TRANSACTIONS

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The Essex Society for Archaeology & History

FORMERLY THE ESSEX ARCHAEOLOGICAL SOCIETY

FOUNDED 1852

ESSEX SOCIETY FOR ARCHAEOLOGY AND HISTORY

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EDITED BY

CHRISTOPHER THORNTON

ASSISTED BY

NEIL WIFFEN AND HELEN WALKER

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THE ESSEX SOCIETY FOR ARCHAEOLOGY AND HISTORY

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The Society was founded in 1852 as the Essex Archaeological Society. Its objects are:

1. To promote and encourage the study of the archaeology and history of the historic county of Essex.
2. In furtherance of the above, to publish the results of such studies in its journal and to disseminate information on matters relating to archaeology and history in Essex through appropriate media.
3. To organise conferences, lectures and visits for the benefit of members of the Society and interested members of the public; to educate the wider community in the archaeological heritage of Essex; to co-operate with other bodies on matters of common interest and concern.
4. To provide library facilities for Society members and approved members of the public.

Publications

The articles in its journal range over the whole field of local history. Back numbers are available; a list and prices can be obtained on application to the Librarian. Members receive a regular Newsletter covering all aspects of the Society's activities, news of current excavations and fieldwork, and items of topical interest.

The Library

The Library is housed in the Albert Sloman Library at Essex University, Colchester, and is extensive. It aims to include all books on Essex history, and has many runs of publications by kindred Societies. Members may use the Library on any week day during Library opening hours (and on Saturdays in term time) on presentation of a reader's ticket, available on application to the University Librarian.

Membership

Application should be made to the Hon. Membership Secretary at Hareton House, Church Street, Blackmore, Essex CM4 0RN. The current annual rates of subscription are: full member £20; family member £22; institutional member £25; associate or student (who do not receive Essex Archaeology and History) £9.

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Cover illustration: The Roman Mersea Island Barrow, with the glass burial vessel that held the cremated bone (superimposed). Photographs courtesy of Mersea Museum.

Major William Alfred Hewitt T.D., A.C.I.B., 1923–2013

The Society is very sad to report the death of a loyal member, Bill Hewitt. He was born in Romford, the third generation of Hewitts to be born in the town, and he was always proud of his Essex origins. After attending a local school, he moved to Brentwood School at the age of eleven, where he distinguished himself in the Combined Cadet Force, obtaining the highest marks in his year for the Officer Training Certificate. He left school in December 1939 and started work as a junior clerk in the Midland Bank at Brentwood. In his spare time he joined the Home Guard. He was called up in 1942 and in due course was commissioned as second lieutenant in the Royal Artillery, serving in anti-aircraft batteries in Scotland, Durham and Norfolk. In July 1944, by now promoted to lieutenant, he embarked on a troop ship for the Mediterranean and enjoyed the danger and excitement of active service in the 8th Army's invasion of Italy. One of his proudest moments was to be amongst the first troops to liberate Padua after the German surrender in May 1945. After the end of the war, he was posted to Greece, and promoted to the rank of captain. On demobilisation in 1947 he returned to his career with the Midland Bank, ultimately becoming manager of the Gidea Park branch. However he continued to serve in the Territorial Army as battery commander of the TA base in Brentwood, and in due course was awarded the Territorial Decoration. His superior officers' reports come as no surprise to those who knew him later in life: 'loyal and efficient, very thorough in all he does', 'has initiative and good organising ability – thoroughly reliable'. He retired in 1959 with the rank of major.

In September 1949 he married Jean Mudd – the two families had known each other since childhood – in the church of St Edward, Romford where Bill's parents and grandparents had also been married. They had two daughters, and grandchildren in due course, and supported each other loyally through the responsibilities and challenges of family life, and the disabilities brought by old age.

After retirement from the Midland Bank, he put his banking experience to good use in the service of various Essex charities. Having joined the Society in 1984, he was elected to Council in 1990, and three years later was recruited by Ray Powell to set up and run the Publications Development Fund. Those who had proposed the establishment of the Fund had only modest hopes for it (a previous similar scheme having failed) but Bill organised the new fund like a military campaign, and ran it – with outstanding enthusiasm and efficiency – for 14 years. The sums that he raised exceeded all expectations; nearly twice the anticipated final total of £5,000 was subscribed in the first year alone, and the Fund (renamed the Publication and Research Fund in 2003) has continued to grow steadily ever since. It now stands at just over £50,000. He was always modest about his contribution to the success of the Fund but it flourished almost entirely due to his efforts and excellent organisation. Bill established the principle of Gift Aid reclamation on donations (later extended to annual subscriptions) and did all the necessary paperwork for many years. He insisted that only the interest generated from capital specifically donated to the Fund should be used to support publications. This has ensured that the Society continues and will continue to benefit from his hard work. In recognition of all that he had done for the Society, he was elected Vice-President in 2003.

Bill did much else for the Society, about which he cared very deeply. In 1995 the Society was left in a difficult position by the sudden resignation of the Hon. Treasurer, and Bill filled the post for the next two years as deputy treasurer. Later, when his successor became seriously ill, Bill again came to the rescue. He had a great respect for the academic activities of the Society and took an active interest in the library at Hollytrees, being instrumental in obtaining a professional valuation of the books. His contributions to Council – on which he served till ill health prevented him from attending meetings – were always supportive and well thought out. Most officers, past and present, will remember receiving carefully handwritten letters (Bill never embraced the advantages of the PC) containing helpful and clear cut advice. He was a regular attender of the Society's outings, and spent much time and petrol in delivering the Society's Transactions to local members. Like a good old-fashioned bank manager, he set much store in personal contact with the wider membership.

At the end of his life he was housebound by disabilities which he bore with patient good humour and he entertained several members of the Society at his 90th birthday party in October 2013. He died on 19 December and is survived by his wife, Jean, and two daughters. In his will he left generous bequests to the Society's Publication and Research Fund and to the Society's General Fund. With his characteristic attention to detail, Bill had already planned the service in St Edward's church, Romford and this was well attended by representatives of the Society.

C.R. Hart, 1923–2013

Cyril James Roy Hart known professionally as Cyril Hart and to his many friends as Roy, was a remarkable man: both a distinguished medical doctor (his main profession) and an eminent historian of Anglo-Saxon England, particularly of Essex and East Anglia. It is, of course, as the latter that he was known to members of the Essex Society for Archaeology and History.

Hart grew up in Dagenham and returned there briefly at the beginning of his medical career, after training at St. Bartholomew's Hospital in London. He started his historical studies at the Essex Record Office, studying the Dagenham area on which he published several articles between 1947 and 1951. There he came under the influence of F.G. Emmison who taught him palaeography, and who probably supported his election as a Fellow of the Royal Historical Society in 1953. In 1987, Hart contributed an important article on the Ealdordom of Essex to Emmison's festschrift, *An Essex Tribute*.

In the mid 1950s, Hart moved to Huntingdonshire. While establishing himself in his own medical practice there, he continued his historical studies under H.P.R. Finberg at Leicester University, and in 1962 obtained an MA, the first to be awarded by that university. His thesis was on the Anglo-Saxon charters of Huntingdonshire and of Thorney Abbey, a difficult and complex subject as few such charters survive in their original form and all must be carefully examined to determine their degree of authenticity on a scale from undoubtedly authentic to totally spurious.

Meanwhile, Hart had already published his first Anglo-Saxon charters. *The Early Charters of Barking Abbey*, was privately printed in 1953; in 1957 it was expanded as two University of Leicester Occasional Papers: *The Early Charters of Essex: the Saxon Period*, and *The Early Charters of Essex: The Norman Period*. The charters were reprinted as a single book, again as a Leicester Occasional Paper, The *Early Charters of Essex*, in 1971. By then Hart had published *The Early Charters of Eastern England* in 1966, and he went on to produce *The Early Charters of Northern England and the North Midlands* in 1975. In the latter year he was honoured by Leicester University with the degree of D Litt.

Hart had not forgotten Essex, publishing 'Notes on Essex Place-Names' in the *Journal of the English Place-Name Society* for 1970, and 'The Mersea Charter of Edward the Confessor' in this Society's journal for 1980. In 1992 his articles on northern and eastern England were collected, extensively revised and republished, with twelve hitherto unpublished articles, in *The Danelaw*. This book, in addition to containing reprints of 'The Mersea Charter' and 'The Ealdordom of Essex', contained articles on 'The St. Paul's Estates in Essex', 'The Battle of Maldon', and 'The site of *Assandun*'.

When a committee was set up to organize an international conference to mark the millennium of the Battle of Maldon in 1991, Hart, who had recently retired from medical practice, at once offered a paper. After some discussion we fixed on 'Essex in the late 10th Century', a paper which drew on, among other sources, his work on some Barking charters then newly-discovered at Hatfield. His enthusiasm and breadth of knowledge shone through the preliminary correspondence and the conference itself.

The list of contributors to *Anglo-Saxons*, the festschrift for Roy Hart published in 2006, reads like a list of leading Anglo-Saxon scholars, including as it does Professor Janet Bately, Professor Harold Fox, Professor Simon Keynes, Dr Emma Mason, Professor D.M. Metcalf, Professor Janet Nelson, Professor Peter Sawyer, Professor Pauline Stafford, and Dr Ann Williams. Simon Keynes and Alfred Smyth started their preface to the book with the words 'Roy Hart has always protested he is an amateur historian'. As they went on to point out, this was true in the strict sense that Roy's main profession was that of a medical doctor. It was also true if 'amateur' is taken in its basic sense of one who loves something: Roy so clearly loved his work on early English history. His insistence that he was an amateur resulted in a remarkable humility despite his formidable knowledge of his subject. Perhaps because of this, he was a generous supporter and encourager of other scholars.

A prehistoric eyot at Canning Town, Newham: a geoarchaeological investigation

M. Nicholls, J. Corcoran, E. Eastbury, J. Cotton, R C. Scaife, J.E. Whittaker, R.I. Macphail, N. Cameron and K. Stewart

Geoarchaeological work at five closely-spaced sites in the London Borough of Newham shows significant variability between sediment sequences and considerable changes in the palaeotopography. A early prehistoric sandy island or 'eyot' at Fords Park Road was surrounded by a diverse wetland of lakes, rivers, sand banks and marshes. Within the buried land surface of the eyot, assemblages of worked flint and pottery were discovered, showing prehistoric human presence. The largely Mesolithic material formed a tight cluster on the eyot and a significant quantity of burnt flint demonstrates fires were lit. The deposit accumulated through in-washes of sand and wind-blown silt with soil formation taking place during stable episodes. Distribution plots of the artefact assemblage show a distinct concentration, with remnants of horizontal spatial distribution patterning. However, intermittent sedimentation and bioturbation have led to a palimpsest effect, and artefacts of different periods are shown to be mixed within the profile. Investigations at the surrounding sites demonstrate a great deal of local stratigraphic diversity with evidence of sedge-reed fen, sand bedded rivers, an Early Holocene mere and a breached sand bank suggesting a storm or tidal surge. Using archaeological and geotechnical data a digital elevation model of the Early Holocene landscape is created. By bringing together the topography, environmental history and archaeology the work helps build a picture of the floodplain environments available for prehistoric exploitation in Canning Town, emphasising the array of local conditions. The work demonstrates that even in built up areas beneath the alluvium and modern ground, evidence of a varied and undulating prehistoric landscape survives and adds to the growing number of Mesolithic sites in the region.

INTRODUCTION

From May to July 2007, Museum of London Archaeology (MOLA) conducted archaeological evaluation and limited excavation of five sites in Canning Town: Fords Park Road, Crediton Road, Vandome Close, Butchers Road and Butchers Road Garages (Fig. 1 and Table 1). At Fords Park Road archaeologists uncovered a scatter of prehistoric flint tools and small amounts of pottery on a sandy island or 'eyot'. Work on these five sites demonstrates that beneath street level, evidence for prehistoric exploitation of the past landscape still survives. Indeed, the modern urban landscape and Thames alluvium can mask a host of floodplain environments including eyots, sandy channels, peaty backwaters and mudflats. In investigating the site specific palaeoenvironmental conditions this article demonstrates the range of local environments that existed on the Thames' prehistoric floodplain, and thus the valuable resources available to hunter-gatherer-fisher and later sedentary groups.

Often prehistoric deposits are so deeply buried on the valley floor that, unlike those on the river terraces, they escape discovery. A review of the archaeology of London area reports a very limited number of sites from the floodplain area (MoLAS 2000). In rare circumstances, archaeology relating to temporary camps used by people through the Mesolithic, Neolithic and Bronze Ages survives on once prominent eyots surrounded by marsh and river inlets. Building on a basic geoarchaeological deposit model constructed at the desk-based stage of the work, evaluation trenches targeted and encountered both archaeology on an eyot and the deeper sediments in the surroundings.

Each site was evaluated by a single trench with the exception of Fords Park Road where open area excavation (15m^2) revealed the prehistoric artefact scatter. This information was supplemented by a series of power augered boreholes (Table 1).

Site name	Site code	NGR (machine readable)	Site area (m^2)	Trench area (m^2)	No. of auger-holes	No. of monolith (m)/kubiena (k) samples	No. of bulk samples
Fords Park Road	FDP07	540500 181450	1514	256	4	2m, 5k	5
Crediton Road	CDQ07	540250 181360	4716	64	4	3m	5
Vandome Close	VAD07	540770 181200	2361	61	11	2m	4
Butchers Road	BUZ07	540278 181209	5164	91	0	4m	6
Butchers Road garages	BCQ07	540420 181445	334	43	1	3m	5

TABLE 1: Site codes, area and samples for the five Canning Town sites

The work aimed to investigate:

- The nature, date and extent of temporary prehistoric activity on the Fords Park Road eyot
- The palaeotopography surrounding the eyot
- The characteristics of the buried land surface at Fords Park Road
- The environmental history of the area including the date of alluvial/estuarine inundation

Sampling and analytical methods

On-site

Geoarchaeology:

Geoarchaeological work aimed to interpret the past environment on and around the eyot. It involved detailed on-site sediment descriptions of sections, augered boreholes, monolith columns and associated bulk samples. In addition, a key section was sampled for soil micromorphology at Fords Park Road (Fig. 2–Fig. 6).

Trench sections and sediment sequences in the augered cores at the five sites were examined and described on site using sedimentary criteria relating to colour, compaction, texture, structure, inclusions, clast-size and nature of deposit boundaries (e.g. Jones *et al*. 1999). The section profiles and augerhole sequences recorded at each site are fully detailed in the post-excavation assessment report (Eastbury and Ruddy 2009).

Steel monolith tins (500mm × 50mm × 50mm) were hammered into the face of selected cleaned and recorded trench sections to sample the deposit sequence. In some cases (Crediton Road and Vandome Close) the height of the water table prevented sampling of the complete sediment profile. Tins were overlapped by 0.10m, with the exception of two tins at Butchers Road where the nature of the stepped trench made this dangerous. Ten litre bulk sediment samples were taken alongside the monoliths respecting deposit boundaries. Monolith sampling has advantages over augered boreholes enabling detailed assessment of larger exposures allowing uncharacteristic sequences to be avoided; and avoiding vertical compaction of the sediment. However, augered cores supplement the trench sampling and proved useful in reaching the base of the Holocene sequence, retrieving deeply stratified deposits that would otherwise have been inaccessible.

Augered boreholes were drilled using a gouge auger driven by a Cobra 2-stroke percussion engine. Meter-long gouge bits were drilled through the sediments using the weight and action of the engine and the cores removed by hand with a jack. Drilling terminated when Pleistocene river terrace gravels were proved. Sediments were observed and recorded from the open core windows.

Archaeology:

Worked flint and pottery were found surviving within sandy loam under alluvial clay at Fords Park Road and the evaluation trench was extended to create an open area. Artefacts were attributed a small-find number at the start of excavation as the flint scatter was uncovered. These pieces were 3D recorded, but as more flint was exposed it was not possible to continue this level of recording within the time constraints of the project. Flints were therefore hand excavated in spits across the 15m^2 area by metre square and the spoil sieved.

Off-site

Sediments:

Off-site, the lithostratigraphic units were grouped into area-wide types of depositional environment with a common formation process ('facies'). This categorisation enables discussion and interpretation of the wider landscape.

Past landscape reconstruction includes all aspects of palaeoenvironmental studies, and bulk samples and monoliths were processed and sub-sampled for biological remains and radiocarbon dating. Biological analyses included investigating pollen, diatoms, ostracods and plant macrofossils within selected sediments. Four radiocarbon dates were obtained across the area, giving a broad chronological framework. The illustrated sections from each site show the monolith, bulk and sub-samples locations.

Deposit modelling:

A large part of the work comprised mapping the palaeotopography by combining the findings from evaluation and excavation (Eastbury and Ruddy 2009) with surrounding archaeological and borehole information. This enabled a contour plot of the interpreted prehistoric landscape to be reconstructed.

The lithostratigraphy of evaluation trenches along with other geotechnical and archaeological site information was entered into the geoarchaeological database (RockWorks 2006). Sediments were then interpreted and a basic stratigraphy created. This included a 'pre-Holocene surface' layer at the top of the sand or gravel. Spot heights from this layer were exported to ArcMap (10.0) mapping software and used to model an inverse distance weighted (IDW) digital elevation model of the surface. These data form part of the MOLA geoarchaeological deposit model of the wider Silvertown area. The surface mapped is a plot of the height relative to ordnance datum (OD) of gravel and sand at the beginning of the Holocene. Plots such as this are central to understanding the surroundings in which people lived as they can provide a template for subsequent sedimentation.

Archaeology:

The flint and pottery were quantified and analysed by in-house specialists. Artefact distribution was then investigated by creating a 5cm × 5cm grid across the study area and the Kernel Density Function in ArcMap was used to calculate artefact densities for each cell of this grid. This produces 'heat maps' that can provide useful information on patterns of activity and post depositional processes.

STRATIGRAPHIC SEQUENCE AND PALAEOECOLOGY

Geology, palaeotopography and geoarchaeology

The sites lie on the valley bottom gravels (Shepperton Gravel *sensu* Gibbard 1985) of the inner part of the present day Lower Thames Estuary floodplain, today a tide dominated estuary containing mixed energy regimes with tidal meanders (Bates 2000) (British Geological Survey [BGS], 1:50 000, sheet 256). These gravels were deposited at the end of the last glaciation (Devensian) as the river cut down through the older, Taplow Terrace. The edge of the terrace rises just to the north of the study sites, running along the line of the A13, while the River

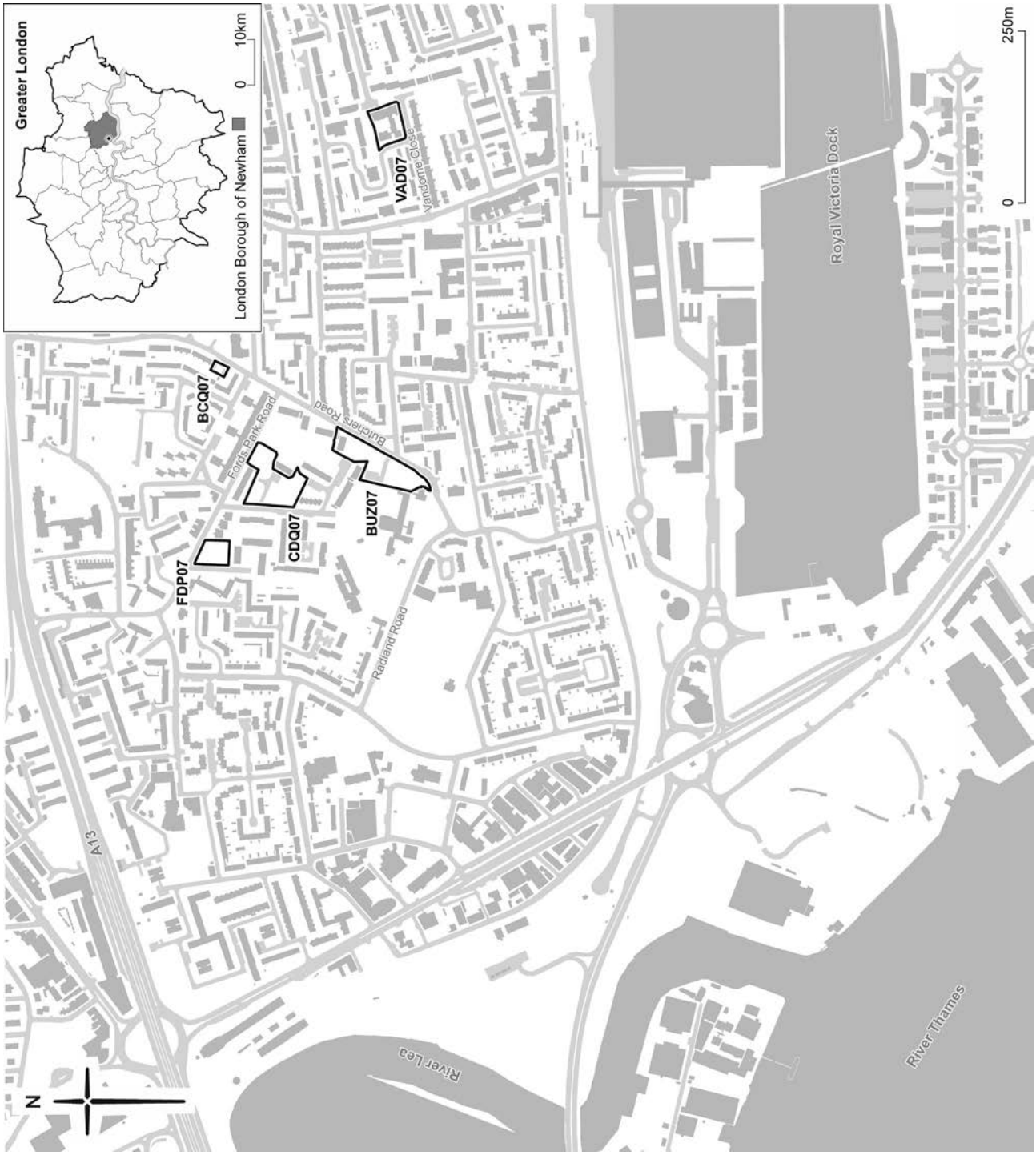

FIGURE 1: Site locations

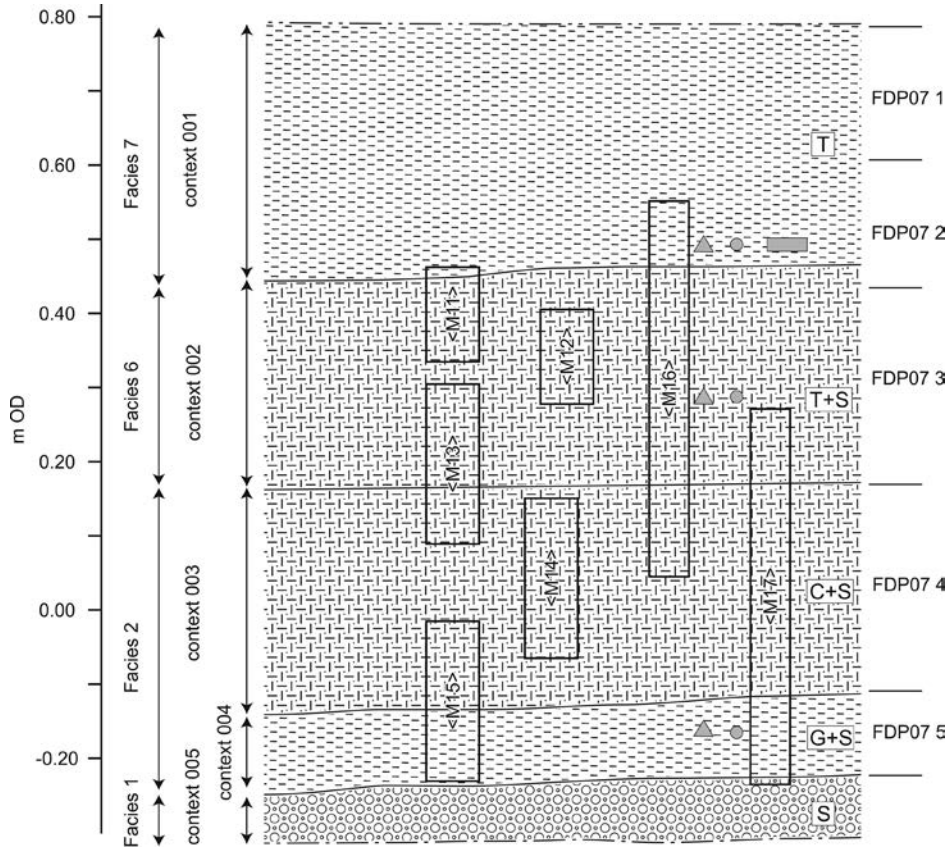

FIGURE 2: Fords Park Road sequence with monoliths, micromorphology tins, sub samples and facies attributions marked. See Fig. 8 for key to lithology and samples

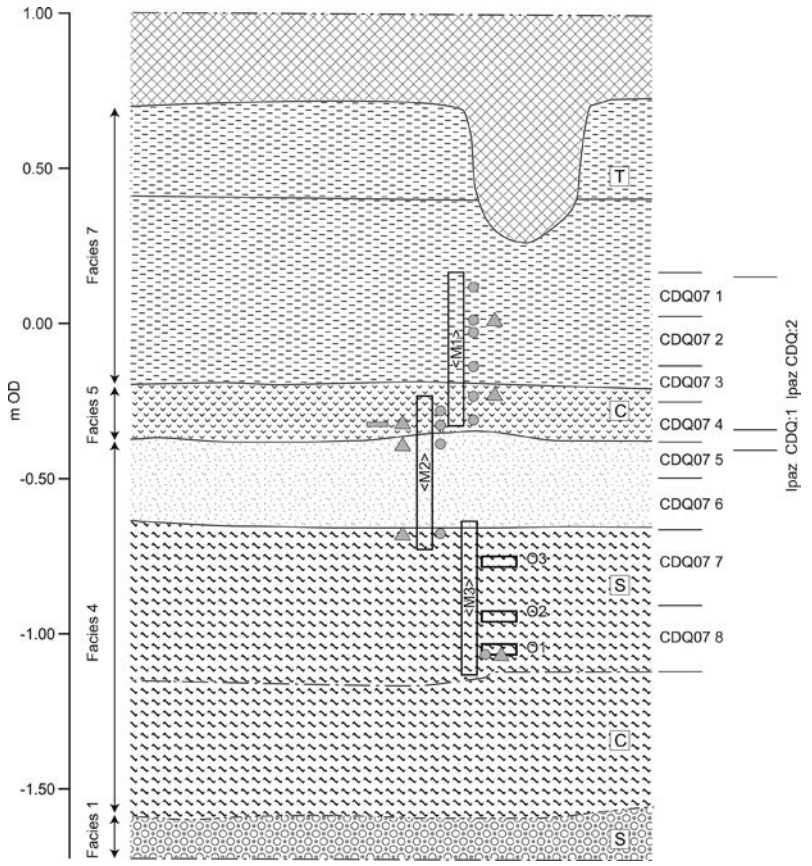

FIGURE 3: Crediton Road sequence with monolith tins, subsamples and facies attributions marked. See Fig. 8 for key to lithology and samples

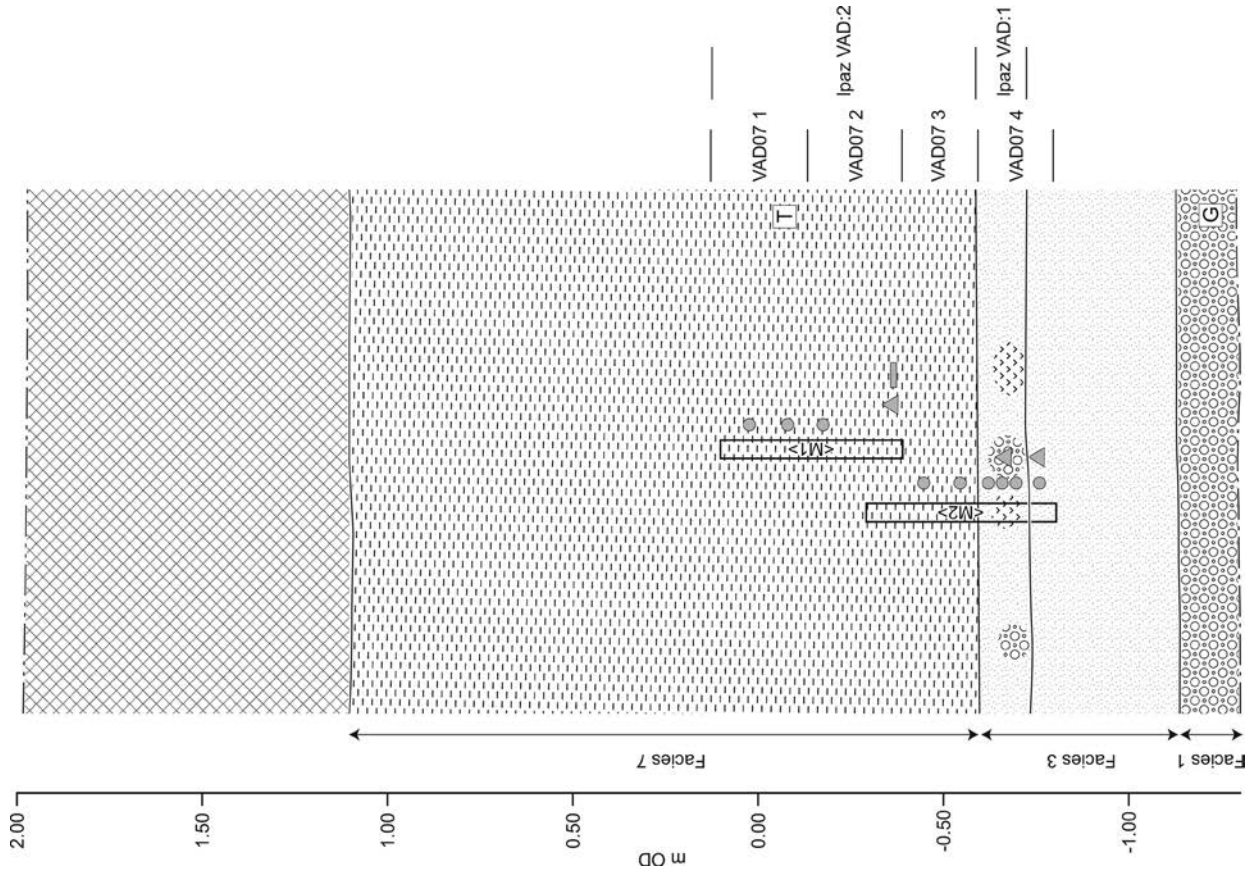

FIGURE 4: Vandome Close sequence with monolith tins, subsamples and facies attributions marked. See Fig. 8 for key to lithology and samples

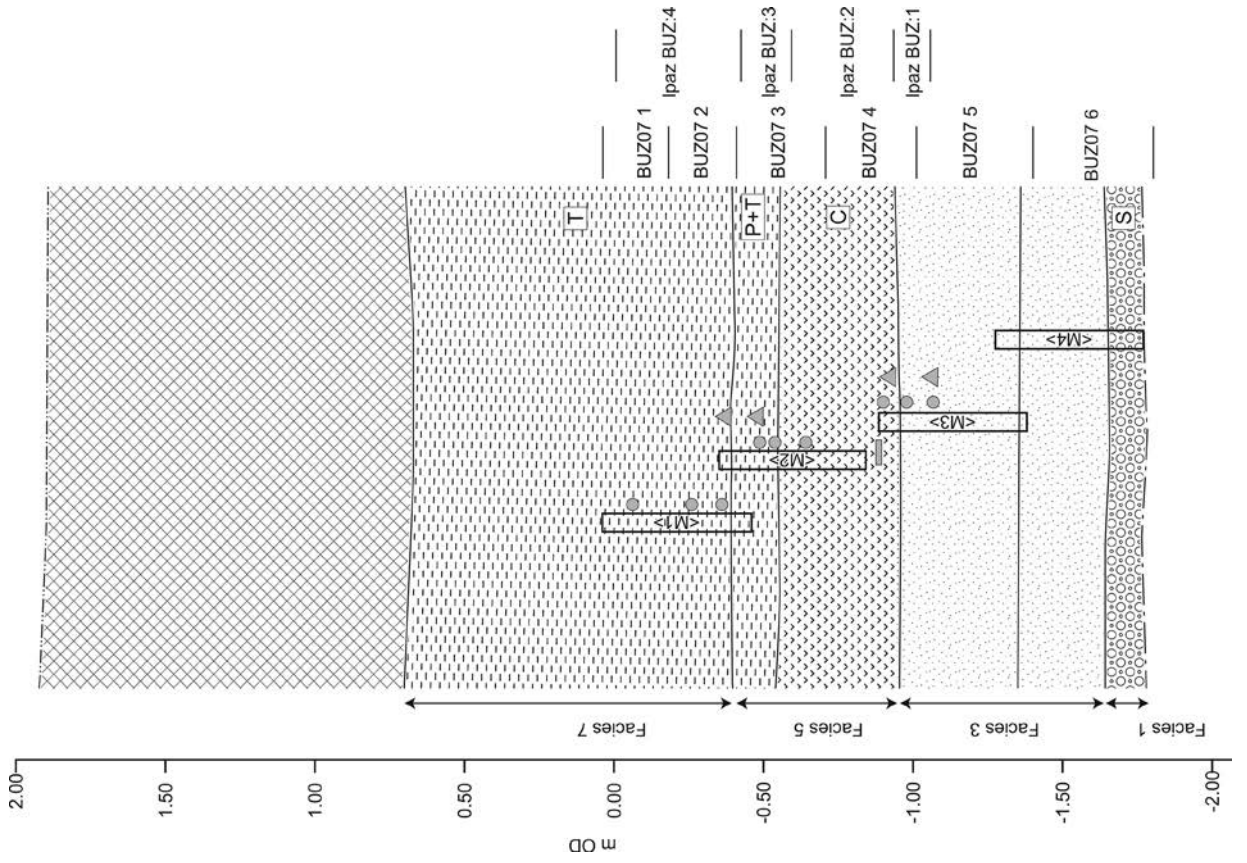

FIGURE 5: Butchers Road sequence with monolith tins, subsamples and facies attributions marked. See Fig. 8 for key to lithology and samples

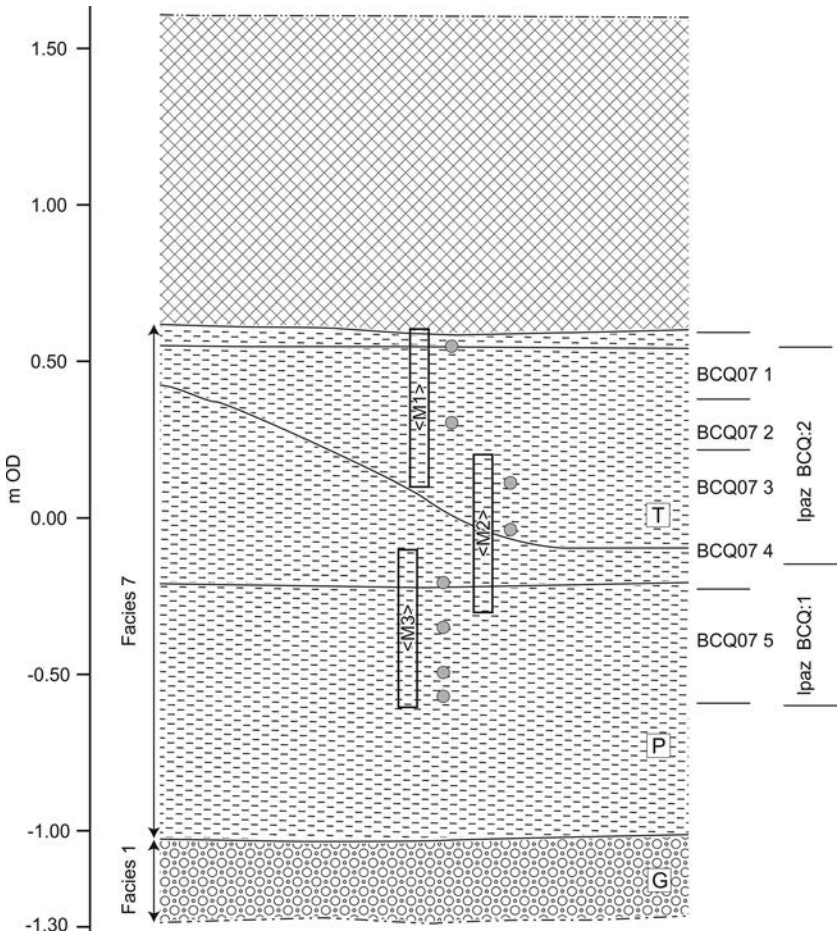

FIGURE 6: Butchers Road Garages sequence with monolith tins, subsamples and facies attributions marked. See Fig. 8 for key to lithology and samples

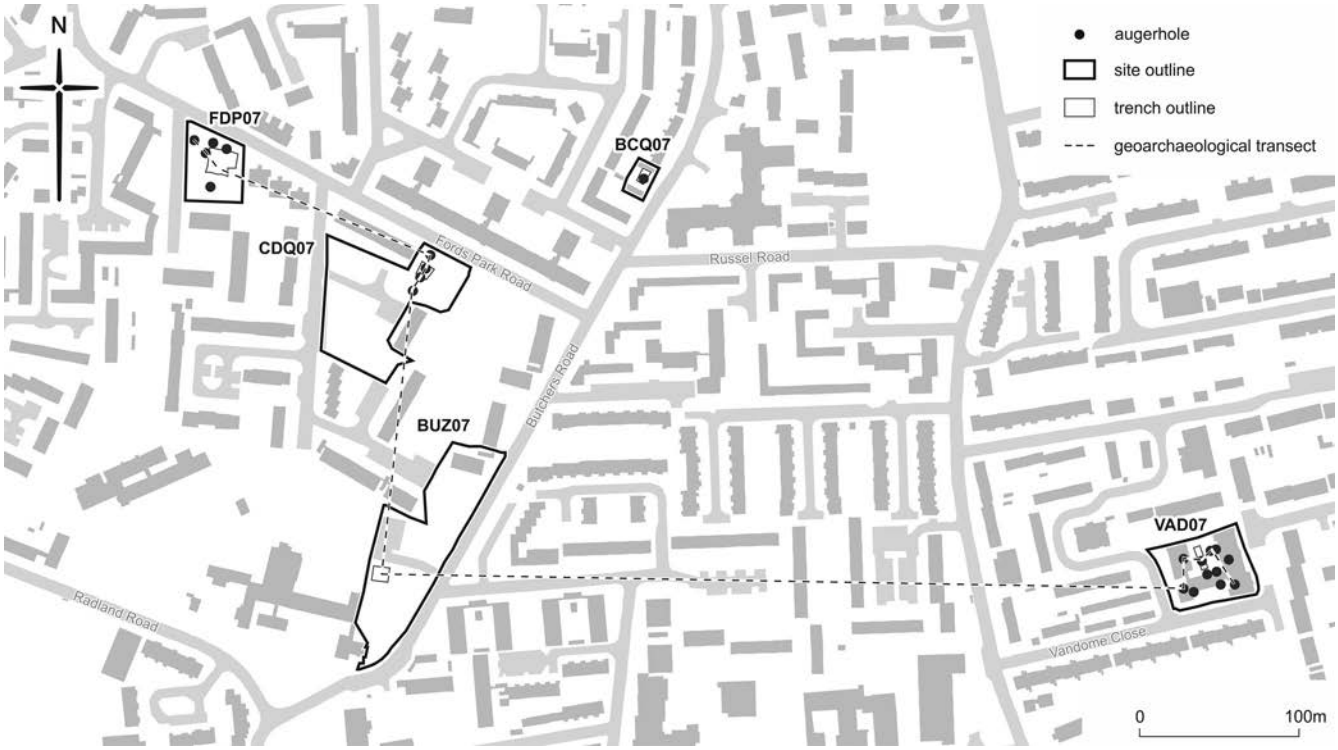

FIGURE 7: West to east transect through Canning Town sites

Facies	Description and interpretation	Approximate height (m OD)	Site
Alluvium Facies 7	All sequences were capped by a deposit of grey brown silty clay mottled orange. (Overbank flood alluvium accreting on the floodplain from the late prehistoric)	0 to +0.9	All sites
Land surface Facies 6	Mid to light greenish brown mottled silty sand with clay with clay-rich pockets forming within Holocene weathered fluvial material. (Dry land surface from the Mesolithic to Bronze Age)	0 to +0.4	Ford Parks Road
Peat / clayey peat Facies 5	Friable dark reddish brown slightly clayey peat or wood peat with wood clasts, sometimes with clayey bands and sand clay. (Bronze Age freshwater peat forming within abandoned channels and on low-lying waterlogged ground)	–0.95 to 0.00	Butchers Road and Crediton Road (feather edge at Butchers Road Garages)
Lacustrine silt Facies 4	Soft white or grey finely bedded silt with fine sand. (Sediments deposited at edge of Early Holocene body of water such as an ephemeral pool or lake that gradually dried up)	–1.6 to –0.5	Crediton Road
Early Holocene fluvial sands Facies 3	Coarse grey brown sands. (Early Holocene fluvial activity as rivers flowed across the gravel terraces, deposited while Early Holocene fluvial material was building up on the higher ground at Fords Park Road)	–2.9 to –1.5	Crediton Road, Vandome Close and Butchers Road
Early Holocene weathered fluvial/soil Facies 2	Heavily mottled orange brown clayey silt with sand. (Deposit building up on the eyot by sporadic onlap of Early Holocene fluvial sands. Heavy weathering and soil formation due to periods of exposure)	0 to –0.2	Ford Parks Road
River terrace gravels Facies 1	Clast-supported subangular gravel in coarse sand matrix. (Deposited during the Late Pleistocene in a braided river system, probably subject to reworking in the Early Holocene)	gravel surface at around –0.2 OD to as deep as –2.9	All sites

TABLE 2: Facies units at the five study-area sites.

Lea, a major Thames tributary, lies less than a kilometre to the west.

Over the Holocene, sea level has risen from as much as 40m below present-day tide heights (Lambeck 1995) leading to the floodplain being covered in alluvium, burying archaeology and depositing a thick layer of sediment. Sea level and river level rise, however, are not the only influence on floodplain evolution and archaeology. The lower Thames was a wide multi-threaded (braided) channel with an abundance of gravel bars and islands in the Devensian Lateglacial. The importance of this topographic template in influencing sediment deposition and the location of archaeology must not be downplayed (Bates and Whittaker 2004). Using stratigraphic information from archaeological sites and borehole records the gravel topography of east London can mapped, opening a window onto visualising the landscapes buried within the alluvium (Corcoran *et al.* 2011, Halsey 2011, Morley *et al.* forthcoming, Yendell in prep.). This can help predict accurately the location of prehistoric archaeology. Eyots of high ground, although more likely to be subject to later truncation, comprise zones of potential for Mesolithic to Bronze Age dry land occupation or activity, while the surrounding marshy low-lying ground may protect wetland archaeology such as trackways, bridges, jetties and boats. The deeper profiles may also preserve long organic sequences containing biological remains from which it is possible to reconstruct past environments.

Investigation of this cluster of sites provides a good example of the predictive power of geoarchaeological models. Considerable differences in the sediment sequences in geotechnical boreholes and window samples were noted prior to fieldwork (Dawson *et al*. 2006), and the variation recognised as indicating marked changes in palaeotopography and depositional processes over short distances. Thick sands over a gravel high point at Fords Park Road in contrast to deeper gravels overlain by peats and silts at Crediton Road, Vandome Close and Butchers Road identified the site as lying on an eyot surrounded by wetland. This flagged it up as a zone of significant prehistoric archaeological potential. The work on tracts of both wet and dry land at Canning Town presented an opportunity to study the variability between these closely spaced sites and consider the prehistoric landscape. The distinctive sediment units or facies that span the five sites are discussed below and summarised in Table 2.

The following section on the sequence should be read in conjunction with the transect (Fig. 7 and Fig. 8) and section profiles (Fig. 2–Fig. 6).

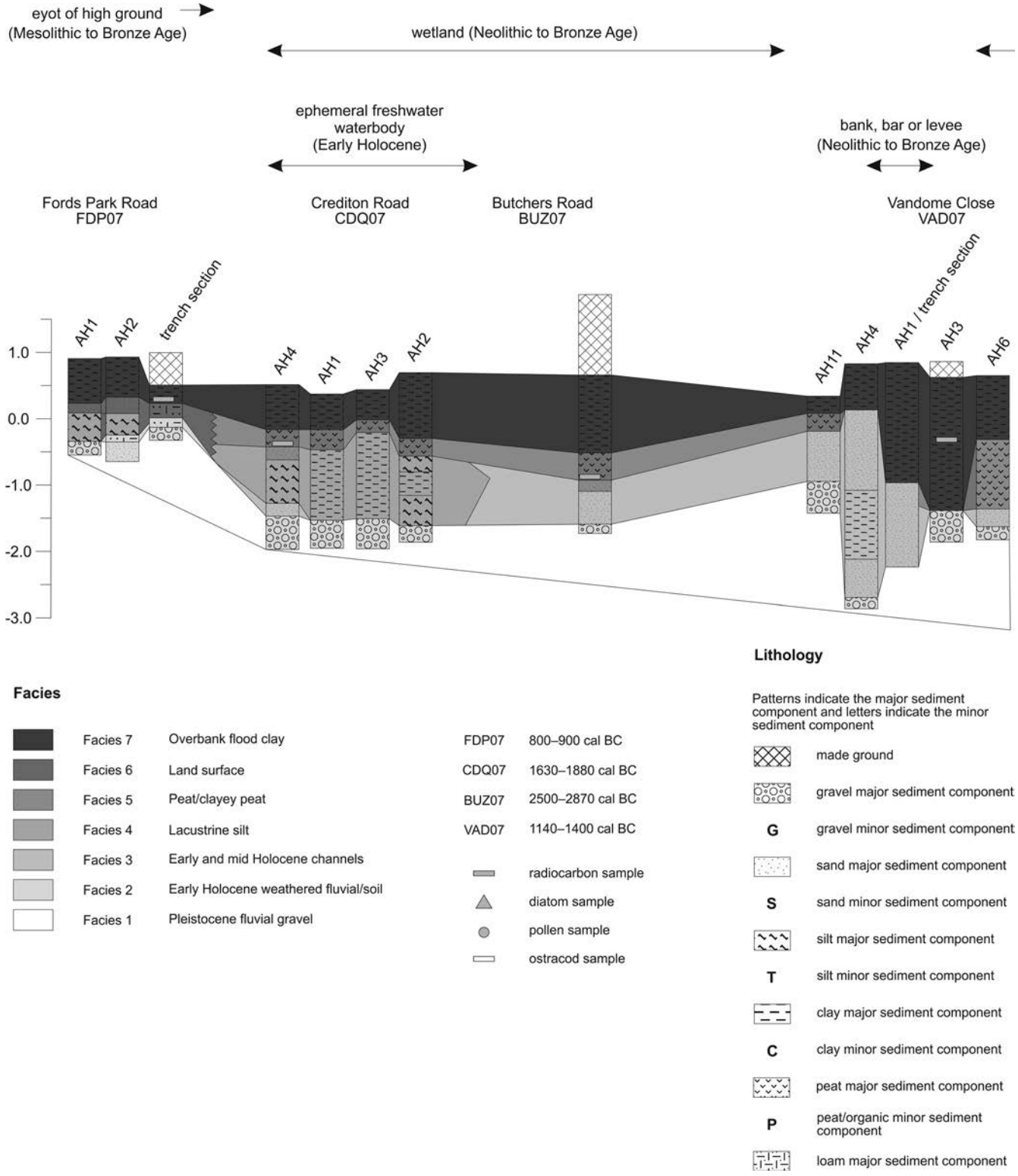

FIGURE 8: Transect through Fords Park Road, Crediton Road, Butchers Road and Vandome Close (FDP07, CDQ07, BUZ07 and VAD07) sections and augerholes showing the facies described in the text

Devensian Lateglacial (*c.* 13 ka–8 ka BC)

Floodplain gravel and brickearth soil (Facies 1 and 2)

Facies 1 (F1) height of surface of gravel ranges from *c.* –3 to –0.25m OD:

At the five Canning Town sites, Devensian gravel comprises the oldest sediment deposited within the braided Thames. Gravel was mostly seen at the base of sections beneath groundwater level and in power augered boreholes, and so in most cases was not fully investigated. The clearest section was observed at Fords Park Road (Fig. 2), where a moderately compact orange brown to grey brown coarse, bedded, clast-supported sandy gravel was seen. Here, the height at the top of the unit was approximately –0.25m OD, but gravel is generally recorded at *c.* –1.5m OD on the other sites and as deep as –3m OD in places (for example at Vandome Close).

