core of the village and may always have been predominantly yards.

Ely, 54 Broad Street
TL 5434 8002 (Report no. A110)

Simon Bray and Jonathan Last for AFU

In March 1996 a recording brief revealed a series of post-medieval yard surfaces, sealing earlier waterlogged deposits. These contained medieval pottery, animal bone, mussel shells and a leather shoe sole, spanning a date range between the 12th (at the earliest) and 16th centuries AD. No structural remains were encountered but the artefacts represent domestic rubbish, suggesting that the site has contained dwellings since at least the fourteenth century. The work did not reach the base of archaeological deposits.

Ely, Ely Cathedral - South Choir Aisle
TL 542 803 (Report no. 180)

P. Whittaker for CAU

Excavation along the western end of the south choir provided evidence for the underpinning of Buttresses 5, 6 and 7. In the area around Bays 7 to 9, where no restoration work was carried out, intact graves were found, disturbed only by Victorian pipes. A brick feature in Bay 5, probably the cistern built by the cathedral to provide water for the public, demonstrates early use of brick.

Ely, Ely Cathedral - South Porch and Song School
TL 542 803 (Report no. 176)

M. Alexander for CAU

A watching brief on a contractor's trench revealed the tile and mortar footings for a garden wall, one of the cathedral buttresses and a brick-built cistern or sump.

Ely, Gas Lane TL 5419 7965

Ben Robinson for AFU

Occasional visits were paid during February 1997 to the redevelopment of the old gasworks, near or within the Potters Lane medieval pottery production site. The ground had been greatly disturbed by gasworks structures and landscaping. Sherds of Medieval *Ely ware* were recovered in small quantities but no good views of the stratigraphy or *in situ* features were obtained.

Ely, Little Thetford to Cawdle Pipeline
TL 5348 7617 - 5380 7793 (Report no. 173)

D. Edwards for CAU

Evaluation trenches along a *c.* 1,500 m length of the proposed route of a pumping main revealed limited archaeological remains. No significant features were recovered at the north end near Braham Dock, save a number of depressions and possible earthworks, probably relating to post-medieval ponds or similar features. Midway along the route, the southern side of a lode was revealed, identified from aerial photography, running between the Great Ouse and the Braham Farm earthworks complex,

again probably medieval or later. Two clusters of posts and stakes may be revetments or other features defining the bank. An unusually dense concentration of late Neolithic lithics was found further south, in an area where a number of stone tools have previously been found. The peat sequence indicates significant Bronze Age accumulations sealing the well preserved Neolithic deposits. At the south end of the corridor, on the gravels and clays surrounding Little Thetford, a single ditch, probably Romano-British, forms part of a field system identifiable from aerial photography. This may relate to scatters of Romano-British pottery recovered from the field immediately to the south.

Ely, Old Bishop's Palace
TL 542 803 (Report no. 215)

M. Alexander for CAU

Excavation alongside the present Palace uncovered the footings of a 13th–14th century building which may be the former Abbot's House.

Ely, Old Gaol TL542 805

Kate Fearn

Relocation of the Ely Museum to the Old Gaol necessitated building works which have been subject to a watching brief. Monitoring of test pits revealed a 'floor' of sandstone slabs and recorded the section to a depth of *c.* 2 m. The slabs lay at a depth of 0.3 m and could be part of a yard, path or floor. No date is available for this feature but sizeable fragments of two thirteenth-century jugs were recovered, along with animal bone and other sherds, from a clay deposit *c.* 1 m below it.

Ely, Prickwillow Road
TL 551 812 (Report nos 208 and 214)

A. Dickens and P. Whittaker for CAU

Evaluation and subsequent excavation was carried out at a site designated for housing development on the north-east side of Ely. A general flint scatter indicated later Neolithic and Bronze Age activity, whilst a single isolated feature contained earlier Neolithic flint, perhaps associated with some degraded sherds of contemporary pottery. A series of drainage ditches, late Iron Age or Romano-British, contained a distinctive pottery assemblage of the 1st or 2nd century AD. These were superseded by a droveway (also dated to the 1st or 2nd century ad) suggesting a change of land-use from arable to pasture. There was no indication of settlement of any period, but it seems likely that Romano-British settlement in particular is not far away.

English Rivers Project, Region 9, Great Ouse Drainage (English Rivers Palaeolithic Project, Report no. 2)

Trust for Wessex Archaeology/English Heritage

Survey of the river gravel systems of Cambridgeshire and other areas, placing known finds in the context of recent changes in dating and understanding of the Palaeolithic sequence in Britain.

Fen Ditton, Greenhouse Farm
TL 4920 5940 (Report forthcoming)

Mark Hinman for AFU

An open area excavation was conducted between November 1996 and January 1997 on this important middle Iron Age settlement site, following earlier evaluation by Birmingham University Field Archaeology Unit.