Facies 2 (F2) between –0.25 and +0.15m OD:
Silts and sands lie directly on the gravel eyot at Fords Park Road (Fig. 2). The unit is described as clay-rich silt loam with sand, heavily mottled orange brown with frequent manganese- and iron-staining and iron-stained root casts. This deposit accumulated on the eyot by a mixture of sporadic fluvial and aeolian sedimentation, not dissimilar to a river terrace drift or 'brickearth'. F2 was later affected by soil formation, the development of which has overprinted the characteristics of the sands and silts. An example of this overprinting can be seen in the occurrence of occasional small charcoal inclusions noted towards the base.

Early – Middle Holocene (Mesolithic to early Neolithic, 8–4/5 ka BC)

Freshwater Rivers and Lakes (Facies 3 and 4)

Facies 3 (F3) c. –2.90 to –0.2m OD:
Sand facies seen at Crediton Road, Butchers Road and Vandome Close (Figs 3–5) unconformably overlie Devensian gravels indicating a depositional hiatus and/or erosional surface. F3 is thick and variable, ranging from light grey to brown, massive to finely bedded sand to white and grey clayey silt with bands of soft, massive light grey coarse sand. The particle size, sorting and bedding indicates deposition within flowing channels. These sandy bed rivers would have run from the high ground of the river terrace down towards the Thames, dissecting the landscape. Sediment accretion from the Early Holocene (probably Mesolithic) when rivers adopted a single channel form, depositing mainly sand (Sidell *et al.* 2000) is envisaged. The age here is assumed on the basis of comparison with local sequences (e.g. those studied during work on the A13 road construction: Bates and Whittaker 2004) as, due to a lack of suitable organic material and microfossils, sand facies such as this are not easily dated. It is likely that multiple meandering channels flowed across the area, prone to avulsion and migration constricted only by soft sediment. The facies probably represents several phases of sand deposition.

Evidence for channel migration can be seen in the south facing section at Butchers Road where gravels clearly line a cut channel within the sands. These gravels probably represent a side-bar within a subsequent meandering river channel. The south- and westward gradient of the infilling sands suggests the channel deepens to the west, outside the limit of the trench, showing likely westward channel migration. Plant remains within the sands at Butchers Road include elder seeds (*Sambucus nigra*) and an abraded fragment of hazelnut shell (*Corylus avellana*). It may not be wise to use these to interpret ecological conditions, as elder and hazelnut tend to survive where other seed remains do not, however, the findings do imply deposition under abrasive or harsh conditions such as within a sandy bed channel that destroyed less hardy organic remains. Pollen spectra show closed oak, lime and hazel woodland in the wider catchment dominating the surrounding sandy soils of the interfluves. Alder grew locally on the floodplain but perhaps not directly on either site. Moving up the profile at Butchers Road, the basal sand becomes more dark-coloured with organic material (at *c.* –1.35m OD) indicating rooting and weathering due to the subsequent wetland development (F5). The section shows an example of riparian primary succession from open channel to swamp and marsh due to siltation and vegetation colonisation.

Facies 4 (F4) *c.* –1.6 to –0.5m OD:
At Crediton Road (Fig. 3), the lower part of the sequence comprised soft, light whitish grey finely bedded silt with fine sand. This sedimentary unit was almost devoid of fossil content: no pollen, ostracods nor plant macrofossils were retrieved, leaving interpretation reliant on sediment type. The fine-grained calcareous silt is indicative of in low energy

Location	Lab no.	Sample type and pre-treatment	δ13C (‰)	Radiocarbon determination	Calibrated date BC (95% confidence)
Fords Park Road (FDP07)	Beta–248513	AMS humic clay (sediment fraction). Acid washes	–26.70	2710 ± 40	930–800
Vandome Close (VAD07)	Beta–248514	AMS wood. Acid/alkali/ acid	–24.50	3030 ± 40	1410–1130
Crediton Road (CDQ07)	Beta–248512	Radiometric clayey peat (peat fraction). Acid/alkali/acid	–27.3	3470 ± 40	1900–1680
Butchers Road (BUZ07)	Beta–248511	AMS sandy peat (sediment fraction). Acid washes	–26.80	4100 ± 40	2880–2490

TABLE 3: The results are conventional radiocarbon ages (Stuiver and Polach 1977), and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). Samples were analysed by Beta Analytic by accelerator mass spectrometry (AMS) with the exception of the radiometrically measured Crediton Road peat. Calibrations have been calculated using the datasets published by Reimer et al. (2013) and the computer program OxCal v4.1 (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited are quoted in the form recommended by Mook (1986), with the end points rounded outward to 10 years. The ranges have been calculated according to the maximum intercept method (Stuiver and Reimer 1986).

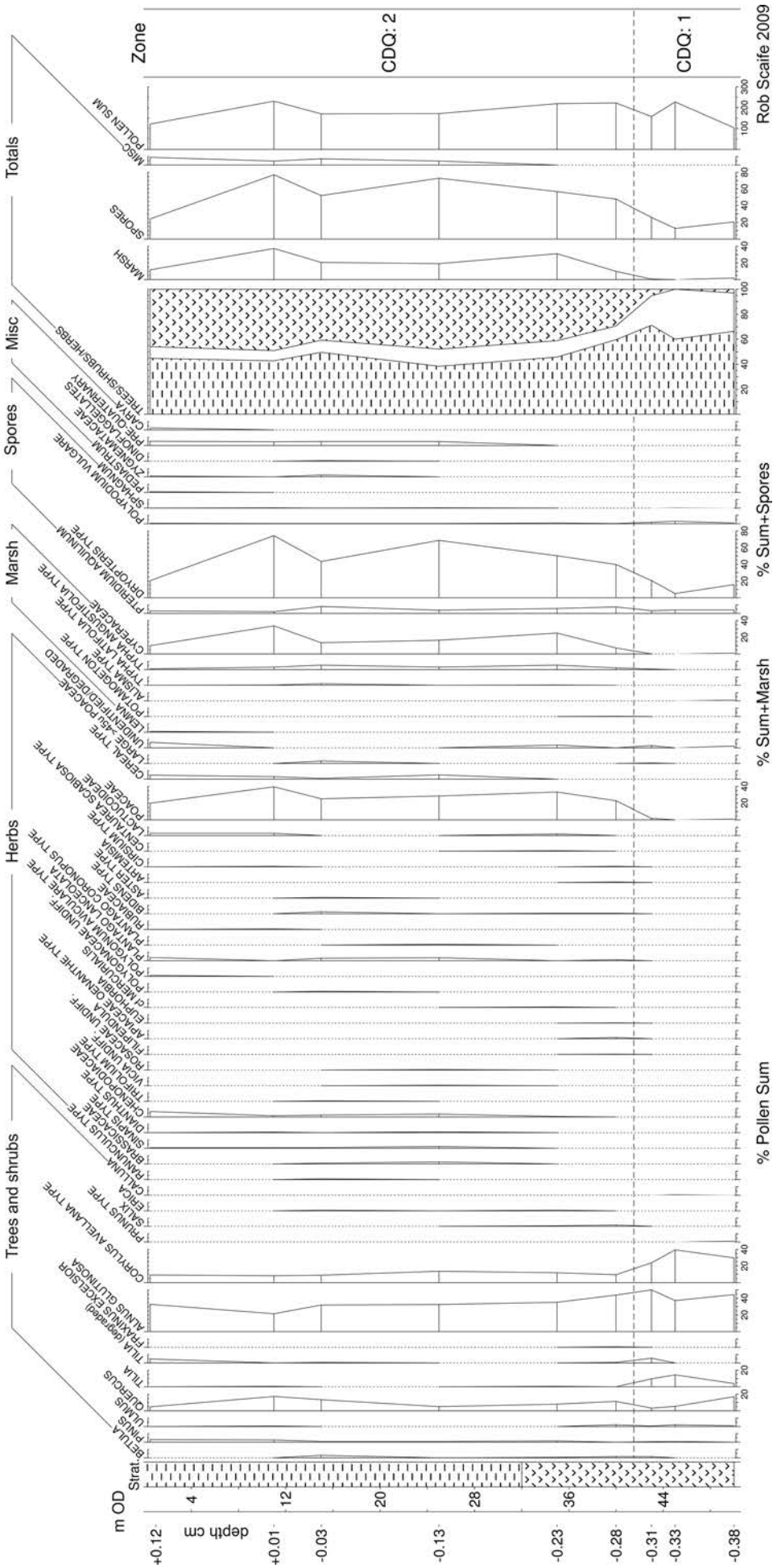

FIGURE 9: Crediton Road CDQ07 pollen diagram

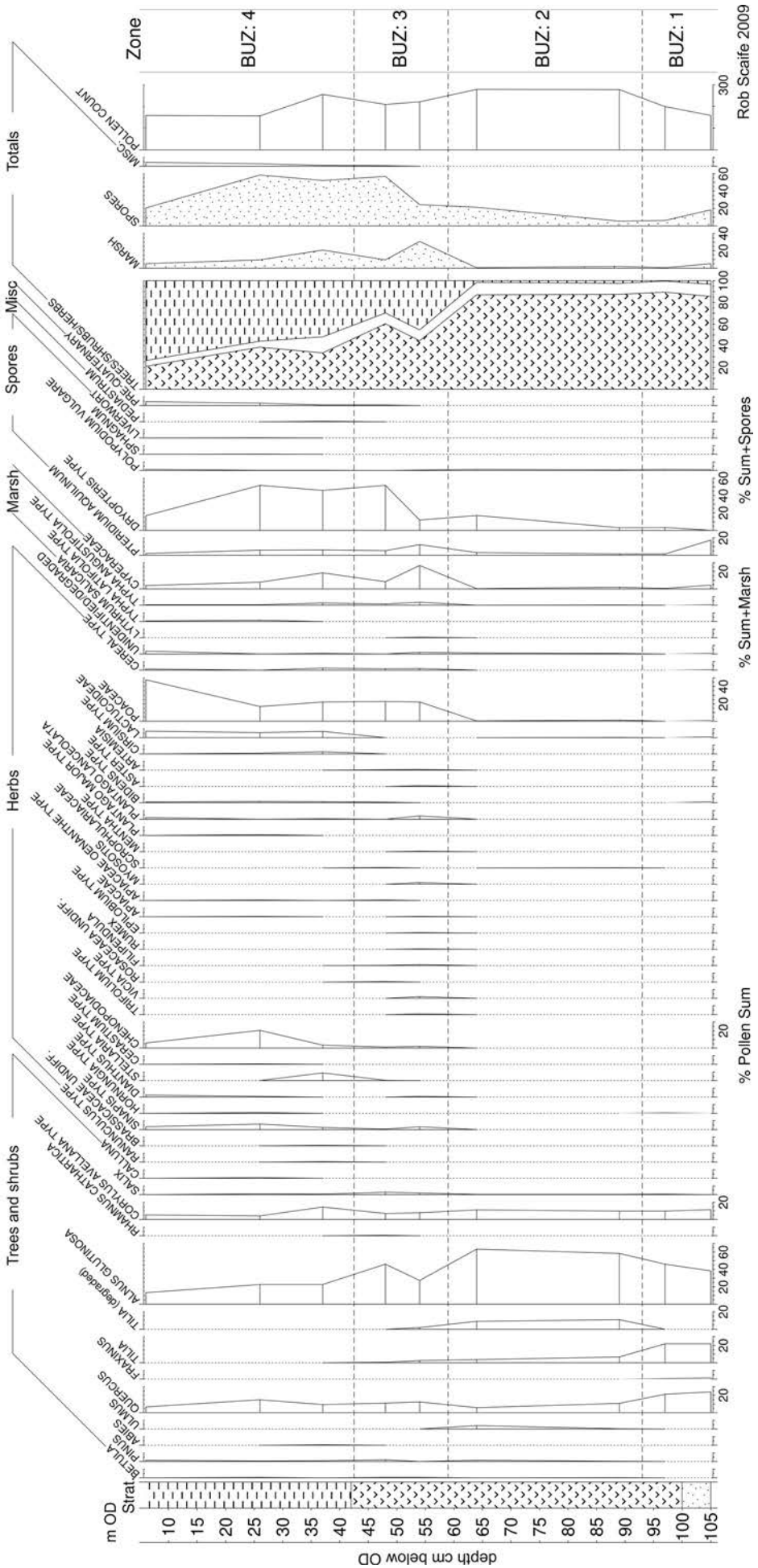

FIGURE 10: Butchers Road BUZ07 pollen diagram

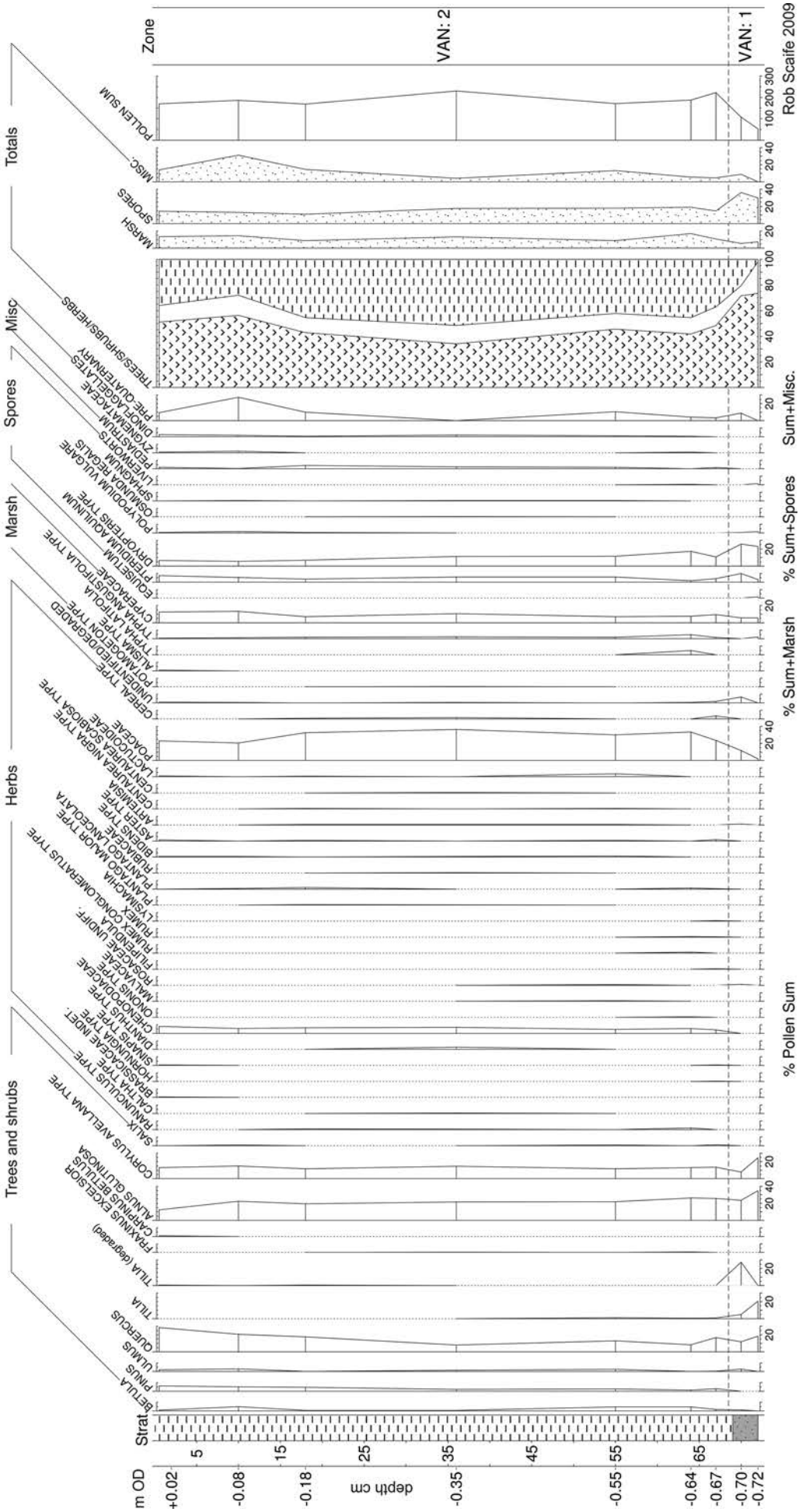

FIGURE 11: Vandome Close VAD07 pollen diagram

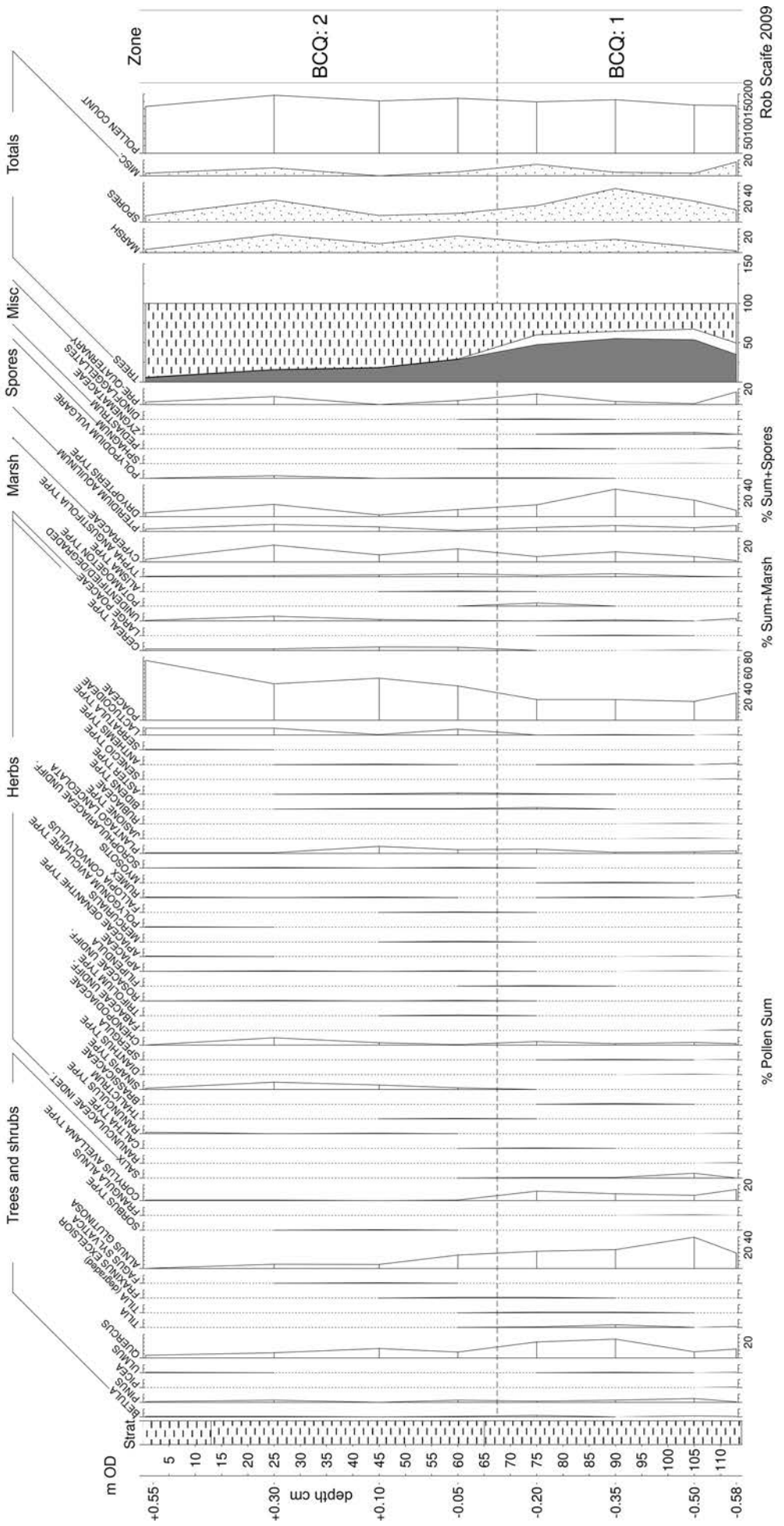

FIGURE 12: Butchers Road garages BCQ07 pollen diagram

deposition, for instance at the edge of a probably freshwater seasonal pool. Root channels were noted, encrusted with calcareous material (rhizoliths). These irregular, tube-like structures result from the preservation of plant remains in mineral matter and tend to suggest drying out of the sediment followed by vegetation growth (J. Whittaker pers. comm.). The morphotype seen at Crediton Road (cemented cylinders around root moulds) (Klappa 1980) is formed by individual plant roots likely to be rushes, sedges, or other wetland plants penetrating the soil and sediment.

The most acceptable environmental scenario for F4 would seem to be a shallow Early Holocene freshwater mere with some fringing wetland vegetation, possibly adjacent to a riverine environment but only refreshed during overtopping of the main channel or through natural precipitation. The mere was probably fed by seepage from nearby streams and rivers such as that at Butchers Road. Calcium carbonate precipitation on the mere bed would have initially prevented peat growth, but drying out occurred either as a result of sediment infilling or lateral migration of the channel system away from the area, and conditions on site gradually became entirely terrestrial. Another factor contributing to desiccation of the mere could be the initiation of a drier climate. Poor fossil preservation must indicate an inhospitable environment, or alternatively subsequent decalcification or oxidation due to subaerial weathering. The interpretation is strengthened by the presence of the diatom *Ellerbeckia arenaria*, often associated with unstable, damp or ephemeral aquatic environments of the Devensian Lateglacial, Early Holocene and freshwater stages of the Baltic.

F4 coarsens-up from the lacustrine silt to massive, mid-grey brown fine sandy silt with flint clasts (at around –0.6m OD), indicating a wash of sediment from surrounding higher ground such as the eyot perhaps as the ground generally became wetter. Wetland conditions are confirmed by sedge macrofossils and alder pollen in environmental samples (Fig. 3 and Fig. 9), and charcoal may point to anthropogenic burning in the catchment. However, the top of this facies is weathered, with abundant roots and wood, demonstrating tree and shrub growth on a wetland land surface or root penetration from the overlying peat. It is thought that F3 and 4 are contemporary, deposited prior and leading up to Late Neolithic and Bronze Age peat growth (see following section and Table 2).

Middle Holocene (Neolithic and Bronze Age, 4/5 – 1 ka BC)

Wetland Marsh (Facies 5)

Facies 5 (F5) –0.95 to 0.00m OD:

Soft, dark reddish brown, friable clayey peat deposits were seen at Crediton and Butchers Roads. These organic sediments built up in a boggy sedge-reed fen as the ground became saturated with water. Conditions grew wetter due to continuing river level rise allowing colonisation by alder carr. This became dominant and dense, leading to the development of alder fen carr peat on and around the sandy soils of the interfluves. Tree and shrub growth on the bog surface may have taken place, indicated by woody clasts and roots within the peat. The well-humified nature of the deposit and generally poor fossil preservation suggest high biological activity and decay perhaps due to aeriation on the free-draining sandy substrate, or post-depositional desiccation.

The Butchers Road and Crediton Road pollen profiles bear strong similarities in showing a woodland dominated landscape in which lime was important (Fig. 9 and Fig. 10), changing to one of more open grassland and possibly pastoral agriculture after a typical late Neolithic or Bronze Age Lime Decline. During initial peat development, conditions continued to become wetter perhaps with pools of standing water (indicated by duckweed) bordered by grass-sedge-reed fen. The surrounding landscape was dominated by lime, oak and hazel woodland (lpaz BUZ:1). This was followed by a significant reduction in woodland, predominantly lime (lpaz CDQ:2 and lpaz BUZ:2). Lime would have been an important element of the late prehistoric forest cover (Greig 1992; Scaife 2000) despite under-representation in pollen spectra (Andersen 1970). In response, there is a marked expansion of herbs including cereal pollen and ribwort plantain, implying woodland was replaced by grassland and areas of arable cultivation during this period.

Radiocarbon dating (Table 3) suggests peat began building up from the Late Neolithic at Butchers Road (between 2880 and 2490 cal BC). At Crediton Road a Bronze Age date was obtained at the base of the peat (1900 to 1680 cal BC). The Lime Decline shown by the palynology also suggests a Late Neolithic or Bronze Age date for the base of the peat. The disparity between these radiocarbon dates can be attributed to the difference in the elevation of the base of peat: nearly 1m below OD at Butchers Road and –0.35m OD at Crediton Road. Peat formation at both sites is thought to comprise a primary succession through the Bronze Age from river or lake to swamp and marsh until rising river-levels led to inundation and burial beneath fine grained silt and clay alluvium.

Peat was encountered at Vandome Close in two augerholes in the southeast corner of the site however it was not seen in section and remains undated. Of specific interest here is a weakly bedded sand facies (attributed to F3) at a slightly raised elevation (–0.5m OD in section and between 0m and 0.20m below OD in auger holes) with thick roots indicating substantial vegetation growth some time after deposition. This probably formed a bank, bar or levée between the wetland and deeper stream channels. Directly overlying the sand bank (with a sharp, erosional contact) were sands mixed with coarse gravel and large peat rip up clasts. This clearly marks an erosional event, probably a storm or tidal surge that overran the area prior to alluviation. The episode scoured the bank and may have gouged deeper areas that later formed the peaty pools seen in boreholes. This tantalising evidence of a storm surge was supported by a very mixed diatom flora derived from the deposit, dominated by allochthonous estuarine and marine species, plus the presence of non-native fir species (Abies) attributed to long distance marine transport or reworked Pleistocene deposits (Fig. 11).

The buried land surface and associated archaeology

Facies 6 (F6) Land surface of the Fords Park Road eyot 0.00 to 0.40m OD:

A biologically worked silty, sandy loam soil represents the prehistoric land surface of the eyot. Over 2000 pieces of worked flint were recovered from this soil and a small amount of prehistoric pottery. The sediment formed through in-washes

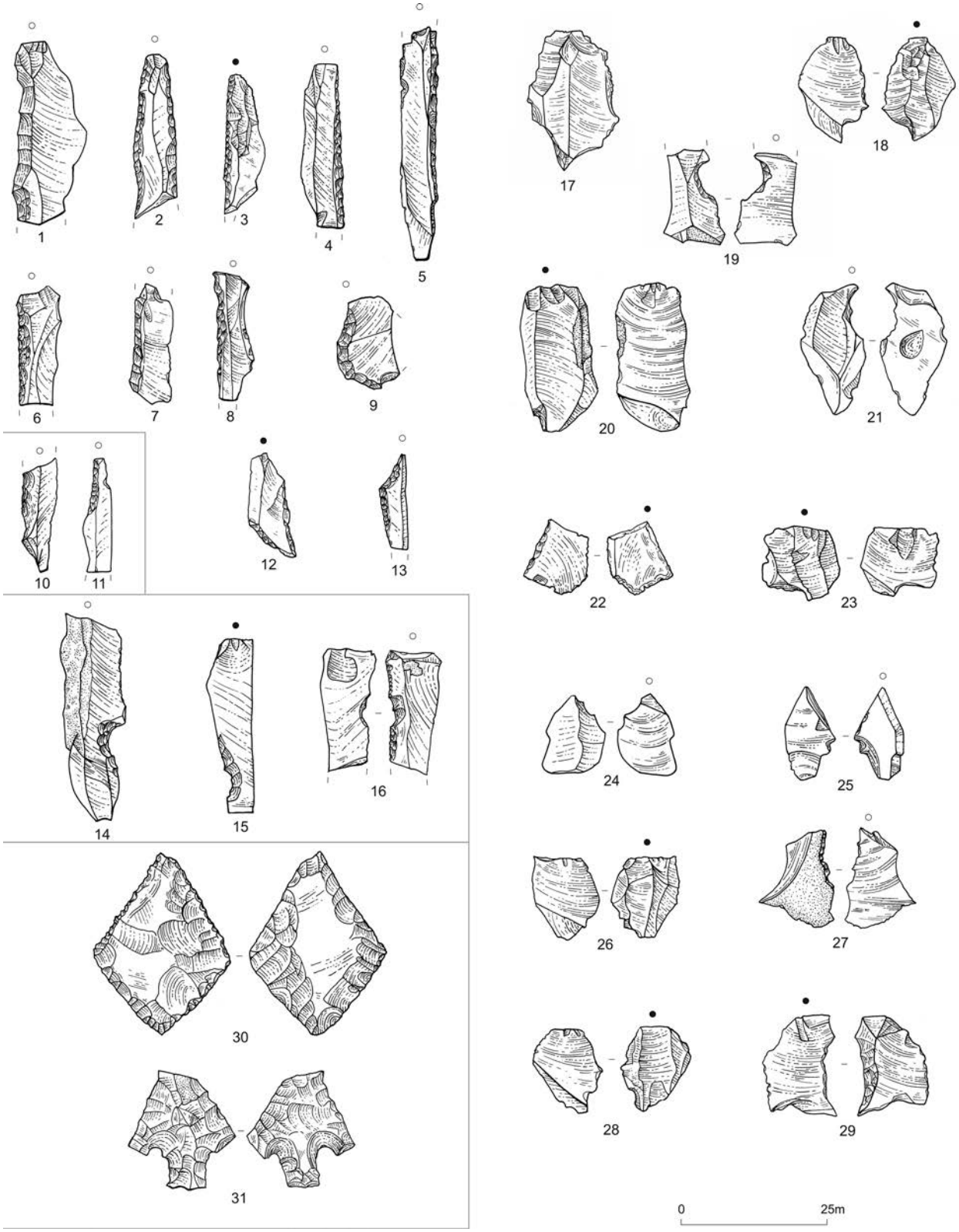

FIGURE 13: Struck flint from the eyot at Fords Park Road comprising: Late Mesolithic narrow blade microliths (nos 1–13), including straight-backed 'rod' and scalene forms; unfinished pieces (nos 14–16); and microburins (nos 17–29). Later pieces comprise an Early Neolithic lozenge-shaped leaf arrowhead (no. 30); and an incomplete Early Bronze Age barbed-and-tanged arrowhead (no. 31). See Table 5 for full list of illustrated items

of sand and wind-blown silt in a similar manner to the underlying subsoil material (F2). When sediment was not accumulating or eroding, soil formation would have taken place, as confirmed by micromorphological analysis that shows a weakly humic homogenous soil with periodic, short-lived stabilised topsoil formation. This would have further worked and mixed the sediment.

The deposit is a gleyic argillic brown earth subsoil with three distinct horizons: lower subsoil, upper subsoil and weakly humic 'topsoil'. Brown earths cover a large proportion of England and Wales, often in lowlands, and support deciduous woodland and grassland. A clay-depleted subsoil lies at the junction with gravels (context [004]), and the leached upper subsoil underlies a weakly humic soil horizon. This humic soil is biologically-worked (rooted and burrowed) with charcoal and flint inclusions indicating local human presence in the Early to Middle Holocene and is likened to a 'hummock' subsoil that adheres to the root plate of a fallen tree. Such hummock and hollow microtopography is typical of wooded areas, suggesting trees grew on the eyot. The soil is likely to have been intermittently wet and covered by overbank flood clays, as suggested by microlaminations, and possibly subjected to low intensity animal trample. So, in the absence of preserved pollen, soil micromorphology provides evidence of Early Holocene woodland development, human activity and possibly the presence of animals.

The flint and pottery assemblages:

The lithic assemblage from the site comprises 2376 pieces of struck flint together with over 2000 pieces of burnt unworked flint and a handful of fragments of burnt quartzite. A majority of the material was recovered from the upper 100mm of the silty sandy loam mantling the surface of the eyot. Also recovered from the same deposit were a number of small abraded sherds of flint-tempered pottery, including one rim sherd probably belonging to an early Neolithic plain bowl, and a few scraps of animal long bone including one fragment of sheep/goat radius (Alan Pipe pers comm).

Type	Totals
Flakes (fragments)	537 (247)
Blades (fragments)	188 (291)
Chips/spalls	793
Nodular shatter	135
Cores (fragments)	52 (15)
Core-rejuvenating flakes	39
Crested pieces	2
Microliths (failed pieces)	15 (3)
Micro-burins	13
Burins (burin spalls)	8 (5)
Scrapers (fragments)	4 (2)
Denticulates	4
Composite tools	2
Miscellaneously retouched	14
Bifacially-worked piece	1
Fabricator	1
Leaf arrowhead	1
Ground axe fragments	2
Knife	1
Barbed and tanged arrowhead	1

TABLE 4: Summary of tool types at Fords Park Road

The lithic assemblage, summarised above (Table 4), is dominated by debitage in the form of flakes, blades and bladelets, with a large number of chips/spalls (<10mm in size) and fragments of angular nodular shatter accounting for much of the remainder. The large number of chips/spalls in particular, many recovered during sieving, is a reasonable indicator that the eyot was used for *in situ* flint working (Leivers *et al*. 2007). The raw material mainly comprises rolled cobbles of locally-available flint of medium quality, amongst which are a few pieces of glauconitic flint with a green/black cortex and a distinctive orange sub-cortical band. The material is in fresh condition, though a few pieces of anciently re-corticated flint have been re-worked; in addition a handful of pieces have faint milky re-cortication while a small proportion (*c.* 5%) has been burnt.

The relatively large numbers of cores are invariably small and of one- and two-platform type. Many have been worked to exhaustion in the production of small flakes and bladelets. Core preparation flakes include several small crested pieces, while the rather larger number of core tablets, platform renewal flakes and plunging flakes/blades bear testimony to efficient core reduction. In addition to the large number of chips/spalls less than 10mm in size, detached flakes and blades are almost invariably small too, with few exceeding 40mm in length. Secondary and tertiary flakes predominate while the large number of fragmentary flakes and blades could suggest a high degree of further manipulation of the blanks, and/or that the assemblage lay exposed to subsequent damage by human and animal agency.

The illustrated flint is shown on Fig. 13 and listed at Table 5. With the exception of a few pieces of diagnostically retouched Neolithic and Bronze Age material (such as a lozenge-shaped leaf arrowhead (in two pieces), two fragments of ground flint axe, a scalar-flaked knife and a single barbed and tanged arrowhead), much of the assemblage appears to be of later Mesolithic type (Fig. 14a). Particularly diagnostic here are a number of broken microliths of predominantly straight-backed form (Clark 1934, class B types) together with three failed/unfinished notched pieces and a number of micro-burins, the latter comprising waste products from the manufacture of microliths. Microliths are usually interpreted as composite armatures for arrows, though other uses (e.g. as saws, piercers, gravers etc.) are possible. It is noticeable too that many of the micro-burins are somewhat broader than the spent microliths, suggesting the presence of two quite distinct populations of artefacts, though whether this has chronological implications is unclear.

Other diagnostic artefacts comprise a small series of burins, principally worked on truncations, together with a number of burin spalls. In addition, there are two composite tools, in both cases scrapers converted to burins. Unmodified scrapers are present too but are few in number (one of two end scrapers retained cortex at its scraping edge, which has been heavily worn as a result). Notably absent from the assemblage are any core tools such as adzes and axes and/or the characteristic thinning and sharpening flakes struck from them. As such, it looks as though that part of

Microliths and related pieces

Grid square	Type (after Clark 1934)	L.	B.	T.	Comment	drawing
101E 206N	Un-finished B?	30	10	2	Light grey-brown flint; bulb present	1
111E 211N	B4?	26	6	2	Mottled light grey-brown flint	2
109E 204N	B1?	23	6	2	Mottled light grey-brown flint; bulb present	3
103E 204N	B4?	27	6	2	Mottled light grey-brown flint	4
Not located by grid square	B3?	38	5	3	Smoky grey-brown flint	5
104E 207N	B1?	19	6.5	2	Pale grey-brown flint	6
104E 207N	B1?	18	6	2	Grey-brown flint	7
109E 205N	B1?	22	6	2	Mottled light grey-brown flint	8
103E 201N	D?	17	9	2	Mottled light grey-brown flint	9
101E 208N	B3?	17	5	2	Grey-brown flint; incomplete	10
101E 207N	B3?	18	4	2	Mottled grey-brown flint; incomplete	11
107E 205N	C1?	18	6	2	Grey-brown flint; bulb present	12
104E 201N	Dbi	16	4	1.5	Light brown flint with milky re-cortication	13
100E 204N	Un-finished	34	9	3	Translucent orange-brown flint with milky re-cortication; notched piece	14
111E 206N	Un-finished	30	6	3	Light grey-brown flint; notched piece, bulb present	15
104E 208N	Un-finished	20	8	2	Grey-brown flint; notched piece	16

Micro-burins

Grid square	Type	L	B	T	Comment	drawing
105E 206N	Prox; notch to left	22	13	2	Dark mottled grey-brown flint; bulb present	17
104E 200N	Prox; notch to left	17	11	2	Dark smoky brown flint; bulb present	18
Not located by grid square	Dist; notch to right	15	9	3	Orange-brown flint	19
103E 203N	Prox; notch to left	25	12	2	Semi-translucent brown flint; bulb present	20
102E 204N	?Dist; notch to right	21	10	3	Burnt	21
105E 204N	Prox; notch to right	12	12	3	Mottled light grey-brown flint; bulb present	22
102E 202N	Prox; notch to left	11	14	2	Dark smoky grey-brown flint; bulb present	23
103E 201N	Dist; notch to right	13	10	1.5	Mottled dark grey-brown flint	24
103E 200.5N	Dist; notch to left	15	8	3	Burnt	25
104E 206N	Prox; notch to left	13	10	3	Orange-brown flint; bulb present	26
103E 204N	Dist; notch to right	16	12	2	Mottled light grey-brown flint	27
104E 206N	Prox; notch to left	13	10	2	Grey-brown flint; bulb present	28
103E 207N	Prox; notch to left	17	14	2	Mottled grey-brown flint; bulb present	29

Arrowheads

Grid square	Type (after Green 1980)	L	B	T	Comment	drawing
104E 207N	Squat leaf arrowhead (Green Type 3A)	30	22	3	Two conjoining pieces comprising a lozenge shaped leaf arrowhead of translucent orange brown flint with shallow marginal retouch on both faces	30
114E 208N	Broken barbed and tanged arrowhead (Green ?Sutton b)	20	18	4	Small barbed and tanged arrowhead of semi-translucent smoky grey-brown flint with a small patch of thin beige cortex on one face close to the broken tip, broken at the tip and across both barbs	31

L. = length; B. = breadth; T. = thickness. All measurements in mm

TABLE 5: The illustrated flint

the eyot examined hosted activities geared principally to the manufacture and repair of hunting equipment – assuming of course that the microliths functioned as armatures. Moreover, the quantity of burnt flint suggests that such activities may have centred round one or more hearths although associated archaeology such as cooking pits, hearth stones or significant amounts of charcoal are absent.

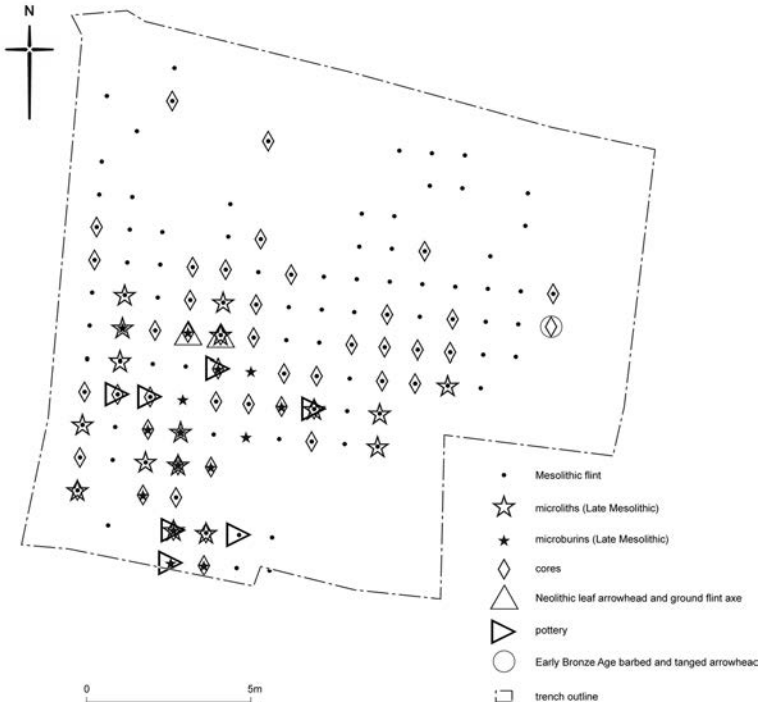

FIGURE 14: a) Plan of flint and pottery found at Fords Park Road summarised by 1m grid square. Tool types are represented by symbols

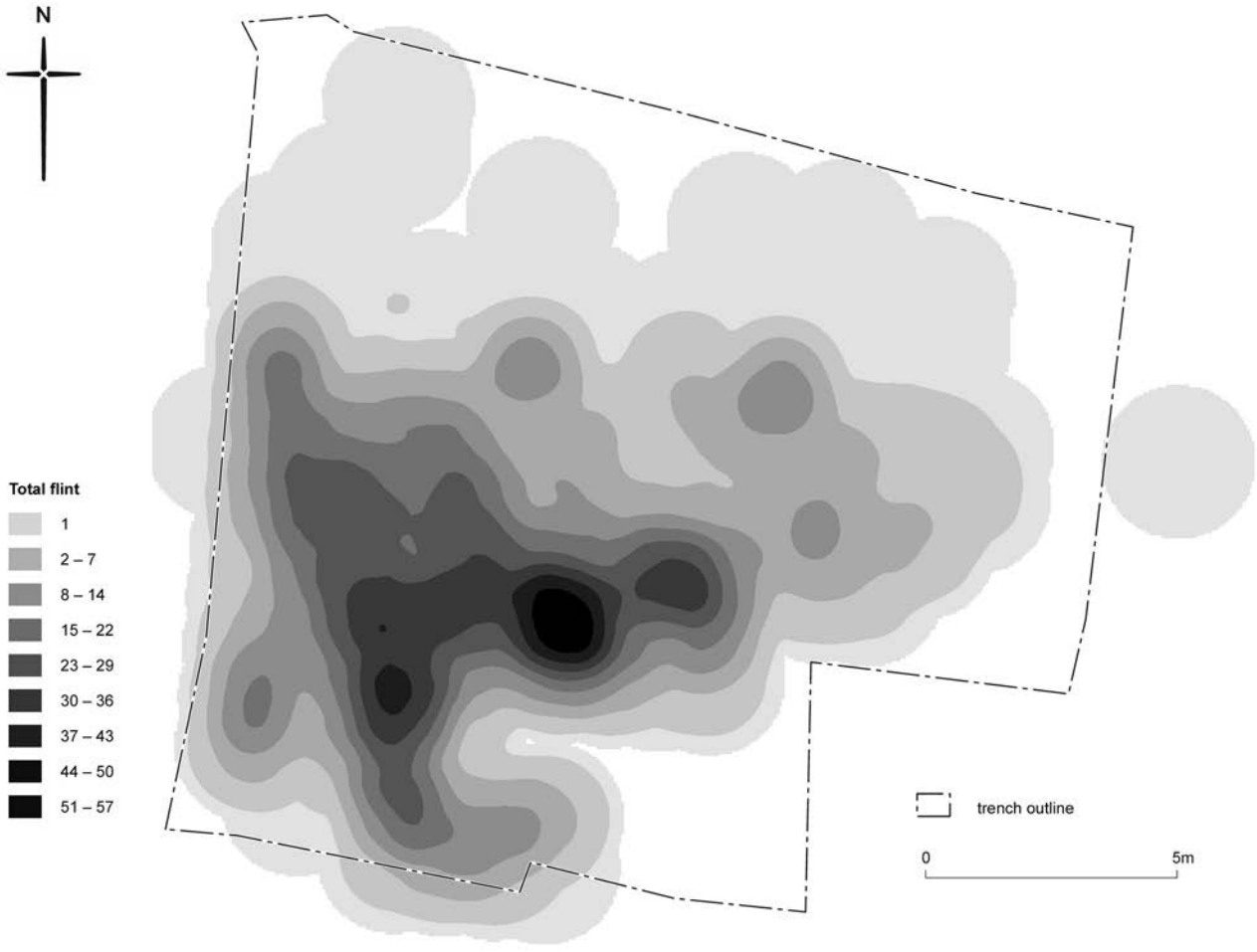

FIGURE 14: b) Density plot of the predominantly Late Mesoltihic flint assemblage recovered from Fords Park Road based on totals per 1m grid square

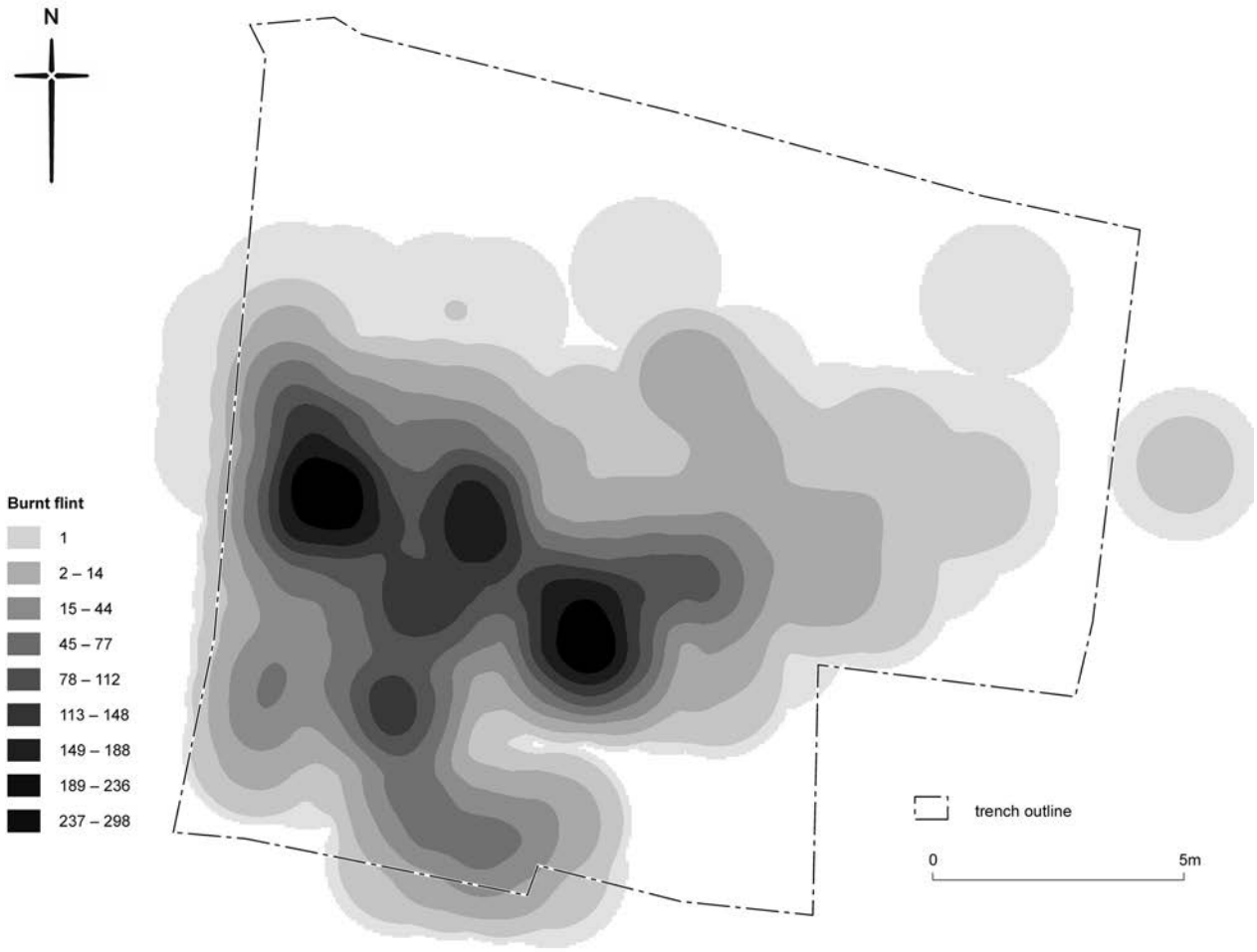

FIGURE 14: c) Density plot of burnt flint recovered at Fords Park Road per 1m grid square

Flint density surfaces:
The spatial distribution of worked flint and pottery across the excavation area is shown in a series of plans and density surfaces (Fig. 14a-c). It is clear that this part of the eyot was a focal point for fires and flint processing as the distribution of the total number of artefacts shows an accumulation near the centre of the excavation area with material at lower density towards the edges of the trench (Fig. 14b). The extent of burnt flint dispersal is comparable to the worked flint scatter (Fig. 14c). The overlap is thought to be due to post-depositional sediment mixing rather than representing general discarded knapping waste, as the debitage assemblage suggests *in situ* flint working.

Despite the biologically-worked and intermittently alluviated soil context then, tool typologies and their lightly abraded condition suggest artefacts have not moved very far. Although blurred, the horizontal distribution does hold out the prospect of defining discrete activity areas within the area examined. This is particularly the case in the later Mesolithic where for example microliths and micro-burins show significant spatial overlap (Fig. 14a). It appears to hold true for the Neolithic period too, as the two fragments of ground flint axe and the leaf arrowhead were recovered from adjacent squares, with the sherd of open bowl not far distant. In contrast, analysis of the F6 soil and down-profile artefact distribution suggests the lithic assemblage has been vertically conflated, effectively mixing artefact populations of more than one period. This would explain the presence of the Neolithic material (both lithic and ceramic) amongst the assemblage. It is possible that a certain amount of debitage is of this date, though the absence of large blanks characteristic of the Neolithic makes this less likely. Interpretation of the use of space could be enhanced by refitting analysis as well as a detailed comparison of micro-burin and microlith form and distribution.

Later prehistory and beyond

Alluvium (Facies 7) (*c*. 0 to 0.90m OD):
The deposition of blue grey alluvial silts and clays is widespread, and indicates the penetration of estuarine flood water to the area. Wetland plant macrofossils (gypsyworts, crowfoots, sedges and sow-thistles) show shallow water or wetland habitats, with the presence of Chenopodiaceae, *Aster* and *Sinapis*-type pollen indicating the incursion of brackish or salt water (lpaz BCQ:1) (Fig. 12). Although the taphonomy of the alluvial sediments is likely to be complicated, with pollen derived from fluvial and airborne sources, it appears that alder and willow fringed the wetland with mixed woodland (oak, hazel and smaller numbers of lime, ash and beech) on drier ground. An increase in cereals and herbs of arable and disturbed ground throughout this unit implies greater human activity and woodland clearance in the surrounding landscape. At Crediton Road, overbank alluvial clays are palynologically broadly similar to the peats although pollen counts are lower

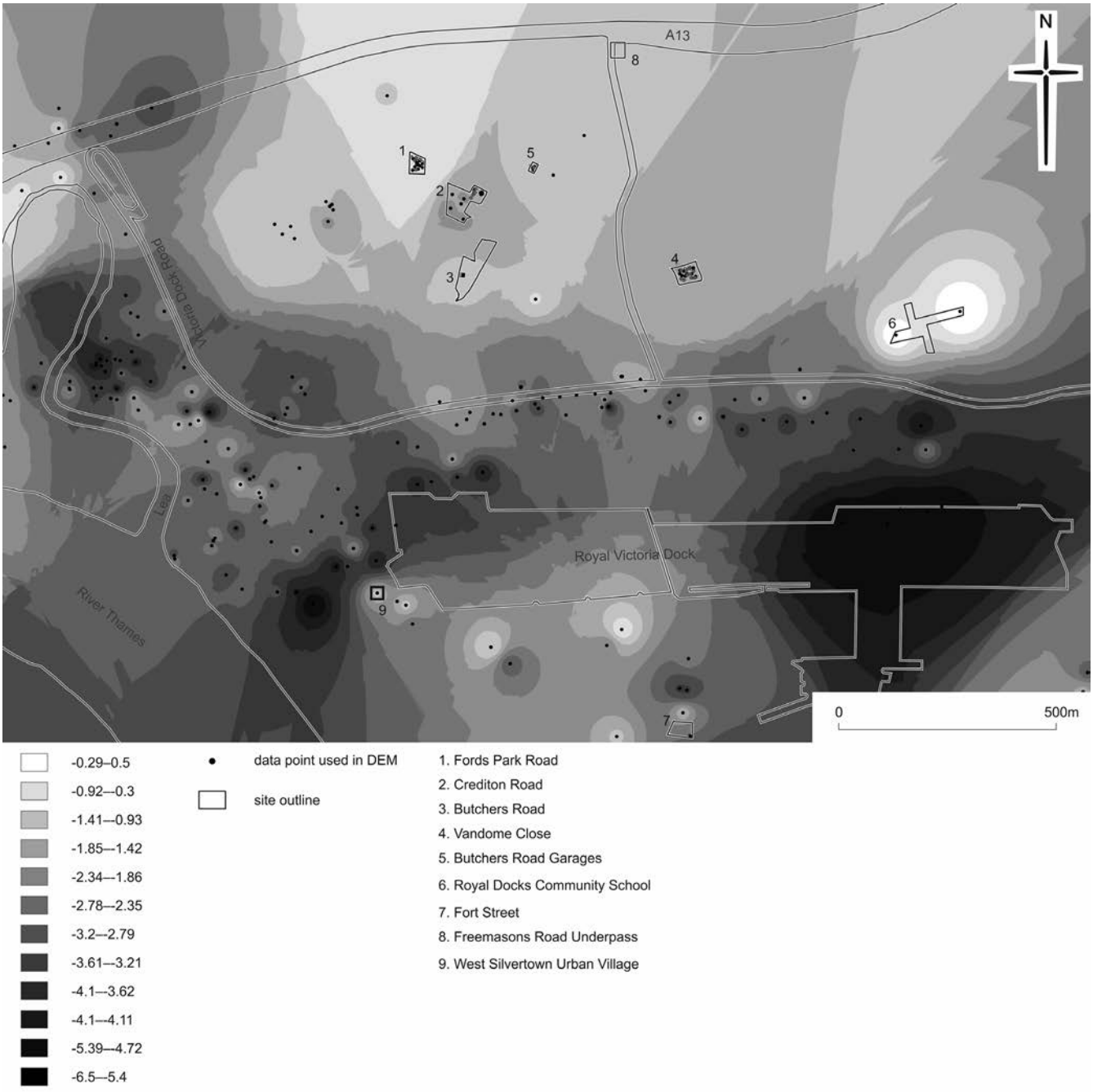

FIGURE 15: The pre Holocene surface modelled from borehole and archaeological height data showing the Canning Town sites and those mentioned in the text. The eyots at Fords Park Road and Royal Docks Community School are clearly prominent, surrounded by lower areas where rivers, streams and lakes (such as at Crediton Road) dissected the terrace. More extreme low points indicate 19th century Royal Victoria Dock excavation on the east and the course of a Lateglacial channel on the west of the plot.

(lpaz CDQ:2). Diverse assemblages at Vandome Close suggest some mixed woodland and grassland, and as at Crediton Road, cereals and ribwort plantain show pasture and cultivation in the catchment. Butchers Road is similar to the above sequences, but there is strong evidence of a saline/brackish water incursion. The alluvial silt clay sequence at all the sites investigated probably accumulated from the Late Bronze Age or Iron Age.

Soil micromorphology at Fords Park Road demonstrates the alluvium was non-calcareous and weakly humic and, as with a typical alluvial gley soil, probably accreted gradually interspersed with periods of stabilisation. During stable episodes, soil developed and biological sediment working mixed and homogenised the deposit. It is suggested that the humic levels relate to periods of stasis during otherwise steady alluviation. A sample from the gley soil directly over the land surface was radiocarbon dated. Carbon recycling within the soil horizon presents an obstacle to accurate absolute dating, as young carbon can be transported by percolation in acidic soils via root growth, animal transport and through soil turbation (Dincauze 2000). The dated organic material may therefore not represent initial soil formation. However, as clay-rich sediments do not easily exchange their organic component with younger carbon, some confidence in the Late Bronze Age date on the organic carbon fraction (920—800 cal BC) is reasonable.

The facies appeared most variable at Butchers Road Garages where nearly 2m of mixed humic and minerogenic silt clay survived with fragments of bone, building material, shell and wood towards the top of the profile. Deposits represent later historic alluviation at the feather edge of a channel belt. Weathering (mottling and rooting) point to reduced water depth and a peaty infilled channel feature indicates final, probably early medieval, sediment infilling.

DISCUSSION

Topography and landscape

The gravel topography or pre-Holocene template of the area surrounding Fords Park Road eyot was modelled (using ArcMap 10.1) (Fig. 15). This illustrates the irregular surface of highs and lows associated with former bars and channels of the Lateglacial river (F1 and F2). The digital elevation model (DEM) must be seen as a generalisation for a number of reasons: the software interpolates between data points; the quality of descriptions (and therefore interpretations) vary from point to point; sequences may suffer erosion, modern truncation (such as within the Royal Victoria Docks) (Fig. 15); and the date of the gravel is assumed to be pre- or Early Holocene when it may in some cases be more recent. Despite these limitations, the template remains a useful interpretative and predictive tool.

It is apparent from the DEM that the eyot was prominent, standing a metre above the gravel surface at Crediton Road and Butchers Road and up to two and a half metres above that at Vandome Close. It thus provided a relatively dry location that served as a transitory active flint knapping zone where people stopped, perhaps to repair and maintain hunting tools around small fires. This took place over thousands of years mostly during the Late Mesolithic but right up until the Bronze Age. Gravel eyots have long been recognised as significant in terms of their prehistoric archaeological potential, and for decades workers have endeavored to map the buried features within the Thames floodplain (Cowan *et al.* 2009; Sidell *et al.* 2002). Good assemblages of lithics and small abraded prehistoric sherds have been recovered from similar eyot soils at the Royal Docks Community School, Custom House (Holder 1998) (Fig. 15), Thorney Island, Westminster (Thomas *et al.* 2006) and on the north Southwark/Lambeth sand islands (Sidell *et al.* 2002). It is not clear, however, whether the Fords Park Road eyot is an isolated island or a bluff of the Taplow Terrace (the edge of which is mapped approximately 200m to the north) as there is a distinct lack of available information on the subsurface stratigraphy directly north of the sites in the current model. The terrace edge is also known to have high archaeological potential, and Mesolithic to Bronze Age artefact scatters (often abraded and disorganised suggesting chance deposition) are fairly typical of the weathered sand and gravel surface. Notable assemblages, however, are found further east in Rainham (Bates and Whittaker 2004; Bull 2010; Brook Way, Pamela Greenwood pers comm.) and at Addington Street, Southwark (Bruce Watson pers. comm.). Tank Hill Road Purfleet (Leivers *et al.* 2007) also deserves a mention despite its distance from Fords Park Road due to the similarities of the Mesolithic assemblages and the scarcity of such sites.

In the immediate surroundings during the Early and Middle Holocene, sands and silts collected within mere and river basins (F3 and F4) fed by rivers flowing from the terrace to the Thames dissecting the floodplain. The channels and depressions seem to have undergone a prolonged period of freshwater deposition perhaps forming areas of more open, navigable channels to the north of the expanding peat marsh. The free-draining and minerogenic depositional conditions on the sites would not have been favourable for archaeological preservation. Prior to Bronze Age peat accumulation, the Crediton Road mere dried out and plant life established. This may have been caused by channel migration or the onset of a dry period as recorded in mire-derived and alluvial data (Barber *et al.* 2003) and generally low alluvial activity at the beginning of the Bronze Age (Macklin *et al.* 2005). These factors, combined with the site's position on the floodplain and raised topography, may have contributed not only to mere infilling and desiccation but to delayed peat development.

The freshwater channels eventually gave way to sedge-reed fen and alder carr peat (F5) and infilling took place by the Late Neolithic and Bronze Age as a result of RSL (relative sea level) rise. The widespread Neolithic and Bronze Age peats typical of the Thames floodplain, often dubbed 'ubiquitous', were defined by Devoy as the Tilbury III peat (1977; 1979; 1982). Within this unit evidence for Neolithic to Iron Age activity may be found in the form of wooden trackways, constructed across marshland to link topographic high points and provide access into the marshes (Meddens 1996). For example, a short length of simple Early Neolithic 'trackway' at Fort Street (Fig. 15) was preserved, subsumed by later peat development (Crockett *et al.* 2002). In comparison to sites such as this and West Silvertown Urban Village (BWC96) where peat started forming as early as 4780–4350 cal BC (5660±100 BP [Beta–93689]) within a deep Lateglacial channel feature (Wilkinson *et al.* 2000) (Fig. 15), peat accretion at Crediton Road and Butchers Road was retarded for another 2000 to 3000 years. This ties in well with the recently published A13 investigations with freshwater peat and organic silt accumulation from the early Neolithic 2210–1810 cal BC (3650±70 BP [Beta–147962]) (Stafford 2012). The A13 project also provides an example of more permanent or semi-permanent settlement, contemporary with peat growth and Bronze Age land use at Fords Park Road, at Freemasons Road Underpass less than half a kilometre to the north-east on the edge of the Taplow Terrace (Fig. 15). Here lay a 15m long Middle Bronze Age (1880–1600 cal BC, 3400±50 [Beta–152738]) 'bridge' or puncheon: an east-west aligned post-built structure consisting of a double row of large oak piles, possibly leading to an eyot identified by the Lea Valley Mapping Project (Corcoran *et al.* 2011). Associated craft, food debris, pits, ditches and post-holes to the north suggest more intensive settlement activity. The eyot may have been a satellite to this local Bronze Age centre.

Another distinctive feature of the studied sequences is the destruction of a sand bank at Vandome Close by an event such as a storm or tidal surge prior to alluviation. The storm probably took place before the Late Bronze Age as the sand is sealed by alluvium from which a radiocarbon date of 1400–1190 cal BC was obtained. A growing number of local sites show evidence of mixed, exotic microfossil assemblages in Bronze Age sediments remote from the contemporary coast where freshwater conditions would be expected. One important example nearby is the Urban Sustainability Centre (USC10) north of the Royal Victoria Dock (Halsey 2011). Ostracod and foraminifera assemblages comprised a mixture of brackish,

saltmarsh, freshwater, marine and offshore shelf species. Similar microfaunas have been seen in Thames-Medway boreholes on the Isle of Grain reliably dated in one borehole (based on the AMS dating of foraminifera) to *c.* 2250 BC (late Neoltihic/Early Bronze Age) (Whittaker 2007). A tidal surge dated to *c.* 1250 cal BC is also recorded at one of the Jubilee Line Extension (JLE) sites (Union Street) (Sidell *et al.* 2000). These records may be related to the flooding of what is now coastal Kent that must have produced a much more open, less protected lower Thames estuary enabling storm surges to push vast amounts of water and sediment upstream (Whittaker pers. comm.). The evidence for multiple Bronze Age storm surges has implications for our understanding of life in the Thames floodplain zone. Due to poor dating control (both accuracy and precision), the timing, causes and consequences of individual events are currently difficult to assess, but as the body of evidence grows, we may gain valuable insights into Bronze Age life.

The blue grey silt clay alluvium that buries the peat and the eyot is dated to the Late Bronze Age/early Iron Age, a phase of well-documented climatic instability. Widespread flood clay deposition was caused by a combination of the upward RSL trend, increased river discharge and soil erosion due to a solar-forced climatic event and arable cultivation (Brown 2008). The southern extent of the study area preserves strong evidence for a brackish water incursion, reflecting the inland progression of estuarine conditions while pollen spectra show a mixture of woodland and open grassland in the surroundings with evidence of cereal cultivation.

Conclusions and future prospects

The excavations demonstrate that even in urban surroundings a varied prehistoric landscape can survive with marked changes in palaeotopography and sediment deposition. The work revealed evidence for occupation where predicted on the Fords Park Road eyot and characterised the soils and local environment in which this activity took place. The assemblage has potential for further spatial definition and enhanced refitting analysis. It is clear that the advantages provided by the eyot were recognised throughout much of prehistory, at least until progressive inundation of the floodplain since the Bronze Age. The work at Fords Park Road in particular has demonstrated a significant human presence here during the later Mesolithic, with further episodes of activity during the early Neolithic and the early part of the Bronze Age. As such, the site can be added to a growing number of other periodically occupied localities on the prehistoric valley floor downstream of the modern urban core. The eyot was a safe stopping point where people could light fires while making and repairing hunting tools. Although there are no vertical stratigraphic relationships between artefacts of different time periods, some horizontal distribution pattern remains and further work on the flint scatter (including refitting analysis and a closer look at the relationship between the micro-burins and microliths) may augment the current interpretation of the use of space and tools.

Equally importantly, the archaeological evaluation trenches exposed a variety of more deeply stratified wetland and dry land sediment archives that prove invaluable for understanding environmental change over the prehistoric period. Examination of the site specific environmental histories has accentuated departures from wider estuary and floodplain models. The local variability is often overlooked or avoided by geographers studying wider-scale issues, but whilst stratigraphic frameworks are useful in describing the complex factors that control sediment build up and provide background information for archaeology, the homogeneity of the prehistoric floodplain landscape they suggest is far from that actually encountered by prehistoric groups. For example, being remote from the direct influence of the Thames there is no evidence of Early Holocene marine transgression and freshwater rivers and lakes persisted into the Late Neolithic and Bronze Age perhaps as navigable waterways. Meanwhile, to the south mid-Neolithic estuary contraction caused peat accretion. Peat expansion only starts at these sites during the Late Neolithic and Bronze Age (perhaps with rapid RSL rise during Devoy's Thames III) and is buried with RSL rise during a phase of climatic instability in the Late Bronze Age. Fascinating evidence of a Bronze Age storm episode comes from the breached vegetated bank and associated microfaunal assemblages at Vandome Close and with further work, similar events documented locally and in the wider estuary may be better understood.

A significant part of the work on these sites involved creating a pre-Holocene surface DEM. Notwithstanding its limitations this provides a picture of the topography of the area and replicates the now buried land surface that existed at the start of the Holocene. The deposit model is an on-going project, evolving as new data are added. As it develops, issues such as whether Fords Park Road is an island or actually part of the terrace edge will be resolved and our understanding of the diverse prehistoric floodplain environments of east London will broaden. The template proves invaluable in terms of providing the basis for interpretation of the depositional environments and for targeting areas of archaeological and palaeoenvironmental potential in the future. In publishing these data and disseminating the information MOLA hopes to attract interest from field archaeologists and researchers alike.

AUTHOR AFFILIATIONS

M. Nicholls, J. Corcoran, E. Eastbury: Museum of London Archaeology (MOLA), Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED

J. Cotton: Archaeological Consultant, 58 Grove Lane, Kingston upon Thames, Surrey, KT1 2SR

R C. Scaife: School of Geography, University of Southampton, Highfield, Southampton, SO17 1BJ

J.E. Whittaker: The Natural History Museum, Cromwell Road, London SW7 5BD

R.I. Macphail: Institute of Archaeology University College London, 31–34 Gordon Square, London WC1H 0PY

N. Cameron: Environmental Change Research Centre, Department of Geography, University College London, Pearson Building, Gower Street, London WC1E 6BT

K. Stewart: MOLA

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Further excavations at a Late Prehistoric and Roman site at West Thurrock

Kevin Ritchie

With contributions by Kayt Brown, Jessica M. Grimm, Jacqueline I. McKinley and Ruth Pelling. Illustrations by S.E. James

Excavations in 2007–8 have added further information to that recovered in the extensive Channel Tunnel Rail Link (CTRL) work undertaken in 2001–2 immediately to the north and showed that, as expected, the evidence for late prehistoric settlement and early Romano-British burial extended into this area. The finds and environmental assemblages provide a small but significant supplement to the material recovered from the CTRL site. Middle Bronze Age – Middle Iron Age features included a possible roundhouse and a four-post structure, as well as a continuation of a boundary ditch. The early Romano-British linear cemetery recorded in the CTRL excavation extended to the south, utilising the prehistoric boundary ditch. Two further inhumation graves, one containing a pottery vessel, and a cremation-related deposit were inserted along its length. Continuations of a probable trackway and a ditch forming a major Romano-British land boundary were also recorded. Medieval features comprised two large sub-rectangular pits probably associated with buildings that predate High House, the 16th century and later manor house immediately to the south of the site.

INTRODUCTION

In January 2007 Wessex Archaeology was commissioned by Thurrock Thames Gateway Development Corporation to undertake an archaeological evaluation of land to the north-west of High House Farm, Purfleet, Essex. The site, centred on Ordnance Survey (OS) national grid reference (NGR) 556550 178130, extends over approximately 2.88ha and is situated on the south side of the Channel Tunnel Rail Link (CTRL; Andrews 2009) as it passes in a cutting through the Purfleet anticline (Fig. 1).

Following completion of the evaluation, which revealed archaeological remains throughout the site (Wessex Archaeology 2007), a two-phase strip, map and record excavation was undertaken. The first phase was carried out in December 2007 and the second phase in March 2008.

Site location and geology

The site is located on the highest part of the Purfleet anticline, between the River Thames approximately 1km to the south and the Mar Dyke channel (considered an early course for a relict loop of the Thames known as the Ockenden Loop), to the north. The site occupies the very top and south-facing brow of the anticline, on a gentle slope descending within the site limits from a height of *c.*19m above Ordnance Datum (aOD) in the north-west to *c.*13m aOD in the south-east. An east to west aligned sharp break of slope along the southern side of the site indicates a modern terrace cut into the prevailing slope.

The solid geology for the area is mapped as Cretaceous Upper Chalk (BGS 1998), forming the south-facing side of the Purfleet anticline extending from the mouth of the Mar Dyke at West Purfleet across to Little Thurrock near Tilbury. The British Geological Survey notes superficial caps of Palaeocene Thanet Beds sand on the surface of the anticline, although no drift geology is mapped in the immediate vicinity of High House Farm. However, the CTRL excavations revealed superficial spreads of 'flinty wash' – a sandy silt containing flints and small chalk inclusions – overlying chalk. It is likely that this 'flinty wash' is largely a chalk-derived periglacial deposit. The CTRL excavations also revealed that the Pleistocene gravels within the Mar Dyke did not extend this far to the south-east.

Archaeological background

Previous archaeological work has concentrated on the nationally important Pleistocene deposits overlying the chalk anticline at Purfleet. In addition, various finds of later date have been recovered as a result of quarrying (data from the Essex Sites and Monuments Record (SMR)). Further details of these and the existing 17th and 18th century buildings at High House Farm can be found in Andrews (2009).

Excavations in 2001–2 in advance of the construction of the CTRL, and following a programme of fieldwalking, geophysical survey and evaluation, revealed the presence of a multi-period site at High House (Andrews 2009) (Fig. 1). The principal prehistoric remains all lay within area A1 and comprised several Middle and Late Bronze Age pits, clusters of Late Bronze Age pits and post-holes (many filled with burnt flint and charcoal), a Late Bronze Age/Early Iron Age north to south aligned ditch, and a Late Iron Age small double-ditched enclosure. Broadly contemporaneous with this was a sinuous north to south aligned ditch following the west side of the enclosure, and two small pits (to the south-east of A2; not illustrated). Early Romano-British features, all in area A1, included a major north to south aligned ditch, a possible trackway, and an unusual group of at least fourteen inhumation burials and two cremation burials inserted along the Late Bronze Age/Early Iron Age ditch. Post-Roman remains comprised three medieval pits (A1–A2), a small group of post-medieval pits, post-holes and ditches (A3), immediately adjacent to High House Farm cottage, and a large post-medieval chalk quarry.

The 2007 evaluation revealed archaeological remains in fourteen of the eighteen trenches (Fig. 1) (Wessex Archaeology 2007), though the features were generally fairly thinly scattered and very little dating evidence was recovered. However, comparison with the more extensively excavated and dated features on the CTRL site has enabled the date and nature of the majority of the undated remains to be inferred. Features included a cluster of probable prehistoric pits and post-holes and possibly two prehistoric ditches, a large early Romano-British ditch extending through and beyond the proposed development area towards the River Thames floodplain, and

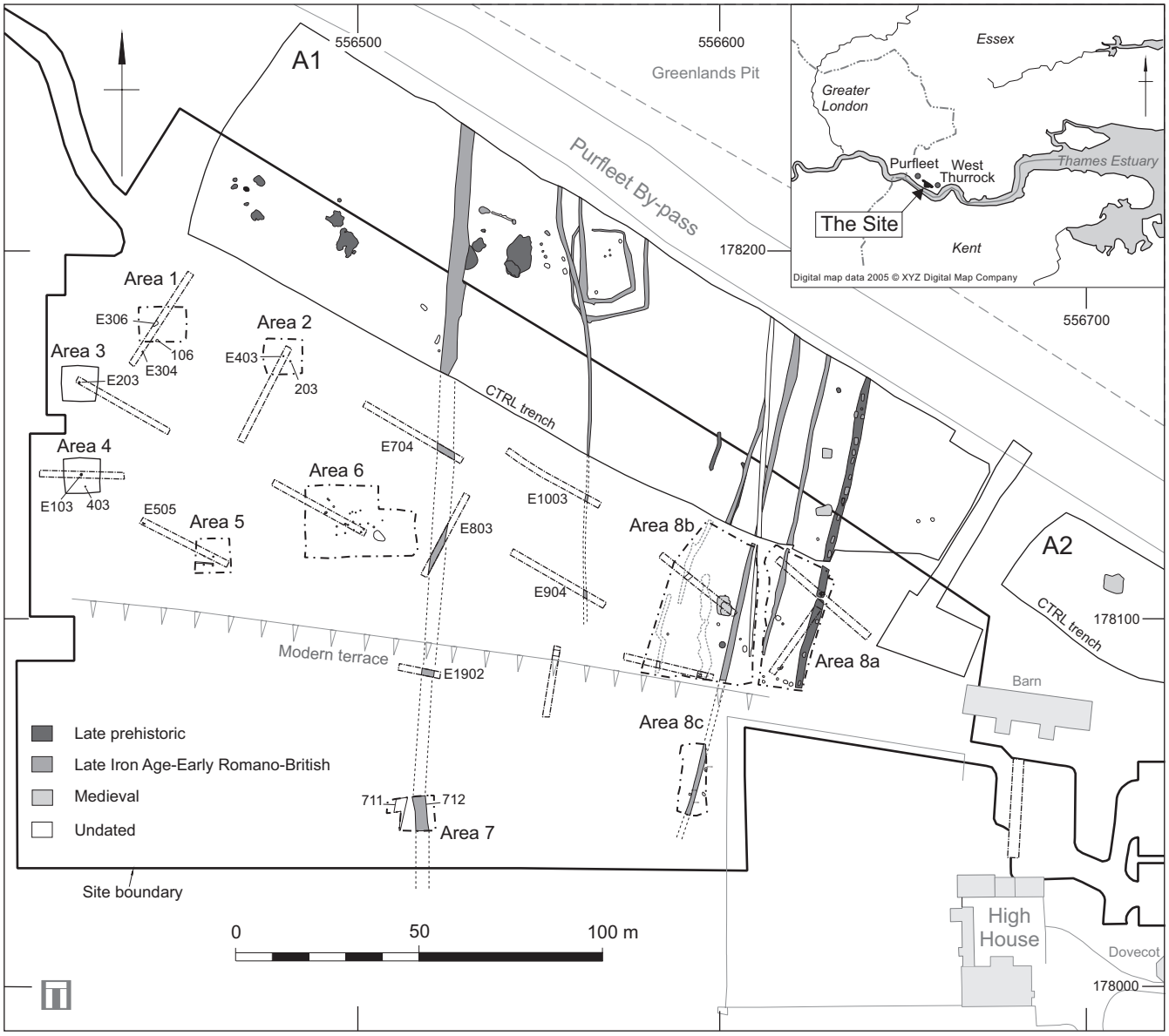

FIGURE 1: Site location plan, showing CTRL 2001 excavations (A1–A2) and 2007–8 excavations (areas 1–8c)

a possible early Romano-British grave cutting one of the prehistoric ditches. A colluvial deposit, thickening towards the bottom of the slope, was identified throughout the main part of the evaluation area, sealing prehistoric and Romano-British features and cut by modern features, suggesting a medieval or later date for its formation. Post-medieval features included the terrace cut noted above, a ditch probably associated with the terrace and a succession of yard surfaces, the earliest related to the 18th century and later occupation of High House Farm.

THE 2007–8 EXCAVATIONS

The 2007–8 excavations, undertaken in two phases, targeted archaeological features identified during the evaluation as well as the principal group investigated in the earlier CTRL excavations which extended into the eastern part of the site (Fig. 1).

Phase 1 comprised seven areas located in the west of the site, all but one (Area 7) intended to examine discrete features. Areas 1–5 and 7 were to measure 10m × 10m and Area 6 20m × 20m. Areas 1, 6 and 7 were subsequently extended (to 130m², 520m² and 110m² respectively) to ascertain the extent and nature of features or groups of features only partially exposed during machine stripping.

Phase 2 comprised three areas in the east of the site, targeted principally on a series of linear features and, in particular the ditch containing Romano-British burials. Areas 8a and 8b, separated by a modern bank, measured 600m² and 1120m² respectively. Area 8c to the south of the modern terrace measured 120m².

A summary of all archaeological features is presented below, with phased features shown on Figure 1. Three broad ranges of feature dates have been identified: late prehistoric (Middle Bronze Age – Middle Iron Age), Late Iron Age/early Roman, and medieval, with a number of undated features. Full descriptions are available in the project archive. Numbers prefixed by an E were recorded during the evaluation stage of the fieldwork.

Late prehistoric (Fig. 1)

A small assemblage of worked flint (33 pieces) from a variety of features consists entirely of waste flakes. Most pieces are unpatinated, and condition is generally good, with little evidence of edge damage. In the absence of diagnostic tools or other utilised pieces, this small lithic group can only be broadly dated as Neolithic or Bronze Age, probably pre-dating most if not all of the excavated features.

The majority of datable features are Middle or Late Bronze Age, with isolated examples of Early – Middle Iron Age date. Dating is based almost exclusively on the generally small quantities of pottery recovered, supplemented by a single radiocarbon date, and also, in the case of the ditches, by the period assigned to them in the CTRL excavations.

Post-holes

Fifteen post-holes comprising E103, E203, E403 and E304 (Fig. 1), E503, E603, E605, E607, 609, E609, 613, 615 and 635 (Fig. 2), and 8106 and 8108 (Fig. 3) have been assigned to this period. The post-holes varied between 0.27m and 0.49m in diameter and 0.17m and 0.35m in depth, generally with steep or vertical sides and concave bases. Spatial analysis has identified a four-post structure and a possible roundhouse.

Posthole E503 recorded during the evaluation was 0.34m in diameter and 0.27m deep. The excavation revealed three further post-holes in close proximity within Area 5, (504, 506 and 508), all undated and shallower. These post-holes lay between 2.3m and 2.5m apart and formed the corners of a four-post structure (Group number 510) (Fig. 2).

The main concentration of post-holes was recorded in Area 6 (Fig. 2). Postholes E605 and 613 formed part of a possible linear arrangement with four other, undated post-holes aligned east to west across the centre of Area 6. Postholes 609 and 635 appeared to form part of a similar, roughly parallel arrangement comprising five post-holes (three undated) a short distance to the south. The two rows of post-holes, approximately 12m in length, may represent fence lines.

Alternatively, post-holes 605, 609, 611, 619, 623, 627 and E607 may define a roundhouse structure *c*.5.8m in diameter. The post-holes that form this potential structure had an average diameter of 0.32m, with depths from 0.09m to 0.29m.

Post-holes/pits 8054, 8056 and 8060 were cut into the fills of the south terminal of ditch 8138 and may have formed part of the (later) entrance arrangements between ditch 8138 and ditch 8139 immediately to the south.

Pits

Six pits (8003, 8007, 8009, 8085, 8119 and 8134; Fig. 3) produced prehistoric pottery, mostly body sherds with the exception of a small cup and a shouldered jar fragment recovered from pit 8119. Pit 8134 contained the largest concentration of burnt flint on the site, which was otherwise fairly sparse. The pits were confined to Areas 8a, b and c in the east of the site and had dimensions ranging from 0.6m diameter to 1.75m long by 1.14m wide, with depths from 0.2m to 0.6m.

Two grains of emmer wheat (*Triticum dicoccum*) selected from a sample from pit 8003 produced a radiocarbon date of cal 1410–1210 BC (3040±30BP, NZA–29932). Pottery from pits 8007 and 8085 dates to the Middle Bronze Age, while pits 8009 and 8119 have been assigned to the Late Bronze Age and Late Bronze Age/Early Iron Age respectively, and pit 8134 to the Early/Middle Iron Age, based on pottery from them.

Feature 625 (Fig. 2) was located in Area 6 in the west of the site. The feature was interpreted as a tree-throw hole, irregular in shape, 3.4m long, 2.4m wide and 0.45m deep. However, it produced a relatively large quantity of artefacts including pottery, animal bone (worked and unworked) and a single human bone, indicating that it had been utilised for rubbish disposal. The pottery recovered comprised 53 sherds and included a Late Bronze Age carinated sherd and two upright rims, presumably from shouldered jars.

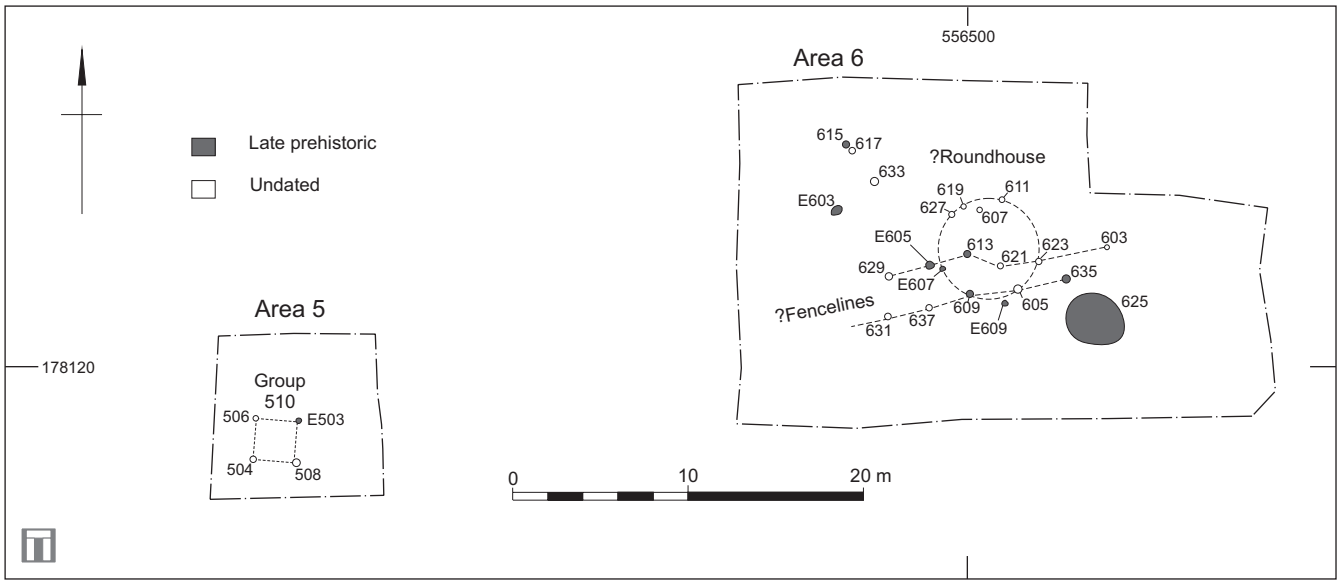

FIGURE 2: Detailed plan of Areas 5 and 6

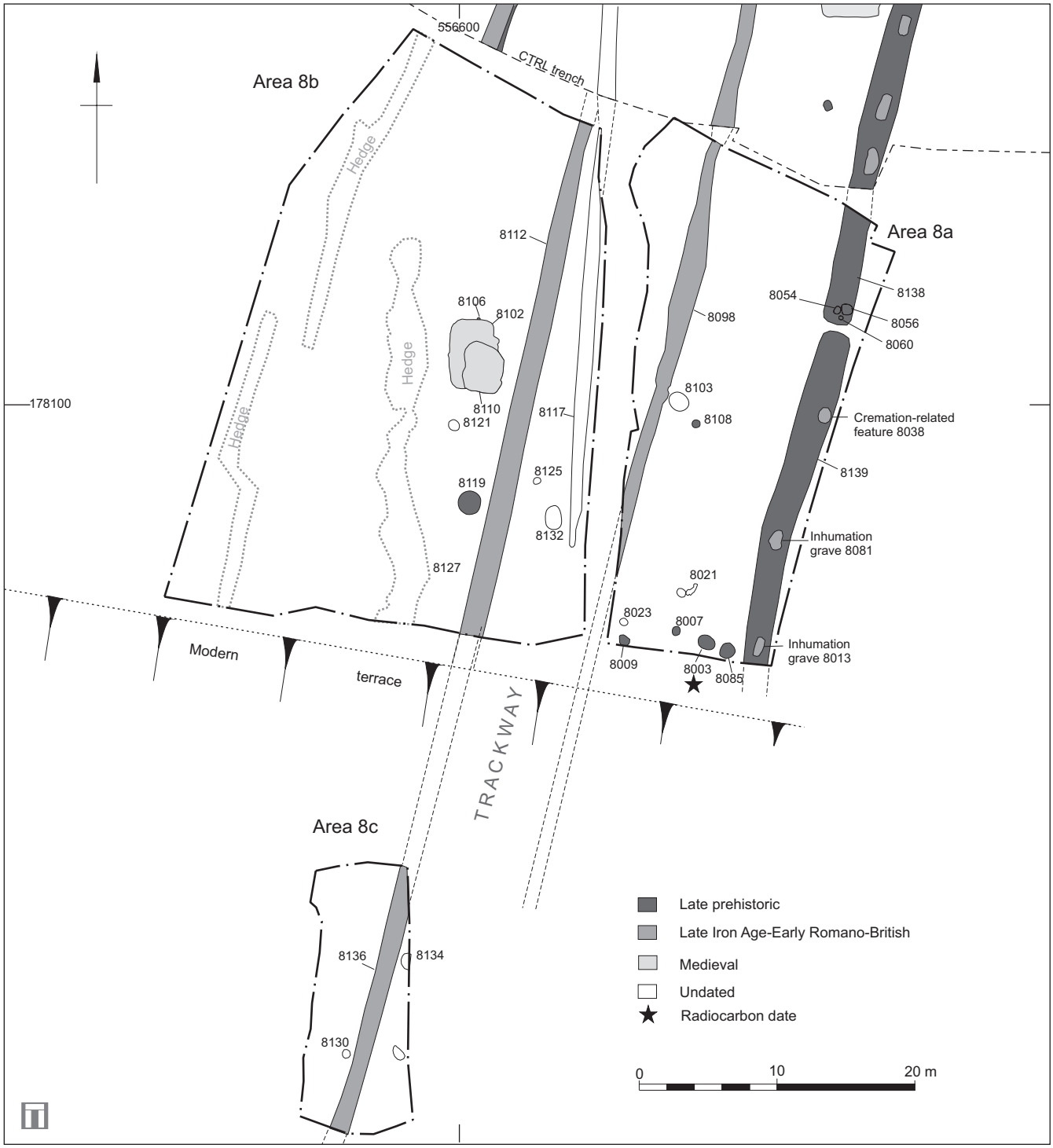

FIGURE 3: Detailed plan of areas 8a, 8b and 8c

Ditches

Ditches 8138 and 8139 were located at the eastern end of the site in Area 8a and formed part of the same boundary feature (Fig. 3). Ditch 8138 was 2.20m wide and 0.44m deep, aligned north to south and extended *c*.7m into the excavation area. The terminal was cut by three post-holes/pits (8054, 8056 and 8060). Ditch 8138 formed a continuation of ditch 17000 within the CTRL excavations immediately to the north and dated as Late Bronze Age/Early Iron Age, and the small quantity of pottery recovered in 2007/8 supports a Late Bronze Age date for 8138.

Ditch 8139 to the south was also aligned north to south and was at least 25m in length, 2.55m wide and 0.60m deep. The terminals of ditches 8128 and 8139 were separated by a causeway *c*.1m wide, possibly representing an access point between the two ditches.

Undated/late prehistoric?

A number of post-holes produced no dating evidence, but a four-post structure (Area 5) and 15 post-holes (Area 6) may have formed two fence lines and/or a roundhouse, are probably of late prehistoric date.

Pit 106 in Area 1 (Fig. 1) was an isolated feature; pits 8023, 8103, 8121 and 8132 (Fig. 3) (Areas 8a and b) may have been associated with nearby prehistoric features.

Late Iron Age/early Romano-British (Figs 1 and 3)

Ditches

A single, small Late Iron Age ditch, aligned north to south, was identified in two of the evaluation trenches (E904 and E1003) and formed a continuation of a ditch recorded within the CTRL excavations immediately to the north of the site.

A large north to south aligned ditch was recorded in evaluation trenches 7, 8 and 19 (E704, E803 and E1902) and Area 7 (712), generally varying in width between 4m and 6m and at least 0.90m in depth with steeply sloping sides and a gently rounded base. Truncation to the south of the modern terrace cut had reduced the width to *c.*2.5m and the depth to *c.*0.3m. Although undated, it is certainly a continuation of the large early Romano-British ditch encountered crossing CTRL area A1.

Ditch 711, also recorded within Area 7, was aligned north-north-east to south-south-west and was 2.9m wide and 1.26m deep with steep sides and a narrow flat base. It was undated but may be of Romano-British date, perhaps diverging from ditch 712, a shallower feature, immediately to the east.

Further to the east were parallel ditches 8098 and 8112/8136 which lay approximately 10m apart. Both were relatively small and shallow, ditch 8098 being 0.55m wide and 0.2m deep and ditch 8112/8136 1.6m wide and 0.3m deep. Both were undated but formed continuations of early Romano-British ditches recorded in the CTRL excavations to the north. It is suggested that they defined a trackway parallel and 10m west of late prehistoric ditch 8138/8139 which had been re-used for burial in the early Romano-British period.

Burials

Grave 8013 (Fig. 4), was located at the southern end of ditch 8139, at the limit of the excavated area. The grave cut was rectangular, aligned north to south and measured 1.44m in length, 0.64m in width and 0.45m in depth. The grave contained the remains of an adult male, (skeleton 8011) which was laying face down on its right side with the head to the north; the arms were under the torso with the legs flexed. Three joining sherds that made up a small carinated bowl with a potential date range which spans the conquest period (mid-1st century BC to late 1st century AD) was recovered from the southern end of the grave.

Grave 8081 (Fig. 4) was located in ditch 8139 *c.*6.5m to the north of grave 8013. It was irregular in plan, aligned north to south, measuring 1.50m in length, 0.95m in width and 0.25m in depth. It contained skeleton 8032, another adult male, laying on its right side in a crouched position with the head to the north. No grave goods were present.

Cremation-related feature 8038 was located *c.*8.50m to the north of grave 8081 and, like the other graves, was also cut into the upper fill of ditch 8139 (see Fig. 3). It measured 0.8m in length, 0.5m in width and 0.16m deep and contained the remains of a sub-adult or adult. Four fragments of curving copper alloy wire, probably originally a single object, perhaps a loop or suspension ring, and an iron nail were recovered from the cremation-related deposit.