Excavation revealed a series of enclosure ditches, concentrated mainly towards Newmarket Road to the south, and approximately 200 pits. The pits extended in a band from the south-western to the north-eastern corner of the area. The vast majority were used for domestic rubbish; evidence for ritual deposition is limited. Postholes indicating possible structures occur across the area, although feature density suggests a focus of settlement to the south. Preliminary study of the ceramic assemblage suggests that the bulk of it dates from between 300 and 100 BC.

Comprehensive environmental sampling was employed to compare the contents of individual pits as well as primary and secondary ditch fills. An assessment of samples processed during the excavation indicates that preservation of faunal remains, seeds and other carbonised material is good.

Fenstanton, Grove House
TL 3132 6845 (HAT Report no.213)

J. Murray for HAT

An evaluation was carried out at the moated site of Grove House, prior to its redevelopment. A single trial trench was excavated and revealed

a substantial post-medieval deposit beneath which was a deep deposit of silty clay, which may represent an arm of the moat. Finds of tile and brick from this deposit suggest a medieval building, possibly within the moated area.

Folksworth, Elms Farm
TL 144 897 (Report no. A106)

Andrew Hatton and Stephanie Leith for AFU

In August and September 1996 and January 1997, archaeological investigation revealed a post-medieval ditch and modern pond at the site of Elms Farm. A brick built barn dating to the late 19th century, but on earlier stone foundations, was recorded prior to demolition. Although it has been suggested in the past that the site was originally moated (RCHM, 1926: 98), no evidence for a moat was revealed, despite four trenches being deliberately located to find it.

Fordham, Block Farm TL 605 707

Tim Malim for AFU

A resistivity survey on the site of a Roman villa did not give a clear picture of the building(s). Three small test pits were dug by hand where resistivity was highest, revealing 0.4 m of plough-soil above a subsoil containing artefacts.

Fordham, Hillside Meadows
TL 632 707 (Report forthcoming)

Ben Robinson and Scott Kenney for AFU

In June 1996, archaeological evaluation was carried out on an area adjacent to the cemetery, in advance of a proposed housing development. Abraded Romano-British sherds were encountered alongside unabraded sherds of vegetation-tempered hand-made fabric, confirming a Saxon date for these vessels, an assignment hitherto problematic in the region (cf. Evans 1993; Robinson and Guttmann 1996; Connor 1996). The association of these sherds with middle Saxon Ipswich ware and late Saxon Thetford ware on this site is intriguing, and suggests that activity on the site dates from the middle to late Saxon transition. A single structure was exposed at the east end of the site, although, at only just over 2 m wide, this would appear to be too small for a dwelling. The greatest density of pottery and animal bone occurred in features at the western (lower) end of the site, suggesting that this end is closer to the focus of domestic activity. The presence of middle Saxon material in the medieval core of the village, and continuity to the present day of boundary alignments indicates that this site would reward further investigation.

Gamlingay, Station Road
TL243 519 (HAT Report no.195)

J. Murray for HAT

A desk top study and 23 trial trenches were used to investigate a 3.92 hectare site south of Station Road prior to development. Aerial photographic study revealed a series of enclosures, and trial trenching exposed part of an inhumation cemetery dating from the middle to late Saxon period. The graves are oriented east to west. Other features, mostly ditches, dated from the prehistoric and Saxon periods. Field walking prior to trenching recovered traces of a Mesolithic hunting camp.

Girton, Church of St Andrew
TL 4237 6235 (HAT Report no. 214)

J. Murray for HAT

A recording brief during construction of a parish room on the north side of the church did not identify any trace of a north porch. A door was unblocked and recorded, and appears to be thirteenth-century. No archaeological deposits were found below the disturbance level from the building and demolition of a Victorian boiler house.

Girton, Girton Road
TL 424 615 (Report no. 196)

D. Edwards for CAU

Assessment excavations were carried out at Girton Road in order to clarify the nature and extent of previously recorded features and determine whether other remains existed in a proposed development area. The results indicated that a number of the more prominent crop-mark features are natural . Moreover, the absence of significant archaeological features, other than those indicated by crop-marks, and the very low density of associated finds and other material suggests that Iron Age and Roman, or indeed other, activity was small-scale.

The focus of late Iron Age and Roman occupation probably lay to the south, although early and middle Iron Age activity, of which there were slight indications, may have been centred elsewhere.

Glinton, Werrington to Glinton Bypass
TF 540 440 (Report forthcoming)

Stephen Kemp for AFU

The Roman site at Glinton, near Peterborough, was discovered in 1993, during investigations linked to the A15 road improvements (*PCAS* LXXXIV: 172).

Open area excavations in June and July 1996 recovered the remains of a Roman farmstead enclosure dating to the 3rd and 4th centuries AD, although Roman activities on the site can be traced back to the 1st century AD. Rubbish dumps, or middens, and ponds of Roman date were also recovered and a Roman limestone-lined well recorded. Post-excavation analysis of charred plant material has demonstrated that cereals were being grown locally and processed on site.

Godmanchester, Earning Street
TL 8450 4450 (Report no. A103)

AFU

Assessment revealed archaeological remains of little or no significance.

Great Abington, Abington Park, The Welding Institute
TL 522 488 (Report no. A105)

AFU

An archaeological study, including archaeological and historical background research, field visits and geophysical survey, was carried out as part of the planning process for development proposals.

Great Ouse, Cam and Ten Mile Rivers
(various locations) (Report no. 193)

L. Lloyd-Smith for CAU

A watching brief on the machining of several cattle drinking points revealed nothing of archaeological significance.

Great Wilbraham, High Street
TL 547 572 (Report no. 133)

Tim Denham and Jonathan Last for AFU

In June and September 1996 two phases of archaeological work were conducted within an L-shaped plot of land fronting onto the High Street, on the south side of the village near Frog End. Evidence of various periods was recovered, including Roman or post-Roman field boundaries and ditch sections or elongated pits, of which some cut through an earlier buried soil and some were sealed by a later subsoil. An area of medieval activity was located, consisting of a central pit with four surrounding post-holes, and a variety of post-medieval features, including land drains, soakaways, a ditch, pits and post-holes.

Heydon, Heydon Grange Golf Course – Bran Ditch TL 417425 (Report no. 181)

L. White for CAU

Field-work was carried out prior to landscaping changes and construction of a driving range. Previous investigations had indicated the likelihood of Neolithic activity, and Bran Ditch, an Anglo-Saxon defensive ditch, was known to lie along the eastern edge. Test pits and stations across the site yielded no archaeological features, but bucket sampling indicated three main clusters of lithic activity dating to the middle to late Bronze Age. Trench excavations across Bran Ditch showed the remnant bank and associated features, as well as the full ditch profile. The section revealed evidence of late 19th-century and earlier backfilling and a possible turf layer, as well as the original weathered and eroded chalky fills at the base of the square cut. No finds were recovered from the ditch, apart from post-medieval material in the upper horizons.

Hinxton, Hinxton Hall
TL 496 448 (Report forthcoming)

Stephanie Leith for AFU

Post-excavation work following the major excavations of 1993–4 is in progress (*PCAS* LXXXIV: 172). To aid the construction of a chronology for the site, the following radiocarbon age determinations have been obtained (all on charred materal):

Beta-100147	1030±50 BP
Beta-100148	870±60 BP
Beta-100149	1270±70 BP
Beta-100150	1410±60 BP

Following calibration, these determinations have been used to date structures to particular phases of occupation and activity:

Structure 6A	AD 970–1165	(95%)
Well planks	AD 1035–1280	(95%)
Grubenhaus	AD 650–960	(95%)
Grubenhaus	AD 590–775	(95%)

Hinxton, Riverside
TL 500 443 (Report no. 139)

AFU

An archaeological study, including archaeological and historical background research, field visits and geophysical survey, was carried out as part of the planning process for development proposals.

Huntingdon, Stukeley Road – Stanton Butts TL 23 72 (Report no. 192)

R. Mortimer for CAU

Evaluation trenching revealed a dense concentration of pits and ditches, and a possible timber building, all dating to the 12th to 13th centuries.

Ickleton, Abbey Farm
TL 490 437 (Report no. 217)

R. Regan for CAU

Evaluation trenches on the site of a former Benedictine convent found evidence of a building associated with industrial activity, possibly of medieval date and marking the limits of the convent precinct. The remaining archaeology consisted of a patchwork of post-medieval chalk floors.

Kirtling Tower
TL 686 575 (Report no. 179)

A. Dickens for CAU

An investigation was carried out on a length of wall within the south-west corner of the mound. No direct dating evidence was recovered but stratigraphic and comparative evidence was sufficient to attribute it to the walled gardens around the Tudor hall which stood on the mound until 1801.

Landbeach, Car Dyke Farm
TL 4750 6616 (Report no. 141)

Stephen Macaulay for AFU

Following aerial photographic survey, investigations were conducted in September 1996 at Akeman Street Roman road and an associated Romano-British farmstead, enclosure ditches, and droveways. The Roman road was proven to have undergone extensive erosion due to modern farming, with little of the *agger* surviving, although the roadside ditches were still evident. The total width between ditches was 14 m and the *agger* survives as a 10 m wide soil and gravel mound 0.35 m high. The ditches of an earlier trackway had been backfilled before the construction of Akeman Street diagonally across it. Recovered pottery dates the trackway and settlement to the 2nd to 4th centuries AD, giving a *terminus post quem* for the construction of Akeman Street. Evidence for a timber building, in the form of a sub-rectangular ring-ditch, was located in the north west of the area.

Little Downham, Bishop's Palace
TL 51935 84200 (Report no. A99)

Stephen Membery and Jonathan Last for AFU

An archaeological evaluation and recording brief was conducted in August 1996, in advance of the construction of an orangery. The site lies within the grounds of the former palace of the Bishops of Ely, which dates back to the 10th century and was in use until the Civil War. Remains of buildings from the 15th-century palace are incorporated into the present farm buildings. Stone building foundations, probably medieval, and a later brick-built extension or renovation were revealed. A metalled surface was identified which is related to a track on a 19th-century Ordnance Survey map. The remains were preserved in situ after recording, using a protective covering.