Medieval and later

Two relatively large intercutting features, 8102 and 8110, were located in the centre of Area 8b (Fig. 3). The earlier feature, 8102, was sub-rectangular and aligned north to south, measuring *c.*5m in length, *c.*3m in width and 0.3m deep. Feature 8110 was roughly square and measured *c.*3.5m long,

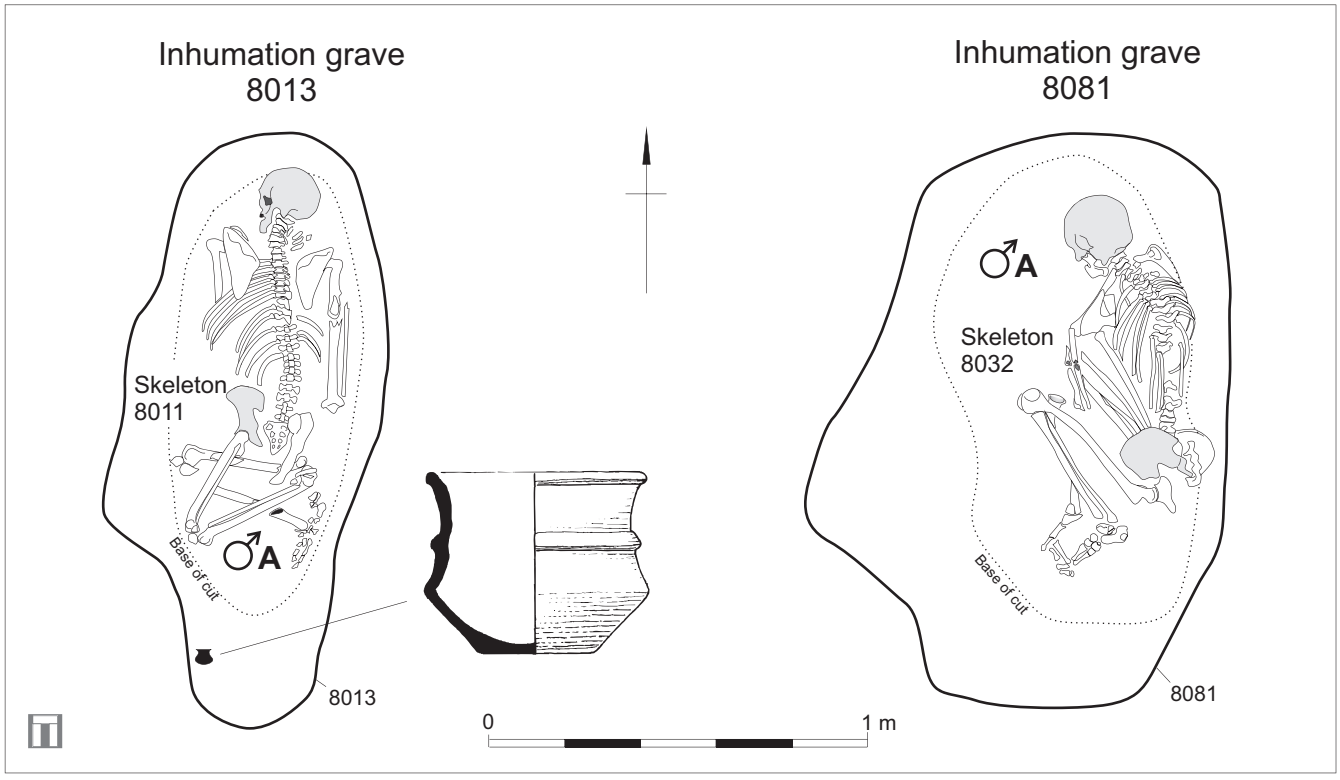

FIGURE 4: Plans of inhumation graves 8013 and 8081 (pot at one-third actual size)

c.3m wide and 0.56m deep. Two sherds of medieval pottery were recovered from context 8101, the primary fill of feature 8102 and 16 sherds from 8111, the secondary fill of 8110.

Undated ditch 8117 was aligned north to south is certainly a continuation of a post-medieval/modern ditch encountered in the CTRL excavation, while several shallow, irregular features (including 8127) to the west may represent former hedge lines.

FINDS

Pottery by Kayt Brown

A small assemblage of 230 sherds (3063g) was recovered, primarily late prehistoric in date, with small quantities of Late Iron Age/early Romano-British and medieval material. The sherds are in a relatively good condition, with an average sherd weight of 13g, although there is a paucity of diagnostic sherds.

The pottery was analysed using the standard Wessex Archaeology recording system for pottery (Morris 1994). Where possible, fabrics were correlated with those defined for the large assemblage previously recorded from the CTRL work at High House (Mepham 2009). Fabrics were defined by principal inclusion type and, given the size and condition of the assemblage this was a necessarily broad classification. Brief fabric descriptions, and quantification by sherd count and weight, are given in Table 1.

Flint-tempered fabrics dominate the assemblage, forming three distinct groups. Fabrics with frequent, relatively well sorted flint inclusions are characteristic of the Middle Bronze Age Deverel-Rimbury ceramic tradition. No diagnostic forms were present within this group, but a radiocarbon date of cal 1410–1210 BC from cereal remains within pit 8003 supports this identification. Although both a fine and coarse variant was identified within the previous assemblage (Mepham 2009) only a coarse version was recorded within the present assemblage (Fabric FL2). A range of other fabrics with sparse, poorly sorted flint tempering of varying coarseness were grouped together (Fabric FL1) and are likely to represent a small Late Bronze Age post-Deverel-Rimbury plainware assemblage. Diagnostic forms within the FL1 fabric group comprised a carinated shoulder sherd decorated with diagonal incisions from a bipartite jar (Fig. 5.1) (ditch 8139), two shouldered jars with upright rims (Fig. 5.2) (both within tree-throw hole 625), a small, crudely made cup (Fig. 5.3) (pit 8119), and a weakly shouldered jar (Fig. 5.4). A small number of fineware sherds, with burnishing on either one or both surfaces were also recorded (fabric FL6). Two small sand-tempered sherds (fabric QU5) could not be assigned a date range with any certainty although both are likely to be later prehistoric in date. Two coarse shelly ware sherds (fabric SH1) occur alongside Late Bronze Age flint-tempered sherds.

Three joining sherds in a fine grog-tempered fabric (fabric GR1) are from a carinated bowl with single cordon, probably wheel-thrown in the Late Iron Age, 'Belgic' tradition (see Fig. 4) (grave 8013). The form is comparable to Thompson's type E1–1 (1982, 351), common in Essex from the late 1st century BC and continuing into the post-conquest period (ibid., 352).

Medieval sherds comprised local orange sandy wares (Essex fabric 21), a single shell-tempered sherd (fabric 12A) and four sherds of Mill Green Ware (fabric 35), the latter produced at Ingatestone, Essex during the early 14th to late 15th centuries. The glazed sherds, two with sgraffito decoration, are likely to

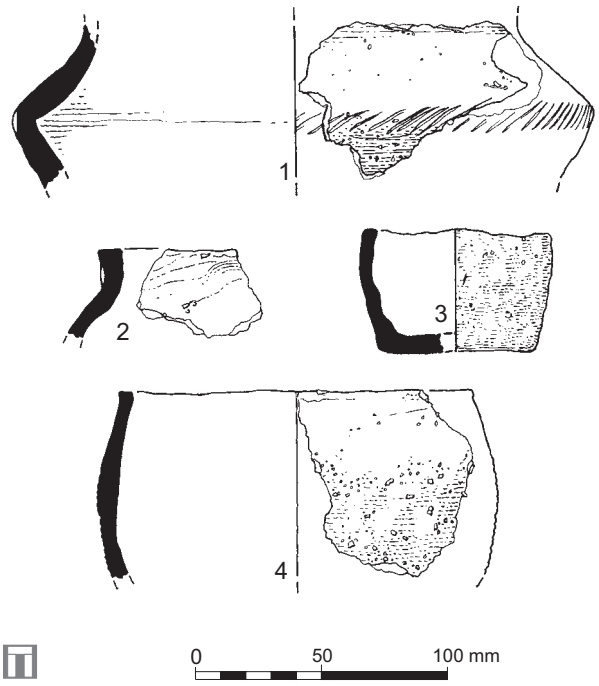

FIGURE 5: Late Bronze Age pottery (details in catalogue)

Date Range	Fabric Code	Fabric Description	No. sherds	Weight (g)
MBA	FL2	Deverel-Rimbury coarseware	98	1589
M/LBA	FL1	Coarse flint-tempered fabric	81	860
M/LBA	FL6?	Flint tempered Finewares	20	218
LBA?	QU5	Coarseware, sandy	1	2
LBA	SH1	Coarseware, shelly	5	64
E/MIA	QU6	Coarseware, sandy	1	20
LIA	GR1	Fine grog-tempered fabric	4	187
MED	Essex fabric 21	Orange sandy wares	15	92
MED	Essex fabric 12A	Shelly ware	1	13
MED	Essex fabric 35	Mill Green ware	4	18
Total			**230**	**3063**

TABLE 1: Quantification of pottery assemblage by sherd count and weight, by fabric

be 14th century in date. All the medieval sherds came from two rectangular pits (8102 and 8110) within area 8b.

This assemblage provides a useful addition to the material previously excavated at Purfleet and, as expected, there are shared characteristics between the assemblages. The most notable difference perhaps is the lack of an obvious Late Bronze Age/Early Iron Age component, with more of an emphasis on the Middle and Late Bronze Age within this assemblage. This late prehistoric assemblage can be paralleled on a number of sites within the region such as Mucking, Springfield Lyons and North Shoebury (Barrett and Bond 1988; Buckley and Hedges 1987; Brown 1995). It is also perhaps surprising that given the quantity of Late Iron Age/early Romano-British activity to the north, little pottery of this date was recovered. The single Late Iron Age carinated cup from grave 8013 is a common form in Essex, particularly within graves dated to the mid-/late 1st century AD (Thompson 1982, 352) which corresponds with the date assigned to the burials within this ditch to the north (Andrews 2009).

Catalogue of illustrated vessels:
(PRN – pottery record number)

Illustrated Fig. 4
PRN 20, fabric GR1 carinated cup with cordon, Thompson type E1–1, context 8011, Object number 500, Grave 8013

Illustrated Fig. 5

1 PRN 25, fabric FL1 incised decorated shoulder sherd, context 8041, ditch 8043
2 PRN 6, fabric FL1 upright, flat-topped jar rim, context 626, tree-throw hole 625
3 PRN 49, fabric FL1 small cup, context 8120, pit 8119
4 PRN 50, fabric FL1 Shouldered jar, context 8120, pit 8119

Metal finds by Kayt Brown

Four metal objects were recovered, all associated with cremation-related feature 8038. They comprise three fragments of curving copper wire (object number 501), probably parts of a single object such as a loop or suspension ring, and an iron nail.

Human Remains by Jacqueline I. McKinley

Cremated and unburnt human bone was recovered from four contexts, including the remains of two Romano-British inhumation burials and one cremation-related deposit, all from features cut through the fills of a north-south ditch (8139) on the eastern margins of the site (see Fig. 3). A fragment of redeposited, unburnt bone was recovered from a Late Bronze Age feature in Area 6.

The features cut through the ditch fills doubtless form an extension of the early Romano-British (1st century AD) linear cemetery discovered in the CTRL excavations to the north of the present site (Andrews 2009). That cemetery utilised what clearly comprised a continuation of the same ditch alignment, albeit with an intervening 17m length devoid of mortuary deposits, and included the remains of thirteen inhumation burials and two unurned cremation burials.

A summary of the results from analysis is presented in Table 2. Full details are in the archive.

The inhumation graves (see Fig. 4) had cut through the fill(s) of ditch 8139 and ranged in depth from 0.45m to 0.56m. The percentage of skeletal recovery is high, reflecting the undisturbed nature of the deposits and generally good condition of the bone; graded 1–3 (slight-moderately root marked). The levels of preservation are consistently better than that seen in the remains excavated from the cemetery to the north, indicating a slight variation in the burial microenvironment (McKinley 2009). As previously noted, post-depositional movement – generally slumping forward – of the body had clearly occurred, suggesting either the graves were not immediately backfilled after burial or that some subsequently decayed organic cover was originally laid over the corpse.

The redeposited Late Bronze Age bone comprised a humerus shaft fragment with old, worn breaks and a slightly polished appearance. It was neither weathered nor abraded, and did not appear to have undergone repeated deposition episodes.

The cremated bone (as with the previously recorded material) is in good visual condition and includes some trabecular bone as well as the more taphonomically stable and robust compact bone. The relatively substantial surviving depth of the feature (0.16m) and recorded position of the bone within it (close to the base) suggests it is unlikely that much, if any, bone was removed as a result of disturbance/truncation. The feature was not, however, subject to full excavation (half sectioned only) so an unknown quantity of bone is undoubtedly missing from the assemblage.

Demographic data

The unburnt bone assemblage includes the remains of one immature Late Bronze Age individual and two early Romano-British adult males. The latter increases the number of individuals from the Romano-British linear cemetery to sixteen, mostly adults (87.5%), and predominantly male (eight of thirteen sexed individuals; McKinley 2009). Despite the uncertain nature of the cremation-related deposit, the bone is unlikely to have derived from the same cremation as the remains from the cremation burials to the north, and thereby increases the number of cremated individuals from the cemetery to three (McKinley 2009, with further discussion).

Skeletal indices and non-metric traits

The cranial indices for both males (76.3–.7) were in the upper range of those previously recorded from the site and well above the mean of 71.0; they join one other previous outlier in the mesocrany range. The platymeric index (demonstrating the degree of anterior-posterior flattening of the proximal femur) for both males is also towards to top of the previously record range, readings for 8011 falling in the platymeric range and those for 8032 in the platymeric/eurymeric. Both have higher readings for the right side from the left, 8032 by 13.7, suggesting markedly differing stresses on the two sides (similar variations were observed from two males in the cemetery to the north). The platycnemic index (illustrating the degree of meso-lateral flattening of the tibia) for both males is within the range of those previously recorded; falling within the most common eurycnemic range or the slightly less frequent mesocnemic range (McKinley 2009.). The level of homogeneity suggested by these indices suggests there is no marked distinction between these two southern outliers and at least some of the males recovered from the more densely grouped graves to the north; some of the observed variations

Context	Cut	Deposit type	Quantification	Age/sex	Pathology
626	625	redep.	1 frag. (humerus)	juvenile/subadult *c*. 9–16 yr.	
8011	8013	inh. burial	*c*. 98%	adult *c*. 45–60 yr. male	calculus; caries; dental abscess; periodontal disease; calcified cartilage (thyroid & rib); fracture – 2 left ribs; periosteal new bone – left fibula; ddd – C3–5, T1–2, T7, S1; op – right scapula, right prox. ulna, right hip, both sacro-iliac, 2 left & 2 right (inc. 2nd) costo-vertebral, left wrist, left prox. radius, right tarsal, C1–2 anterior facets, C3 bsm, C6–7 bsm, T3–10 bsm, T12 & L2–4 bsm, T1 ap; pitting – both temporo-mandibular, both acromio-clavicular, left sterno-clavicular, right 11th costo-vertebral; enth – femur shafts, patella, tibia & fibula shafts, calcanea, iliac crests; mv – wormian bones, Vastus notches
8032	8081	inh. burial	*c*. 98%	adult >45 yr. male	dental abscesses; calculus; periodontal disease; periosteal new bone – right maxilla, tibia shafts, left fibula shafts; osteoarthritis – C2–4; ddd – C4–5, L5; destructive lesion – left orbit; erosions – finger phalanges, right proximal foot phalanx (?rheumatoid arthritis); ?pyogenic arthritis – middle finger phalanx; spondylolysis – L5; coalition defects – ?right 3rd C-MtC, left 3rd T-MtT; op – scapulae, scaphoids, 1st C-MtC, hips, patellae, 3 right & 4 left costo-vertebral, C1–2 anterior facets, C3–4 & T3–5 bsm, T6–S1 bsm; pitting – acromio- & sterno-clavicular joints, right 3rd C-MtC, right acetabulum; enth – right ischial tuberosity, left iliac crest, femur shafts, patella, calcanea; mv – wormian bone
8039	8038	cremation-related deposit	75.4g	subadult/adult >15 yr.	

KEY: ddd – degenerative disc disease; op – osteophytes; enth- enthesophytes; mv – morphological variation; prox. – proximal, C – cervical, T – thoracic; L – lumbar; S – sacral; bsm – body surface margins; ap – articular process; C-MtC/T-MtT – carpal/tarsal-metacarpal/tarsal joint

TABLE 2: Summary of results from analysis of human remains

are possibly linked to the size and robusticity of both, but especially one (8011) individual.

Stature was estimated for both adult males (8032 1.68m; 8011 1.76m); the former is close to the previously recorded male average of 1.67m and the latter above the previous maximum (ibid.). The robusticity index, expressive the relative size of the femur shaft, for both males, is well above the previous recorded male average of 126 (8011 138–7; 8032 129–131), at or above the upper end of the recorded range. Both males were clearly robust individuals, with strongly marked muscle attachments in the upper and lower limb, particularly 8011, whose deltoid tuberosities (humerus) were so marked as to give a 'bent' appearance to the bones. The forearm and wrist/digital attachments in skeleton 8032 were most marked, suggesting this individual was frequently employed in some physically forceful gripping activity.

As was recorded in the remains from the cemetery to the north, a strong sexual dimorphism was observed in the pelvic bones, and in contrast to some of the previously examined remains both males also had strongly marked male characteristics in the skulls (McKinley 2009).

Pathology

Pathological changes were observed in the remains of both adult males, and a summary of the observed lesions and affected bones is presented in Table 2. As this report essentially forms an addition to the larger proportion of the cemetery to the north the data will be only briefly commented on and the reader is referred to the previous report for further discussion (McKinley 2009).

A total of sixty-one teeth were recovered and sixty-four tooth positions recorded. Slight-moderate dental calculus (calcified plaque/tartar) was observed on all surviving teeth, particularly the molars. Both individuals had slight-moderate periodontal disease (gingivitis) around seven molar (8011) or four anterior tooth (8032) sockets (scoring according with Ogden 2005). Dental caries were recorded in all four first molars from 8011, having totally destroyed the tooth crowns in three cases; the remaining lesion had developed in the contact area. Dental abscesses were recorded in both dentitions, one mandibular lesion (8011) in association with dental caries and two maxillary lesions (8032) linked to exposed pulp cavities (excess occlusal wear). In all cases there is a buccal

exit lesion through the supportive structure, the maxillary lesions resulting in formation of periosteal new bone in reaction to soft tissue infection.

Evidence for minor trauma was seen in both individuals. Two adjacent left ribs from 8011 have well-healed transverse fractures in their lateral-ventral shafts (2/48 ribs). The 5th lumbar vertebra from 8032 shows non-fusion of the dorsal portion (spondylolysis); there is evidence to suggest the condition is the result of a stress fracture in the immature individual though it may also represent a congenital malformation (Adams 1986, 224–5; Aufderheide and Rodríguez-Martin 2005, 63).

In addition to the changes seen in association with the abscess lesions in the maxilla (see above), periosteal new bone was recorded in the legs bones of both individuals. Patchy areas of fine-grained woven new bone were observed over extensive areas of both tibiae from skeleton 8032 and to a lesser extent in the left fibulae from both individuals.

Degenerative disc disease (reflecting age-related wear-and-tear; Rogers and Waldron 1995, 27), was recorded in the spines of both individuals (10/48 vertebrae), predominantly affecting the cervical area. Severe lesions indicative of osteoarthritis (Rogers and Waldron 1995, 43–4) were seen in the cervical area of one spine (skeleton 8032; 3/48 vertebrae). Relatively gross destructive lesions observed in the distal articular surface of a middle finger phalanx from skeleton 8032, though lacking the characteristic new bone formation and marginal origin, appear likely to represent a case of pyogenic arthritis due to their singularity and the almost 'melted' appearance given to the bone (Rogers and Waldron 1995, 88). Lone osteophytes, which appear to be a 'normal accompaniment of age' and reflective of 'wear-and-tear' (Rogers and Waldron 1995, 25–26), were seen in both spines (27/48 body surface margins) and between 12 and 17 non-spinal joint surface margins (Table 2). All are slight-mild in severity and although some may reflect the early stages of osteoarthritis most are probably simply age-related. Macro- and micro-pitting in the surfaces of synovial joints may develop in response to a number of conditions and it is not always possible to ascertain the specific cause of individual lesions, though it is probable that they are most commonly reflective of the early stage of osteoarthritis. Lone extra-spinal lesions were seen in the remains of both adult males, at six sites in each case (Table 2).

A small, non-proliferative lesion on the articular surface margins of a proximal foot phalanx from 8032 may be indicative of the early stages of rheumatoid arthritis (Rogers and Waldron, 1995, 53–63). No similar lesions were observed in the 10 other foot phalanges recovered which renders the diagnosis tentative, though further lesions may have been lost together with the missing phalanges. A number of small, juxta-articular erosions (not impinging on the articular surface) to one or both sides of the distal heads in several finger phalanges from the same individual could represent the result of synovial chondromatosis or pigmented villonodular synovium, formed in response to thickened nodularities in the synovium (Rogers and Waldron 1995, 92).

Enthesophytes (bony growths at tendon and ligament insertions) may be associated with advancing age, traumatic stress, or various diseases (Rogers and Waldron 1995, 24–5). They are commonly seen – as here – in the anterior surface of the patellae and posterior surface of calcanea where they reflect activity related stress. Lesions were also observed at various attachments in the lower limb and associated sites (pelvis), also reflective of a lifetime of activity related stress.

The (cartilaginous) coalition defect seen in the third tarsal-metatarsal joint from 8032, which manifests as a series of coalesced pits in the planter third of the joint surfaces, appears to represent the most common form of such defects which are believed to carry a strong genetic component (frequency 3.2–26%; Regan *et al.* 1999). Whilst potentially asymptomatic, it may cause pain as the affected individual enters older adulthood.

The cremated bone recovered from cut 8038 is recorded as having lain above a *c.*0.06m depth of fuel ash deposited at the base of the irregular shaped cut. However, cut 8038 was only half excavated and the fill was recovered as a single context; this compromises the ability to comment on the formation process of the deposit, its probable nature and aspects of the mortuary rite.

Most of the cremated bone is white in colour indicating a high level of oxidation (Holden *et al.* 1995a and b). No lower limb bone was represented amongst the identifiable fragments of bone (*c.*50% of total weight) but in view of the preceding comments no significance can reliably be attached to this observation. Most of the bone was recovered from the 10mm sieve fraction (*c.*42%) with a relatively small maximum fragment size of 37mm. Rust-coloured staining to fragments of skull vault suggests the one-time presence of iron. Whilst the deposit may represent the remains of an unurned burial made over a deposit of pyre debris, this cannot be stated with any confidence on the available evidence.

Animal bone By Jessica Grimm

A total of 106 animal bones came from contexts dated as Middle to Late Bronze Age. Although this assemblage is very small, it was fully analysed as animal bone assemblages from Bronze Age contexts are relatively rare. The majority of the small assemblage of animal bone from the adjacent CTRL excavation is of medieval and later date, with lesser amounts Late Bronze Age/Early Iron Age and Late Iron Age/early Roman material.

Conjoining fragments were counted as one bone in order to minimise distortion. Fragments that could not be identified to species or family were recorded as small, medium or large mammal or bird. Full details of recording methods are given in the archive.

The identified remains in the Bronze Age assemblage consist of cattle (n=twenty-three), sheep/goat (twelve), pig (two), dog (one), red deer (four), a rodent and the partial skeleton of a young swan. Although the dominance of cattle is not uncommon in Bronze Age assemblages (see below), and was also seen on the CTRL site, the poor preservation in some of the contexts means that the less resilient bones of sheep/goat and pig are probably under-represented. Two cattle, one sheep/goat and one large mammal fragment showed signs of canid gnawing. This would mean that the assemblage is probably even further biased towards the more resilient bones which are less likely to be destroyed beyond recognition by the dogs.

Three fragments bore butchery marks. One set of horizontal cut marks on the side of a cattle tibia were probably made during the filleting of meat. Twelve fragments (mainly from one context) showed signs of contact with fire.

The butchered and burnt bones indicate that at least some fragments represent depositions of domestic waste.

Due to the small size of the assemblage, not much can be said with certainty regarding domestic species proportions. A survey of fifty-nine Bronze Age sites, mainly from England (details in site archive), shows that twenty-seven of these were dominated by cattle compared to seventeen dominated by sheep/goat. However, species proportions seem to be related to sample size, preservation and site type. In addition, the range of different species proportions observed in the Bronze Age clearly reflects the local environment as well as further social differentiation compared to the preceding Neolithic (see also Legge 1992, 41–2; Serjeantson 1996, 222–3).

The swan remains in context 8095 comprise a pelvis, right femur and both tibiotarsi of a juvenile swan. Comparison with swan skeletons makes it likely that they derive from whooper swan (*Cygnus cygnus*).

Of special interest are the four pieces of worked red deer antler found in Late Bronze Age features, three from tree-throw hole 625 and a single piece from Late Bronze Age/Early Iron Age ditch 8139 (Table 3). The Bronze Age inhabitants of the site utilised both shed and unshed antlers. This means that antler was collected in spring or removed from dead, perhaps hunted animals. The antlers probably do not represent finished objects as worked surfaces are limited to areas with heavy chopping. Instead, the antlers may be the remains of broken antler picks, waste from antler working or a discarded dump of raw material. Similar pieces are also known from Grimes Graves, Norfolk (Legge 1992, 48, 67) and Potterne, Wiltshire (Seager Smith 2000, 232, 234, 238–40).

Charred plant remains by Ruth Pelling

Seven flotation samples were taken and, following assessment, two samples were selected for more detailed examination of their charred plant remains, one from Middle Bronze Age pit 8003 and one from Late Bronze Age tree-throw hole 625 (Table 4). Details of methods are contained in archive. Nomenclature and taxonomic order of weed species follows Stace (1997).

Middle Bronze Age pit 8003

This sample was dominated by the grain and chaff of hulled wheat, of which both *Triticum spelta* (spelt wheat) and *Triticum dicoccum* (emmer) were identified. A radiocarbon date obtained from two grains of emmer confirmed the Middle Bronze Age date of this deposit (see above). The distinction between the grains of the two species was problematic with a large number showing similar or transitional characteristics, reflected in the large number of grains recorded as *T. spelta/dicoccum* (spelt/emmer wheat). *Triticum spelta* tended to have a lower, flatter dorsal surface and shallow embryo, with parallel sides. *T. dicoccum* tended to have a steeper embryo and a slightly more pronounced dorsal ridge. The division of the glume bases was clearer, with those of *T. dicoccum* having a much more pronounced ventral keel and being more angular than *T. spelta*. While grain of *T. spelta* outnumbered that of *T. dicoccum* the ratio of glume bases was much closer (51:52, adjusted figures) suggesting that the two species were present in very similar proportions. The only other cereal recorded for this period was *Hordeum vulgare* (barley) represented by two very badly degraded grains. A very limited range of weed seeds was present including *Chenopodium album* (fat hen), *Polygonum aviculare* (knotgrass), *Fallopia convolvulus* (bindweed), all of which are common weeds of disturbed ground. A small number of nutlets of possible *Schoenoplectus* sp. (club-rush), may have derived from wetter parts of fields or marshy areas near the site.

Late Bronze Age tree-throw hole 625

This feature produced a small number of grains and higher number of glume bases of which *Triticum dicoccum* (emmer wheat) was the only species positively identified. A very limited weed flora included indeterminate Chenopodiaceae, and single seed of a *Medicago/Trifolium/Lotus* type legume, a small grass seed and a single nutlet of *Schoenoplectus* sp. Several recent seeds of *Chenopodium album* were also present. A surprising find was a single charred caryopsis (grain) of possible *Panicum miliaceum* (broomcorn millet), rarely recovered in archaeological contexts in Britain, and never recorded prior to the Roman period. Given the presence of roots and numerous recent weed seeds in this flot this find must be regarded as intrusive.

Charcoal by Ruth Pelling

The charcoal from Middle Bronze Age pit 8003 and Romano-British cremation-related deposit 8038 was also examined (preparation methods are given in archive). While both samples were dominated by *Quercus* sp. (oak) there were no other identifiable taxa in the cremation deposit, suggesting it to have composed entirely of *Quercus*. This was also the main pyre fuel in the one cremation burial (of two) analysed from the CTRL work (Andrews 2009). Occasional fragments of non-*Quercus* taxa in the Middle Bronze Age pit included *Prunus spinosa* (sloe) and Pomoideae (apple/pear/hawthorn *etc*).

DISCUSSION

The fieldwork has demonstrated that, as expected, archaeological features within the 2001–2 CTRL investigations immediately to the north continued into, and beyond, the bounds of the site. A full discussion of the broader significance

Feature	Side	Description
625	L	Pedicle, burr and beam with brow tine and trez tine. The rest of the antler has broken off. Multiple heavy chop marks were seen on the pedicle. After initial chopping, the antler was snapped off backwards.
625	L	Beam with trez tine and terminal tines.
625	R	Burr and bez tine of a shed antler.
8139	?	Tine with multiple chop marks at the base.

TABLE 3: Late Bronze Age worked antler

	Context	8004	626
	Feature Type	pit	tree throw
	Feature	8003	625
	Date	MBA	LBA
	Sample Volume (litres)	17	18
	Flot volume (ml)	160	20
Cereal Grain			
Triticum spelta L.	Spelt wheat grain	72	–
Triticum cf. *spelta* L.	cf. Spelt wheat grain	3	–
Triticum dicoccum L.	Emmer wheat grain	9	–
Triticum cf. *dicoccum*	cf. Emmer wheat grain	16	–
Triticum spelta/dicoccum	Spelt/Emmer wheat grain	111	1
Triticum sp.	Wheat grain	16	1
Hordeum vulgare sl.	Barley grain	2	–
cf. *Panicum miliaceum*	Broomcorn Millet	–	1
Cerealia indet	grain	116	5
Cereal Chaff			
Triticum spelta L.	Spelt wheat glume base	33	–
Triticum spelta L.	Spelt wheat spikelet fork	9	–
Triticum cf. *spelta* L.	cf. Spelt wheat, glume base	2	–
Triticum dicoccum L.	Emmer wheat glume base	18	1
Triticum dicoccum L.	Emmer wheat spikelet fork	17	–
Triticum cf. *dicoccum*	cf. Emmer wheat glume base	3	2
Triticum cf. *dicoccum*	cf. Emmer wheat spikelet fork	5	–
Triticum spelta/dicoccum	Spelt/Emmer wheat glume base	62	30
Triticum spelta/dicoccum	Spelt/Emmer wheat spikelet fork	82	2
Cerealia indet	detached embryo	1	–
Weed Seeds			
Chenopodium album L.	Fat hen	1	–
Chenopodium album L.	Fat hen, recent seeds?	2	70
Chenopodiaceae indet		–	5
Polygonum aviculare L.	Knotgrass	1	–
cf. *Fallopia convolvulus* (L.) A. Love	Black Bindweed	1	–
Galium sp.	Bed-straw/goosegrass etc.	1	–
Medicago/Trifolium/Lotus sp.	Medick/clover/trefoil etc	–	1
cf. *Schoenoplectus* sp.	Club-rushes	5	1
Lolium/Festuca type	Rye-grass/Fescues	1	–
Phleum/Poa annua type	Cat's-tails/Meadow-grass	–	1
Avena sp.	Oats	–	1
Poaceae indet	Large seeded grass	–	2
Ignota		2	–

TABLE 4: Charred plant remains

of the earlier discoveries to which those published here relate can be found in Andrews (2009). However, the 2008–9 excavations have, in particular, contributed further details to our understanding of the late prehistoric settlement pattern in the area and revealed additional graves within the unusual, early Roman mixed rite linear cemetery.

In the western half of the site (Areas 1–6) many of the isolated pits and groups of post-holes, representing a four-post structure and a possible roundhouse, are likely to reflect late prehistoric (Middle – Late Bronze Age) settlement. Some of the remaining, mostly undated post-holes in this area may represent fences utilised in animal husbandry, though very little animal bone was recovered. Structural elements were notably absent in the CTRL excavations, but several pits and ditches spanning these periods (and again predominantly of Bronze Age date) were present. Further evidence of (Late) Bronze Age settlement activity in the vicinity is provided by tree-throw hole (625) which produced a relatively large quantity of late prehistoric pottery and some animal bone, including three large antler fragments.

Emmer and spelt wheat were present in the late prehistoric features. While emmer is the wheat most closely associated with the Neolithic and Early Bronze Age (Grieg 1991), the occurrence of these two species in the Middle Bronze Age is consistent with records on either side of the Thames Estuary, although spelt wheat has not been as prominent to the north of the Thames as in Kent (see Pelling 2003, Princes Road). At High House emmer wheat chaff and grain with similar numbers of barley grains and a single possible glume of spelt wheat were found (Stevens 2009), and possible spelt was also recovered at North Shoebury (Murphy 1991; 1995). Late Bronze Age sites in the area have also generally produced evidence for both spelt and emmer wheat (Murphy 1987; 1991), with emmer often dominating (Murphy 1988a; 1988b; 1991; 1998). However, evidence from the current site points to spelt having been more significant north of the Thames than previously thought. The sample from Middle Bronze Age pit 8003 appears to consist of a mixture of spikelets (stored with glumes attached) of both emmer and spelt wheat. The small number of weed seeds perhaps indicating that crops were stored in a relatively clean state, also seen at High House (Stevens 2009) and elsewhere in the region (Murphy 1987; 1988b; 1991; 1998).

Ditches 1838 and 1839, a continuation of ditch 17000 recorded in the CTRL excavation to the north of the site, appear to be slightly later in date than most of the other late prehistoric features, and represent a significant Late Bronze Age/Early Iron Age boundary now shown to extend over a distance of at least 90m. The few contemporary features appear to have been confined to the west of this boundary, a gap in the ditches presumably representing an access point to this area.

The large, north to south aligned early Romano-British ditch continuing from the CTRL excavation area into the current site and beyond Area 7 to the south remains something of an enigma. It has now been shown to be over 200m long, extending to the north and south of the site. It was been suggested before that the scale of this feature may indicate a military or defensive purpose (Andrews 2009), though there are no associated features or finds to corroborate such a theory, and its length and profile seem now to rule this out. It is perhaps more appropriate to view this ditch as an important, probably agricultural land boundary, perhaps extending down towards, and even reaching, the edge of the River Thames floodplain to the south. To the north it has been destroyed by chalk quarrying. Although the majority of dating evidence recovered from this feature has been early Romano-British (1st century AD), the possibility that the ditch has Iron Age origins cannot be discounted, particularly considering its apparent co-alignment with the adjacent Late Iron Age enclosure and ditch to the east within the CTRL excavation (no further Late Iron Age features were identified in the 2007/8 excavations). Furthermore, it does not, in this area at least, run parallel to the trackway and linear early Roman cemetery some 100m to the east.

The early Romano-British linear cemetery recorded in the CTRL excavation continued into the current site, utilising the by now almost completely infilled late prehistoric ditches 1838/17000 and 1839 for burial. A little surprisingly, the shorter, northern section of ditch (1838) investigated in 2008 contained no further inhumation or cremation-related deposits, though a cluster of three (undated) post-holes in the southern terminal may be of significance. Ditch 1839, however, had two inhumations and a cremation deposit inserted at intervals along its length, and it is very likely that further burials were made in the continuation of this ditch to the south beyond the site boundary. Apart from some copper alloy fragments and an iron nail in the cremation-related deposit, the only find was a carinated cup from grave 8013, a common form in Essex, particularly within graves dated to the mid-/late 1st century AD, which corresponds with the date range assigned to the burials within the ditch to the north. A fuller consideration of this unusual group of early Roman inhumation (and cremation) burials is presented in the discussion of the CTRL site (Andrews 2009). To summarise, however, the inhumations were perhaps part of a localised minority rite (when cremation was the predominant rite in the South-East) which may also be represented at Arndale, near Grays approximately 7.5km to the north-east (Wilkinson 1988, 27–8, 58) and a little further away at Mucking (Clark 1993, site atlas plan 12).

A continuation of a probable trackway recorded in the CTRL excavation lay to the west of the linear cemetery and was defined by ditches 8098 and 8112/8130 approximately 8m apart. The origin and destination of this trackway remain unknown, but it may have linked the lower lying ground adjacent to the Thames, probably used for grazing, wildfowling and as a source of reeds, with settlement on the higher ground to the north, perhaps within the area now removed by quarrying (as part of what is now the Greenlands quarry).

The find of broomcorn millet in a Bronze Age feature has been noted above. *Panicum miliaceum* is the millet or *millium* of the Roman period (Zohary and Hopf 2000), and it is possible that it represents a Roman find and, if so, is of considerable interest. In Britain it has occasionally been recovered from contexts of Roman date (van der Veen 2008) from both military sites and major urban centres, suggesting it may have had a strong association with the army and was never adopted by the Romano-British population. Indeed, it is not found in the medieval period which may be a reflection of cultural dietary preference.

The only medieval features were two large sub-rectangular pits of uncertain function, but broadly similar to several other examples in the same area found in the CTRL excavations. It is almost certain, however, that they were associated with buildings that predated High House, the 16th century and later manor house immediately to the south-west.

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Caroline Budd managed the project for Wessex Archaeology. The fieldwork was directed by Kevin Ritchie, assisted by Steve George, Oliver Spiers, Rachel Cruse, Georgina Cox, Peter James, Dalia Pokutta, Luke Brannlund, Phillip Boyes, Steve Kemp, Darryl Freer and Sophie Nias-Cooper. Christo Nicolle processed the environmental samples.

In addition to the specialists who have contributed to this report, Lorraine Mepham has provided additional finds information and Phil Andrews has overseen the post-excavation programme and edited the text for publication.

The archive is currently stored at the offices of Wessex Archaeology under the project numbers 65150–52, but will be deposited with Thurrock Museum in due course.

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Bronze Age and Anglo-Saxon occupation at Clements Park, Southend-On-Sea

Gareth Chaffey, Gail Wakeham, Matt Leivers and Philippa Bradley

With contributions from Lorrain Higbee, Grace Jones, Lorraine Mepham, Chris J. Stevens, Patrick Quinn, and Sarah F. Wyles. Illustrations by S.E. James

Extensive evidence of Late Bronze Age and Anglo-Saxon occupation was recorded during excavations at Clements Park, Southend-On-Sea, prior to the development of the site into retail warehouses. This paper explores the diverse nature of the evidence recorded with particular reference to the two main phases of activity that were identified. Only limited evidence for earlier and later activity was encountered.

INTRODUCTION

Excavations at Clements Park, Fossett's Way, Southend-on-Sea, Essex produced evidence for habitation from the later prehistoric periods onwards. Located on a broad ridge at *c.* 27m above Ordnance Datum (aOD), the site overlooked an extensive north- and north-west facing slope which dropped to *c.* 18m aOD in the north. The River Roach lay some 2km to the north. The underlying geology consists of Eocene London Clay overlain by third terrace gravels, in turn overlain by Holocene brickearth drift deposits.

The site lay within an area rich in archaeological evidence, immediately to the south-east of Prittlewell Camp (Scheduled Ancient Monument no. 29408, Fig. 1). The Camp consists of a circular bank and external ditch measuring approximately 250m in diameter, although the northern and eastern sections of the rampart have been significantly reduced by ploughing. Despite several investigations, little has been found to clarify the Camp's date and nature (CgMs 2006, 5). Geophysical survey of the interior of did not reveal any features (Bartlett 2000). It has been interpreted as a low-lying univallate hillfort of later Bronze Age or Early Iron Age date (Wessex Archaeology 2005a, 2).

Negative evidence from archaeological investigations and fieldwalking suggested an absence of activity during the Roman period and no particular focus of early Anglo-Saxon activity at Clements Park. However, Roman and Anglo-Saxon burials, and other finds, including large quantities of building material ('barrow-loads of Roman tile and brick', Pollitt 1923, 104), were found during the digging of a sewer trench along a new road (Priory Crescent) in the 1920s and further work in the 1930s uncovered more finds (Pollitt 1923; 1932). To the west of Clements Park, at the Temple Farm Industrial Estate, Roman occupation has been identified (Hiross Site TF85, Brown ND). The nationally important Anglo-Saxon royal grave, the so-called 'Prittlewell Prince', was found at Priory Crescent in 2003 (MoLAS 2004), demonstrating that this was occupied by a rich, hierarchical society.

Following evaluation (Oxford Archaeology 2003a and b), four areas were chosen for excavation (Areas A–D) and a further site was also developed (the Comet site, immediately adjacent to Area D, Fig. 1). This paper provides a summary of the results of these excavations based upon the assessment data (Wessex Archaeology 2007; further details can be found in the project archive).

THE EXCAVATION RESULTS BY PERIOD

Earlier Prehistoric Evidence

The excavations revealed limited evidence from the earlier prehistoric periods. Small quantities of redeposited lithics suggest some Mesolithic and Neolithic activity in the area. This material was limited to a few scrapers, a piercer, microdenticulates and utilised flakes. An Early Mesolithic obliquely blunted microlith and a series of primarily soft-hammer struck blades and bladelets (some with facetted butts) are likely to relate to Mesolithic or Early Neolithic industries. A discoidal core is probably later Neolithic. Such finds suggest a certain degree of activity along the edges of the River Roach valley.

An extremely crude barbed and tanged arrowhead was recovered from a later Bronze Age pit group (235), and a cortical flake which appears to have been trimmed into rough barbed and tanged form was found within a similarly-dated enclosure ditch (691).

Four plain grog-tempered sherds are probably Early Bronze Age in date with Collared Urn being the most likely ceramic tradition. Little more can be said of this material as it was found redeposited in Late Bronze Age features.

Later Prehistoric Occupation

In the later prehistoric period the landscape underwent a dramatic change to enclosure. Boundary ditches and field systems were laid out, the development of which manifests the emergence of a sedentary and settled agricultural lifestyle. These changes began to occur during the second millennium BC.

Middle Bronze Age

Limited evidence across the site suggests that the re-organisation of the area began in the Middle Bronze Age (Fig. 2). Pit 1409 on the western boundary of the Comet site contained the remains of a Deverel-Rimbury vessel and three sherds of contemporary pottery from adjacent Late Bronze Age ditch 131 are a further indication of Middle Bronze Age activity in this vicinity. A shallow north-south aligned gully (867) located in Area D contained 19 sherds including a Globular Urn. Middle and Late Bronze Age pottery was also recovered from ditch 866 (below), perhaps indicating that this trackway was an early component of the organised landscape.

Late Bronze Age

More widespread change occurred at the beginning of the Late Bronze Age. The rather piecemeal use of the area during the

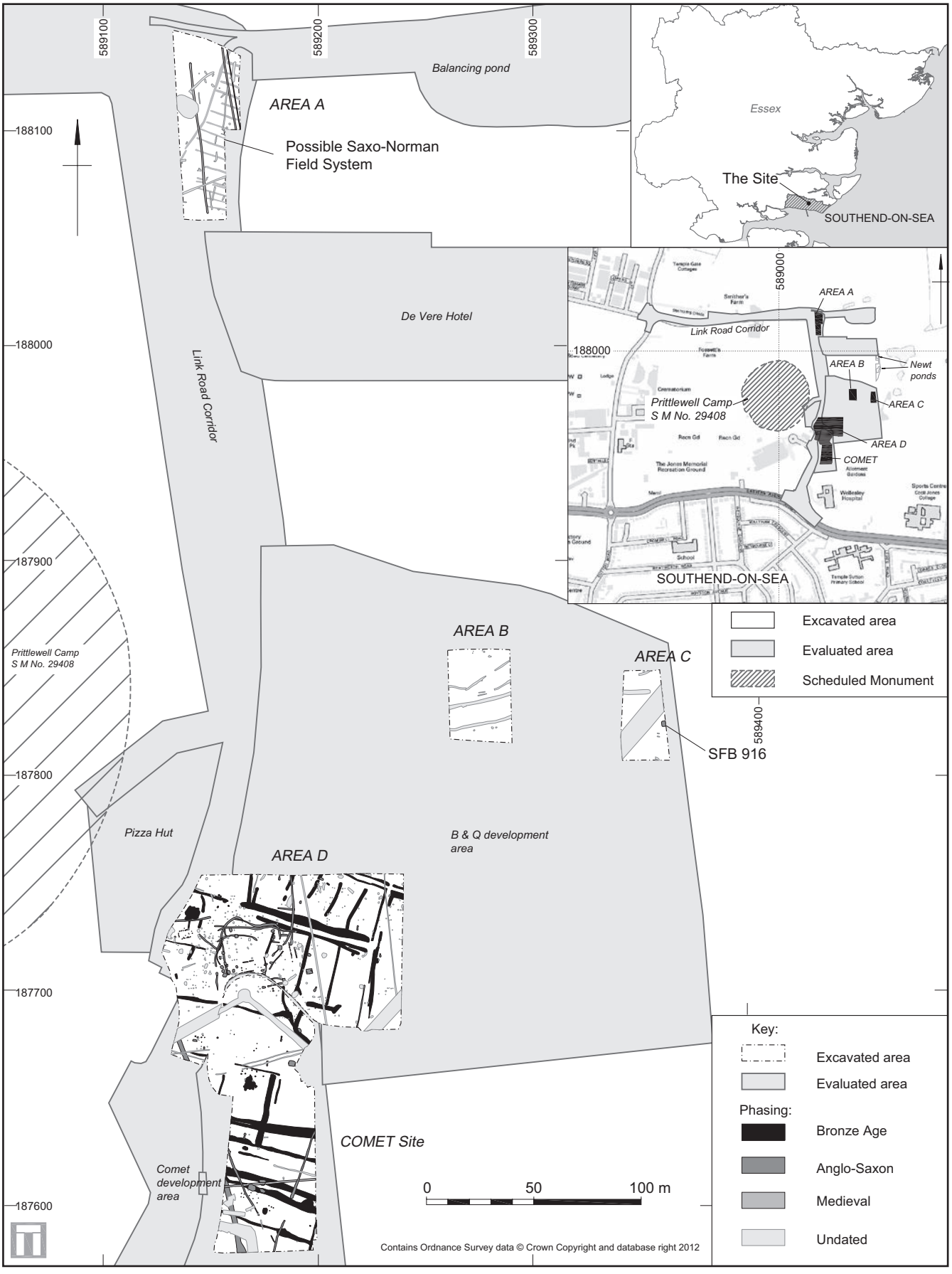

FIGURE 1: Site location, showing excavation areas in relation to Prittlewell Camp

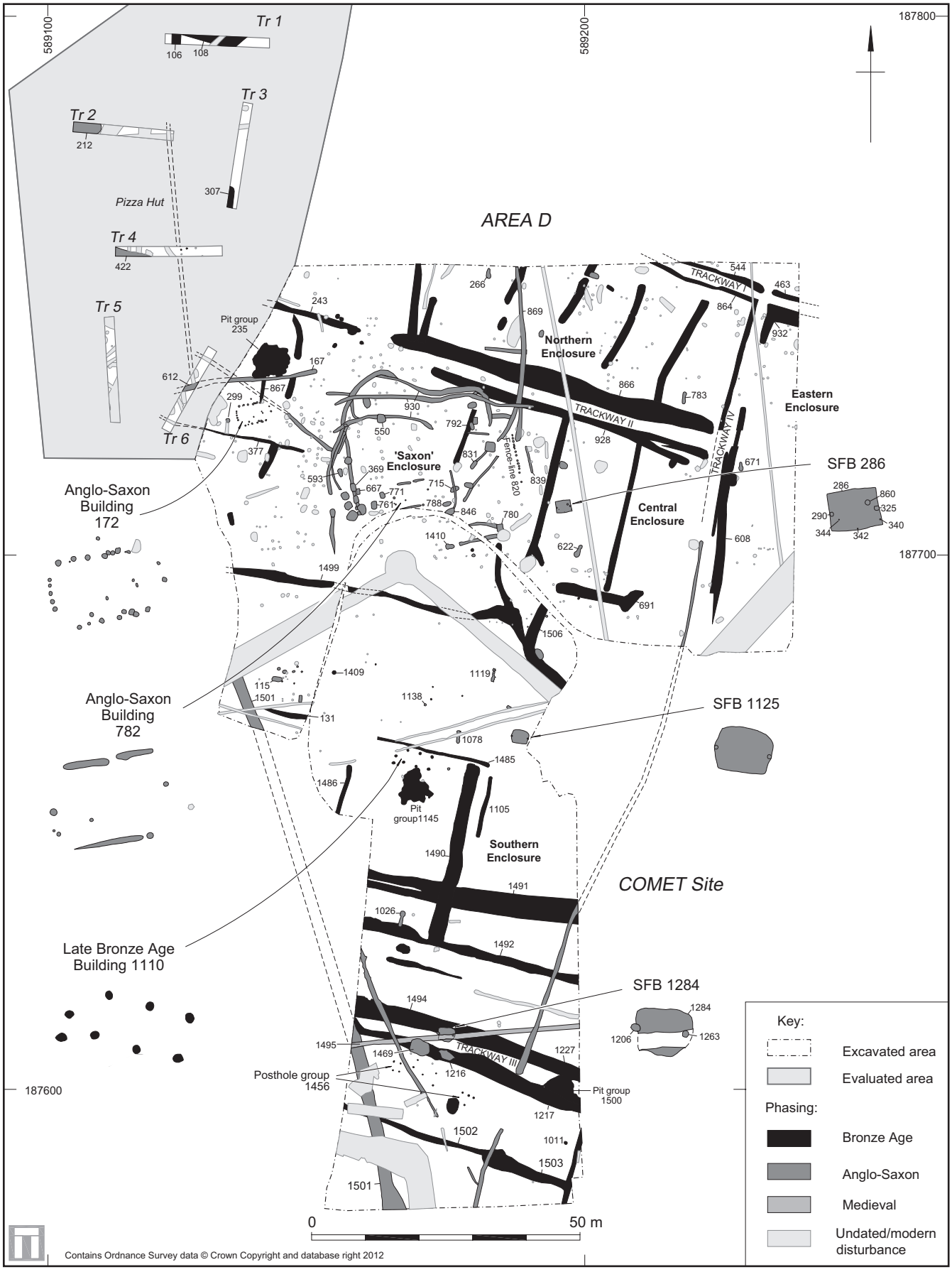

FIGURE 2: Detail of Area D (B&Q), the Comet site and evaluation trenches on the adjacent site (Pizza Hut)

Middle Bronze Age appears to have led to a period marked by the creation of major land divisions, trackways and large enclosures, by the end of which the site had been fully enclosed. However, widespread this agricultural landscape was, it appears to have been relatively short-lived, falling out of use by the end of the period.

The Late Bronze Age evidence can be divided into several possible enclosures and trackways. Many of the ditches extended beyond the limits of the excavation, hampering the interpretation of these features somewhat.

In Area D, a double-ditched trackway system (Trackways I and IV) formed by ditches 544, 463, 864/931, 608 and 932, appeared to define the northern and eastern edges of an area divided into small fields (Fig. 2). Excavated sections through ditch 864 indicate a segmented construction, suggesting that Trackway I was redefined at some stage. It is not clear whether the trackway led into an open area further north or into an enclosure as it was located at the very edge of the excavations. South and west of the trackway, in an area measuring at least 70m by 60m, a series of ditches aligned approximately north-north-east to south-south-west were fairly equally spaced at *c.*9m apart (Northern and Central Enclosures). These ditches produced very small quantities of pottery, all of post-Deverel Rimbury type. The lack of features within these enclosures suggests that they were largely agricultural in function.

A second double-ditched trackway (Trackway II) aligned parallel to the first separated the Northern and Central Enclosures. This trackway (consisting of ditches 866 and 928) was substantially larger than the other elements of the field system, with the broad U-shaped ditches *c.*2.20m apart. As has been observed elsewhere (Leivers 2010), one ditch (in this case the northern) was broader. The trackway was *c.*62m long and ran from Trackway IV into the Central Enclosure.

Another possible enclosure (Eastern Enclosure) was located at the eastern edge of Area D (Fig. 2). It was defined by ditches 608 and 932 of Trackways I and IV. A gap of around 10m towards the north-western corner may have been an entrance: although rather broad it is possible that is was closed by a fence, hurdling or gate. No definite evidence for any structure was identified, although there were a number of undated postholes in and around the gap.

Other parallel ditches in Area D and the Comet site form further parts of the same field system. Ditches 131, 243, 377, 1485, 1491, 1494, 1499, 1502 and 1503 were all orientated parallel to the trackways and appear to have divided the landscape into rectilinear parcels of roughly similar sizes *c.*25 m broad. Some of these features are known to extend further to the west, having been identified during evaluation of an adjacent site (Wessex Archaeology 2005b, Fig. 2).

Within the rectilinear fields and trackways were a number of smaller enclosures interrupting the otherwise generally regular system. Ditches 691, 1506 and 1499 formed one such enclosure. The form of the ditches here seems to have been designed to control the movement of stock (Pryor 1999, 103–04, Figs 52–3).

To the south, ditches 1105, 1485, 1486, and 1491 form a second small enclosure, within which was a rectangular post-built structure (1110), located at the northern edge. Oriented roughly east-west, the structure consisted of eight postholes, four of which contained fragments of Late Bronze Age pottery, as well as fired clay and charcoal. Immediately south of the building was a series of intercutting pits (1145), perhaps quarries. The building can be compared to similar examples recorded at Lofts Farm, Essex (Brown 1988, Structure 2), Manston Road, Ramsgate (Hutcheson and Andrews 2009), and Down Farm, Cranborne Chase (Barrett *et al.* 1991).

Another double-ditched trackway (ditches 1217 and 1494 – Trackway III) crossed the southern part of the Comet site. South of Trackway III, a group of Late Bronze Age postholes (Group 1508) did not appear to resolve into structures, and may represent short fencelines.

Three separate groups of inter-cutting pits were identified. Pit group 235 lay in the Central Enclosure, close to the north-western boundary of Area D; group 1145 lay adjacent to the rectangular building in the Southern Enclosure; and group 1500 lay further to the south, pre-dating Trackway III, the ditches of which cut its fills.

Although the function of these features is unclear: many were of insufficient depth to be storage pits, and they may have been quarries for clay and brickearth for use in building or potting. The relationships between individual pits could not be determined due to similar fills and profiles: it is likely that they were contemporary. Finds included Late Bronze Age pottery, worked flint, burnt flint and animal bone. Charred plant remains (including emmer wheat) and weed seeds indicative of cultivation on wetter soils were recovered from pit group 235.

Within and south of the small enclosure around Building 1110, a pair of ditches aligned at right angles cut across the existing Late Bronze Age features (1490 and 1492). Dated by their ceramic contents to the Late Bronze Age, these ditches indicate a (perhaps quite small scale) second phase of Late Bronze Age enclosure or alteration of the field system.

Iron Age and Romano-British

Iron Age and Romano-British evidence was very sparse at Clements Park, comprising a little Late Iron Age or Romano-British pottery, which was largely redeposited in the upper fills of Anglo-Saxon features. Quantities of Romano-British ceramic building material, including box flue tile and *tegulae* fragments, were also recovered from Anglo-Saxon contexts, although it is not unusual for Romano-British material to have been collected and re-used during the Anglo-Saxon period, as at West Stow (Plouviez 1985), for example. A single piece of Romano-British vessel glass came from Anglo-Saxon pit (115).

The presence of such material suggests a low level of activity in the area during the Romano-British period. No contemporary features were identified on the site but finds from early excavations indicate that there was occupation in the locality (Pollitt 1923). More recently Roman activity has been identified at Temple Farm (Brown ND).

Early Anglo-Saxon

During the late 5th century a sizeable agricultural settlement was established, mainly focused in Area D and the Comet site (Fig. 2), with a single SFB found in Area C, to the east (Fig. 1). As with the prehistoric evidence the limits of the Anglo-Saxon settlement were not identified within the excavated area.

The main focus of Anglo-Saxon activity appears to have been within a rectilinear enclosure of unknown size, the western boundary marked by a substantial ditch (1501)

1.85m wide and 0.8m deep. Other linear features within this area form internal subdivisions, within which were a smaller enclosure, sunken featured buildings, post-built structures, an enclosure, ovens and rubbish pits.

Small Enclosure

The settlement focused around a sub-square enclosure in Area D. The southern, northern and western sides consisted of gullies (930) which – on the north and west – had been redefined a number of times; on the east the boundary was formed by a fenceline (820) and gully (839). Ditch 869 led into the enclosure's north-east corner; ditch 167 to the north-west corner. These radial ditches probably served to channel livestock.

Within the enclosure, a rectangular structure (Building 782) was aligned roughly east to west at the southern end. This building (of post and beamed timber construction) measured 6.5m by 4m. Around it to the east and west were groups of square and elongated cess and rubbish pits of varying depths (most around 1.5m) which contained small quantities of pottery, animal bone, lava rotary quern fragments, and metal objects (including an iron bar and a leather working awl). One feature slightly further to the north (593) contained 6kg slag, including a hearth bottom – indicating metal working was occurring somewhere in the vicinity.

A dump of mussel shells and an eel bone were recovered from a single pit (667); charred and mineralised material (bread wheat, rye, possibly oats; brambles, hazelnuts and sloe berries) were recovered from cess deposits; environmental evidence recovered from the gullies forming the enclosure suggests that hulled barley was the predominant cultivated crop, with peas and beans also present.

The enclosure underwent several phases of minor re-orientation and redefinition. Although there is no particular time-depth evident from the ceramics, some sustained use of the enclosure is indicated by the fact that many of the pits associated with the settlement cut through the enclosure gullies, particularly in its south-western corner.

Buildings Outside the Enclosure

Approximately 13m west of the enclosure a post-built structure (Building 172) lay on a similar alignment to Building 782, and was similarly sized at 6.5m by 3.5m. Unlike Building 782, it consisted of 27 postholes. The long sides were straight, while the short ends were bowed (certainly at the western end, possibly at the eastern). Comparable structures were found at Mucking, Essex (Hamerow 1993, Figs 54–6).

Three sunken featured buildings (SFBs) (Tipper 2004) were identified. SFB 286 lay immediately outside the enclosure's south-eastern corner. It measured 3m by 2.5m, and had a posthole at either end. A considerable quantity of Anglo-Saxon pottery was recovered from its fills, as well as slag, lava quern and a fragment of copper alloy.

SFB 1125 lay some 41m to the south, on what appears to be the periphery of the main area of occupation. It measured 3.6m by 2.54m and also had opposing postholes. Pieces of sheet copper alloy metal, some of which are folded and had rivet holes, a finely worked composite antler comb, a fragmentary perforated dress pin, made from a pig fibula, and a piece of worked antler were recovered from the fill of the SFB (Pl. 1).

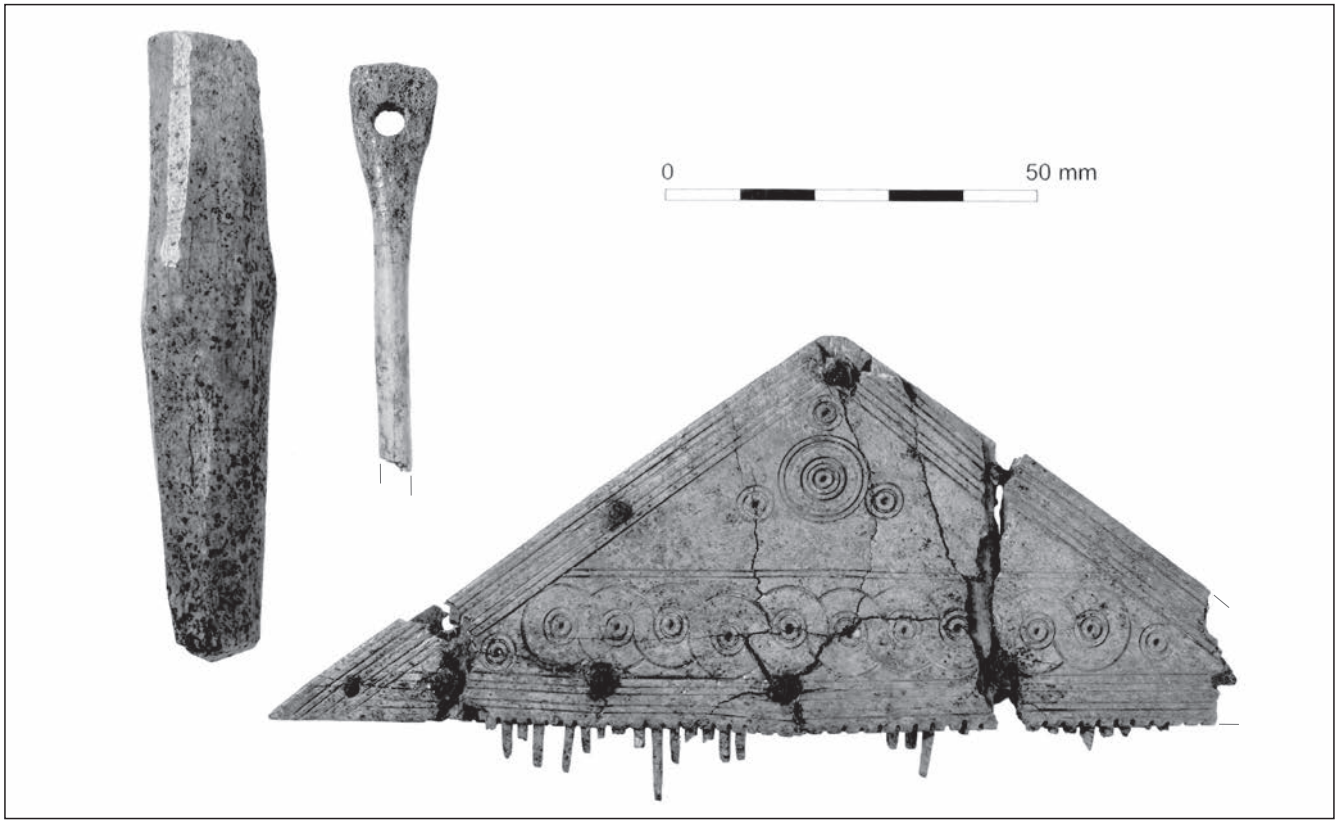

PLATE 1: Worked bone and antler objects

SFB 1284 was located further to the south. Of a similar size, a probable medieval ditch (1495) cut away a portion of the structure. Possibly as a result, few artefacts were recovered, although the fill was very charcoal rich. The building was immediately to the north of two pits (1216 and 1469) which contained quantities of pottery, animal bone, a perforated copper alloy object (possibly a bead) and a complete spindle whorl.

Other External Features

A group of seven small pits and postholes was located adjacent to the western boundary of the settlement area. Among these, pit 115 contained a fragment of what may have been a copper alloy ring, an iron knife blade, two lead fragments, a possible loomweight fragment and small quantity of slag in a charcoal-rich fill. The pit also contained burnt and unburnt cattle bone (possibly from a single animal), as well as a small quantity of pottery. Grass and sedge stems, possibly used as tinder, were also recovered from this pit. A copper alloy decorative belt plate of later medieval date and two fragments of post-medieval glass were intrusive.

A dump deposit of mussel shells was located in the northern terminal end of Bronze Age ditch 1490, along with a quantity of hulled wheat grains and glumes. Although not identified during the excavation it appears most likely that an Anglo-Saxon feature was dug into the ditch terminal and the mussel shells deposited. A single sherd of rock-tempered Anglo-Saxon pottery was found with this deposit.

Seven keyhole-shaped ovens (266, 622, 671, 783, 1078, 1119 and 1026) were identified (Fig. 2); each was similarly shaped and around 2m in length, orientated north-south. Oven 266 contained hulled barley and a small amount of rye. Anglo-Saxon pottery was recovered from all of the features. These ovens may have been used for drying crops away from the main settlement.

Other Anglo-Saxon Evidence

Limited evidence for Anglo-Saxon activity was noted in the excavation areas to the north-east of Area D. A single SFB (SFB 916) was found in Area C, located some 200m to the north-east of the main area of occupation (Fig. 1). Its full extent was not recorded as it lay partially beyond the limits of the excavation. There was no evidence for structural postholes within the excavated portion of the feature.

Later Evidence

Evidence for post-Anglo-Saxon occupation was relatively sparse, although a possible Anglo-Norman field system was identified in Area A (Fig. 1) aligned roughly north-north-west to south-south-east. Only redeposited Early Bronze Age and Romano-British pottery was recovered from these features (Oxford Archaeology 2003b). Analogies across Essex suggest a post-Anglo-Saxon date (for instance strip field systems of early medieval date at Stansted: Framework Archaeology 2008, 201).

Three ditches cut the field system. These are therefore at least medieval (although no datable evidence was recovered). A further medieval ditch cut through two of the SFBs on the Comet site, probably a boundary or drainage ditch. Post-medieval evidence was equally sparse, with only a few modern ditches recorded.

FINDS AND ENVIRONMENTAL EVIDENCE

Prehistoric Pottery by Matt Leivers

The prehistoric pottery assemblage consisted of 959 sherds weighing 8114g, primarily of Middle and Late Bronze Age date. The material was analysed in accordance with the nationally recommended guidelines of the Prehistoric Ceramics Research Group (PCRG 2011). It was generally in poor condition – sherds are small and abraded – probably due to much of it having been redeposited in later contexts. A small proportion had been burnt or refired (in particular from pit group 1145), and one sherd was so heavily heat-affected that the original nature of the fabric is uncertain.

There were very few reconstructable profiles, despite the occurrences of probable single-vessel deposits. Of the 215 contexts containing prehistoric ceramics, only five contained more than 30 sherds; 133 contexts produced less than five sherds.

Nineteen fabric groups were defined. The majority of the sherds are in flint-tempered fabrics, with a smaller proportion of sandy and shelly wares, the latter generally leached, leaving voids in the fabric. The breakdown of ceramics by fabric group is given in Table 1. Fabric descriptions are given in the Appendix.

Early Bronze Age

Four plain body sherds were identified as Early Bronze Age solely on the grounds of fabric. The grog temper and absence of decoration makes identification as Collared Urn most likely. Little can be said about an assemblage of this size, which was all redeposited.

Middle Bronze Age

Sherds in coarse but well-sorted flint-tempered fabrics are typical of the Middle Bronze Age Deverel-Rimbury tradition of southern England. The assemblage can be divided into two

Fabric	No. sherds	Weight (g)	ASW (g)
FL1	97	779	8.03
FL2	20	125	6.25
FL3	87	1024	11.77
FL4	243	2948	12.13
FL5	159	1001	6.30
FL6	100	868	8.68
FL7	41	170	4.15
FL8	26	121	4.65
GR1	2	33	16.5
GR2	2	15	7.5
GR3	15	46	3.07
GR4	3	10	3.33
GR5	4	24	6
O1	46	241	5.24
QU1	2	9	4.5
QU2	33	111	3.36
QU3	70	518	7.4
QU4	8	70	8.75
S1	1	1	1
	959	**8114**	**8.46**

TABLE 1: Prehistoric pottery fabrics by chronological period

basic vessel types, which correspond to the standard division of Deverel-Rimbury ceramics into coarser Bucket-shaped and finer Globular vessels.

Bucket-shaped jars tend to have the thickest walls and to be most coarsely tempered. Surfaces can be slip-coated but are more often left rough, with temper protruding through the surface even on many of the better-finished examples. Walls are usually straight. Decoration is absent. There are no rims or other featured sherds.

Globular vessels generally represent the fineware component of the Deverel-Rimbury tradition, distinguished by an overall higher investment of labour in temper preparation, vessel forming and surface treatment – typically these are thinner-walled vessels in better-sorted fabrics, with a smoothed or burnished surface finish. Decoration consists of slashed shoulders and incised horizontal lines below the rim, which are upright and rounded or pointed.

Two features, near the western boundary of the site contained notable deposits. One (pit 1409) contained 72 sherds from the base and lower wall of a single large jar. The other (gully 867) contained 19 sherds including bases of two Globular urns. One of these vessels also had decoration consisting of horizontal slashes on the shoulder and incised horizontal lines below the upright rim (Fig. 3, 1).

Most of the rest of the Middle Bronze Age pottery was found in sections excavated across ditch 866 (Trackway II), together with relatively equal small quantities of Late Bronze Age post-Deverel Rimbury ware. The presence of Middle Bronze Age pottery suggests that this large U-shaped ditch was an early component of an organised Bronze Age landscape that may have persisted within the landscape throughout the Bronze Age.

Late Bronze Age

The rest of the assemblage belongs to the post-Deverel-Rimbury tradition of the Late Bronze Age and Early Iron Age, although the preponderance of flint-tempered fabrics combined with the low incidence of decoration suggest that this assemblage falls within the early part of this period (although some fineware vessels from pit 1227, including a carinated bowl, could be later (Fig. 3, 2–4)). Apart from the latter there are few diagnostic sherds; those that are present appear to derive exclusively from coarseware jars. Rims are for the most part flat and upright (some slightly expanded either inwards or outwards); a small number are everted and either rounded or pointed. Bases are flat, with or without feet, with the exception of two footring bases from 235 and 1145 (Fig. 3, 5). One vessel redeposited in 869 had a luted handle. Decoration consists of finger-pressed and cabled rims (Fig. 3, 6), rims with incised line, finger-tip impression on shoulders (Fig. 3, 7), and vertical finger fluting on external surfaces (Fig. 3, 8). Parallels for the post-Deverel-Rimbury material can be found amongst other assemblages from south Essex such as Mucking and North Shoebury (Barrett and Bond 1988; Brown 1995).

Most of the material occurred as a low density scatter of small numbers of sherds. Several features however contained more significant deposits. Pit 1011 contained 82 sherds from a single large globular jar with a cabled rim 400mm in diameter (Fig. 3, 6). Quarry pit 1145 contained 121 sherds in four of its fills, mostly small and abraded (and many refired, especially from 1153) from numerous vessels but including sherds from a well-finished bowl with a footring base (Fig. 3, 5). Similar smaller groups of material came from quarry pits 1500 (38 abraded sherds from various vessels) and 235 (33 sherds in 577; 49 sherds in layer 236).

Discussion

Deverel-Rimbury ceramics are well represented in Essex (Brown 1995). In general terms, settlements in central and southern Essex are typified by vessels belonging to Ellison's Lower Thames Valley group (Ellison 1975; 1980) typified by Bucket-shaped vessels with finger-impressed rims, single horizontal rows of fingertip impressions on the body, a scarcity of globular forms, the presence of stamp-decorated bowl-like forms and the absence of grog as a temper.

The assemblage ought to belong to the Lower Thames Valley group, although the presence of globular forms and the absence of stamp-decorated bowls make it less than typical. One recurrent feature of known settlement sites in Essex is placed deposits of ceramics in pits, rather than simple rubbish disposal (Brown 1996, 27), and the Clements Park material conforms to this.

Late Bronze Age pottery is similarly well represented regionally, with a concentration around the Chelmer and Blackwater rivers (for instance Lofts Farm (Brown 1988), Broomfield (Atkinson 1995), Mucking (Bond 1988), Springfield Lyons (Buckley and Hedges 1987), and Great Baddow (Brown and Lavender 1994)).

In general Late Bronze Age assemblages are dominated by coarseware jars, with fineware bowls the second most common form. Very little of the pottery tends to be decorated. Fabrics begin as predominantly flint-tempered, with an increase in sandy fabrics through time. All of these traits can be paralleled in the Clements Park assemblage.

Saxon Pottery by Lorraine Mepham, with a contribution by Patrick Quinn

Pottery of Saxon date amounts to 860 sherds (11,161g), and was recovered from features located across the excavated areas. The condition of the material is generally fair. The assemblage is fragmentary and there are very few complete reconstructable profiles. Levels of surface and edge abrasion are relatively high, given the hard-fired nature of most of the fabrics. Mean sherd weight overall is 13.0g.

Methods of analysis

The assemblage has been analysed following the standard Wessex archaeology pottery recording system (Morris 1994), which focuses on a detailed examination of fabric and form. Fabrics have been defined and coded on the basis of the dominant macroscopic inclusions, and these fall into three broad groups: sandy wares (Group Q); organic-tempered wares (Group V) and rock-tempered wares (Group R). In addition, there is one fabric with indeterminate voids (Group D). It is apparent, however, that these inclusion-based group divisions are somewhat arbitrary, some inclusion types being common to the three major groups, and do not necessarily correspond, for example, to variations in potential source areas. In this instance the fabric coding should be regarded merely as a descriptive tool.

Diagnostic pieces are relatively scarce. Rim forms have been defined according to profile, and where possible assigned

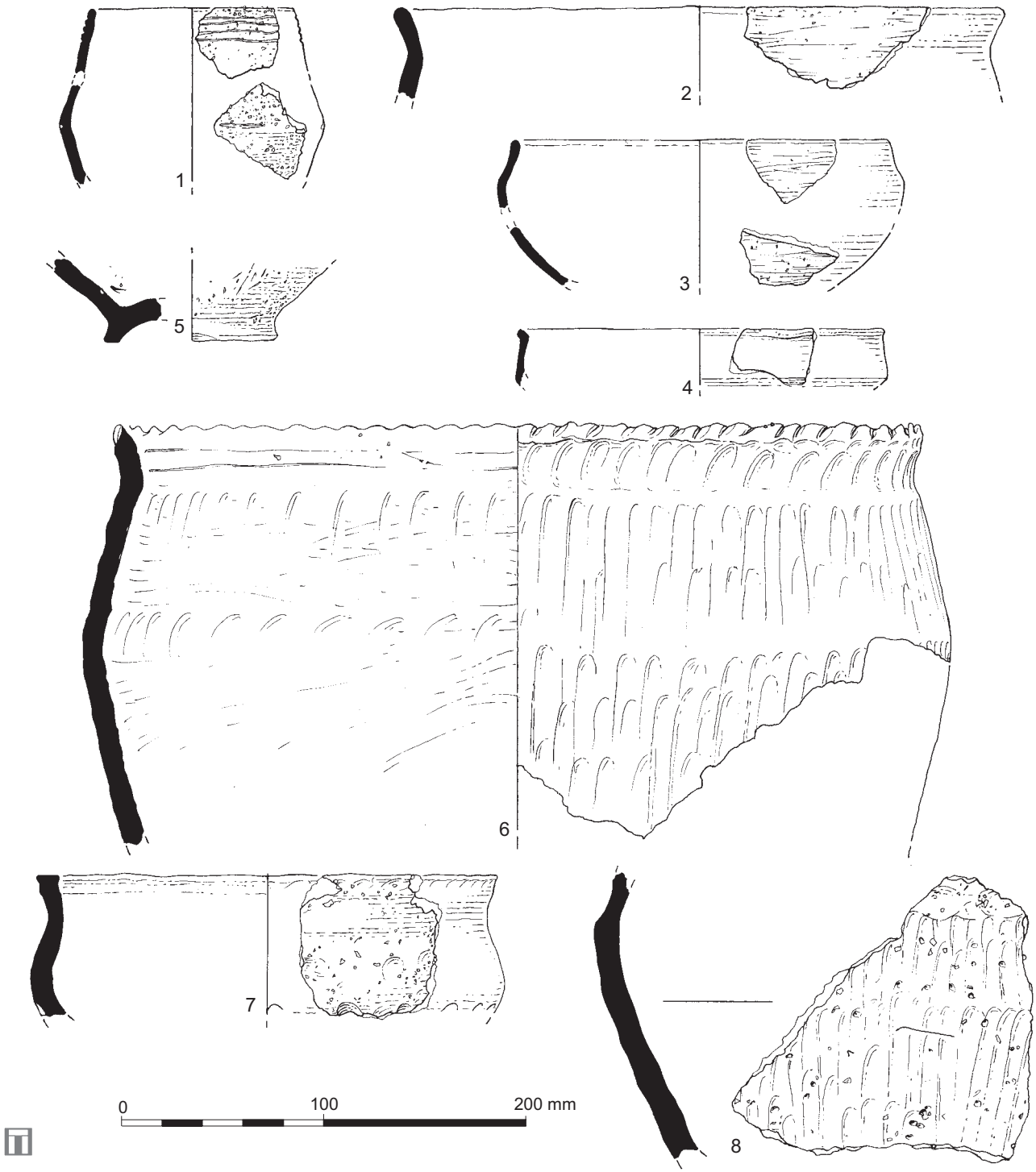

FIGURE 3: Prehistoric pottery, details in catalogue (@1:3)

to vessel form, although in many cases this is necessarily tentative. Vessel forms are defined as far as possible following nationally recommended nomenclature (MPRG 1998). Details of surface treatment (e.g. burnishing, coarse-slipping, etc) and decoration have also been recorded.

Twenty fabric types have been defined (Table 2). In an attempt to link these to potential sources or source areas, samples of seven fabrics were submitted for petrological analysis by Dr Patrick Quinn (UCL). Dr Quinn's full report is retained in archive, as are his fabric descriptions; his interpretations are incorporated here. Analysis has demonstrated that a significant proportion of the fabrics are of probable non-local source.

The most commonly occurring fabric, Q400, was found to be characterised by sandstone inclusions and, on the basis of similarity of inclusions noted in macroscopic samples, fabrics Q401, Q404, Q405 and Q408 are also likely to belong to this sandstone-tempered group. The presence of sandstone-tempered wares is taken to be one of the main indicators of Early Saxon occupation in south-east England (Blackmore 2008, 177). Samples of these wares have been analysed in thin section from London (*Lundenwic*), Northfleet in north Kent, Manor Farm, Upminster, and elsewhere in the Thames Basin (Quinn 2011; Vince 2002; 2006; 2011, samples 4539, 4540; Watson *et al.* 2011, 88–91; Blackmore 2008,

Fabric code	Description	No. sherds	Weight (g)
D400	Fabric with voids, mainly spherical, sparse and poorly sorted, <2mm; also sparse, poorly sorted subrounded quartz <1mm.	1	16
Q400*	Medium-grained sandy fabric; subangular sandstone inclusions <0.5mm; rare organic inclusions	216	2275
Q401	Coarse-grained sandy fabric (coarser variant of Q400?); subangular sandstone inclusions <1mm; rare flecks of burnt bone	78	868
Q402	Sparse, poorly sorted, subangular quartz <0.5mm in coarse matrix; rare fleck of burnt bone and clay pellets	1	12
Q403	Rare to sparse, poorly sorted subrounded quartz <1mm in fine matrix; rare detrital flint	77	1825
Q404	Fine-grained sandy fabric (finer variant of Q400?); rare organic inclusions and burnt bone	113	1370
Q405	Sandy fabric with clay pellets: moderate, well sorted quartz <0.5mm; sparse rounded clay pellets <6mm; moderately coarse matrix, slightly micaceous	3	54
Q406	Imported wheelthrown greyware: fine matrix; common subrounded quartz, well sorted <0.125mm; pale brown-grey with mid grey surfaces	3	42
Q407	Imported wheelthrown greyware: moderately fine matrix; sparse subrounded quartz, well sorted <0.5mm; mod grey with grey/brown core	1	4
Q408	Fine grey sandy ware, handmade: common, subangular quartz, well sorted <0.125mm; mid grey with brown/grey core	33	574
Q409*	Coarse sandy fabric with rock inclusions: sparse, subangular quartz <2mm; rare sandstone; rare coarse mica flakes; rare igneous rock fragments	6	46
Q410	Sandy fabric with iron-stained quartz: moderate subrounded/subangular quartz <0.5mm, fairly well sorted, in coarse matrix	17	187
R401	Coarse rock-tempered fabric: sparse, poorly sorted (?igneous) rock fragments <2mm; rare quartz grains	1	69
R402*	Sandy fabric with rock fragments: moderate, fairly well sorted quartz <0.25mm; sparse igneous rock fragments <2mm; moderately coarse matrix, slightly micaceous	54	911
V400*	Organic-tempered fabric: sparse/moderate organic strands in silty matrix; rare quartz grains	147	1159
V401	Sandy organic-tempered fabric: sparse to moderate organic strands; moderate quartz grains; coarse, slightly micaceous matrix	63	805
V402*	Bone-tempered fabric: sparse burnt bone fragments <1mm; sparse quartz <2mm; rare detrital flint; coarse, slightly micaceous matrix	20	366
V403	Bone-tempered fabric: as V402 but with sparse to moderate organic inclusions	13	134
V404*	Fine organic-tempered fabric: as V400 but with rare igneous rock fragments	11	420
V405*	Bone-tempered fabric, similar to V402: common, fairly well sorted subangular bone fragments <1mm; sparse quartz grains	2	24
	TOTAL	**860**	**11161**

*asterisked fabrics were submitted for petrological analysis

TABLE 2: Anglo-Saxon pottery fabric totals

177–8). The range of inclusions identified in thin section varies between samples; the Southend sherd, for example, does not match thin sectioned samples from *Lundenwic* or Northfleet. The sources of the sandstone-tempered wares are thought to lie within the south-east of England, possibly but not definitely within the Thames Basin, and include Lower Cretaceous sandstone strata, and boulder clay in Middlesex or Essex. No outcrops of sandstone occur near Southend or southern Essex, which is dominated by softer argillaceous and loose sandy deposits, with the nearest outcrops lying in the Wealden Group of north Kent. Glacial till is also absent in the area. It seems fairly likely, therefore, that the sandstone-tempered wares found on the site were not made locally.

Fabrics V402, V403 and V405 contain bone fragments. The use of crushed burnt bone appears to be a Thames Valley tradition, although it was first identified at Spong Hill, Norfolk (Brisbane 1994, group X). It has since been identified at various sites within *Lundenwic* and in the greater London area, including Upminster and Dagenham (Laidlaw and Mepham 1999, fabrics V400, V401; Vince 2006; Blackmore 2008, 178; Watson *et al*. 2011, 88–9). A sample recently analysed from *Lundenwic* provides a good match for both V402 and V405 (Quinn 2011a), and this might suggest a common origin for all three fabrics, and therefore a non-local origin for the Southend bone-tempered wares.

The picture is complicated by fabric Q402, which was not thin-sectioned, but which contains the subangular quartz

characteristic of the sandstone-tempered wares, but also rare bone fragments. It therefore demonstrates links to both the sandstone-tempered and bone-tempered ware groups, and supports similar evidence for links between the sandstone-tempered and granitic wares found at Upminster (Watson *et al*. 2011, 90–1).

Fabrics Q409, R402 and V404 all contained fragments of igneous rock, and to this group can be added fabric R401, which contained similar macroscopic inclusions. Fabrics Q409 and R402 were particularly similar in thin section, and a common source could be suggested. Igneous rock-tempered wares are recorded from *Lundenwic* and the greater London area, although fairly sparsely (Blackmore 2008, 178–9; Watson *et al*. 2011, 88–9). At least some of these wares have been sourced to the Charnwood Forest area of Leicestershire, while a sample from Northfleet, Kent contained inclusions identified as deriving from the Mountsorrel granodiorite but occurring in boulder clay from East Anglia (Vince 2011, sample V4536). This sample provides a reasonable match for fabric R402, although there are some differences. As neither boulder clay nor primary outcrops of igneous rock occur in south Essex, it is likely that these wares are all non-local to the site, although possibly not from any significant distance (see below, Discussion).

Two fabrics, Q406 and Q407, are quite distinct within the early Saxon assemblage; both are wheelthrown fine-grained sandy greywares. These fall into a large and diverse group of imported greywares, originating in northern France or Belgium, which occur in significant quantities at the major Middle Saxon ports (e.g. *Lundenwic*, *Hamwic*), and at various other sites in the south-east and East Anglia, mainly in coastal locations (Evison 1979, map 1; Hodges 1981, Fig. 8,4). Within Essex, examples have been found at Mucking (Evison 1979, 84; Hamerow 1993, 22) and, closer to the current site, in a grave at Prittlewell (Evison 1979, 80, Fig. 16, a, b).

Fabrics V400 and V401 contained plant matter, with apparently nothing else distinctive enough to pinpoint possible source(s). Organic-tempered wares are commonplace in early to middle Saxon assemblages across southern England. While these have generally been considered to represent locally-produced wares, petrological work on organic-tempered wares from the London area has started to highlight a more complex picture (Blackmore and Vince 2008, 155–6). The combination of plant matter and igneous rock inclusions within V404 should be noted here (see above).

Of the three remaining fabrics (Q403, Q410, D400) little can be said. All three contain subrounded quartz grains which are distinct from those in the sandstone-tempered wares; the grains in Q410 are markedly iron-stained. The voids in fabric D400 are mostly spherical, which could suggest leached-out oolitic limestone or possibly tufa. Oolitic limestone was recorded in samples from Northfleet, Kent (Vince 2011, samples V4535 and V4541), while tufa has been identified in sherds from Hurst Park, East Molesey, Surrey (Laidlaw 1996, 87, fabric C400, wrongly identified as oolitic limestone). East Anglian boulder clay was suggested as a source for the sherds from Northfleet, although the occasional presence of oolitic limestone within calcareous Thames gravel was mentioned. Tufa is a calcareous concretion also occurring within the Thames gravels.

Vessel forms

The limitations of the diagnostic component of the assemblage have already been noted. Seven vessel forms were defined, for only two of which were complete, or near complete, reconstructable profiles available.

1. Vessel with plain rim, upright or slightly inturned. Two reconstructable profiles are from rounded bowls, one hemispherical and the other with a slightly inturned rim (Fig. 4, 1, 2, 3)
2. Vessel with slightly concave neck above a shoulder or carination (Fig. 4, 6)
3. Thin-walled, carinated bowl with concave neck. One near complete profile (Fig. 4, 4, 5)
4. Rounded vessel with everted rim (Fig. 4, 7)
5. Convex vessel with weakly everted rim and neutral profile (Fig. 4, 8)
6. Flared dish with plain rim and rounded basal angle (not illustrated)
7. Possible cup; thin-walled, straight-sided, slightly flared profile with plain rim (profile of lower body uncertain), rim diameter estimated at 80mm (not illustrated)

Diagnostic sherds appear to derive largely from rounded/convex jars or bowls (forms 4 and 5), but there are also at least two examples of carinated forms (form 2).

Decoration is extremely scarce, and is confined to three examples with horizontal tooled lines (two straight and one curvilinear), one with tooled or furrowed 'corrugation' on the shoulder, one with two-directional diagonal tooling around the carination, two with pinched up bosses, a third boss, either pinched-up or applied, on a carination, and one with a row of finger-pinching. No stamped sherds are present here.

A small proportion of sherds show some form of surface treatment: 43 are burnished, either externally or internally or overall and 16 are scored. In the case of the latter, scoring appears to be restricted to the lower parts of the exterior, and may be either horizontal or vertical – one example combines both (Fig. 4, 7). In addition, 15 sherds have applied coarse-slipping or *Schlickung*. This surface treatment is considered to be a characteristic of early Saxon assemblages, with a *floruit* in the 5th century AD, continuing into the 6th century (Hamerow 1993, 35–7).

Distribution

Pottery was recovered from 61 separate features, in quantities ranging from one sherd to 245 sherds, although only one feature (SFB 1125) produced more than 100 sherds, and the overwhelming majority (52) yielded 25 sherds or fewer. This, together with the indications of reworking suggested by the abrasion levels, suggests that pottery (and other refuse) was regularly cleaned out of the settlement features and redeposited on midden heaps, and severely restricts the potential of the pottery to provide firm dating evidence for the features in which it was found. This is particularly true of the SFBs, even though these features were among the most productive in terms of pottery, since deposition of refuse within these features is likely to have taken place only after abandonment (perhaps through a process of redistribution of midden deposits), rather than during use.

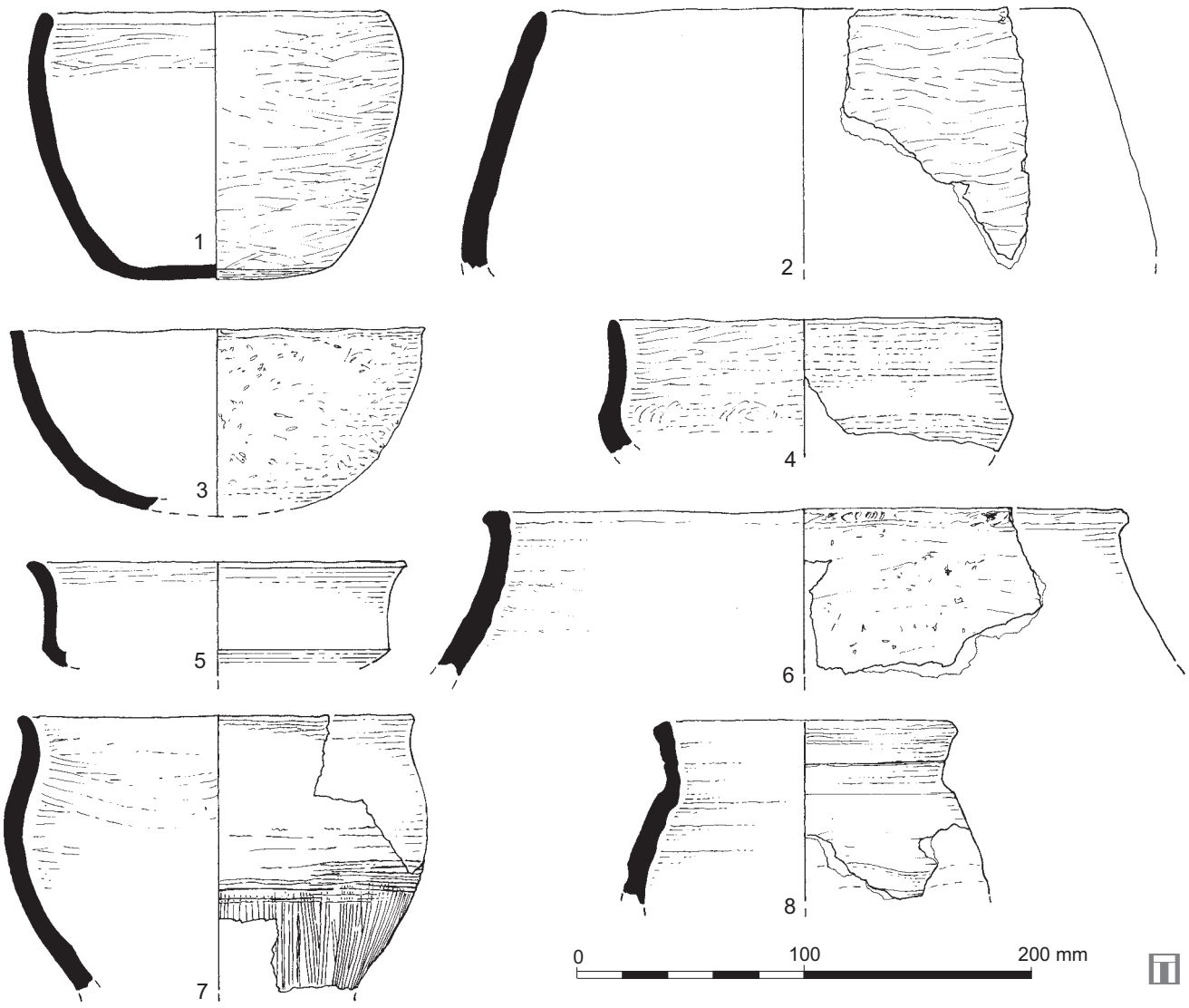

FIGURE 4: Saxon pottery, details in catalogue (@1:3)

The three largest SFB assemblages (245 sherds from 1125, 98 sherds from 708 and 26 sherds from 1284) show no significant differences in their composition by fabric type or by fabric group that cannot be explained merely by differing quantities. This does suggest that these three features were backfilled at around the same time or, at least, using refuse from a common source. Most of the 'early' indicators (*Schlickung* surface treatments, carinated forms) occur in the northern half of the area, but quantities from the southern half are too small for this to be significant.

Discussion

This assemblage forms a useful addition to the growing body of Early Saxon ceramics from south-east England. The sandstone-tempered, bone-tempered and granitic fabrics recorded at Clements Park supplement the evidence from Greater London for the production and distribution of these wares, a pattern which is still very imperfectly understood, since different sites have produced apparently contradictory patterns. Hitherto, although recently identified at Dagenham and Upminster, these wares have apparently been absent from south Essex. This included the large published assemblage from Mucking, despite extensive thin section analysis, and local brickearth and alluvial clays were suggested there as the main sources (Hamerow 1993, 28–9). This could not be due purely to chronological factors, since other early Saxon indicators, such as the occurrence of carinated forms and the use of coarse-slipping (*Schlickung*), were recorded. More recent commentators have suggested that sandstone-tempered and bone-tempered wares may in fact have been present at Mucking, perhaps within the group of unclassified fabrics (Watson *et al*. 2011, 91). Links between the sandstone-tempered and bone-tempered wares seen at Clements Park support similar evidence from *Lundenwic* and from Upminster for the sandstone-tempered and granitic wares, and reinforce the argument for regional production.

The distribution of pottery across the region may have been affected by a number of factors (Blackmore and Vince 2008), such as the chronological position of the site within the period of early immigration (a higher proportion of imports on early sites, later superseded by local wares?), ability and resources to produce pottery (more likely to be available on larger sites, leading to more local wares?), and access to local and regional trade routes (more imports on larger sites?).

Chronological indicators for the Clements Park assemblage are somewhat ambiguous, but generally suggest

a focus in the 5th to 6th centuries. The use of *Schlickung* as a surface treatment suggests a 5th or early 6th century date, and this early date is supported by the presence of at least two carinated forms. Sandstone-tempered wares, very characteristic of early Saxon occupation in the London area, are rare in *Lundenwic* and are thought to have gone out of use in the 7th century (Blackmore 2008, 177). Organic-tempered fabrics are considered to have been in use from the 6th to 7th centuries, while the imported greywares (rare here) are generally dated to the 7th century.

Worked Flint by Matt Leivers

A total of 602 pieces were recovered, much of which was redeposited (Table 3). The assemblage is mixed, both in terms of raw material (good quality dark grey/black flint, glauconitic, variously coloured pieces with worn cortex, some beach pebbles) and technology/chronology. Soft and hard hammer-struck pieces are present, with more of the latter. Condition varies from fresh and unworn to patinated and very rolled.

Much of the assemblage consists of undistinctive hard-hammer struck flakes that could date to any period from the later Neolithic. The only pieces which are more chronologically distinctive are a series of blades and bladelets (some with facetted butts) primarily struck with a soft hammer that are likely to be Mesolithic or Early Neolithic. These were found in small numbers (no more than three together) across the site. Much of the flake and non-flake debitage could be Middle or even Late Bronze Age, especially pieces using previously worked and patinated material.

Formal tools are very scarce, but included seven scrapers and a side scraper resharpening flake, two piercers, microdenticulates, a fabricator, single truncated and notched flakes, and flakes with marginal retouch. The only chronologically significant pieces are an Early Mesolithic obliquely blunted microlith (ditch 866) and a very simple barbed and tanged arrowhead of Sutton B type (Green 1980) with edge flaking but no invasive or covering retouch: this is Beaker/Early Bronze Age (pit complex 235), and a cortical flake which appears to have been trimmed into rough barbed and tanged form (enclosure ditch 691).