Littleport, Camel Road
TL 5660 8715 (Report no. 114)

Judith Roberts for AFU

Evaluation on this site revealed ditches and gullies containing a considerable quantity of Roman pottery, including samian, Horningsea Ware, Nar Valley Ware and Nene Valley Colour-coated Ware, and some briquetage fragments. The pottery gives a late 3rd to 4th-century date for the site. Features were cut into the Old Croft roddon as it skirts the Littleport highland. The site may be related to Romano-British salterns along the Old Croft to the north. Extensive metal detecting failed to find any Romano-British coins.

Mepal, Block Fen B
TL 433 834 (Tempvs Reparatvm Report ref. TR 31010DFA)

M. Coxah and I. Lisboa for Tempvs Reparatvm

Work has been undertaken in advance of gravel extraction, with several phases of field evaluation. Aerial photographic survey revealed a barrow complex (with northern and southern barrow groups) and some possible enclosures. The area was subjected to geophysical survey, which was not very successful, and field walking. The southern barrow group consisted of three ring-ditches, of which two had residual mounds. A further barrow was suggested by a partial ring ditch identified in aerial photographs. Two other barrows in this group, one outside the development area, are Scheduled Ancient Monuments; neither was investigated.

Two barrows in the northern group were investigated and were better preserved than those in the southern group. The possible enclosures are thought to be a field system dating to the late Neolithic or early Bronze Age, when the area of Block Fen B was the edge of a fen island. There is an early Bronze Age barrow superimposed upon the field system, suggesting a change from agricultural to ritual functions as fenland water levels rose. Lithic scatters are evidence of earlier occupation, but later occupation is absent.

Milton, Butt Lane
TL 465 632 (Report no. 135)

Aileen Connor for AFU

Further excavations at Milton Landfill Site were carried out between 15 July and 23 August 1996 as part of the AFU Training Excavation. Excavation was concentrated in two areas, with archaeological features present in both areas, although a higher density of material was recovered to the south. The site was characterised by earthfast features representing small timber structures, a hearth, several pits and working hollows, and at least one cremation. The majority of these features date to the later Iron Age. Small quantities of pottery were recovered from a cremation and hearth possibly as early as the early Bronze Age, although the pottery in the hearth is likely to be residual. A small flint assemblage suggests a late Neolithic or early Bronze Age component, but appeared peripheral and may indicate denser activity beyond the excavation.

Needingworth, Barleycroft Farm, ARC Quarry TL 3510-3620/7140-7220 (Report forthcoming)

M. Knight and C. Evans for CAU

Following excavation of a major later Bronze Age field system and settlement at the northern end of the quarry extension (*The Barleycroft Paddocks*, CAU Report 218), in 1996 excavation shifted to the southern fields. Because of the high density of Neolithic and early Bronze Age artefacts recovered during evaluation, the sample grid was intensified to a 50 m (and locally 25 m) interval, revealing early 'non-feature' settlement activity (the type of evidence that usually escapes open-area stripping).

Of a pair of ring-ditches on a prominent floodplain knoll, Butcher's Rise, the westernmost proved to be simple, with only an unaccompanied complete Food Vessel deposited in its interior. In contrast, the eastern was 'double', with two concentric circuits; an inhumation accompanied a C or horseshoe-shaped predecessor, associated with fragments of Collared Urn. Thirty-five cremations, approximately a third urned, were found in the southern zone; the centre was marked by an in situ pit-pyre cremation.

On the south-western margin of the knoll, a later Bronze Age ditch system was found to delineate the flank of the knoll and be deflected around a major boundary, which aerial photographs reveal extends south-westwards to the White Bridge Farm ring-ditch complex beside Needingworth.

Excavations continue on a later Bronze Age settlement enclosed by a fence or stockade in the eastern fields. A riverside field system, also probably late Bronze Age, appears to be the one found across the south-western margin of the

Over quarry site (Site 2; see entry below). This would indicate that the Ouse did not flow along its present line in later prehistory.

Newmarket, July Racecourse
TL 613 618 (Report no. A91)

AFU

Assessment revealed archaeological remains of little or no significance.

Over, ARC Quarry
TL 3710-3820/7180-7340 (Report no. 213)

C. Evans and M. Knight for CAU

The first five-year 'pull' of the quarry (115 ha) was evaluated by intensive field-work in autumn 1996. Lying north-west of the village, it extends for 1.6 km along the eastern side of the River Great Ouse. Its western margins border the riverside fields in which the Over barrow cemetery lies; one outlier of the southern group falls within the investigation area.