There are very few cores. A single bladelet core is likely to be Mesolithic. A discoidal core is probably later Neolithic. The remainder are likely to all be later, probably of Bronze Age date, and mostly have multiple platforms, little preparation or maintenance, and frequent flaking errors.

Type	No.	%
Bladelet cores	1	0.17
Flake cores	13	2.16
Core fragments	32	5.32
Blades and bladelets	32	5.32
Flakes	419	69.60
Rejuvenation tablets	4	0.66
Chips	10	1.66
Irregular debitage	45	7.47
Microliths	1	0.17
Scrapers	7	1.16
Arrowheads	2	0.33
Piercers	2	0.33
Microdenticulates	4	0.66
Miscellaneous retouch	25	4.14
Fabricator	1	0.17
Truncation	1	0.17
Notch	1	0.17
Tool debitage	1	0.17
Hammer	1	0.17
Total	**602**	**100**

TABLE 3: Composition of the worked flint assemblage

Small Finds by Grace Perpetua Jones

A range of other material was recovered (Table 4), predominantly of Anglo-Saxon date. This includes personal objects, household items, tools, evidence for textile working and several structural components. All are readily paralleled from 5th to 7th century sites in the region. A small quantity of Romano-British material was included, comprising 2.3kg of ceramic building material, including box flue tiles and tegulae, and a piece of vessel glass. These finds were residual in Anglo-Saxon contexts, the ceramic building material spread across 10 features, whilst the glass fragments came from pit 115. A copper alloy triangular belt plate with trilobite terminal of later medieval date was intrusive in pit 115 (Object Number (ON 19), as were two pieces of post-medieval glass (ON 15–16). An iron horseshoe (ON 10) and a small lead shot (ON 27) are of post-medieval date; both were unstratified.

Personal Items

A small number of personal items were recovered, including a comb, four dress pins, a strap end and a possible bead. A single-sided composite antler comb, triangular-backed, was recovered from Early Anglo-Saxon SFB 1125 (ON 114, Pl. 1). With the exception of one corner, the side plates are almost intact; the top was cut to a straight edge just under 4mm in length. Little remains of the teeth, and the tooth plate is broken away at the two ends, however the current length of the comb is 125mm, and the intact side is 87mm, suggesting if both sides were equal, the original length of the side plates would have been approximately 145mm. The tooth plate is 4mm thick; overall

Material type	Number	Weight (g)
Ceramic building material	26	2311
Copper alloy	17	89
Fired clay	1394	23784
Glass	7	7
Iron	39	769
Lead	25	522
Slag	43	6772
Stone	357	18044
Worked bone	16	51
Total	**1924**	**52349**

TABLE 4: Quantification of other finds recovered, by material type, number and weight

the comb is 7mm thick. Seven iron rivets survive intact on each side, with the holes of at least another two. This style of comb was often decorated with 'ring-and-dot mofits, bounded by incised border lines' (MacGregor 1985, 83) and the example from Clements Park is no exception, with both sides decorated, one more elaborately than the other, with very finely executed overlain rings creating the impression of a spiral. Triangular combs with ring and dot motifs were also recovered from the SFBs at West Stow, dating to the 5th and 6th centuries, and one with a pattern of double interlocking arcs (West 1985, 126, Fig. 251,13).

Four dress pins were recovered from the site. An iron pin from pit 1216, now in two pieces, had a small knob head 4mm in diameter. The top of the shank was decorated with bead and reel decoration. The pin is 90mm long, the shank 2.5mm thick. A second iron pin was unstratified (ON 41). It is 82mm long, although the tip is missing. The square-sectioned head is expanded, 12mm long and 7mm wide, it tapers to the shank. A tapering iron rod, 106mm long and up to 5.5mm thick, may represent a third pin (ON 59, pit 846). An incomplete bone pin, fashioned from a pig fibula, was recovered from SFB 1125 (ON 126, Pl. 1). The articular end has slight trimming but is otherwise relatively intact and has been perforated by a hole of 4.5mm diameter. The size of the head, and a lack of wear around the perforation, suggests this object was used as a dress pin rather than a needle.

An unidentified strap end, 32mm long and 9mm wide, was highly abraded and unstratified (ON 26). A possible copper alloy bead, measuring 9mm in diameter and nearly 6mm wide, came from early Anglo-Saxon pit 1469 (ON 121).

Textile Working

A fired clay spindle whorl came from pit 1469. It is circular in plan and faceted in section. It has a pre-firing central perforation of 10mm on one side and 9mm on the other. The whorl measures 40mm in diameter and is 25mm thick. It is similar to an example from grave 163 at Finglesham (Hawkes and Grainger 2006, Fig. 2.125: 4). Part of a fired clay object with a curved surface may have been part of a loomweight (ON 3, pit 115).

Household Objects

Some 192 fragments (7447g) of light grey vesicular basalt were recovered from a range of features (Table 5). Those from later prehistoric features were small, abraded and intrusive. This lava stone, used as a quern material, probably came from the Eifel Mountain region of Germany, although a similar type of lava, from an area near to Volvic, in the Auvergne region of France, is also known, and cannot be distinguished without resort to petrological analysis (King 1987, 94). Rotary querns made from lava stone were used throughout the Roman period, up to the 5th century, but then decline in use, before becoming the predominant stone used for rotary querns during the medieval period (King 1987). However, Anglo-Saxon lava querns are known from a number of sites in eastern England, including some from Early Anglo-Saxon sites, such as Linford, Essex (Barton 1962), and may have been brought to England by Anglo-Saxon settlers, rather than imported (Fiona Roe pers. comm.). Analysis of the stone objects from the medieval contexts at Stansted indicated that lava was the only material used for rotary querns, according with previous work by Major (2004) that in the medieval period in Essex, all rotary quern were made from lava (Shaffrey 2008, 25.4).

Feature	Phase	Number	Weight (g)
Building 1125	Early Anglo-Saxon	1	5
Ditch 864	Late Bronze Age	13	35
Ditch 691	Late Bronze Age	6	36
Gully 930	Late Bronze Age	11	67
Pit 299	Anglo-Saxon	5	41
Pit 593	Anglo-Saxon	64	3414
Pit 667	Anglo-Saxon	2	885
Pit 771	Anglo-Saxon	78	1374
Pit 792	Anglo-Saxon	3	7
Posthole 1138	Anglo-Saxon	7	33
Unstratified	Undated	2	1550
Total		**192**	**7447**

TABLE 5: Quantification of basalt lava quern fragments, by feature

Although none of the fragments could be reconstructed, the thickness of a number was measurable. The thinnest example came from Anglo-Saxon pit 593, with two fragments of just 24mm, while the largest, from the same feature, was 88mm thick.

Other stone objects included a tile fragment, probably in a Coal Measure Sandstone from Derbyshire (SFB 708, ON 287) and a greensand fragment that may have originated from a quern, re-used as a point/needle sharpener (pit 593, ON 64). A burnt piece of very poorly sorted, coarse-grained sandstone had one possible worked surface and may have been brought to the site with the Anglo-Saxon settlers (Fiona Roe, pers comm., pit 1469). A piece of ferruginous sandstone, probably from the Folkestone Beds, had two possibly worn, sloping surfaces and may have been used as a processor (Late Bronze Age ditch 243). An unstratified piece of this type of stone appeared to have a rounded edge, but was very weathered (ON 65). A piece of quartz sandstone with scattered glauconite had one uneven, worn surface, and may have been used as a sharpening stone (pit 550).

Three iron knives were recovered, from pit 115 (ON 6), gully 930 (ON 52) and pit 780 (ON 57). All were tanged, but details of their form were obscured by corrosion products; the example from gully 648 appeared to have an angled back and straight cutting edge. A square-sectioned iron rod, 102mm long, was hooked at one end and broken at the other (ON 45). It may have been used as part of a suspension system, and was recovered from pit 369.

Tools

A small, socketed hooked iron tool, probably a reaping hook, was recorded from SFB 1125 (ON 104). It was 90mm long and 49mm across the widest part of the blade, the socket was 11mm in diameter. Part of the blade from a second reaping hook came from pit 761 (ON 9). A small, squared-sectioned iron awl, 70mm long and up to 6.5mm wide, was recovered from Anglo-Saxon pit 369 (ON 39). One end tapers to a flat point, the other end was presumably hafted.

Structural Fittings
Two iron nails and one rod/shank fragment came from SFB 1125; an iron nail and shank were also recorded from pit 115, and one nail from pit 1469. Rod/shank fragments came from gully 930, pit 788, pit 1216 and ditch 1495, presumably also from nails. A further six were unstratified.

Miscellaneous
A piece of antler tine from SFB 1125 had been worked into faceted object, possibly a peg or toggle (ON 109, Pl. 1). The sides of the tine had been cut to create an object 82mm long, with eight roughly executed facets, the maximum width is 17.5mm, and this is found 30mm from one end (of 14mm), the object tapers to 12mm at the other end. The wider end had been cut across, the narrower end is faceted, creating a very slight point. Several cut marks are visible around the widest area of the piece. The surface appears quite polished, suggesting it was used as an implement rather than representing an unfinished object or bone working.

The function of a number of other metal objects could not be identified. Of interest were five copper alloy riveted and folded sheet fragments (ON 107), and a smaller, curved, sheet fragment (ON 110), from SFB 1125. These may have come from vessels, perhaps cut down for recycling. Similar pieces have been noted from SFBs along the route of the East Kent Access Road (Oxford Wessex Archaeology 2010). A small piece of sheet copper alloy also came from SFB 708 (ON 37) and a folded copper alloy sheet fragment from ditch 1495 (ON 119). Part of a copper alloy ring, 30mm in diameter, from Anglo-Saxon pit 115, may have functioned as part of a fitting (ON 8). A twisted copper alloy fragment of strip and an unidentifiable lump were recorded from the subsoil (ON 1).

A rectangular-sectioned iron bar, of unknown function, was recorded from pit 771 (ON 55). It is slightly curved and is 125mm long and 3mm wide. One end is rounded, the other broken. A small iron strip fragment came from SFB 1125 (ON 115).

A number of fragments of lead were waste products or offcuts. Three were recorded from pit 115 (ON 4, 17, 22), and single pieces came from gully 930 (ON 12), ditch 869 (ON 70), pit 831 and pit 715 (ON 21). Four such fragments were unstratified (ON 13, 30–2). A rectangular bar of unknown function, measuring 89 × 29 × 7mm, was recorded from pit 1469 (ON 125).

Animal Bone by Lorrain Higbee
The following is a short summary of the Early Anglo-Saxon assemblage, which is based on a detailed archive report prepared by J. Grimm.

The assemblage is dominated by bones from domestic livestock species. Cattle were clearly of prime importance, accounting for 88% of all livestock. Pigs were slightly more important than sheep. Less common species include cat, horse and red deer (Table 6). No bird bone and only a single eel bone were recovered despite a programme of sieving.

Analysis of body part information indicates local slaughter, carcass processing and consumption. Cattle hides also appear to have been processed locally. The mortality pattern for cattle suggests a mixed economy but perhaps with slightly more emphasis on secondary products such as milk. Sheep also appear to have been managed for a range of products. However, the slight emphasis on older animals suggests that wool production was important. Pigs, essentially meat animals, were generally slaughtered at *c.*2 years of age. Statistical analysis of biometric data suggests that the Clements Park cattle were taller and more robust than cattle from contemporary sites in other parts of the country. It is suggested that the Clements Park cattle might originally have been imported from mainland Europe. However, large cattle have been recorded from the Late Roman period in this region (Albarella *et al* 2008).

Species	NISP		MNI	
	n	%	n	%
Cattle	1082	35.3	16	44
Horse	61	2	2	6
Sheep/goat	84	3.7	7	19
Pig	185	6	9	25
Cat	1	0	1	3
Red deer	1	0	1	3
Deer	6	0	-	-
Large mammal	1442	47	-	-
Medium mammal	186	6	-	-
Total	**3048**	**100**	**36**	**100**

TABLE 6: Early Anglo-Saxon animal bone assemblage by number and percentage of identified specimens present (or NISP) and minimum number of individuals (or MNI).

Spatial analysis indicated that there were a few subtle differences in the relative proportions of different species according to feature type. However, there was no spatial separation of waste from different processes; butchery waste and domestic refuse were mixed and deposited together.

The settlement appears to have had a mixed economy and been self-sufficient in the provision of milk, wool and meat. In this regard the economy of the site is similar to the contemporary rural settlement at West Stow (Crabtree 1990).

Charred and Mineralised Plant Remains by Chris J. Stevens and Sarah F. Wyles
A total of 171 samples were taken. Of these one came from a Middle Bronze Age pit, and around 40 from Late Bronze Age features. The majority of the remaining samples came from Anglo-Saxon features.

Methods
The samples were processed using standard flotation methods with the flot collected on a 0.5mm mesh. The samples were assessed and identification of major taxa was undertaken using stereo incident light microscope at magnifications of up to x40 using a Leica MS5 microscope, following the nomenclature of Stace (1997) for wild species and the traditional nomenclature as provided by Zohary and Hopf (2000, 28, tables 3 and 65), for cereals.

Results
The later Bronze Age samples had very few remains in them, comprising mainly unidentifiable cereal grains and

occasional fragments of glume bases of hulled wheat. In two samples from pit 577 (quarry group 235) and enclosure ditch 1490 (slot 1287, 1288) glume bases were reasonably well represented and in the former several were identifiable as emmer wheat (*Triticum dicoccum*). Where identifiable grains were present, those of barley (*Hordeum vulgare sl*) were generally well represented. While no other crop remains were recovered, hawthorn (*Crataegus monogyna*) and fragments of hazelnut shell (*Corylus avellana*) were present in a number of the samples, the latter being reasonably well represented in the Middle Bronze Age pit 1409. Stones, probably of sloe (*Prunus spinosa*), were also recovered from Late Bronze Age pit 1227.

Seeds of wild species comprised mainly those of probable arable weeds, which were harvested and brought to the settlement with the crop and subsequently charred with crop waste. For the main part these were of larger seeded species, including vetch/wild pea (*Vicia/Lathyrus* sp.), cleavers (*Galium* cf. *aparine*), knotgrass (*Polygonum aviculare*), and oats/brome grass (*Avena/Bromus* sp.). Of smaller seeded species, a single seed of blinks (*Montia fontana* subsp. *chondrosperma*) was recovered from pit 577 (pit group 235), along with occasional seeds of clover (*Trifolium* sp.) and fat-hen (*Chenopodium album*).

Many of the Anglo-Saxon samples from the sunken featured buildings, as often the case, were relatively sterile with occasional charred fragments and grains of free-threshing wheat (*Triticum aestivum/turgidum* type) and barley. Occasional layers within SFB 1125 and SFB 1284 did however yield 10 or more cereal grains.

A few of the Anglo-Saxon cess pits, in particular pits 771, 792 and 831, had quite high numbers of charred cereals within them, mainly grains of barley and free-threshing wheat, but also occasionally grains of rye (*Secale cereale*). A few remains of both free-threshing wheat rachis fragments, as well as of rye also came from these features. Most of the remaining pits had low levels of charred plant remains apart from two large adjacent pits in the south of the site (1216 and 1469) that had richer deposits, comprising mainly barley grain, but also with some rye, including occasional rachis fragments. A few fragments of glume bases were recovered from pit 1469 (1341), although much of this material is probably reworked given the pit cut a Late Bronze Age ditch.

A beam slot 839 (838) associated with a line of postholes (820) was also relatively rich in charred cereal remains, again of barley, rye and free-threshing wheat, as were two postholes 803 (802) and 815 (814) from the posthole group. A large quantity of barley, along with some rye were also recovered from gully 930, while several of the keyhole-shaped ovens, 1078, 1119 and 1026 and 266, had reasonable quantities of charred cereals within them.

In additional to cereal remains a few remains of pulse crops were present, with both bean (*Vicia faba*) and pea (*Pisum sativum*) being recovered from cess pits 771, 831 and 792 and SFB 916. In addition remains of bean were also recovered from pit 1410 also probably Anglo-Saxon in date. As with the Bronze Age, several samples had fragments of hazelnut shell (*Corylus avellana*), and a few had fruit stones of probable sloe (*Prunus spinosa*).

A number of mineralised deposits were recovered from the cess pits, although only in few cases were these identifiable as seeds, in at least one case to bramble (*Rubus* sp.). For the most part the mineralised material probably relates to cereal bran and general faecal matter.

Seeds of wild species were relatively common in many of the samples and included many larger seeded species which are common weeds of arable crops. These comprised those of vetch/wild pea (*Vicia/Lathyrus* sp.), brome grass (*Bromus* sp.) and occasional seeds of corn-cockle (*Agrostemma githago*), knotgrass (*Polygonum aviculare*), and wild mustard, probably black mustard (*Brassica nigra*). Grains of oats (*Avena* sp.) may be of wild or cultivated variety, and are quite commonly recorded as a crop upon Anglo-Saxon sites. Other seeds included those of stinking mayweed (*Anthemis cotula*), which is a weed of heavy clay soils, as well as being a common contaminant of grain, given the tendency of seeds to remain in the seed head. Other smaller seeds included those of fat-hen (*Chenopodium album*), dock (*Rumex* sp.) and probable annual meadow grass/cats'-tails (*Poa* sp./*Phleum* sp.). Finally, more unusually was a seed of branched bur-reed (*Sparganium erectum*) from pit 1469/1224 (1338), which is a wetland species.

Discussion

The general paucity of charred cereal remains associated with Bronze Age sites is relatively common within Britain. Hulled barley was well represented, along with at least emmer wheat, suggesting these were the dominant cereal crops. This is consistent with the findings from West Thurrock (Stevens 2009), although occasional richer deposits were recovered from this latter site. However, it might be noted that spelt, along with emmer has been recovered from a number of Middle to Late Bronze Age sites from both the north and south of the Thames estuary (Murphy 1987; 1988; 1991; 1998; Pelling 2003; Pelling 2013, 36; Stevens 2009).

The range of wild species was generally similar to other sites in the region, with wetland species present on both, with occasional fragments of hazelnut shell (*Corylus avellana*). The general assemblage is consistent with domestic waste from the dehusking of stored cereal crops, with hulled wheat stored in the spikelet and barley probably stored within its hulls.

The range of crops seen in the Anglo-Saxon features, comprising bread wheat, barley, rye, bean and pea, with possibly also, oats is comparable with those assemblages recorded for other sites in East-Anglia (Murphy 1985; 1990; 1995). While spelt has been recorded as continuing from the Roman into the Early Anglo-Saxon period, both within East Anglia (Murphy 1997) and radiocarbon dated within north Kent (Smith 2011), given the low quantities of spelt wheat seen here they are all thought to be potentially residual. Such cereals were probably supplemented to an extent by wild resources, including brambles, hazelnuts and sloe berries.

The lack of rachis fragments and dominance of larger seeded species imply that the grain crops were stored in a relatively processed state after they had been threshed, winnowed and sieved, activities conducted in the field following harvest in mid- to late summer. The presence of seeds of stinking mayweed (*Anthemis cotula*) can be taken to indicate the cultivation of heavier clay soils. Other species such as black mustard (*Brassica nigra*) are common arable weeds, especially on lighter soils in near coastal areas, as might be found close to the site.

Marine Shell by Sarah F. Wyles

A number of samples had quite high quantities of marine shell, in particular shells of mussel (*Mytilus edulis*), some of which had become pulverised, and cockle (*Cerastoderma edule*). The composition of these assemblages was generally very similar and it is noteworthy that very few shells of oyster (*Ostrea edulis*) were present. In most cases these deposits formed discrete lenses or dumps of material within the features, which were clearly visible during excavation. Of these remains two of the richer deposits came from Anglo-Saxon features, notably pits 667 and to a lesser extent cess pit 771 (778). It is probable that pit 1410, which contained a smaller number of shells, is also Anglo-Saxon in date with a few fragments of residual, reworked Bronze Age pottery. A large number of cockles, together with a few periwinkles (*Littorina* sp.), were recovered from pit 7601. It is notable all these features are in relatively close proximity to each other.

A similar deposit of marine shell, again mainly shells of mussels and cockles, was recorded from the terminal of enclosure ditch 1490 (slot 1079). It is likely that this deposit is also of Anglo-Saxon date, although the ditch was phased to the later Bronze Age (see above) both from small amounts of pottery from the terminal itself, as well as larger quantities of pottery from the southern end of the ditch. While such remains are common from the Roman period they are much more unusual within later prehistoric settlements in Britain, where, if present at all, it is generally only in small quantities (for example Manston Road: Wyles 2009).

Pulverised mussel shells have also previously been recovered from Anglo-Saxon pits in north Kent, for example Cliff's End, Thanet (Wyles forthcoming), as well as in large quantities from other Anglo-Saxon sites in southern England, for example, within the Saxon settlement of *Hamwic* (Wyles 2005).

The assemblages from this site seem to indicate the collection of marine shells from the local middle and lower shore. It might be noted that information on shellfish collecting is largely under reported within East-Anglia, as with much of the British Isles, and while such assemblages have been recorded from urban Anglo-Saxon sites within East Anglia, such information has previously not be forthcoming for rural sites (Brown *et al*. 2000).

DISCUSSION

The Bronze Age field systems and enclosures at Clements Park form only a very small part of an agricultural landscape that had been in the process of establishment and use across much of south-east England for some centuries by the time the activity on site was at its peak. In the immediately surrounding area of the Southend Peninsula field systems and both enclosed and unenclosed settlements are known from Eastwood, Southend Airport, North Shoebury, Baldwins Farm and Great Wakering (Brown 1996; Yates 2007), and Middle and Late Bronze Age metalwork deposits appear to cluster (Couchman 1980). At many of these sites (as well as frequently elsewhere in Essex) there is very little evidence of continuity of settlement into the Early Iron Age (Wymer and Brown 1995; Brown and Leivers 2008).

Anglo-Saxon activity took place in and around a small enclosed settlement, essentially a farming community. Environmental evidence indicates hulled barley, free-threshing wheat and rye were being processed and the presence of peas and beans provides possible indications of other horticulture. The keyhole-shaped ovens have been interpreted as being used for drying crops (see above), and given the number of these features, crop processing was important aspect of the site.

Artefactual evidence helps to enrich a picture of a thriving and prosperous community with a range of craft activities likely to have been undertaken, with evidence for leather working, bone and antler working, weaving and iron working recovered. Five structures within the large enclosed area suggests a reasonably sized population, whilst a further SFB partially within Area C indicates that the settlement was not confined within the enclosure. Indeed, a further example was recorded during excavations in Fox Hall Golf Course immediately to the east (Essex County Council 1992). It seems probable that there is an extensive but dispersed Anglo-Saxon settlement, or series of settlements, along the broad ridge upon which the site is positioned. At Mucking, *c.*20 km south-west of the site, large-scale open area excavations have revealed an extensive Early to Middle Saxon settlement (Hamerow 1993). Study of the distribution of datable finds and pottery suggests that this may have been a gradually shifting settlement changing shape and location from the 6th century onwards (Hamerow 1993, 314), although others see this as a series of separate but contemporary settlements (Tipper 2004, 52). It is not clear from the excavations at Clements Park exactly how similar the examples at Mucking are. Only further excavations along the ridge will truly allow such comparisons to be made.

No evidence of human remains was recorded on the site. Previous excavations in the wider area have revealed likely locations for Anglo-Saxon cemeteries within which the site's inhabitants may have been buried. In 2003, the Museum of London Archaeology Service (MoLAS) discovered a rare princely burial on Priory Crescent, Prittlewell, *c.*1km to the south-west of the site, found within a known Early Anglo-Saxon inhumation cemetery (MoLAS 2004; see Pollitt 1923; 1932 for the earlier investigations). The undisturbed burial chamber would have originally been covered by a barrow, and contained a wealth of grave goods from both this country and the continent. As such, the grave is indicative of a high status individual dated to the seventh century AD. Other Anglo-Saxon cemeteries have been discovered in south-east Essex at North Shoebury (Tyler 1996, 110), and at Rayleigh, five miles north-west of Southend-on-Sea, where a cemetery contained 145 unurned cremation burials. Further to the west, Mucking is the only extensively excavated cemetery and settlement within the region (Hamerow 1993), although other smaller settlement sites have been excavated at Barling Hall, Barling Magna, Temple Farm, Sutton and Great Wakering (Tyler 1996, 108).

APPENDIX: PREHISTORIC FABRIC DESCRIPTIONS

FL1 soft, thick, coarse sparsely micaceous sandy fabric with a moderate amount of relatively well-sorted fine to very coarse sub-angular and angular crushed calcined flint (coarse and very coarse flint inclusions tend to be towards the surfaces rather than within the core of the sherd)

FL2 hard, thin, moderate fabric. Common fine to medium well-sorted sub-angular crushed calcined flint added

FL3 soft, medium, moderate sparsely micaceous fabric with a moderate amount of fine and very coarse poorly-sorted crushed calcined flint

FL4 soft, medium, moderate very sparsely micaceous fabric. Sparse to moderate fine to very coarse generally well-sorted crushed calcined flint
FL5 soft, medium, moderate micaceous fabric. Sparse to moderate fine and medium well-sorted crushed calcined flint temper
FL6 soft, medium, fine sparsely micaceous silty fabric with sparse to moderate medium and coarse well sorted crushed calcined flint
FL7 soft, thin, medium slightly micaceous fabric. Sparse to moderate fine and coarse generally well-sorted crushed calcined flint
FL8 soft, thin, moderate sparsely micaceous fabric. Moderate to common well-sorted fine crushed calcined flint

GR1 soft, medium, moderately fine sparsely micaceous fabric with a moderate amount of fine to very coarse sub-rounded grog pellets added and a very sparse amount of fine crushed calcined flint, probably an accidental inclusion
GR2 soft, medium, moderate sparsely micaceous fabric with sparse fine to medium sub-rounded grog pellets
GR3 soft, thin, fine silty fabric with sparse medium grog pellets and very sparse crushed calcined flint
GR4 soft, medium, moderate fabric with moderate coarse sub-rounded grog pellets and very sparse crushed calcined flint and rounded quart sand grains
GR5 soft, thin, fine fabric; moderate fine to medium sub-rounded grog pellets; sparse to medium voids

O1 soft, thin, moderate micaceous fabric with linear voids and occasional random calcined flint pieces (probably accidental)

QU1 soft, medium moderate micaceous sandy fabric with sparse dark minerals probably naturally-occurring
QU2 soft, thin, moderate sparse to moderately micaceous sandy fabric with sparse dark minerals probably naturally-occurring and very sparse fine crushed calcined flint perhaps accidentally included
QU3 soft, thin, moderate sandy fabric (very little or no mica), with moderate well sorted fine and medium crushed calcined flint temper
QU4 soft, thin, fine micaceous sandy fabric, very occasional fine crushed calcined flint probably accidental

S1soft, thin, moderate silty fabric, with moderate fine crushed shell

List of illustrated prehistoric vessels (Fig. 3)

1. PRN 211+212. Context 330. Decorated rim and shoulder (not joining) of a Globular Urn
2. PRN 223. Context 1229. Joining sherds from rim of jar 300mm diameter
3. PRN 226. Context 1229. Non-joining rim and body of fineware carinated bowl
4. PRN 225. Context 1229. Rim of burnished carinated fineware bowl
5. PRN 189. Context 1150. Footring base
6. PRN 162. Context 1012. Large parts of a globular jar. 400mm diameter
7. PRN 77. Context 303. Rim and shoulder with very faint finger-tip impressions
8. PRN 69. Context 283. Shouldered sherd of large jar with finger fluting below shoulder

List of illustrated Anglo-Saxon vessels (Fig. 4)

1. Full profile of rounded bowl, with slightly inturned rim; fabric V402. PRN 536, context 1129.
2. Vessel with plain, slightly inturned rim; fabric Q403. PRN 648, context 1345
3. Hemispherical bowl with plain rim; fabric V400. PRN 655, context 287
4. Shouldered vessel with upright rim; fabric Q400. PRN 556, context 1129
5. Carinated bowl; fabric Q400. PRN 593, context 1236
6. Vessel with concave neck and thickened rim, possibly shouldered; fabric V401. PRN 366, context 270
7. Rounded vessel with everted rim; fabric Q404; two-directional scoring on lower part of vessel; burnished on upper part and interior. PRNs 361 & 378, contexts 270/287
8. Convex vessel with weakly everted rim; fabric Q408. PRN 461, context 836

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The West Mersea Roman Barrow (Mersea Mount)

Stephen Benfield and Ernest Black

The barrow was excavated under the supervision of S. Hazzledine Warren on behalf of the Morant Club in 1912 and published by him in exemplary fashion in the Essex Archaeological Transactions the following year (Warren 1913). Although it was not a total excavation as would be considered desirable today, Warren excavated a shaft to locate a central chamber containing a cremation burial and recorded a half-section through the mound carefully noting the position of pottery, other objects and features that he found. The observations made here are largely based on the detailed information provided in that report. Re-examination of the pottery found in the barrow mound has made it possible that the barrow should be dated not to the latter half of the 1st century AD, as Hazzledine Warren believed, but to later in the 2nd century AD, and new interpretations are offered for the components of the barrow mound and the tomb structure. The relationship of the barrow to the villa at West Mersea church is assessed.

INTRODUCTION

The barrow is located in West Mersea parish at TM 02251437 overlooking the Pyefleet Channel that forms a link on the northern side of Mersea Island between the Blackwater and Colne estuaries. The nearest verified villa lies in the vicinity of West Mersea church *c.*2.3km to the south-west (Fig. 1). The present paper is divided into seven sections dealing with the burial, the tomb structure, the mound, the finds from the mound, special deposits in the mound material, models for the Mersea Barrow and the context, followed by the conclusion.

THE BURIAL

The cremated remains were stated to be those of an adult on the authority of Mr. A.G. Wright, the curator of Colchester Museum (Warren 1913, 130). Recent analysis by Jacqueline McKinley (McKinley, this volume, 74–80) has added significant detail to this bare statement, establishing it as highly probable that the individual was male and that he died at the age of *c.*35–45 years. The cremated bones show that he was regularly engaged in strenuous walking or running and had an underlying medical condition (diffuse idiopathic skeletal hyperostosis) that eventually engendered excessive bone growth that could have caused considerable discomfort. The remains were contained in a globular glass vessel with a broad, flat mouth ring with a beaded rim (Warren 1913, pl. E facing page 130). Warren (1913, 131) gives the height as 289mm and the diameter as 327mm. The diameter across the mouth ring is given as 181mm though the actual aperture measured only 80mm. Denise Allen (1998, 37) assigns vessels of this type a date range in the later 1st-2nd century.

The vessel had been placed inside a square container made of five pieces of lead cut from a larger sheet and joined together without solder using the 'burnt-joint' process (Warren 1913, 132). The lid of this container was not formed of lead: instead, two boards of oak rested on top of it. It is possible that the glass vessel was sealed by an organic material that did not survive *in situ* and Rhea Brettell's examination of a substance found on the bones (Brettell, this volume, 81–7) has shown that they were anointed with a mixture of pine resin and frankincense after being placed inside the glass vessel. No other grave goods or grave furniture were found. The burial below the Mersea Mount therefore does not belong to the British tradition of élite burials, exemplified in the pre-Roman period by Welwyn-Type burials, in the early Roman period by burials excavated at Stanway near Colchester and in the 2nd century AD by the burials covered by the barrows of the Bartlow Hills, in which a plethora of unburned grave goods is deposited alongside the cremated remains of the dead (Stead 1967; Crummy P. *et al.* 2007; VCH Essex III 1963, 39–43).

THE TOMB STRUCTURE

A hole had been dug just over 1m square and *c.*69cm in depth below the original ground surface. In the bottom of this was a foundation of two courses of boulders and some tile set in mortar. The boulders are described as chiefly septaria with some flints and a few blocks of Kentish rag. Crummy (2008, 28) regards the use of Kentish rag at Colchester as a development post-dating the construction of the town wall and possibly no earlier than the 2nd century. Two complete *tegulae* had been inverted over this foundation to form the base of the cist in which the burial was placed and its walls were formed of seven courses of *tegulae*, slightly corbelled towards the top to support a single flat tile forming the roof. The section drawing of the tomb (Warren 1913, 129 Fig. 2) shows the *tegulae* used in the walls, and others in the superstructure of the tomb, with only a single flange so that these tiles were evidently incomplete. The *tegulae* are shown with a thickness of less than one inch (25.4mm), sometimes considerably less. Peter Warry (2006, 56) has noted that the overall size of *tegulae* reduces through time with the measurements of the various components (including thickness) reducing proportionately. This was seen in examining *tegula* fragments from 21–31 Long Wyre Street in Colchester where fragments from Period 4 contexts (mid-late 2nd century) and earlier were generally found to have a thickness in excess of 20mm and types with a thickness of *c.*13–20mm only appeared in Period 5 in the late 2nd century (Black 1998). A date of *c.* AD 100–150, when the usual thickness of *tegulae* would lie between *c.*20 and 25mm, would fit some but probably not all of the tiles shown in Warren's drawing. Although it could be argued that the scale of the section drawing is too small to take accurate measurements of the tiles from it, it could represent an accurate record. Unfortunately the tiles are no longer *in situ*, having been removed illicitly from the tomb (pers. comm. M. Davies), and none of those removed by Warren to gain access to the tomb seems to be held in Colchester Museum. However, the museum does have a fragment of *tegula* recovered by Warren from disturbed soil near the eastern side of the mound and this has a thickness of 17–20mm, suggesting a date after *c.* AD 150.

Apart from the *tegulae*, Warren's section also shows fragments of thicker tiles in the tomb structure including

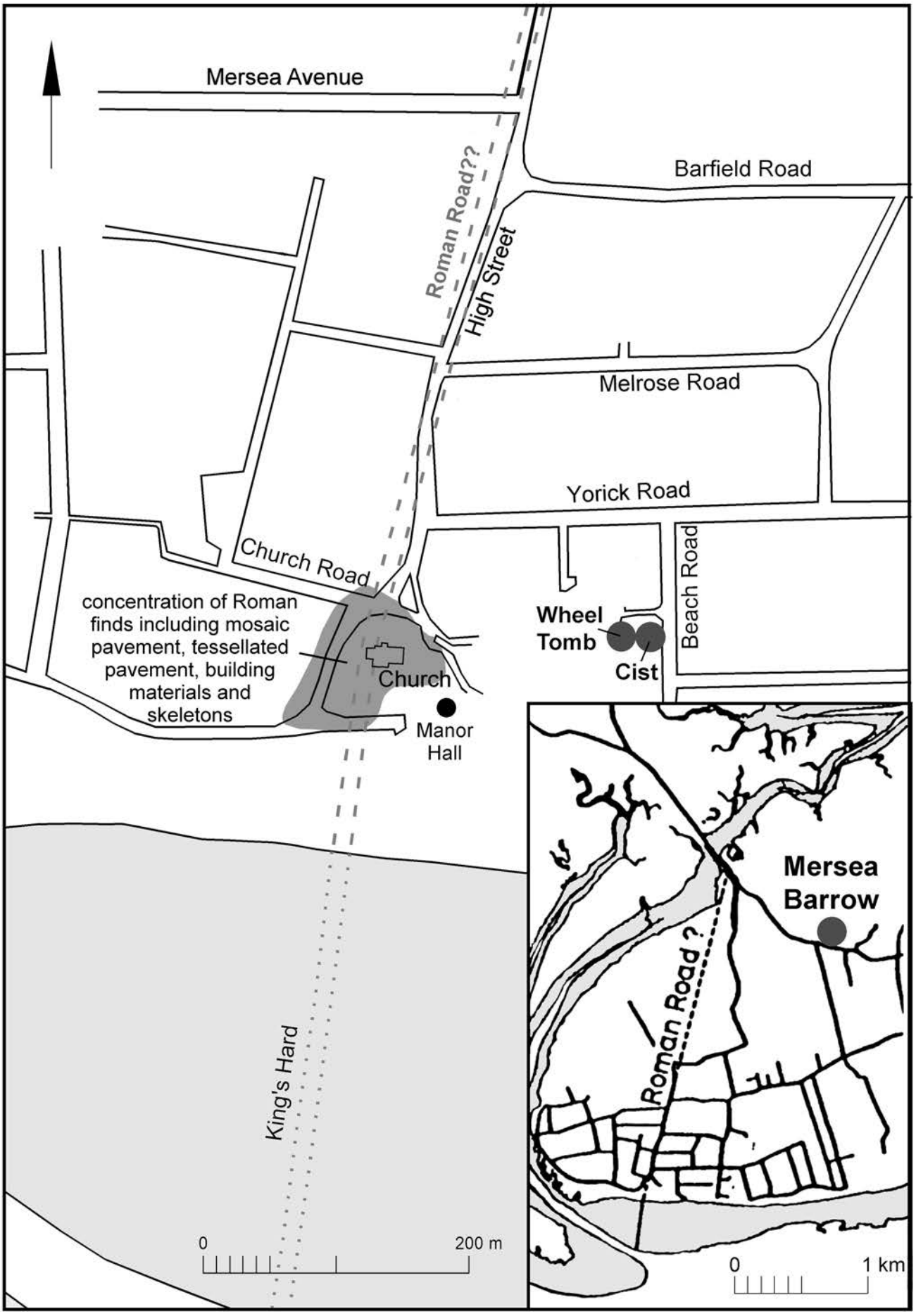

FIGURE 1: Map of principal Roman sites in West Mersea (adapted from E.M. Karbacz 1980, courtesy of Mersea Island Museum)

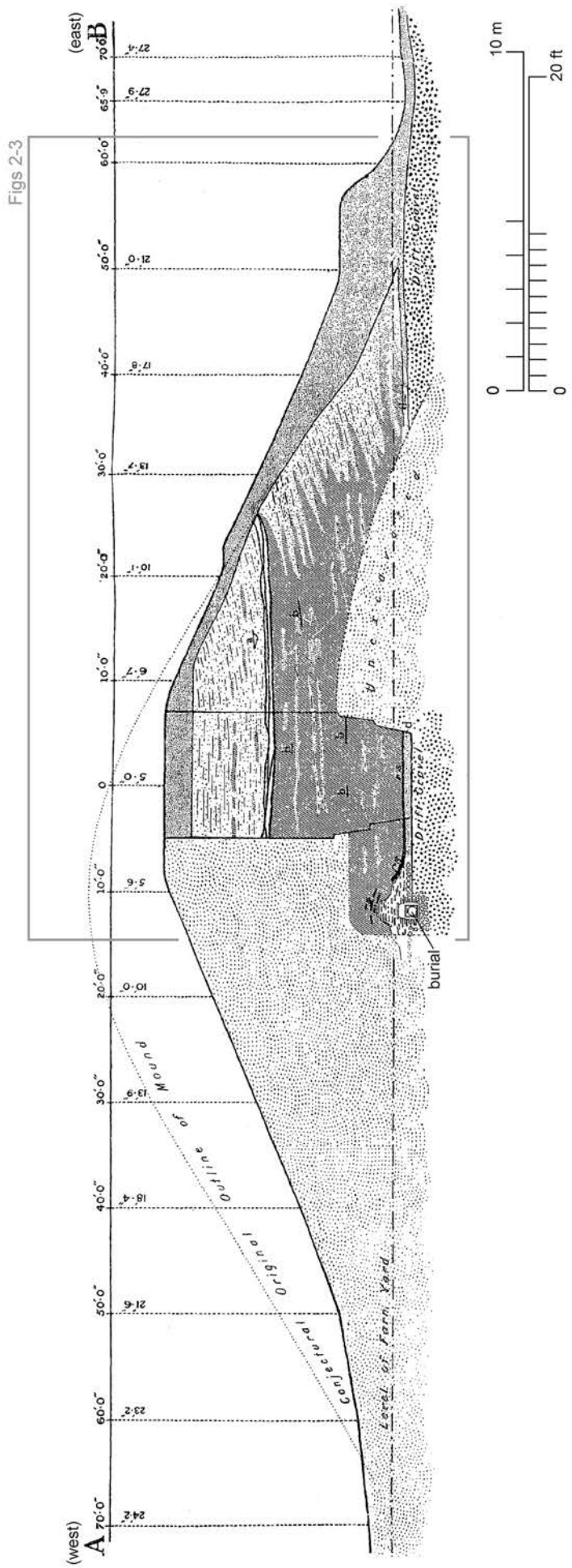

FIGURE 2: Warren's West-East section of the barrow

the complete tile which formed a capping for the cist. These are shown with a thickness of *c.*1½–2 inches (*c.*38–51mm) and so might have come from a variety of Roman brick types (Brodribb 1987, 142). However, the complete capping tile is shown 22 inches (*c.*559mm) long which is far in excess of the greatest measurement for a *sesquipedalis* recorded elsewhere (460mm: Brodribb 1987, 40–1) so that it is more likely that it was a *bipedalis* which had a notional measurement of *c.*590mm square with the examples recorded by Brodribb (1987, 142) averaging 577mm with a thickness of 60mm. A corner fragment of tile found by Warren in the disturbed topsoil near the top of the shaft measured 51–54mm in thickness and another small piece found on the floor of his trench in 2012 (now deposited in Mersea Island Museum) was *c.*47mm thick. The latter was over-fired and had mortar over a broken surface, probably indicating that it had been dislodged from the tomb structure or was one of the pieces of tile built into its foundation.

Beyond the burial cist a single course of boulders, again of the same three stone types, formed a foundation on the original ground surface for a superstructure estimated at *c.*2.75m in diameter. This rose to form a 'step' *c.*1.5m in diameter surrounding a sort of 'dome' above the cist itself. As noted above, the superstructure was constructed of tiles and mortar. Over the tomb structure and on the original ground surface for between *c.*4.6 and 6.1m around it Warren (1913, 128) noted a 'red stratum' *c.*50mm thick (also marked as 'r s' on his section drawings: see Figs 2–4). Above the dome of the cist were four or five layers of the red stratum. This was found to comprise crushed tile, yellow ochre and some mortar.

The tomb structure can be seen to incorporate an extraordinary range of materials which together derive from building operations on a substantial, presumably contemporary, Roman building. Three different types of building stone were combined with broken *tegulae* and bricks, together with crushed tile (for *opus signinum* flooring), mortar and yellow ochre, used as a pigment in wall-painting (Ling 1991, 207). In his Relic Table Warren (1913, facing page 132) lists three of the elements found in the tomb structure and in the red stratum sealing it (roofing tile, crushed red tile and yellow ochre). While all are noted as 'abundant' or 'very abundant' in and below the red stratum, there are only three occurrences (one of crushed tile and two of yellow ochre) in the grey core of the mound and none in the gravel and sand above. The deposition of these materials in association with the tomb structure was therefore quite deliberate. While the other materials might be dismissed as fortuitously available for use in the tomb structure, it seems unlikely that the yellow ochre could be a casual inclusion but rather indicates a deliberate selection. Decorating the walls of rooms in a house would be a task done at the end of a building project and probably carried out by a specialist brought from Colchester, the nearest urban centre, perhaps some time after the basic construction was completed. It is as if the occupant of the tomb was being provided with all the materials that were being used over a period of time in building a new residence for the living, presumably other members of the same family. In this context it is worth thinking about the container that protected the glass cinerary urn. This was formed of lead cut from a larger sheet. Was this also part of the material acquired for construction work? There was no lead lid to the container but on top of it were two boards of oak. If insufficient lead was available for a lid, why was a tile not used for this purpose? Plenty were employed in the superstructure of the tomb. Perhaps the answer is that the oak boards were there because oak fittings, perhaps including window-shutters and doors, were an important element in the new building for the living and so oak, like the other materials, was also regarded as symbolically due to the dead.

Among the clearest examples of the idea of providing a house for the dead are the Simpelfeld sarcophagus from the Netherlands and a structure under one of the barrows at Rougham in Suffolk. The interior of the Simpelfeld sarcophagus is carved in relief to represent the furniture and fittings within a room and a figure, probably the deceased, is shown reclining on a couch; for good measure a building, perhaps the baths of a villa, is also shown (Liversidge 1969, 169 and pl.4.30; Rook 1992, 32). At Rougham one of the barrows contained a rectangular tomb of flint with tile quoins in which was an inhumation burial inside a lead coffin, itself probably in an outer coffin of wood. The tomb structure had a pitched outer roof covered by *tegulae* and along its ridge was a line of box flue-tiles (Babington 1872, 275–9). Here the tomb is a small-scale version of a house while the flue-tiles serve to symbolise a bath-building. The inclusion of strigils as grave-goods in some burials, e.g. Barrow IV of the Bartlow Hills (VCH Essex III 1963, 41–2) and two rich cremations at Bayford, Sittingbourne in Kent (Payne 1877 and 1886), symbolises the activity of Roman-style bathing while at Rougham it is symbolised by the flue-tiles, construction materials designed for use in a hypocaust. Although the tomb structure at the Mersea Mount included *tegulae* and bricks, there is no record that flue-tiles were associated with it. This is not decisive since the record of the tiles used in the tomb structure is incomplete. It is also worth noting that if, as suggested above, the tile capping the tomb structure was a *bipedalis*, this type of tile was most commonly used as a support for flooring above stacks of *pila* tiles in hypocausts (Brodribb 1987, 41–2).

THE MOUND

Warren excavated a shaft *c.*3.7m square at what he judged to be the centre and a trench *c.*1.83m wide to link with this from the eastern side of the barrow. When his shaft failed to find a burial it was extended by a tunnel to the west where the tomb structure was located at a distance of 1.52m (Warren 1913, 122–3). Warren's section west-east across the mound is re-produced here as Fig. 2. The barrow mound sealed the tomb structure but this did not happen immediately. Warren (1913, 128) noted that the red stratum was covered by a considerable amount of charcoal and conjectured that: 'a large wood fire had clearly been lighted on the east side of the tomb (it will not be forgotten that the other sides were not excavated) subsequently to the spreading of the red stratum, which was itself subsequent to the closing of the tomb'. As he points out, his excavation of the barrow was far from total and much of the original ground surface remained unexplored. It is worth digressing here to look at what was revealed in the total excavation of another Roman barrow, of early 3rd century date, at Holborough Knob in Kent. The summary is based on the published excavation report (Jessup *et al.* 1954).