This investigation employed the same sampling methodology as on the opposite bank of the Ouse at Barleycroft Farm (see entry above). The palaeo-topography, buried by up to 3.50 m of alluvium and peat, consists of linear east–west gravel terraces divided by Quaternary channels and pools filled with heavy clay. Test pit sampling indicates that prehistoric activity was generally confined to these terraces; detailed recording of the soil sequences coupled with monolith sampling will permit palaeo-environmental reconstruction in depth. (GIS modelling has already been attempted.)

Apart from the outlying round barrow (Site 1), five major complexes were discovered:

Site 2: A later Bronze Age field system with a settlement on its northern terrace-edge margin. Geophysical survey demonstrates that the field system extends west into the riverside fields – the area of the main barrow cemetery. Its orientation and narrow double ditches, probably flanking hedges, suggest that it is the system found in the extreme south-eastern fields at Barleycroft Farm.

Site 3: An early Neolithic scatter and later Bronze Age feature complex on the edge of the Site 2 field system, east of the Site 1 barrow. A round structure was identified, probably associated with the latter phase of usage. Nevertheless, quantities of early Neolithic flintwork were present, and some of the features may be contemporary.

Site 4: Dispersed Neolithic activity was found across the Burling Peninsula Terrace in the south-eastern corner, including a knoll surrounded by a channel, effectively an island, and adjacent features including 'select assemblage' Grooved Ware pits.

Site 5: A late Bronze Age settlement and enclosure complex, possibly with an early Iron Age component. Internal features were dense; round and possibly rectilinear buildings were identified. Although it has not yielded great quantities of artefacts, the buried soil within the enclosed area was blackened by occupation.

Site 6: A ring-ditch east of Site 5 on the Church Rise terrace; either a later Neolithic or earlier Bronze Age ritual complex, or a later Bronze Age stock enclosure. Probably later Neolithic features were identified on the northern terrace margin.

Peterborough, Dogsthorpe
TF 217 025 (BUFAU Project no.475)

A. Jones for BUFAU

Desktop assessment and trial trenching of an area of proposed clay extraction did not reveal any anthropogenic features, despite the proximity of Car Dyke. This is of interest for the reconstruction of the Roman landscape around Car Dyke.

Peterborough, Eyebury Quarry
TF 237021 (Report forthcoming)

D. Gibson and L. White for CAU

Excavations were carried out in advance of quarry expansion. An area of 9.4 ha was investigated by trial trenching and open-area excavation. Evidence of intensive land use from the Bronze Age to the Roman period was uncovered, including field systems, post-hole structures, pits, wells and burials. Bronze Age activity is represented by an east–west aligned field system and droveway, several large well features and a pit containing a cremation and a child burial; post-hole features may attest to contemporary structures. The axis of the field system was shifted towards north west–south east in the Iron Age, and there appears to have been more settlement activity, including several four-post structures, storage pits and wells or watering holes. Roman features were restricted to the south-east corner, where a farmstead or villa is located outside the quarry. The field system seems to follow the Iron Age alignment at a 45° angle, running north west–south east. An inhumation was found, severely plough

damaged. Excavations in the 1950s found several burials including a large stone coffin. Both artefactual and eco-factual data were recovered, mainly pottery, flint and bone, but also burnt clay, brick and tile, and worked wood.

Peterborough, Fengate – Tower Works
TL 206 987 (Report no. 206)

G. Lucas for CAU

Evaluation trenching was carried out on a former industrial site, adjacent to earlier gravel quarrying and the findspots of Wyman Abbott's 'rescue' work earlier this century, which first highlighted the importance of Fengate's prehistoric remains. Field-work identified two main areas of activity, with occupation dating to the later Bronze Age or early Iron Age, and associated field systems. A Romano-British field system, possibly associated with a settlement c. 200 m north-east, beyond the site, was also found. The prehistoric material is significant in terms of the quantity of settlement refuse, including a large assemblage of pottery and bone; settlement features included part of a linear structure defined by stone-lined post-holes.

Ramsey, Ramsey Abbey School
TL 2925 8515 (Report no. 129)

Stephen Macaulay for AFU

An archaeological evaluation within a proposed development area in the grounds of Ramsey Abbey School proved conclusively the survival of archaeological remains dating to the late Saxon and medieval periods.

A late Saxon ditch and pit (infilled with building debris) were sealed beneath a medieval layer to the north. Partially robbed foundations of two walls were revealed, and a robbing trench for a third. All of these were sealed by a demolition layer dating to the 16th century, perhaps to the Dissolution. These walls are thus likely to be part of the medieval abbey complex. A fragment of floor tile likely to have been produced on site was also recovered.

St Ives, 10 Priory Road
TL 3146 7103 (Report forthcoming)

Ben Robinson for AFU

A recording brief, undertaken in October 1996, during the construction of a foundation behind the brick retaining wall of the old river, revealed post-medieval dump deposits to a depth of 1.6 m below existing ground level. This is an area where waterfront remains pertaining to the priory might be anticipated.

St Neots, Cedar House Car Park
TL 1870 6035 (Report no. B6)

AFU

Assessment revealed archaeological remains of little or no significance.

St Neots, 43–45 Church Street
TL184 600 (BUFAU Project no.391.01)

A. Jones for BUFAU

A watching brief recorded demolition deposits dating from the late 19th to early 20th centuries. No Saxon or medieval features were recorded.

St Neots, Tan Yard
TL 182 604 (Report no. A111)

Judith Roberts for AFU

In April 1997 archaeological evaluation noted a ditch running north-east to south-west and a further shallow feature, either a pit or the butt end of a ditch, containing locally made grey wares, some fine wares and a sherd of colour coated pottery, all dated to around the 3rd century ad. Quantities of animal bone and a fragment of Roman roof tile were also recovered.

Sawston, Spicers' Estate
TL 4717 4948 (Report forthcoming)

Simon Bray for AFU

In March 1997 a watching brief was undertaken during trench digging for a high voltage cable across the centre of the hillfort. Good archaeological survival was particularly apparent in the northern half of the monument.

The defences were found to consist of an outer ditch at least 4 m wide, a substantial bank 4 m wide sealing a buried soil, and an internal ditch at least 5 m wide. Unfortunately, the trench was dug to a uniform depth of 1 m, so that, although the bank was viewed in entirety, only the tops of the ditches were exposed. The bank was truncated by a large feature contain-

ing at least two very mixed fills, similar to a feature recorded in 1993 (Bray 1993), also cut through the bank, and interpreted as a palisade trench. The northern half of the hillfort covered by a thick, homogeneous dark brown silty clay, as in 1993, which has been interpreted as ploughed-out bank material.

Shingay-cum-Wendy, Sewerage Pipeline Project
TL 325 474 to 332 483 (Report no. A102)

AFU

Assessment revealed archaeological remains of little or no significance.

Soham, 9–13 Pratt Street
TL 5927 7346 (Report no. A107)

Andrew Hatton and Jonathan Last for AFU

Evaluation in advance of housing development revealed linear and curvilinear ditches, pits and post-holes of Saxo-Norman date (10th–12th centuries AD). Only limited recording was advised.

Soham, Station Road
TL 5924 7340 (Report forthcoming)

Richard Heawood for AFU

This investigation, prior to residential development, produced late Saxon or Saxo-Norman remains from the 10th to 12th centuries. At least five foundation trenches were located, implying timber structures, which have been dated by associated pottery. Although domestic occupation cannot be conclusively demonstrated, relatively dense activity of this date was also recorded during investigations at Soham County Infants' School. A ditch parallel to Station Road showed that the line of this street has probably been an important feature since the late Saxon period.

Soham, 11 White Hart Lane
TL 5943 7325

Ben Robinson for AFU

At the request of the County Archaeologist, a visit was made to White Hart Lane to investigate the discovery of several human (and animal) bones in back garden flower-beds. The bones included skull, ulna and femur fragments and probably came from more than one individual. The material was recovered in an area noted for unaccompanied burials, which may confirm the proximity of the 7th to late 9th-century abbey of St Felix.

Somersham, Edwards Farm
TL 3575 8065 (Cambridge Mesolithic Project, Site 1)

T. Reynolds and S. Kaner for CMP

A large Mesolithic flint scatter identified by the Fenland Survey was field walked on a grid. Tools were manufactured and used on the site, on a sandy south-west facing slope close to a water channel. *C.* 800 pieces were recovered, including 11 microliths and 20 cores. There is potential for waterlogged preservation, and the project will investigate the site further to determine whether such remains exist.

Stapleford, Gog Magog Golf Course
TL 500 538 (Report no. A108)

AFU

Field walking during 1995 produced a discrete cluster of Mesolithic flint probably representing a production site, on which a report was produced in 1996.

Stapleford, Wandlebury Hillfort
TL 4940 5343

P. Pattison and A. Oswald for RCHME

A survey was undertaken to complement work by the University of Cambridge Department of Archaeology training excavation. The survey includes a history and archaeological history, with sections on the house, gardens and stables, and a new survey of the earthworks.

The Stukeleys, Hinchingbrook Park Road
TL 5220 2724 (Report forthcoming)

Mark Hinman for AFU

Following an evaluation in January 1997, AFU was commissioned to conduct an open area excavation of a multi-phase Iron Age site.

In the main area the earliest evidence of activity was a pit alignment running east to west,

which appears to define an area, presumably the original settlement, along the crest of the hill. The date of this alignment remains unknown, but it may be associated with an Early Iron Age component. The apparently ritual placing of the upper fore limb of a boar on the base of the largest pit appears to confirm the importance of this boundary.

The pit alignment was truncated along its inner (southern) limit by a *c.* 20 m long ditch (dateable to the MIA) with a defensive 'ankle breaking' profile. A placed deposit of a ritually defaced quern base was revealed against the northern edge of this ditch at its western terminal.

The final phase of boundary definition maintains the same alignment and takes the form of a shallow unbroken ditch truncating both earlier phases. Two currency bars were found against the northern edge of this ditch, parallel to each other with the socketed ends pointing east.