Total clearance of the barrow at Holborough revealed a *c.*2.3 by 0.76m grave, i.e. a size appropriate for an inhumation burial, whereas the bone had been cremated and buried in a

narrow coffin-like wooden container. This burial is clearly *sui generis*. Positioned round the burial were the stake-holes of a rectangular wooden structure *c*.4.6 by 4.8m which had stood for only a short time before being dismantled. It is possible that this functioned as an above-ground mortuary structure for the exposure or display of the body before its cremation and that the position of the body within this determined the position and dimensions of the grave. Five amphorae were smashed and deposited immediately north-west of the burial pit sealing two of the wooden structure's stake-holes, and a libation of an unidentified liquid had been made over the smashed amphorae. The amphorae sherds showed traces of burning and there was a deposit including nails, some molten glass and a very large quantity of fragmentary burnt wood on the turf in the 'central area' surrounding the burial though, importantly, no evidence that this had been the site of the funeral pyre itself. It seems likely that some of this was material re-deposited from the funeral pyre but pottery, apparently unburned, was also represented by small fragments and charcoal from hazel-wood was thought to be from the walling of the dismantled structure represented by the stake-holes. The grave itself and three other pits, two dug to the south-west in line with it and the third to the south, contained cremated human bone and oak wood-ash and charcoal and further pyre material, including a folding-chair similar to that buried unburned in Barrow IV of the Bartlow Hills. One of these pits (Pit 2) contained an unburned rouletted beaker along with pottery burnt on the pyre and a sherd from the beaker was found in the deposit in the central area around the grave. Further unburned pots were found, one in the rapid silt of the ditch surrounding the barrow and two more from higher in the fill. These unburned pots may represent débris from a funeral feast that took place immediately before or after the cremation of the body and perhaps from another held on a later occasion. The burial pit was covered by a mound of puddled chalk *c*.36cm high which also sealed part of the amphorae deposit and this mound had a thin covering of turf before the construction of the barrow over it.

There was clearly a complex, and perhaps lengthy, sequence of ceremonies attending the Holborough burial. This was revealed only because a total excavation was carried out. One hint that something similar may have taken place at the Mersea Mount is the deposit of charcoal found overlying the red stratum. This is not shown on Warren's section nor does he note that the red stratum below the charcoal showed signs of burning. It is therefore difficult to judge whether this was really *in situ* burning as Warren thought or, alternatively, the re-deposition of material from the funerary pyre or from a mortuary structure that had been burned after it had served its function, as happened at Holborough. Charcoal from the pyre was present in various contexts at Holborough but it was associated with other burnt items and therefore did not resemble the deposit at Mersea. Here the charcoal is perhaps more likely to have derived from a timber mortuary structure and it is possible that it was actually staining caused by the decay of unburned wood placed over the red stratum from such a structure that had been dismantled. However, Warren (1913, 127) was able to recognise and describe a wooden stake found upright in the body of the mound and this suggests that the charcoal was probably also correctly identified. As at Holborough, the burning of a mortuary structure and its consignment to the burial mound close to the cremated remains of the dead may have marked a significant stage in the funerary process.

Distinctive assemblages of pottery have also been recognised at the Stanway burial site near Colchester where Enclosures 3–5 were in use *c*. AD 40–60 (Crummy P. *et al.* 2007). There complete pottery dinner services were present in some of the graves (BF64 and CF47) with only two out of the twenty-nine pots showing any trace of scorching from a funerary pyre. In the below-ground wooden chambers (BF6, BF24 and CF42) a similarly small proportion, five out of fifty-four pots, showed traces of burning. However, the pottery from the chambers, like the metalwork, had been deliberately broken and only parts of vessels were present. In the case of Chamber CF42 in Enclosure 5: 'The exceptionally small size of many of the sherds suggests that many of the vessels had not simply been broken but repeatedly pounded to reduce them to fragments in a way that had not occurred elsewhere on the site' (Crummy P. *et al.* 2007, 149). The deliberate deposition of 'partial pots' also occurred in the enclosure ditches and in the ditches of the ?mortuary enclosures (BF32 and CF43-6, perhaps used as pyre sites at one stage of the funerary rituals). Here the pottery, again unburned, was largely from vessels (jars, bowls and butt beakers) used in traditional British rather than Roman-style eating and drinking and included fragments of large storage jars and of briquetage (S. Benfield in Crummy P. *et al.* 2007, 274–89; N. Crummy, Crummy P. *et al.* 375–7).

Warren (1913, 127) recorded a possible setting-out stake above the dome of the tomb structure at Mersea Mount but found no trace of a ditch on the perimeter of the mound. At Holborough there was both a ditch and a low internal bank of hard chalk. Warren (1913, 125–7 and section plate B) carefully noted the structure of the mound. The lowest core comprised grey material described as 'earthy quartz sand' ('grey loamy sand with flint pebbles' in Warren 1914, 203–04) which contained small fragments of charcoal, shells of marine molluscs (mostly oyster and mussel; a single scallop shell was also noted), numerous fragments of briquetage and one piece of clinker as found on salt-making sites ('red hills') and pottery, and rose *c*.3.7m above the original ground surface. This also contained what he regarded as 'cooking hearths' (marked **b** on Figs 3–4), each comprising a spread of charcoal accompanied by broken oyster shells (described in the key to the section drawing as 'crushed oyster shells': Warren 1913, plate B). It had a level top and was overlain by a deposit of gravel and sand with earthy seams, *c*. 2.1m thick and again with a level top. Presumably it would not have been difficult to have completed the whole mound using quarried sand and gravel. As Warren (1913, 126) noted, the gravel seemed to contain the earthy grey sand towards the edge of the mound as well as overlying it above (Fig. 2). It seems that the incorporation of the grey sand with its contents within the body of the mound was a quite deliberate act, similar to the deposit of charcoal above the tomb. Around the lower part of the mound towards its outer edge the gravel and sand and the grey material were interleaved with tip-lines sloping downwards towards the interior at angles between 5° and 17°.

THE FINDS FROM THE MOUND

Warren (1913, 135–6) incorporated a report on the potsherds from the mound by A.G. Wright and (as with other finds)

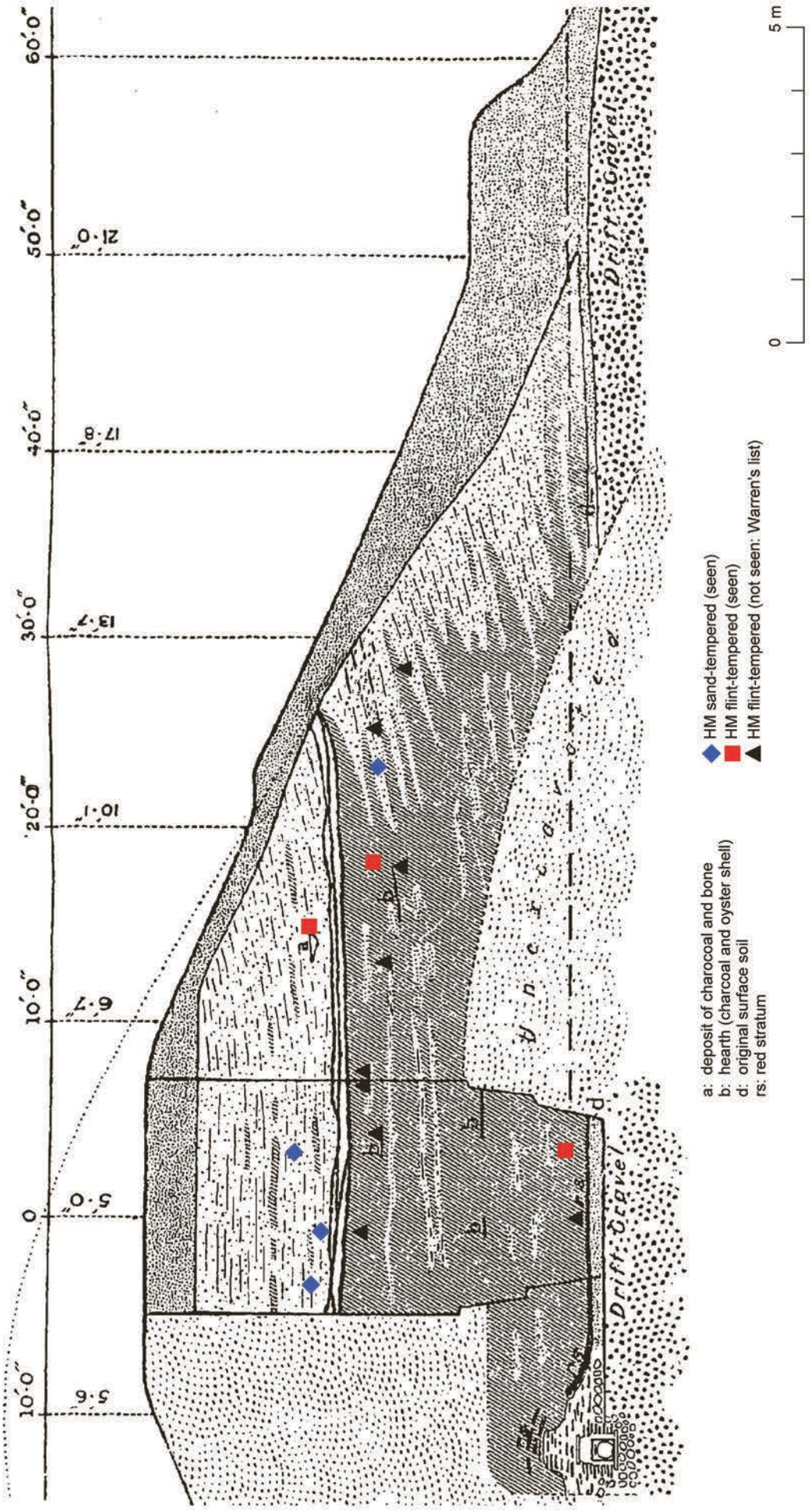

FIGURE 3: Position of handmade prehistoric pottery sherds

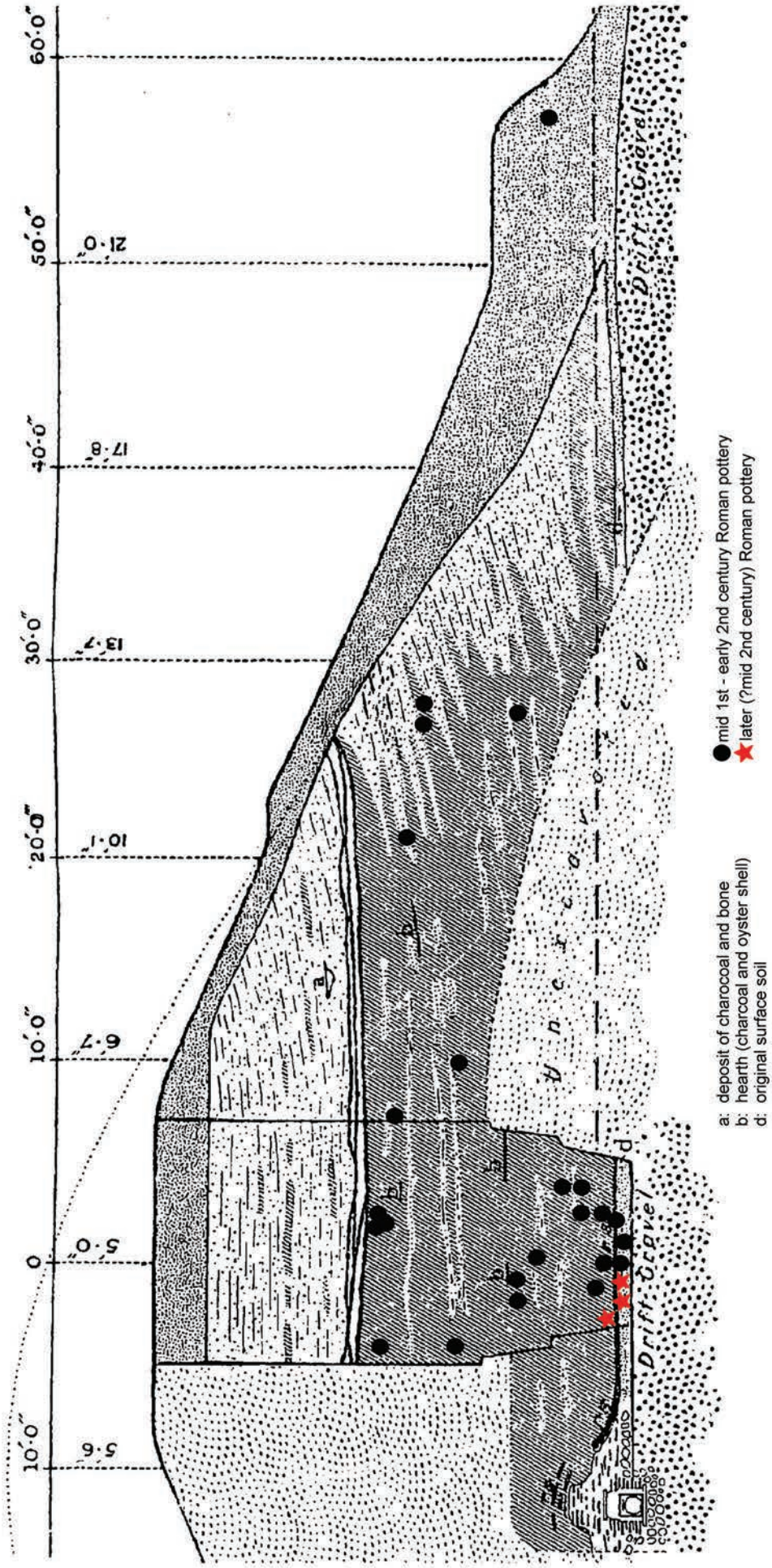

FIGURE 4: Position of Roman pottery sherds

carefully recorded their find-spots. The position of each object is given in feet by a notation comprising the distance from the west side of the shaft (given as a number), from its north side (given as a letter) and the depth from the top of the mound at its find-spot (again given as a number) (Warren 1913, 124–5 and the Relic Table facing page 132). Warren (1913, 137) noted that 'fragments of mediaeval tiles or pottery and later wares' had been found but he chose not to include most of them in his report because they had no bearing on the dating of the mound. Items held in Colchester Museum store include fragments of peg-tiles, a corner of a glazed brick, fragments of lava quern-stone, some post-medieval pottery and clay pipe stems. The codes on most of them show that they came from the disturbed topsoil. The only exception was a clay pipe stem marked 28 E 6 which was noted by Warren who thought it had been introduced into the core of the mound by rabbits (Warren 1913, Relic Table facing page 132).

The first writer was able to re-examine most of the pottery recorded by Warren and marked with these co-ordinates in 2012 and 2013. In total fifty-eight potsherds were spot dated though only eleven out of twenty-eight sherds of Warren's Group 6 (Coarse Black Ware) could be located. Three additional sherds, apparently not listed in Warren's Relic Table, were also seen. The significant findings are summarised in this section. The Roman pottery fabrics refer to the Colchester Roman pottery fabric series (CAR 10) and the vessel forms to the Camulodunum / Colchester (Cam) Roman pottery form type series (Hawkes and Hull 1947; Hull 1958). Post-Roman pottery fabrics refer to the Colchester post-Roman fabric series (CAR 7).

Although the pottery has been previously dated to the late 1st century and to the early 2nd century, one pot from the base of the mound suggests that the barrow was probably constructed slightly later, in the Late Hadrianic-Antonine period.

Prehistoric pottery

There are a number of small, abraded sherds of residual hand-made pottery of prehistoric date. Not all of the sherds which descriptions in the original report would suggest were of prehistoric date (Warren 1913) were present among the accessioned finds. The sherds are tempered with crushed burnt flint or are sand-tempered. All are body sherds and none are decorated. Although difficult to date closely the moderate to sparse inclusions of relatively fine flint in many would suggest they are probably of Late Bronze Age or Early Iron Age date. The sand-tempered sherds are typical of pottery of the Middle Iron Age. Although this pottery survives in some areas until the conquest period, the sherds here can probably be dated to the period *c*.350–50/25 BC as sand-tempered pottery is commonly replaced by Late Iron Age grog-tempered wares on sites in this region in the late 1st century BC or early 1st century AD.

Of the sherds listed by Warren in his Group 6, the six sherds out of eleven in his first sub-group (Coarse black ware with quartz grit) that were located in Colchester Museum proved to be a mixture of hand-made prehistoric sherds and Roman and probably Roman sherds. Seven out of seventeen sherds listed in Warren's second sub-group (Coarse black (or red and black) ware with calcined crushed flint) were seen. One of these was a fragment of Roman tile with its surviving surface burnt and the other six were prehistoric hand-made sherds, three with flint tempering and two sand-tempered and one uncertain. In addition a second small sherd was marked with the same code (8 H 21½) as one listed by Warren. Fig. 3 shows the position of the prehistoric sherds seen by the writers along with the missing sherds in Warren's second sub-group.

The prehistoric pottery is clearly all residual and has been re-deposited with the material brought to build the mound. Its distribution is broadly matched by that of the flint-working débris found throughout the mound (Warren 1913, Relic Table facing page 132), though, with two exceptions, the sherds are distributed in the upper levels of the grey material forming the core of the mound and in the lower levels of the overlying gravel. Perhaps the most useful result is the identification of the sherd with the co-ordinates 19 H 5½ as a hand-made prehistoric sherd in a flint-tempered fabric since this was associated with a feature found by Warren within the gravel capping of the mound (marked **a** on Figs 3–4). This comprised charcoal and small fragments of partially calcined bone (Warren 1913, 127 and 137). It seems possible that instead of being *in situ* this material was re-deposited along with the gravel.

Roman pottery

Unlike the prehistoric sherds, the Roman pottery is distributed throughout the core of the mound but not in the lower levels of the gravel above (Fig. 4). The Roman pottery is dominated by grey wares (Fabric GX). These can broadly be divided between sherds which have a coarse sandy fabric and grey wares with a fine fabric, many of the latter being medium grey in colour with smoothed or burnished surfaces. There is also at least one sherd of fine grey ware from a vessel of *terra nigra* type (Fabric UR). Most of the sherds are of small-medium size and some are slightly abraded.

A number of the grey ware sherds can be identified as from globular or ovoid beakers, bowls or jars and platters. Most of these sherds are small and are of a size where further breakage, in relation to the strength of the fabric, would probably be unlikely without undue force. There is a sherd from a small vessel (probably a beaker) with an everted rim (Warren 1913, plate F no.3) and one sherd has traces of comb-stab decoration indicating an early Roman date. These sherds are probably from beaker(s) of form Cam 108 (dated mid 1st-early 2nd century) and are probably Colchester products. There is also a neck sherd from a jar/bowl of form Cam 218 (Warren 1913, plate F no.7) (dated mid 1st-early 2nd century). A single rim sherd in Fabric UR can be identified as from a platter of form Cam 28 (Warren 1913, plate F no.1), while another small rim sherd is possibly from a terra nigra-type platter of form Cam 30. While most common in the mid-late 1st century, both of these are among the later dated of the Gallo-Belgic vessel-types and form Cam 28 appears with some burials dated to the Hadrianic-Antonine period.

Only one vessel, a large grey ware jar, is represented by more than one or two sherds (Warren 1913, plate F nos.5 and 6). There are several medium size body sherds from the lower wall of this pot and a number of these join together. With one or two exceptions, these appear to be the only sherds from the excavated portion of the mound that can be joined. They are marked with their find-spots at 2 D 22 (just above Warren's red stratum) and at X 22½. The X in place of a number and letter shows that he had no measurements from the west and north

sides of the shaft for the sherd but the last figure, its depth, indicates that it must have been found just below the level of the red stratum. In addition to the joining fragments of the vessel, another sherd from the same or a similar jar also came from X 22½ as well as two other unrelated sherds, one of which may be from a beaker of form Cam 108. Although their precise horizontal find-spots are not known, these are shown below the red stratum on Fig. 4 along with a sherd of the type of form Cam 28 which is recorded at X 23. A further eleven sherds (from X 11 (6 sherds), X 14, X 18, X 19 and X 22 (2 sherds)), which also came from the area of the shaft and lack horizontal co-ordinates, are not shown on Fig. 4.

The fact that the sherds from the grey ware jar are the only joining group of sherds and that they are associated with the base of the barrow mound indicates that this pot was broken close to the time that construction of the barrow mound was begun and is probably contemporary with it. They are decorated with angled groups of lines forming 'chevrons' intersecting at the broken sherd edges. One sherd appears to show a group continuing slightly higher on the body and indicating that the burnished lines are probably part of an open, acute lattice pattern. The lower part of the vessel appears to have been burnished and there are traces of a possible black surface finish, although the surfaces of all the sherds are slightly abraded or are possibly scorched by heat. Burnished lattice patterns covering most of the body wall, including patterns of spaced grouped lines, are common on some jars, notably of form Cam 278 (dated Hadrianic-mid 3rd century). However, various types of burnished line decoration are occasionally used on the bodies of other coarse ware jars or deep bowls from the early Roman period and the sherds do not allow a positive identification of the vessel form.

In addition to the grey wares, there are a few sherds from heavily tempered large storage jars (Fabric HZ) including two rim sherds, one of form Cam 270B and the other Cam 271 and an early Roman date (mid 1st-early 2nd century) or slightly later seems likely. One medium size, abraded buff ware sherd (Fabric DJ) is probably from a flagon of mid 1st-2nd century date. Two small sherds in a fine oxidised ware (Fabric DZ) are of Late Iron Age or more probably of Early Roman (mid-late 1st century) date, given the lack of any other Late Iron Age pottery among the assemblage.

There are also three very small sherds (fragments) of samian. All appear to be south Gaulish (Fabric BA (SG)), dating to the 1st century AD or very early in the 2nd century. One is probably from the internal rim of a platter of form Dr 15/17 (dated 1st century, most probably Flavian).

Early medieval pottery

There is one large rim sherd from an early medieval cooking-pot in a shell-tempered fabric (Fabric 12) (Warren 1913, plate G no.2) which can be dated to the 11th-12th/early 13th century. This came from the disturbed topsoil towards the eastern side of the mound and is clearly not associated with the primary mound.

Discussion

The barrow has previously been dated to the late 1st century and to the early 2nd century based primarily on the pottery recovered from the mound. The pottery was originally examined by A.G. Wright who considered it to be of 1st century and Flavian date (Warren 1913, 136–8). Later, M.R. Hull thought the pottery from the barrow indicated a date of *c*. AD 100–120 (VCH Essex III 1963, 160). His reasons for this revision are not explicitly stated, although in respect of this he refers to the nature of the fabrics present. However, it is possible that his dating was in part also influenced by the sherds from the jar with the 'chevron' (grouped burnished lines) decoration which is the pottery vessel which can be most closely associated with the date of the mound's construction. He does not mention form Cam 278, but he thought this originated in the Flavian period (after *c*.AD 65) but was most common between *c*.AD 100–140 and into the later 2nd century (Hull 1958, 285), which would fit with his postulated early 2nd century dating.

The more closely dated of the sherds examined in the archive indicate that as an assemblage the pottery dates to the late 1st-early 2nd century. There are no grog-tempered ware or obvious 'romanising' fabrics present, but a closer dating within the Flavian-Trajanic/early Hadrianic period is difficult. In relation to the date of the barrow, as most of the pottery consists of small, single sherds from individual vessels recovered from throughout the primary mound, there is the possibility that at least some of these may be residual.

The pottery which can be most firmly associated with the construction of the mound is the 'chevron' (lattice) decorated jar which appears to have been broken when work on the barrow commenced and, as such, is almost certainly contemporary with it. While not positively identified and recognising the danger of suggesting a date based on decoration of this nature, these sherds are probably most likely to come from a jar of form Cam 278. If so, the nature of the burnished pattern in relation to this particular form could indicate a vessel of Antonine rather than Hadrianic date. This suggests that the Mersea barrow mound was most probably constructed in the late Hadrianic-Antonine period. An Antonine (or later) dating would agree with the suggested date for the *tegulae* used in the tomb structure.

The portions of the jar with 'chevron' pattern were found at depths of 22½ and 22 ft (6.86 and 6.71m) near the bottom of Warren's shaft, just below and just above the red stratum sealing the tomb structure. They show possible signs of burning but it seems unlikely that this could have been brought about by contact with the charcoal above the red stratum, if this represents *in situ* burning. In that case only the pottery above the red stratum would have been burned. This reinforces the possibility that the charcoal and the pottery were re-deposited from somewhere close by. It seems that these sherds are the only pottery that may match the practice of breaking and depositing the sherds of pots used in funeral rituals in the vicinity of the burial that was noted at Holborough and Stanway.

SPECIAL DEPOSITS IN THE MOUND MATERIAL

Most of the finds were undoubtedly brought in along with the material used to form the mound and Warren (1913, 127) noted that the shells of oyster and mussel were common throughout the grey core of the mound with a concentration of mussel shells at a depth of *c*.5.95m at a level just a little higher than the top of the tomb structure. However, the consistent association between the four areas of burning and broken oyster shells marked on Warren's section drawing (Figs 3–4 **b**) indicates that these were genuine features. Warren (1913, 117)

seems to have regarded them as very temporary and incidental features ('cooking hearths') in a continuous process of mound-building. Two of the 'cooking hearths' occurred at a depth of *c.*5.2m. The broken condition of the oysters from the hearths may point to a ritual of deliberate breakage and these hearths can be interpreted as terminating a first stage in the erection of the burial mound.

A third 'cooking hearth' was located on one of the tip-lines *c.*2.74m east of the shaft and *c.*91cm below the top of the earthy quartz sand forming the core of the mound. The same tip-line produced the single example of a scallop shell (described as a *pecten*, so presumably the shell of *pecten maximus*, the Great Scallop). At Holborough Knob a secondary burial of a child was contained in a lead coffin decorated with a Dionysiac scene and fourteen representations of scallop shells. Toynbee (in Jessup *et al.* 1954, 37) notes: 'The scallop-shells....most probably allude to the journey of the soul across the Ocean to the Islands of the Blessed'. There can be no certainty that this was the case at Mersea Mount and it is, of course, possible that the shell of *pecten maximus* was a fortuitous inclusion. A deposit of marine shells from the 1st century back-filling of a feature at Castle Road, Sittingbourne in Kent contained a wide range of species: oyster, mussel, cockle, Great Scallop and Great Topshell (Sygrave 2008, 138). Nevertheless, there is still the possibility that it was a deliberately selected item, deliberately deposited at a particular level of the mound. The consistent association of the 'cooking hearths' with broken oyster shells might possibly have occurred for a similar reason.

Allen and Sykes (2011, 15) have drawn attention to the rarity of evidence for the consumption of birds and wild animal species and marine fauna in the Iron Age and suggest that contexts where such species are represented were often of a ritual nature: 'We suggest that the zooarchaeological evidence indicates an Iron Age cosmology composed of different spheres of influence, some (the ''domestic'') under human care, others (the ''wild'') more closely aligned with the divine, but all part of the same inter-connected world. In many respects the situation in the Roman period appears to have been very similar to that of the Iron Age culture, nature and the divine were not seen as separate entities but as intertwined parts of the whole'. They go on to discuss a gully (Feature 1147) excavated at Fishbourne on a site to the east of the palace and dating to the later 1st century AD (Manley and Rudkin 2006, 75). This contained a dark-grey silty clay flecked with charcoal and is described as a midden deposit, probably the débris from a single feast. Among the pottery from it was a complete bowl 'ritually killed' with a hole in its side and an unusually large number of fish bones from local estuarine species and bird bones, notably of duck species several of which are winter visitors, as well as bones from lamb and piglet and many of these bones were charred. The feature was characterised as showing affinities with 'sacrificial-feasting deposits' (Sykes *et al.* in Manley and Rudkin 2006, 99–102).

The contents of the Fishbourne gully also included a mass of oyster shells and other species of edible shell-fish but these showed no evidence of burning. This and the age range of the oysters together with the equal numbers of right and left valves made it unlikely that the shells were also débris from a feast (Somerville and Bonell in Manley and Rudkin 2006, 94–7). If the oyster and other shells were deliberately deposited with the débris from the feast, even though they had not figured on the menu, this may have been done to reinforce the significance of the wild species in the assemblage. The oysters would have been collected from a liminal location in coastal waters, between the world of human activities and the untamed sea. At a coastal site like Fishbourne, in addition to their dietary importance, they represent an obvious symbol of the interface uniting human activity with the sphere of the divine while the fecundity and abundance of oysters would also have made the shells a symbol of prosperity and plenty. The same choice may have seemed equally obvious to the builders of the Mersea Mount barrow.

The deliberate deposition of the shells of oysters and other shell-fish in ritual contexts is attested quite widely in south-east England. Just inside the eastern entrance of the *temenos* of the temple at Hayling Island in Hampshire there was an obliquely aligned pit (D54) *c.*3.5m long which was filled with oyster shells and also contained a coin of Nerva (Downey *et al.* 1978, 4 and facing plan). At Ivy Chimneys, Witham in Essex a ditch (F3230 / F5123), probably dating to the late 1st century AD contained a large quantity of mussel and oyster shells and a concentration of broken pottery and a complete small bowl, perhaps representing a deposit similar to that at Fishbourne (Turner 1999, 26, 224 and 240). David Rudling (2008, 114–16) has interpreted concentrations of pig skulls from the polygonal temple (Temple 2) at Chanctonbury Ring in Sussex and of cattle skulls and sheep mandibles from the *temenos* ditch as ritually placed deposits along with a layer of oyster shells to the west of the main temple (Temple 1). This layer was 6cm thick and lay directly on the bare chalk which had been cleared of topsoil and it was sealed by a rubble layer from the dilapidation or destruction of the temple (Bedwin 1980, 177). Another occurrence of oyster shells from an undated burial or burials was found *c.*1924 close to a probable villa north of Mere Court at Murston in Kent and within *c.*500m of the site at Castle Road, Sittingbourne: a pile of cremated human bones was surrounded by a circle of urns containing oyster shells and small human bones (Parfitt 1990, 3).

Of particular interest for the interpretation of the oyster deposits in the Mersea Mount is a Bronze Age barrow at Stanwick in Northamptonshire. In the early Roman period this was enclosed by a polygonal wall and offerings of *c.*500 coins were found within this *temenos*. Outside the *temenos* was a mass of oyster shells up to 20cm deep (Neal 1989, 156–7). Although the shells presumably represent the débris from meals, their apparently systematic deposition around what must have been viewed as a significant burial place may indicate an expectation that the goodwill of the dead person might bring about future prosperity and abundance for the living. The oysters deposited with the hearths in the Mersea Mount may also have carried this expectation with the fires set on the hearths strengthening the link to the individual who had been cremated and buried under the mound.

At the Mersea Mount Warren 'washed out' what he estimated as *c.*51kg or more of soil from the original ground surface in order to recover seeds that he hoped would throw light on the vegetation in the vicinity of the barrow in the Roman period. These were then submitted to Clement Reid for identification. Warren expressed himself disappointed by the limited range of species represented. These were listed by their Latin names and the English equivalents (from Preston *et al.* 2002) are here given in brackets: *ranunculus*

bulbosus (bulbous buttercup); *fumaria officinalis* (common fumitory (abundant)); *raphanus raphanistrum* (wild radish (abundant)); *spergula arvensis ?* (corn spurrey ?); *montia sp.* (a variety of blinks); *lycopus europaeus* (gypseywort); *galium sp.* (a variety of bedstraw / cleavers); *scrophularia sp.* (a variety of figwort); *stachys betonica* (betony); *chenopodium bonus henricus* (good-king-Harry); *chenopodium sp.* (a variety of goosefoot, fat-hen or good-king-Harry); *polygonum aviculare* (knotgrass); *rumex acetosella* (sheep's sorrel (represented by the nut only)). He reported that Reid considered the assemblage typical of wet meadow land and pointed to the absence of cultivated plants, though noting that: 'The abundant remains of Fumitory and Wild Radish were rather suggestive of former cultivation' (Warren 1914, 260–1). This material was deposited in the Essex Museum of Natural History at Stratford but because it is currently inaccessible it has not been checked. Warren (1914, 263) noted that he had taken samples from the grey core of the mound which 'yielded seeds which appeared to me to represent the commonest species in the above list' and it may be that the seeds identified from the base of the mound reflect the vegetation found where the grey material was obtained.

Apart from the oysters scattered in the grey core of the mound fragments of briquetage were found at eleven locations, suggesting that this may have come from the vicinity of one of the salt-making sites or red hills found on the Essex coast, including the northern side of Mersea (Warren 1913, 137). One red hill, now cut through by the Pyefleet Channel, lies just over 1km north of the Mersea Mount and has produced pottery with a date within the range *c.* AD 50–200 so that it may have been active at the time the barrow was constructed (Fawn *et al.* 1990, 56 and 73: site 86). The deliberate choice of this material for the core of the mound was noted above. In the light of what has been said about the symbolism of the oysters an explanation can now be offered. Like the harvesting of oysters, salt-making was done at a liminal location between the usual world of human activities and the divine element of the sea and it extracted the salt from sea-water. It seems possible that the earthy quartz sand with its briquetage was incorporated into the barrow precisely because it came from this interface.

A fourth 'cooking hearth' was located in the area of the shaft at *c.*52cm below the top of the core of the mound. The core material was then levelled off and sealed by layers of gravel and sand and *c.*50cm above the base of these layers was a feature marked by charcoal and a small quantity of calcined bone (Figs 3–4 **a**). At first Warren thought that this might have been a secondary cremation but examination of the bone found that: 'The greater part, at least, proved to be non-human, and there was none which could be definitely stated to be human, although there were some fragments which might be such' (Warren 1913, 127 and 137). It is regrettable that no information is provided about what species, if any, were positively identified. It was suggested above that this was in fact re-deposited material as a sherd of flint-tempered prehistoric pottery was found associated with it. By contrast, it seems likely that the four hearths located in the grey core of the mound (the lowest two at the same level) can be taken as marking significant stages in the rituals attending the mound's construction and dedication. If the grey material was chosen for the core of the mound because of its location between the cultivated world of men and the untamed world of the gods, this was reinforced by the hearths with their broken fragments of oyster shells.

MODELS FOR THE MERSEA BARROW

Warren estimated the diameter of the mound at *c.*33.6m and conjectured that originally it could have risen to as high as 9.5m. The Mersea Mount is one of the monumental Roman barrows found in Britain that share elements (their large diameter, steep-sided profile, usually a flat top and burial by cremation) with a group of Roman barrows in Belgium, concentrated in the territory of the Tungri and adjoining areas of the neighbouring *civitates*, the Nervii and Treveri. The continental barrows of this type have a limited chronological range from *c.*80 to the late 2nd/early 3rd century (Brulet 2008, 192) and this applies also to their counterparts in Britain. An earlier barrow at Knob's Crook, Woodlands in Dorset is dated *c.*70–85. Here the mound was slightly oval in plan with maximum dimensions of 6.7m and 5.8m and only survived 0.3–0.61m in height (Fowler 1965, 23). Beneath it Pit 1 contained cremated bone along with charcoal, nails and fragments of objects that had mostly been burnt on the pyre. Charcoal, probably brought from the pyre, had been used to line part of the bottom and sides of the pit before it had been filled (Fowler 1965, 26–9). The excavator recognised that the finds deposited from the pyre and the ritual involved in the burial pointed to a romanised outsider rather than a Briton buried following the local tradition, with a graffito *Quin(tus)* or *Quin(ti)* on a samian base of Dr 18 perhaps giving the actual name of the deceased (Fowler 1965, 31–2 and G. Simpson *ibid.*, 34–5). The Knob's Crook barrow may be derived from barrows of similar dimensions pre-dating the monumentalised barrows in the territory of the Treveri (Brulet 2008, 192). It is probable that such small barrows continued to be built after the introduction of the monumentalised type but because of their modest size they would have been more easily removed by levelling. At Stansted Airport (Site DCS) two richly furnished cremation burials (Burials 25 and 26) dated to *c.*140–60 and were contained in wooden burial chests/chambers like most of the burials in the Bartlow Hills cemetery (Havis and Brooks 2004, 216–31). The two Stansted burials were *c.*12.5m apart and the nearer of the two (Burial 25) lay *c.*19m south-west of a cluster of other cremation burials. This spacing and the siting of later ditches to avoid them led to the suggestion that the burials may originally have been covered by small barrows (Havis and Brooks 2004, 249–50 and 253–4).

One of the earliest barrows of the monumentalised type known in Britain is at Riseholme in Lincolnshire and is dated *c.*80–100 (Thompson 1954, 33). It measured an estimated 18.3m in diameter and survived to a height of *c.*2.74m, with the classic steep profile and flat top (Thompson 1954, 28). The mound sealed the site of the funerary pyre and a trench, that had probably been dug to provide a draught for the pyre, contained fragments of burnt human bone and of objects placed along with the body on the pyre (Thompson 1954, 31–2). Riseholme barrow lies only *c.*4km north of the late 1st century *colonia* at Lincoln and, if it marked the grave of a colonist, it is likely that the form of burial was modelled on contemporary continental barrows rather than being an attempt to replicate prehistoric barrows of the British Bronze Age.

At Knob's Crook and Riseholme the cremated bones were not collected from the remains of the pyre and buried separately in a container, although this was the case with a secondary burial at Riseholme which was contained in a pot and covered by a stone slab and probably dated soon after the primary burial in the late 1st century (Thompson 1954, 33). In Barrow I, the earliest barrow in the Bartlow Hills cemetery dated *c.*80–100, a small deposit of cremated bones was placed on the chalk floor of the tomb-chamber; in the remaining five undisturbed barrows, all of 2nd century date, the cremations were placed inside glass vessels (and in the case of Barrow VII also within a pottery beaker) (VCH Essex III 1963, 40–3). Glass vessels were also used as cinerary urns in two of the barrows at Rougham in Suffolk (Babington 1872, 262–5). This matches the use of a glass cinerary urn at the Mersea Mount but at these other barrows there was no outer container of lead (or of other material). Like the Mersea Mount the barrows at the Bartlow Hills covered tomb-structures: five were wooden chests or chambers and one (under Barrow II) a tile-built structure. At Rougham at least three of the four barrows contained tile tomb-structures.

In the barrows at the Bartlow Hills and in at least one of those at Rougham there was a plethora of unburnt grave-goods buried with the deceased. This is matched in many of the monumentalised continental barrows (Brulet 2008, 195) but was not the case at the Mersea Mount. It seems likely that there any grave-goods provided were burnt on the pyre as they were at Knob's Crook and Riseholme. At these two barrows the act of burning the body and accompanying grave-goods seems to have marked the immediate freeing of the soul from the body for its journey to an afterlife. At Riseholme an oil-lamp was placed on the pyre, presumably to provide light for this journey (Thompson 1954, 32). By contrast at Rougham a cremation burial was accompanied by numerous unburned grave-goods and an iron lamp was suspended from a rod fixed into the wall of the tile tomb-structure (Babington 1872, 264–9 and illustration facing page 270). This seems to indicate an expectation that the soul of the deceased would linger in the tomb and require light to make use of the unburned grave-goods there before setting out on his final journey. The different forms of disposal of the cremated remains of the dead and the placing of grave-goods on the pyre or, unburned, in the tomb attest differences in belief regarding the transition of the soul of the deceased to an afterlife. The commemoration of the dead by the construction of a monumental barrow was a matter not of belief but of social display.

It is clear that Roman barrows in Britain were an insular extension of those found among the Tungri and neighbouring peoples on the continent. Some of the latter incorporate masonry revetments and internal dividing-walls and one (Trou de Billemont, Antoing) had a stone-built *dromos* leading to the burial-chamber from the exterior, betraying the influence of classical models in Italy (Brulet 2008, 196 and 304–05). The most notable of these Italian models was still in the Flavian period the Mausoleum of Augustus and this was considered by Dunning and Jessup (1936, 44–8) as a possible prototype for the monumental barrows in both Britain and on the continent. They cited Strabo's description of the mausoleum built for himself and his family by the emperor: '. . .a great mound near the river [Tiber] on a lofty foundation of white marble, thickly covered with ever-green trees to the very summit. Now on top is a bronze image of Augustus Caesar; beneath the mound are the tombs of himself and his kinsmen and intimates. . .' (Strabo *Geography* 5.3.8).

There are indeed considerable differences between Augustus' mausoleum and most of the Roman barrows in Britain and Belgium but it seems plausible that it was the former that provided the idea behind the latter. It may be noted that when Augustus eventually died and was buried in AD 14, his mausoleum had been ready for forty-two years (Suetonius *Augustus* 100). Completed by 28 BC the mausoleum received the remains of Marcus Vipsanius Agrippa, Augustus' son-in-law and right-hand man, in 12 BC and in 9 BC of Nero Claudius Drusus, Augustus' stepson. Drusus had inaugurated the altar of Rome and Augustus at Lugdunum in 12 BC and had led Roman forces into Germany between 12 and 9 BC. The burial-place of such men could even have served as an inspiration for the Lexden Tumulus which was constructed in this period and lacks itself convincing contemporary local parallels.

THE CONTEXT

Warren (1913, 118) pointed out the commanding position of the Mersea Mount, with extensive views to north and south. To the north, depending on contemporary tree cover, it could have been strikingly visible to those approaching the western part of Mersea Island from the direction of Colchester, perhaps via the ford noted by Warren crossing the Pyefleet Channel north of the barrow. To the south, although again potentially visible for a considerable distance, it seems unlikely that it could have been seen from the nearest known villa, *c.*2.3km to the south-west, at West Mersea church. It seems probable that the location of the barrow was chosen to make a visible statement about the proprietorial claims of a particular family to the surrounding land, as has recently been argued for the Bartlow Hills (Eckardt 2009). Is it possible that it was located out of sight of the extensive villa at West Mersea church but towards the northern boundary of the estate attached to this villa in order to make such a claim?

A recent survey (Krier and Henrich 2012) has examined the relationship between monumental tombs (tower tombs and tumuli), villas and routeways in the territory of the Treveri. The authors found that the monuments were sited predominantly to provide an impressive appearance seen from a nearby road or waterway. In some cases tomb monuments were sited in relation to a villa residence to form part of a single architectural complex. An example of this is the villa at Nennig where two tumuli were positioned *c.*300m in front of the termination of the more southerly of two detached porticoes that flanked the palatial villa. The whole was designed to impress those viewing it from the River Moselle to the west (Krier and Henrich 2012, 227). At other villas tomb monuments and residences were not closely integrated in this way but the former were still carefully sited in relation to routeways.

About 140m east of the villa at West Mersea church a robbed 'wheel tomb' was discovered in 1896 (VCH Essex III 1963, 159). This was circular, *c.*19.8m in external diameter, with a buttressed outer wall *c.*91cm thick. The central burial had been robbed but had been placed in an hexagonal chamber *c.*1.5m across. Six walls radiated from this to the external wall (plan in Laver 1897, 426). All the walls were built of *sesquipedalis* tiles (one and a half Roman feet square)

on a foundation of Kentish ragstone. Clearly a much more sophisticated structure than the Mersea Mount the wheel tomb is undoubtedly modelled on the mausoleum of Augustus with which it shares internal divisions marked by radiating walls, though in Augustus' mausoleum these were combined with horizontal relieving arches rather than external buttresses (Toynbee 1971, 153 Fig. 14). Although the Mersea wheel tomb was designed for a single burial and could not be re-entered, like the mausoleum of Augustus, to make additional burials, it represents the same type of monument: the external wall would have formed the revetment of a barrow. Its height cannot be estimated but it may have been crowned by a roofed structure, perhaps containing a statue or statues, since three pieces of dressed stone were found, *c.*91 cm long and *c.*18cm thick, flat on one edge and convex on the other, as well as roofing tiles. In contrast to the tomb structure under the Mersea Mount the wheel tomb employed only Kentish ragstone and a single type of tile in its construction.

When first discovered the wheel tomb was identified as a *pharos* (a Roman light-house). Although this identification was erroneous, it does indicate how the tomb would have been visible to coastal shipping coming from the Blackwater, Crouch and Thames estuaries, or even from the Kent coast, and heading past Mersea Island towards the Colne estuary and Colchester. In the absence of a plan of the villa we do not know whether the tomb-monument was sited in relation to the villa buildings to provide an impressive architectural vista from the sea, like the complex at Nennig provided to those travelling on the River Moselle.

Close to the wheel tomb a tile cist was found in 1923 which contained the cremation of a child aged between twelve and fifteen months inside a small glass vessel with a lid of lead which preserved the impression of an original wrapping of linen. This was placed inside a large hollow voussoir tile approximately square in shape (intended to form part of a vault, usually in a room heated by a hypocaust in a bath-suite or bath-building). The voussoir was capped by a tile on which was placed a lamp with the stamp IEGIDI. An early 2nd century date is suggested for this burial (VCH Essex III 1963, 159 and pl. XXVA). The voussoir has combed keying on one surface and scored lattice keying on another (presumably the top and base, leaving the faces unkeyed). Most box tiles and many voussoirs have two opposing surfaces left unkeyed but the combination of different forms of keying on the same tile is comparatively rare. Among 253 complete examples that he recorded Brodribb (1987, 105–7) could only cite the West Mersea tile and another voussoir in Colchester museum with a combination of scored and combed keying and the accuracy of his conclusion is confirmed by Dr. Ian Betts (pers. comm.) from his extensive work on tile assemblages from sites in London and south-east England. Dr. Betts suggests that a date in the early 2nd century would be appropriate for such tiles. A well-dated site with box tiles keyed in this way is the Period 3I public baths at Canterbury built *c.* AD 100–110 (Black 1995, 1270–73). The West Mersea cist had been destroyed when it was discovered in digging the foundations of a new house and the report describing it is not clear in a number of respects. However, it is stated that the cist was 'surrounded by a circular mass of broken tile embedded in red mortar' and the estimated size given for tiles from this feature before breakage suggests that they were *lydion* tiles (Benton 1926, 129). One of the unkeyed faces of the West Mersea voussoir has clear traces of *opus signinum* and slighter traces of some kind of mortar are visible on other surfaces. This should indicate it had been re-used from an earlier structure, very probably a bath-building. If the voussoir was re-used, a date later in the 2nd century would be more likely for the West Mersea burial.

There are clear similarities between this burial and that in the Mersea Mount, both in the way the glass vessels with the cremated bones were additionally enclosed, even within a roofed tomb structure, and in the almost complete lack of additional grave goods. The surrounding mass of tiles set in red mortar may be analogous to the red stratum that covered the tomb structure within the Mersea Mount. The use of *opus signinum* painted red on the outer surface of the retaining wall of a barrow at Keston in Kent (Philp *et al.*1999, 47) raises the possibility that the choice of red material to seal or enclose a tomb structure carried some significant meaning. Perhaps because red is the colour of blood, it might represent the hope or expectation of a new life for the dead. The use of the voussoir tile may have carried a reference to Roman bathing as we saw above was the case elsewhere, though at West Mersea, because the dead child was no more than fifteen months old, this can only have been a hopeful aspiration.

The suggestion that the Mersea Mount lay on the estate belonging to the villa at West Mersea church can only be based on circumstantial arguments. The occurrence of a second barrow burial (the wheel tomb) beside the villa and the similarity in the form of burial in the Mersea Mount and in the tile cist at West Mersea are not conclusive. Shared practices and emulation of, or even competition to outdo, a neighbour could be the explanation. At present no extensive excavation has been carried out at the villa and the tentative dating of one of the known mosaics to the later 2nd century (Neal and Cosh 2009, 150) provides a *terminus ante quem* later than that given by the contents of the tile cist since, although probably re-used, the voussoir from the latter should date to the early decades of the 2nd century and indicate the presence of a substantial building by that period.