Despite the lack of direct evidence for dwellings and ancillary structures, initial impressions suggest at least three major phases of MIA activity, associated with a sizeable settlement. A large quantity of MIA pottery was found in a very good state of preservation: sherds were often large and unabraded and many formed virtually complete vessels. Preservation of animal bone was also very good, but the heavy clay was not an easy medium from which to float ecofacts. One of the enclosures to the north of the main site boundary has yielded evidence of iron working.

In a small second area, large quantities of LIA pottery and other domestic debris clearly indicate habitation, suggesting a new site or a shift in settlement focus.

Sutton, Blaby's Drove
TL 404 815 (Report no. 131)

Jonathan Last for AFU

In October and November 1996 an evaluation was carried out over a large area designated for an irrigation lake, forming a significant part of a low gravel 'island' on which several barrows and an important Neolithic flint scatter were located (Fenland Survey Project Sites SUT1–7).

The western margins of the area retained an intact fen sequence, with waterlogged deposits at the base, but across the rest of the area the peat and fen clay horizons have been lost to wastage and ploughing. Field walking and trial trenching revealed a low density of worked flint of earlier Neolithic type. A concentration around the trench closest to the known lithic site (SUT 1) may mark the periphery of that occupation, but in general the finds are seen as an 'off-site' scatter relating to prehistoric exploitation of the landscape. An air photographic assessment identified some possible barrows, revealed by trial trenching to represent the crests of humps in the pre-Flandrian gravel surface.

Swaffham Bulbeck, The Abbey
TL 558 635 (Report no. 137)

Judith Roberts for AFU

Archaeological excavations in January 1997 adjacent to the Abbey revealed a paved surface, a substantial wall foundation and a possible buttress. The wall is not on exact alignment with the existing building but parallel to it. The floor levels are broadly similar, suggesting they may be contemporary. Stone roof tiles and medieval painted window glass were recovered from immediately above the floor. Residual Roman pottery and a coin were found in the deposit abutting the southern face of the wall and underlying the floor.

Swaffham Bulbeck, Old Mill Drain
TL5310 6690 (Cambridge Mesolithic Project, Site 2)

T. Reynolds and S. Kaner for CMP

Rescue work was carried out in advance of the construction of a dyke through flint scatters identified as potentially of national importance by the Fenland Project, and has further characterised the site as Bronze Age with residual Mesolithic material. The area was field walked on a grid with the help of the Haverhill and District Field Group, and then trial trenched. Twentieth-century claying and ploughing has destroyed most of the 'upland' part of the site, but as the sand terrace falls off into the Cam Valley, a palaeosol is preserved with Bronze Age pottery and flints, and some Mesolithic flint. The boundary between the 'upland' and the valley edge was marked by a Bronze Age ditch. Underground features and waterlogged remains may survive in the Cam Valley part of the site, and a watching brief will monitor this area.

Swavesey, Blackhorse Lane
TL 358 687 (Report no. 136)

Spencer Cooper and Paul Spoerry for AFU

Evaluation trenching in early 1997 produced evidence of late Saxon and Saxo-Norman occupation, including post-holes, beam-slots, and pits which probably represent property boundaries and a timber structure. All these features were located on the terrace gravels. In contrast, the remaining six trenches, which produced alluvial deposits, lie within the extent of the 1947 flood waters, suggesting that the limit of this inundation may mark the historic edge of permanently dry land.

Swavesey, School Lane and Blackhorse Lane
TL 358 687 (Report no. 130)

Paul Spoerry for AFU

During the second part of this three phase evaluation, conducted in July 1996, dense late Saxon to medieval occupation was identified, including pitting and evidence for timber structures of more than one phase. This overlay part of an area of deliberate dumping, which seems to have provided an extension to the natural gravel terrace. The gravel terrace was found to occupy only the north-eastern corner of the field, rather than spreading across the whole of it, as is indicated in the Geological Survey map. The area of occupation represented a sharp contrast with the lower lying, and probably periodically flooded, basin across the rest of the field. Ditches seen in aerial photographs formed a presumably long-lived drainage system, with as many as five different phases of ditch cuts and, in one phase, a bank, probably constructed to keep episodic flooding at bay.

Teversham, Airport Way
TL 4980 5909 (Report forthcoming)

Richard Heawood for AFU

A two phase investigation at this site, in December 1996 and February 1997, recovered evidence for at least two timber structures, a chalk clunch rubble platform, and a number of ditches. Many of the features contained late Roman pottery, and in one post-hole a small bronze coin was found, dated to the reign of the Emperor Constans (AD 337–348). It is probable that most of the features date to the mid to late 4th century.

Together with the results of a geophysical survey conducted in early 1996, this evidence suggests that a Romano-British settlement is centred on the crest of the low hill to the east.

Wansford, Haycock
TL 5077 2990 (Report no B4)

AFU

Assessment revealed archaeological remains of little or no significance.

Whittlesey, Eldernell Lane
TL 3205 9852 (Report no. A112)

AFU

An archaeological study was undertaken, including archaeological and historical background research, field visits and aerial photographic survey.

Whittlesey, King's Dyke
TL 245 980 (Report no. 204)

M. Alexander for CAU

While no archaeological features were found except one ditch of unspecified date, significant amounts of abraded Roman pottery were recovered.

Whittlesey, King's Dyke – Star Pit
TL 247 968 (Report no. 207)

D. Gibson and G. Lucas for CAU

Evaluation trenching revealed no features of archaeological significance, although diffuse prehistoric activity along the fen-edge was indicated by flints.

Wicken, Dimmock's Cote
TL 5463 7239 (Report forthcoming)

Stephen Kemp for AFU

1996 saw a continuation of archaeological excavations recording the prehistoric landscape at Dimmock's Cote (see *PCAS* LXXXIV: 177). Exca-

vations have been undertaken since 1992, phased to cover the expansion of the quarry eastwards.

Two pit complexes were identified. One was a continuation of a complex partially excavated in 1994, and the other occupied a 12 by 20 m area to the south of the enclosure. A cow skull lay centrally in the large pit complex, and has the appearance of a placed deposit. Fragments of late Bronze Age pottery were recovered during initial cleaning of the large complex.

Other features include a series of east–west and north east–south west ditches, furrows and pits of medieval and post-medieval date.

An interrupted ring ditch with a diameter of 24 m and a single entranceway on its eastern side was found north of an enclosure whose northern side has been much altered by a series of sub-rectangular pits. Excavation was undertaken in the centre of the enclosure, but no archaeological features were recovered.

Willingham, High Street
TL 403 702 (Report forthcoming)

Aileen Connor for AFU

The archaeological potential of this site was identified by a desktop study and evaluation trenching in 1995 by CAU. In December 1996 and January 1997 excavation in advance of and during housing development revealed extensive early to middle Anglo-Saxon settlement remains.

Two areas contained evidence for post-built double-square 'hall' type buildings, the largest *c.* 10 m by *c.* 5 m. Eight were complete and discernible in plan, a further two were seen in partial plan, and other post-holes may represent other buildings or fence lines. No definite sunken featured buildings were encountered, and no positive evidence for buildings constructed on earth-fast sill beams. This perhaps lends weight to an early Anglo-Saxon, or at least early to middle date for the main activity. Phases of ditches and gullies could also be broadly assigned to this period and many seemed to define the house plots. Of particular interest was a Saxon well with its wattle lining and other timber surviving intact.

Provisional study suggests an early Saxon date for some of the pottery, although there are certainly pieces dating to the middle (Ipswich ware) and late (Thetford ware and St Neots ware) Saxon periods. The latter is asociated with ditches to the north of the area, which appear to define the rear boundaries of properties fronting Church Street. Only isolated features produced conclusively middle Saxon pottery.

A small number of pits and a ditch are thought to be medieval , although dwellings had shifted elsewhere by this time.

A number of post-medieval boundary ditches and adjacent tree planting pits were also noted. These are thought to represent the boundary to 'Berrycroft', an undeveloped close in the centre of Willingham which existed prior to 1575.

Wing to Peterborough Trunk Main
(Report no. A104)

AFU

An archaeological study, including archaeological and historical background research, field visits and geophysical survey, was carried out. Construction was observed along the pipeline.

Wisbech, Market Mews
TF 4630 0969 (Report forthcoming)

Mark Hinman for AFU

In June and July 1996 evaluation and excavation revealed deeply stratified medieval and post-medieval deposits. The sequence contains conclusive evidence for metalworking in addition to at least eight distinct building phases, the earliest provisionally dated to the 13th century. Associated floors were sealed by extensive accumulations of fine sand and silts deposited during episodic flooding. Excavation more than 3 m below the current ground surface failed to locate the base of the medieval sequence. Varied and rich environmental remains and good ceramic assemblages were recovered. The floors have undergone micromorphological analysis.

The excavation represents the most comprehensive sample of medieval archaeology ever recorded in Wisbech.

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Illustrations are indicated by numbers in *italics* or by *illus* where figures are scattered throughout the text. The following abbreviations have been used in this index; C – century, n – note.

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Books: Edward Gibbon, *The History of the Decline and Fall of the Roman Empire. Vol.3*, ed. by William Smith (London 1862) pp.23–4.
Theses: Mark Campbell, 'The changing residential patterns in Toronto, 1880–1910' (unpubl. M.A. thesis, University of Toronto 1971).
Articles: K.R. Dark, 'Archaeological survey at Sidney Sussex College, Cambridge, 1984', *Proceedings of the Cambridge Antiquarian Society* 74 (1985) pp.81–4.
Chapters in books: John Patten, 'Changing occupational structures in the East Anglian countryside, 1500–1700', in H.S.A. Fox & R.A. Butlin (ed.), *Change in the Countryside: Essays on Rural England, 1500–1900* (London 1979) pp.103–21.

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