Among the Treveri the relationship of tomb monuments and villa residences of the 1st–3rd centuries AD can be determined in some fifteen cases (Krier and Henrich 2012, 219–31). Of these, five monuments lie in the immediate vicinity of the house while the others lie between *c.*100 and 600m away. The Bartlow Hills are sited within *c.*90m of a building that probably originated as a small bath-house forming part of a villa (Neville 1853, 17–21) while at Rougham in Suffolk the barrow cemetery lay a few hundred metres north of what was probably the villa residence (Babington 1872, 270). These cases at least seem to conform to the pattern found among the Treveri and make it more likely that the Mersea Mount was sited in relation to another villa much closer than that at West Mersea. Rodwell (1978, 21) implied that this might have been a villa postulated at East Mersea where Roman tile is present in the fabric of the church, but the Mersea Mount could lie at least as far from this villa (over two kilometres) as from the villa at West Mersea. Sue Howlett (pers. comm.) has drawn our attention to another possible location some 250–300m distant from Mersea Mount where fragments of a tessellated pavement and other finds were reported to Mr. D. Clarke, then curator of Colchester Museum, by Mrs. J.W.M. Read in a letter in 1980. It seems that the report was not followed up and no published

reference to the find seems to exist so that it is wholly uncertain whether a Roman building existed here or what it might have been. However, the Mersea Mount itself should indicate the former existence of a villa residence in a location much closer than the known villa at West Mersea church.

CONCLUSION

As suggested above, it is possible that the Mersea Mount was located where it was to make a statement of proprietorial rights, perhaps one that was felt to be necessary at the time, and that the materials used in the tomb structure indicate the construction or extension of a contemporary villa, probably in a location close to the barrow. The lack of rich grave-goods with the burial may simply indicate that such items were burned on the pyre along with the corpse and may eventually have been deposited with other material from the pyre under an unexcavated part of the barrow. The use of frankincense to anoint the bone fragments selected for burial implies considerable resources. In the AD 70s the Elder Pliny (*Historia Naturalis* XII.58–9) described the harvesting and marketing of frankincense and stressed how the price had been inflated by high demand. There are strong indications from the pottery within the mound and the tile used in the tomb structure that the barrow was probably not constructed before the Antonine period. Another possible occurrence of frankincense (or myrrh) was noted by Michael Faraday coating the interior of a container of basket-work that accompanied the burial in Barrow II at the Bartlow Hills (Gage 1834, 6–8 and 16–7). The cremation there was contained in a tile-built tomb and was richly furnished with grave-goods, with the glass cinerary urn containing a gold ring and a coin of Hadrian. The coin provides a date that must be close to that of the Mersea Mount burial, while the gold ring, which had a carnelian intaglio showing two ears of barley, indicates that its wearer was of equestrian rank. A *census* of 400,000 sesterces was the financial qualification for an *eques*. It cannot be proved that the occupant of the Mersea barrow was so qualified but it is certainly a possibility.

A rather surprising aspect of the burial, apparently contrasting with the resources deployed for it, is that the cremated bones show that the individual was regularly engaged in strenuous walking or running and had an underlying medical condition (diffuse idiopathic skeletal hyperostosis) that eventually engendered excessive bone growth that could have caused considerable discomfort (McKinley, this volume, 75). Service in the army might account for the exercise evidenced by the cremated bones and the military colony at Colchester and its environs are likely to have supplied willing recruits. A soldier who died in action would normally be buried on the battlefield or, in peacetime, in the cemetery of the fortress where his unit was based. Here the age at death (*c.*35–45 years) would have just allowed this individual to have completed a full term of 25 years' service as a legionary if his death had come at the upper end of the estimated range. However, it is unlikely that any legionary could have commanded the resources needed for such a burial. If we were to pursue this line of enquiry, it would be necessary to postulate that the deceased had risen to the rank of chief centurion in a legion (*primus pilus*) which he could have held for one year before retiring or progressing to further administrative posts. Webster (1985, 114) notes that the grant for a discharged *primus pilus* would have been sufficient to raise him to equestrian rank.

It is suggested here that the Mersea Mount as a tomb type derives ultimately from the idea of an élite tomb provided by the Mausoleum of Augustus in Rome. Such an inspiration was available, indirectly rather than directly, to all those with sufficient wealth throughout the Roman empire so that it tells us nothing about the origins of the occupant or builders of the barrow. It is possible that the lack of unburned grave-goods accompanying the cremation, as well as other aspects of the burial, reflect a particular belief about the transition to the afterlife and were perhaps influenced by what may have been near-contemporary practices among the family occupying the villa at West Mersea church. There are hints from the artefacts and features incorporated into the mound of the barrow of links with a coastal site going back to the 1st century AD. It was possible for a new recruit who did not have citizenship to gain it on joining up (Webster 1985, 120) and this may have been the case with the individual buried at Mersea. As a veteran, if he returned to his ancestral home, he may have wanted to advertise his new status with the construction or extension of a villa and he no doubt gave careful instructions for his funeral and monumental tomb in his will. Such a reconstruction, based on the excavated evidence from the barrow and the work of Jacqueline McKinley and Rhea Brettell, helps to focus attention on the considerable social mobility that was possible for some within the first two centuries of the Roman empire.

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Mersea Island Barrow: the cremated bone and aspects of the mortuary rite

Jacqueline I. McKinley

INTRODUCTION

Cremated bone from the remains of an early Romano-British urned/contained burial was received for examination. The bone had been deposited in a large, globular glass vessel which was placed inside a square lead ossuary. At the time of excavation, in 1912, the glass vessel was observed to have no lid but the ossuary was covered by two short oak boards (Hazzeldine Warren 1913). The burial had been made within a tomb constructed of mortared stone, brick and tile, sealed below a large mound. The tomb construction, making of the burial and raising of the mound appear to have been undertaken as a contiguous series of activities.

This report deals specifically with the cremated remains and aspects of the mortuary rite. It was not conceived as and does not form a stand-alone document, but represents the second in a series of three papers in this volume relating to the Romano-British barrow at Mersea Island. The preceding paper by Benfield and Black comprises a review of the monument, and the reader is referred to their figures for representations of the barrow and the location of the tomb and burial remains. The subsequent paper by Brettell deals with detailed findings relating to residues recovered during the writer's examination of the bones.

METHODS

It is not clear what post-excavation treatment, if any, the cremated remains were subject to, but given the mode of burial and the burial environment it is likely to have been minimal (see below). As received by the writer the bone is clean, in that there is no adhering soil, but much of it is coated in a white, slightly powdery 'precipitate'. Although there are no stones/pea grits, as commonly occur in burial remains from earth-cut graves, the deposit incorporates frequent small and medium sized fragments of the same material that coats the bone.

The white/yellow precipitate is slightly sticky, giving off a resinous and rather choking aroma, and emits a fine dust when disturbed (see below). In an attempt to remove/minimise some of the latter and to separate the fragments of precipitate from the bone, all the material from the deposit was wet-sieved. Most of the fragments of precipitate floated to the surface of the water and could be skimmed-off, whilst most of the bone sank (see below). In total, 92.9g of the resinous precipitate were recovered; the largest single fragment – 21.2g, 62 × 52mm, 25mm thick – had several small fragments of bone fixed within it. A sample of this material was submitted for residue analysis at the Department of Archaeological Sciences, University of Bradford (see Brettell, this volume).

Osteological analysis followed the writer's standard procedure for the examination of cremated bone (McKinley 1994a, 5–21; 2000a; 2004a). Age was assessed from the stage of skeletal and tooth development (Beek 1983; Scheuer and Black 2000), and the general degree of age-related changes to the bone (Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Buikstra and Ubelaker 1994; Gejvall 1981; Wahl 1982).

RESULTS AND DISCUSSION

Taphonomy

The mode of deposition, presence of the mound and lack of subsequent disturbance had ensured the integrity of the burial remains was maintained. The glass vessel and lead ossuary were fully intact, as was the structure of the tomb itself, and even the wooden boards had survived within this advantageous burial environment. No soil or other extraneous materials appear to have infiltrated the burial container, but the excavator did observe that the vessel was partly filled with liquid, reportedly water amassed as a result of condensation, the whole of the structure being 'water-logged' (or at least damp). Certainly, the lack of damage to the vessel means that any water which did get in, either due to condensation or potentially rain-water slowly dripping in from above, would get out only by evaporation and the temperature within the tomb is likely to have been fairly stable limiting this eventuality.

Consequently, there had been no disturbance or major disruption to the burial remains prior to the archaeological investigations. There will have been no loss of bone from the burial environment, both the quantity and condition of the bone at time of excavation being confidently reflective of that at time of deposition. The burial remains were taken to Colchester Museum, where they were on display for many years. Unfortunately, there are no records of the treatment afforded the material whilst under curation. The water was obviously emptied out of the vessel and the bone dried prior to going on display. This would undoubtedly have involved some disruption of the deposit, probably removal of the bone from the vessel. Early photographs show the bone lying in the lower *c.* one-third of the vessel; the liquid had clearly been removed by this stage, but a 'tide-mark' about two-thirds up the side of the vessel suggests the possible depth of water at the time of excavation (Hazzeldine Warren 1913, plate E). The orientation of the bone is not as it would be if the water had simply been drained-out with the bone *in situ*; it must either have been removed and replaced or had been shaken back into position after tipping to drain the water. A recent photograph of the burial remains shows the bone filling the same volume of the vessel, but its arrangement is clearly different, and it appears likely that the bone was removed from the vessel more than once prior to its dispatch to the writer.

One consequence of this post-excavation disturbance is that any details of the burial formation process have been lost. It is also possible that the apparently repeated removal of the bone from the vessel will have increased fragmentation along the lines of the dehydration fissures formed in cremation. Any such damage is likely to be limited, however, partly due to the soil-free burial environment and partly to the minimal post-excavation processing of the remains which would have been required.

Despite the initial processing of the remains undertaken by the writer (see above) most of the bone retained its fine coating of resinous precipitate which appeared to confer a

degree of 'waterproofing' to the bone. Although it occasionally slightly masked the surface morphology of the bone, the effects were not highly detrimental to the details of analysis.

The individual

The 1730.5g of bone recovered represents the remains of an adult ?male, *c.*35–45 years of age. Most of the bones appear relatively large and robust with some marked muscle attachments, particularly in the lower limb. Here, enthesophytes (bony growths which may develop at tendon and ligament insertions) at attachments in the proximal femora, fibula and particularly the proximal-dorsal tibiae, indicate the individual was regularly engaged in strenuous walking/running. Exostoses at the upper end of one femur shaft imply soft tissue injury, probably a tear in one of the major thigh muscles.

Although the distribution of the enthesophytes in this case suggest they are activity related, the causative factors of such lesions may also be linked to various diseases which result in general hyperostosis (excessive bone formation; Rogers and Waldron 1995, 24–5). One such disease is diffuse idiopathic skeletal hyperostosis (DISH), the distinctive spinal manifestations of which were observed in the cervical and thoracic regions in this individual. Thick, smooth new bone was recorded extending across the anterior/lateral sides of two cervical and a minimum of nine thoracic vertebrae. Ankylosis (bony fusion), with maintenance of the disc space, was observed between a pair of thoracic vertebrae and three other adjacent thoracic vertebrae (Plates 1 and 2). These spinal lesions indicate ossification of the anterior longitudinal ligament. Symptoms of the disease are generally minimal other than understandable stiffness and some aches/pains associated with inflammation. The condition is predominantly seen in older males (>50 yr.), rarely being observed in modern clinical studies in individuals under 40 years of age, and occurs at a rate of 5.8% in modern European males. Although the aetiology is unknown, there are indications of a link with diabetes and obesity (Rogers and Waldron 1995, 47–54; Aufderheide and Rodríguez-Martín 1998, 97–9; <http://www.patient.co.uk>). In this case, there is limited evidence for hyperostosis elsewhere within the skeleton, with no involvement of the classic sites – e.g. anterior patellae and dorsal calcanea – and no evidence for calcified cartilage. Although there are numerous Romano-British and earlier examples, the disease is not commonly recorded in archaeological remains prior to the medieval period, and its recognition within cremated remains is a rarity.

Other minor lesions, generally classified as age-related degeneration of the joints, were recorded at several sites. Lone osteophytes (new bone on joint surface margins) are largely seen as age-related lesions and probably lead to a feeling of 'stiffness' in the joints (Rogers and Waldron 1995, 20–6). Slight lesions were observed in two cervical and one thoracic vertebrae body surface margins, in one hip, one elbow and one wrist joint, and the right patella. Lesions indicative of osteoarthritis were seen in the left 1st costo-vertebral joint.

Variations in skeletal morphology may indicate population diversity or homogeneity, but the potential interpretative possibilities for individual traits is complex and several have been attributed to developmental abnormalities or mechanical modification (Tyrrell 2000). Some traits, such as extra ossicles in the lambdoid suture (or wormian bones), are frequently observed in archaeological assemblages, but their recognition and recovery from cremated bone assemblages tends to be more limited due to the nature of the material and aspects of the mortuary rite (see below). The Mersea Barrow individual had a minimum of four wormian bones, the location for at

PLATE 1: Three upper thoracic vertebrae showing smooth new bone over right sides of bodies. NB: Note white resinous precipitate coating bone

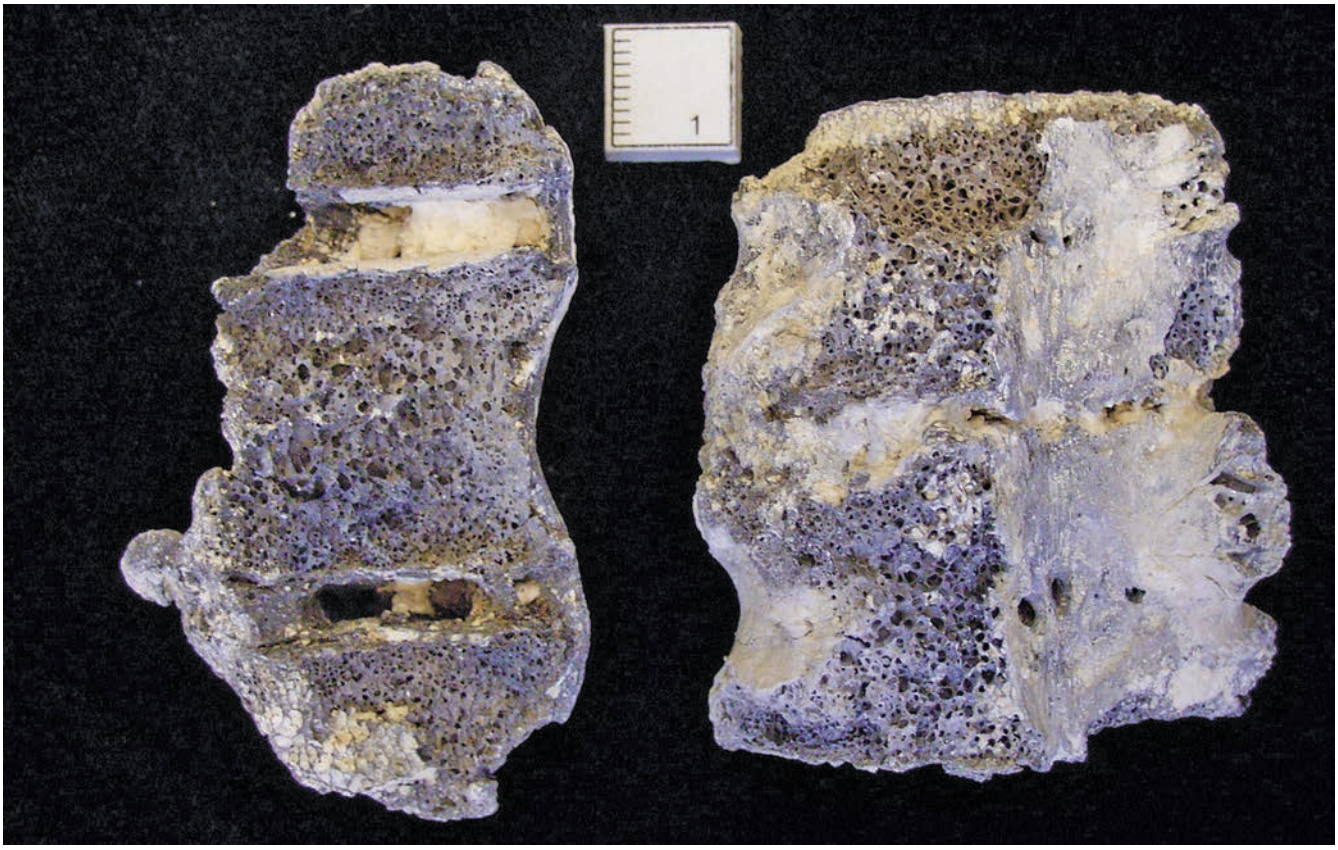

PLATE 2: One pair and three thoracic vertebrae ankylosed via smooth new bone across anterior/right sides of bodies. NB. Note white resinous precipitate coating bone

PLATE 3: Fragments of right lambdoid and parietal bones showing gap in sutures for wormian bone and four small wormian bones (far left deriving from the gap in the sutures). NB. Note white resinous precipitate coating bone

least one of which could be seen in the right lambdoid suture (Plate 3). Both patellae also exhibited large Vastus notches (Finnegan 1978).

Pyre technology and aspects of cremation ritual

Oxidation

Although the majority of the bone is white in colour, indicating full oxidation of the bone (Holden *et al.* 1995a and b), a substantial minority show variations demonstrating incomplete oxidation. All areas of the skeleton are affected, involving several skeletal elements in each area. Skull elements are least affected, with slightly grey hues observed in the left facial/temporal region and a few fragments of vault. The greatest variation was observed in the axial skeleton where most of the twenty-two vertebrae recovered show some variation, most of the thoracic vertebrae being black (charred), others and some lower cervical vertebrae being slightly grey, and a few lower thoracic/lumbar vertebrae appearing largely unburnt inside (light brown). Parts of elements of the upper limb – excluding the hands – are affected to varying degrees (few joints light brown inside, various elements slightly grey). Parts of the foot and areas of the knee joint are affected in the lower limb (few light brown inside or slightly grey).

Numerous factors, both intrinsic to the process and imposed by external mechanisms, may have an impact on the efficiency of oxidation (McKinley 1994a, 76–8; 2004b, 293–5; 2008a). Some skeletal elements are more susceptible to poorer oxidation than others due to their dense soft tissue coverage (therefore requiring longer to burn fully) or potential peripheral position on the pyre (e.g. head and hands; McKinley 2004b, 293–5). It has been observed that the greatest variability in oxidation in the Romano-British period is generally seen in the remains of adult males, their larger bulk requiring longer to cremate in full and, consequently, being more prone to a shortfall particularly if a 'standard', 'one-size-fits-all' pyre is employed (McKinley 2008a). In the case of the Mersea cremation, the lack of involvement of the skull and hands suggests the pyre was of sufficient size, though the feet may have been located too close to the periphery. The inclusion of some joints may reflect the density of soft tissues in these areas, but the full oxidation demonstrated in the hip region implies discrete external inhibitors rather than a general shortfall. Certainly the very poor levels of oxidation in the spine suggest the presence of some material(s) inhibiting the cremation process specifically in this area of the corpse. Were the individual to have been carried to and placed on the pyre on a funeral couch or bier with a solid, rather than an open lattice base, the effect would have been to cut-off the heat from below, effectively 'muffling' the body from the effects of the fire. Had this been the case, however, one would expect a more universal effect. It may be that the individual's spinal condition resulted in him being provided with some form of protective padding, either as part of his normal attire or whilst he was laid down, which would have produced a more discrete area of oxygen/heat deprivation.

Full oxidation of the organic components of the body in cremation is largely a modern Western health and safely requirement. Where the requisite was for the transformation from one state (the corpse, recognisable as the individual) to another (burnt, clearly altered and 'purified' remains) the degree of oxidation attained may have been of little or no consequence (McKinley 2006; 2008a). Minor, and occasionally major variations in oxidation of the bone observed in archaeological cremation burials across the temporal range of the rite in Britain suggest a complacent or possibly simply pragmatic attitude to the level of oxidation attained. It may be pertinent to observe that, although there is evidence to suggest the urban poor in Roman Britain may have been afforded less efficient cremation (McKinley 2008a), the implied wealth and status of the individual did not have a consistent link to the level of oxidation attained in their cremation. Some of the most poorly oxidised Romano-British remains observed by the writer derived from a burial made within a high status walled cemetery at Purton, Wiltshire, where even charred soft tissues were recovered (McKinley 2008a, figures 10.6–7). There the remains of the adult ?female had been buried in a glass vessel almost identical to that at Mersea, similarly placed within a lead ossuary/canister (circular, lidded and decorated), all enclosed within a stone sarcophagus.

Bone weight

The weight of bone recovered is amongst the highest from any cremation burial, of any period, in the British Isles. It represents *c.* 8% by weight in excess of the average expected from an adult cremation (McKinley 1993), though clearly not quite all skeletal elements were present in this case (see below). Similarly high weights have been reported from numerous contemporaneous cemeteries (McKinley 2004b, table 6.6), the greatest currently recorded being from the high status burial at Purton (2654.4g; McKinley 1990).

Unsurprisingly, given its size, the Mersea vessel was not used to capacity. Despite the large quantity of bone included in the burial much is clearly missing, notably some facial bones, ribs, hand and foot bones. There would have been room for all the remains in the vessel but such comprehensive burial was obviously not requisite. The absence of any charred soft tissues, such as those found in the Purton burial (see above), despite the evidence for poor levels of oxidation and its undoubted presence at the end of cremation, is also potentially pertinent (this material rarely survives in most cremation burials, but the exceptional burial environments present at Purton and Mersea would favour its resilience).

Full recovery of the human cremated remains from the pyre site for inclusion within the burial does not appear to have been a general requirement of the rite either in the Romano-British period or at any other time in which it was practiced in the British Isles. This leads to the question as to what was done with the material not collected for burial. There is clear evidence that at least some, if not most, was discarded or deposited (sometimes as a deliberate, apparently ritual act) with the rest of the pyre debris, but some bone may also have been distributed to friends/relatives as mementos of the deceased (McKinley 2000b; 2006).

Fragmentation

The fragmentation of cremated bone is influenced by a variety of intrinsic and extrinsic factors exclusive of human manipulation with the deliberate intent to fragment (McKinley 1994b; 2004b). The vast majority of the bone was recovered from the 10mm sieve fraction (*c.* 88%), with a maximum fragment size of 99mm. Only *c.* 1% of the bone was less

than 2mm in size. The excellent condition of the remains is further demonstrated by the large proportion identifiable to skeletal element (*c.* 70% by weight). These figures render the material closely commensurate with that from modern British crematoria where fragments of up to 195mm have been recorded (prior to deliberate mechanical pulverisation – *cremulation* – of the bone within a *cremulator*), and where it is known no deliberate fragmentation occurs, only that due to cremation and raking-down of the bone (McKinley 1993). The highly protected burial environment at Mersea, with no disturbance or infiltration by a soil matrix, will have been instrumental in the preservation of the size of the bone fragments. As is generally observed, there is no evidence to suggest any deliberate manipulation of the bone aimed at reducing the size of the fragments prior to burial.

The largest recorded bone fragment exceeds the diameter of the mouth of the vessel (*c.*80mm). This, together with the high proportion of similarly sized fragments within the assemblage, demonstrates that much of the bone would have had to be individually fed into the vessel. It also illustrates that bone was not deliberately broken after cremation to fit vessel-neck size – as has often being postulated in the past – but that the formation process of the burial was adapted to suit.

Skeletal elements

Most cremation burials will include fragments of elements from all four skeletal areas (skull, axial skeleton, upper and lower limb). The identifiable proportions from each are often skewed from what may be referred to as a 'normal' distribution due to the ease with which skull fragments may be recognised and the difficulties in distinguishing individual long bones (McKinley 1994a, 6; McKinley 2004b, 298–9). The taphonomic loss of trabecular bone also often reduces the proportion of the axial skeleton (mostly trabecular) identified. In this case, the known lack of disturbance and excellent preservation of the remains, together with the large proportion of bone identifiable to skeletal element (see above), means these taphonomic/methodological effects should be minimised. Such indeed is the case with the skull and axial skeletal elements, which show a close to 'normal' distribution (by weight) at *c.* 20% and *c.* 17% respectively of the identified skeletal elements. There is, however, a noticeable disparity between the upper and lower limb in favour of the latter (9% and 53%) which suggests a potential deliberate omission of the former from the burial.

The small bones of the hands and feet and tooth roots no longer *in situ* are routinely recovered from cremation burials, and the writer has discussed elsewhere how their frequency of occurrence may provide some indication of the mode of recovery of bone from the pyre site for burial (McKinley 2004b, 300–1). Relatively few of these small elements were recovered within the Mersea assemblage, comprising only one tooth root, three hand and eight foot bones. This compares with the relatively large numbers of hand/foot elements recorded from some contemporaneous cemeteries, e.g. sixty-one from Purton (McKinley 1990), forty-eight from the burial remains at Shortlands Lane, Collumpton, Devon (single large deposit; McKinley 2012) and the twenty-seven to thirty-two from the burials at Kingsley Fields, Nantwich, Cheshire (McKinley 2009); though elsewhere much smaller quantities have been found, e.g. Wall, Staffordshire (maximum thirteen elements; McKinley 2008b, 136) and Brougham, Cumbria (McKinley 2004b, 298–301). This observation is one indication of some variation in the mode of collection of bone for burial between (and sometimes within) contemporaneous cremation cemeteries. The implication at Mersea is that collection was facilitated by hand recovery of the bone from the pyre site which would favour the recovery of the larger elements/bone fragments. Another possible alternative in this instance, especially when viewed together with the apparent paucity of upper limb elements, is that the hand bone in particular may have been selected for other uses, such as *memento mori* distributed to the deceased's relatives/friends.

A potentially pertinent observation made in the pre-analysis processing of the bone (see *Methods*) was that although the majority (*c.* 88%) sank during the wet-sieving, the highest proportion of that which floated (*c.* 48%) comprised elements of axial skeleton, other elements representing parts of articular surfaces, with only *c.* 4% skull elements. This may be of relevance if winnowing using water was employed, with the float – which would mostly comprise fragments of fuel ash – being discarded or disposed of elsewhere.

Formation process

As observed above, there is limited surviving evidence for details of the early stages of the burial formation process, though deductions regarding collection of the bone from the pyre site and its introduction into the burial container have been made. One further detail does survive, however, in the form of the resinous precipitate which survived as individual lumps of material (92.9g, max. 62 × 52 × 25mm) and as a fine yellowy-white coating to all the bone.

Scientific analysis of a sample of this material found it to represent a combination of a pine resin and *boswellia* spp. gum-resin, ie. frankincense (from the Old French *franc encens* meaning high quality incense). Details of the analysis and an in-depth discussion is presented by Brettell (this volume), but some observations on the part this material played in the burial formation process and the overall cremation rite are also presented here.

There are numerous references in Roman period texts to the use of frankincense and other perfumes/unguents at various stages within the mortuary rite. Incense and papyrus are recorded as two materials which functioned as acceleratants in the initial stages of cremation, the former also serving to mask any unpleasant smell from the corpse. Pliny notes the purchase of '...frankincense, ointment and spices for the funeral ... ' (Letters, quoted in Hope 2007, 187) and the Elder Pliny that '...these assisted combustion and also disguised odours' (Natural History, in Hope 2007, 112). At the end of cremation the ashes on the pyre may be quenched or 'washed' using a variety of liquids including water, wine and occasionally milk (Noy 2005), wine being most frequently mentioned; '...wine that quenched the ashes...' (*Statius*, Silvae in Hope 2007, 112; Toynbee 1971, 50). There are also occasional references to perfumes being used at this stage, though frankincense is not specifically mentioned; '... sprinkle my ashes with good wine and perfumed oil. Stranger bring balsam too ...' *Ausonius* Epitaphs (Hope 2007, 232; Toynbee 1971, 63). More ambiguous as to timing is the lament '...no sister to put Assyrian perfumes on my ashes ...' (*Tibullus* in Hope 2007, 115); again, though

frankincense is not specifically mentioned it would have featured amongst the 'Assyrian perfumes' together with myrrh, balm and balsam (Rubin 2005). Here, there is an implication that unguents/oils were sprinkled or poured on the cremated bone prior to or at the time of burial. Finally, those who could afford it left money for offerings to be made at their tomb, this was generally in the form of items of food or drink, but also included incense (*tus*) (Toynbee 1971, 62). The living are known to have visited the tombs of the dead and participated in certain timely rituals (Hope 2007, 231). There are examples of pipes or similar structures feeding into the cremated remains deposited in some tombs, generally such libations appear to have been in the form of 'nourishment' but it is possible that unguents/oils may also have been added (Toynbee 1971, 51–2). Although rare in Romano-British contexts, one such pipe was found associated with an inhumation burial made in a lead sarcophagus from Colchester, Essex, and a cremation burial within a lead canister from Caerleon in South Wales (Toynbee 1971, 51–2).

In the Mersea Island example the surviving resinous material will not have derived from a pre-cremation accelerant. The volatility of this material at temperatures greater than 50ºC (Brettell, this volume) means even were it used at this stage any such evidence would be lost during cremation. Similarly, it is unlikely to have been used in 'quenching' since the temperature of the fuel ash would have remained too great for its survival (McKinley 2008a). In addition, given the evidence for hand recovery of bones from the pyre site for burial (see above), which suggests it had cooled sufficiently for the remains to be handled, the absence of fuel ash adhering to the bone implies the resinous material was not added whilst it lay at the pyre site. It is most likely that it was added at the time of burial, either as an unguent or possibly as solid pieces subsequently affected by the waterlogging (see Brettell, this volume). The effects of the latter would certainly account for the ubiquitous coating of all the bone by the precipitate. Had it been possible to examine the material fully at the time of its discovery and before the vessel was emptied it may have been possible to make these deductions with greater confidence. Even so, the recovery and recognition of this currently unique find has enriched our comprehension of the wealth and magnificence of this individual's funerary rites and his reflected social status and connections.

One final and possibly pertinent observation relates to the burial at Purton, with which that from Mersea shares close similarities. This burial also contained a precipitate, the full nature of which was not adequately ascertained, but one part of the material was found to comprise beeswax which had clearly acted as a seal across the mouth of the glass vessel (Lynn Wootten *pers comm.*). Most urned burials were probably originally sealed – the types of 'lid' which have been found include stones, ceramic vessels, textiles, skins and, recently, clay (Dinwiddy and Bradley 2011; McKinley 2013; forthcoming, Fig. 8) – though subsequent disturbance often destroys the evidence. Although the outer lead container of the Mersea burial was covered by the oak boards, the glass vessel may also have been sealed. Though there is evidence that the resins in this case were added as an unguent, there remains a possibility that the material served more than one function and may have been present in a variety of forms.

NB. Small-fraction (2mm and smaller) bone fragments from amongst one of the deposits of fuel ash from the mound was subject to a rapid scan, and 2.4g of bone from the 2mm fraction was examined in detail. Two fragments were confirmed as animal bone (immature small mammal vertebra and ?pig molar root fragment); the rest of the bone is commensurate with an animal rather than human origin.

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Mersea Island Barrow: molecular evidence for frankincense

Rhea C. Brettell, Ben Stern and Carl P. Heron

INTRODUCTION

A portion of the yellow/white residue associated with the cremated bone from the urned burial contained within the Mersea Island Barrow was sent to the University of Bradford for analysis. The aim of this investigation was:

1. to ascertain the nature of the sample
2. to identify any lipids present and establish their source
3. to illuminate the anthropogenic and environmental factors involved.

METHOD

Sample preparation

Ensuring that a portion was retained for future examination, sub-samples were selected for lipid residue analysis. This was conducted using established protocols (Brettell *et al.* 2013; Stern *et al.* 2008). Briefly, the sub-samples were solvent extracted in dicholoromethane:methanol (DCM:MeOH, 2:1 *v/v*, 3 × 2ml) aided by ultrasonication. The solvent-soluble fractions were combined and excess solvent evaporated under a stream of nitrogen. To produce silyl derivatives ~0.02g of each dry residue was trimethylsilylated using ~0.05ml of *N,O*-bis(trimethylsilyl)trifluoroacetamide with 1% TMCS (trimethylchlorosilane) (40°C, 15 min; 25°C, overnight). The derivatized total lipid extracts were then re-diluted in ~0.05ml of DCM for analysis by gas chromatography-mass spectrometry (GC-MS). A range of botanically and geographically certified modern reference materials were treated in an identical manner to provide comparative data.

Gas chromatography-mass spectrometry

Analysis was carried out by combined GC-MS using an Agilent 7890A GC system, fitted with a 30m × 0.25mm, 0.25µm DB-5MS UI 5% phenyl methyl siloxane phase fused silica column (Agilent), connected to a 5975C inert XL triple axis mass selective detector. The splitless injector and interface were maintained at 300°C and 280°C respectively and the carrier gas, helium, at constant flow. The temperature of the oven was programmed to rise from 50°C (isothermal for 2 min) to 350°C (isothermal for 10 min) at a gradient of 10°C per minute. The analytical column was connected via a Quickswap with a 0.17m 100µm ID deactivated capillary which was inserted into the ion source where electron impact (EI) spectra were obtained at 70eV with full scan from *m/z* 50 to 800amu.

RESULTS

Results are presented as total ion current (TIC) and extracted ion current (XIC) chromatograms of the silylated solvent extracts (Figs 1–3). The components identified and discussed in the text have been labelled. Assignments have been made through mass spectral interpretations based on molecular mass, established fragmentation patterns and relative retention times.

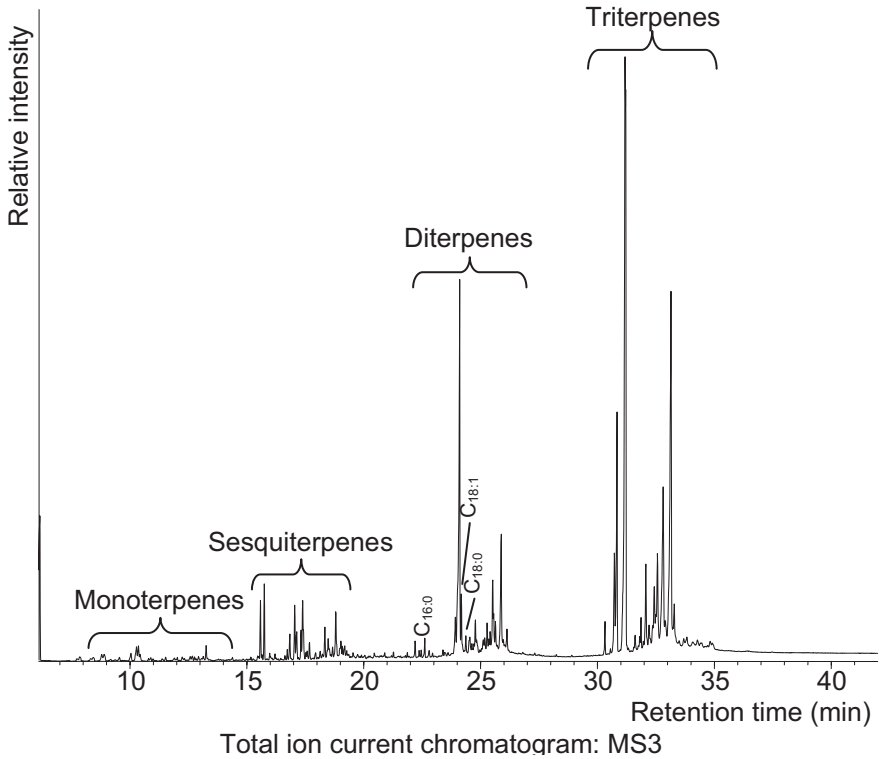

FIGURE 1: Total ion current chromatogram showing the range of terpenic compounds present in the amorphous material from the Roman period cremation burial within the Mersea Island Barrow

1. The nature of the sample

Inspection of the samples revealed orange crystalline fragments embedded within a yellow/white amorphous matrix. These visibly different areas were initially investigated using Raman spectroscopy which indicated that both were resinous in nature. The sub-samples selected for lipid residue analysis dissolved readily in the organic solvent to produce a gold-coloured liquid with a strong aroma. They were found to contain trace amounts of even carbon number saturated ($C_{12:0–18:0}$) and monounsaturated ($C_{18:1}$) carboxylic acids. These are ubiquitous degradation products of both plant and animal tissues. In this instance, they probably derive from the former as the remainder of the molecules were found to be characteristic of natural resins of archaeological interest and comprised: mono-, sesqui-, di- and triterpenes (Fig. 1).

2. The identity and sources of the terpenes present

The presence of lower molecular weight mono- and sesquiterpenes is of considerable interest as these highly volatile components rarely survive in aged resinous materials and are rapidly lost upon heating. Those identified are listed in Table 1. Unfortunately, their common occurrence in the exudates of many botanical families means that they are of limited diagnostic potential. Nonetheless, as the volatile fractions of conifer resins are dominated by monoterpenes while those of angiosperms are characterised by sesquiterpenes (Langenheim 2003, 36-8), the presence of both suggested a mixture of resinous substances. This was confirmed by identification of the higher molecular weight compounds. These consisted of diterpenoids with abieta(e)ne and pimara(e)ne skeletons in conjunction with cembrene and verticillane-type diterpenic constituents and triterpenic compounds with oleana(e)ne and ursa(e)ne skeletons. This combination does not occur in nature and shows that two different resinous substances had been deposited in the cremation urn.

The minor component was found to be a conifer resin. The diterpenoids eluting between 25 and 27 minutes (pimaric (PM), sandaracopimaric (SDPM), laevopimaric (LPM), isopimaric (IPM) and abietic (AB) acid; Figure 2; Table 2) are biomarkers for exudates of the sub-family Pinaceae which includes pines, firs, spruces, cedars and larches (Colombini and Modugno 2009; Langenheim 2003, 37, 54–9). These genera contain a similar range of compounds whose relative abundances vary considerably with environmental factors. In archaeological samples the homogenising effect of degradation pathways must also be considered. Thus, a lower level of classification is unwise. Confirmation of these findings was made through comparison with modern Pinaceae resins and showed a strong correlation between the compounds identified (Fig. 2).

Monoterpenes	Sesquiterpenes
α-pinene (1R + 1S)	α-copaene
β-pinene	β-elemene
α-phellandrene	β-caryophyllene
camphene	α-caryophyllene
menthene	aromadendrene
o-cymene + β-terpinyl acetate	γ-muurolene
β-phellandrene	eudesma-4(14),11-diene
δ-3-carene	α-muurolene + α-selinene
γ-terpinene	γ-cadinene
cymenene + terpinolene	δ-cadinene
ocimene	calamenene
dihydrocarvone	α-calacorene
pinocarvone	carophyllene oxide
isocineole (1,4-cineole)	?longifolene
α-terpineol	?cedrene
verbenone (2-pinen-4-one)	τ-muurolene

TABLE 1: Range of mono- and sesquiterpenes identified in the sub-samples

The second, major, contributor was found to contain a series of pentacyclic triterpenic compounds with oleana(e)ne and ursa(e)ne skeletons. The significant fragment ions at *m/z* 189, 203, 218 and 292 are characteristic of olean-12-ene and urs-12-ene derivatives (Başar 2005, 117-9; Modugno *et al.* 2006) which are diagnostic of Burseraceae exudates (Mathe *et al.* 2009). This botanical family is widespread throughout the tropics and contains over 600 species (within seventeen genera) that are known to produce resinous secretions (Başar 2005, 35; Howes 1949, 86–7; Thulin and Warfa 1987; Tucker 1986). In this instance, however, the abundant neutral degradation products 24-noroleana-3,12-diene (**1**), 24-norursa-3,12-diene (**2**) and 24-norursa-3,12-dien-11-one (**6**) (Fig. 3; Table 3) provided a strong indication as to source. These compounds are distinguished by a methyl group at C-17 which results in a base peak at *m/z* 218 (Budzikiewicz *et al.* 1963) and are characteristic of resins from the genus *Boswellia*, better known as frankincense (Mathe *et al.* 2007; Modugno *et al.* 2006). Low levels of the precursor α- and β-boswellic acids (**10** and **11**) and their *O*-acetyl derivatives (**12** and **13**) confirmed this identification. These moieties are definitive biomarkers of *Boswellia* spp. gum-resins (Evershed *et al.* 1997; Mathe *et al.* 2004) although they are often in low abundance in fresh frankincense and may even be absent from some *Boswellia* species' exudates (Başar 2005, 132–6, 147–50). Additional

Code	$M^{+\bullet}$	BP	Fragment ions	Identification
PM	374	73	121, 133, 191, 207, 257, 299, 359	Pimaric acid
SDPM	374	121	73, 91, 143, 241, 257, 359	Sandaracopimaric acid
LPM	374	241	73, 105, 143, 157, 256, 257, 359	Laevopimaric acid
IPM	374	241	73, 105, 143, 256, 257, 359	Isopimaric acid
DDHA	370	237	73, 103, 143, 195, 209, 252, 355	Didehydroabietic acid
DHA	372	239	73, 129, 143, 171/3, 185, 240, 255	Dehydroabietic acid
AB	374	256	73, 105, 185, 213, 241, 257	Abietic acid

TABLE 2: Identification of key diterpenic compounds in modern and archaeological Pinaceae samples

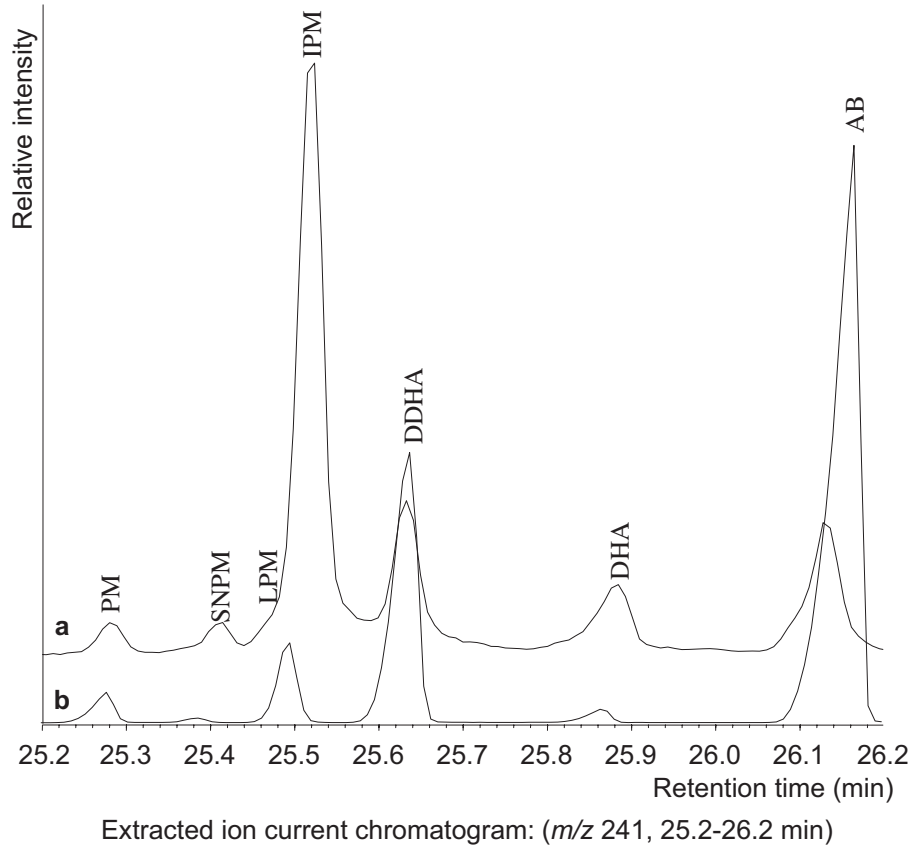

FIGURE 2: Extracted ion current chromatogram showing key diterpenic compounds in: a) a sub-sample of the amorphous substance from the Roman period cremation burial in the Mersea Island barrow; b) a modern reference *Pinus sylvestris* resin from Germany. Peak identifiers relate to Table 2

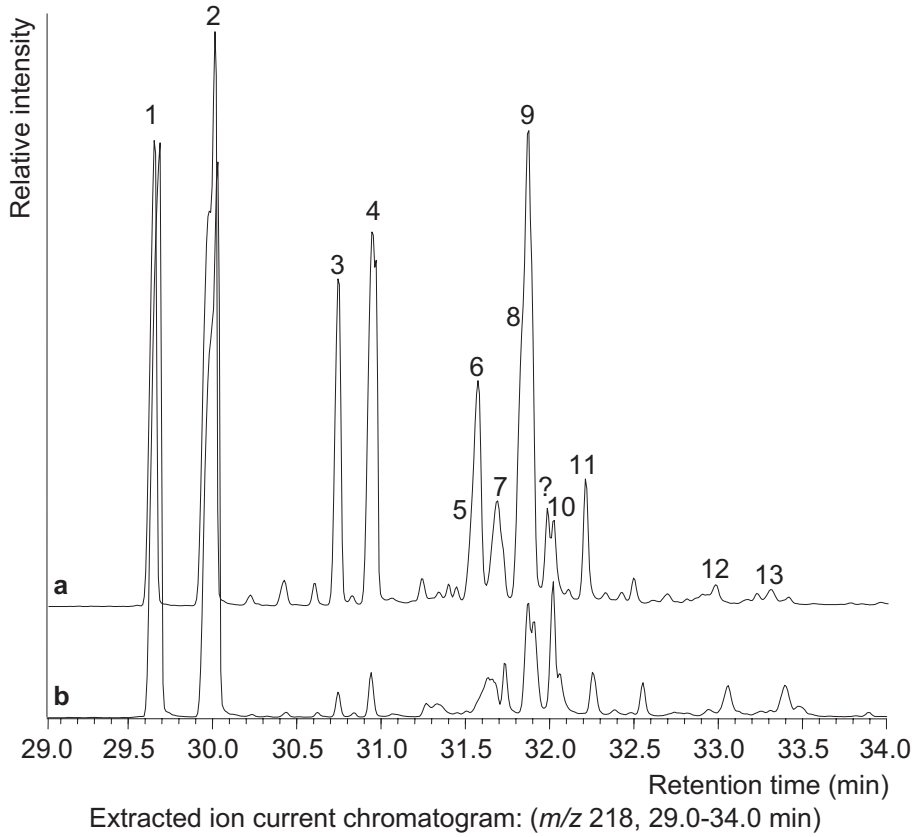

FIGURE 3: Extracted ion current chromatogram showing key triterpenic compounds in: a) a sub-sample of the amorphous substance from the Roman period cremation burial in the Mersea Island barrow; b) a modern reference *Boswellia serrata* resin from Sudan. Peak identifiers relate to Table 3

Peak	$M^{+\bullet}$	BP	Key fragment ions	Name of compound
1	394	218	379, 323, 257, 229, 203>189, 175, 161, 147, 135, 119	24-norolean-3,12-diene
2	394	218	379, 341, 281, 203<189, 175, 161, 147, 133, 119, 107	24-norursa-3,12-diene
3	498	218	483, 393, 327, 279, 257, 203>189, 175, 147, 121	3-epi-β-amyrin
4	498	218	483, 408, 393, 229, 203<189/190, 175, 161, 147, 121	3-epi-α-amyrin
5	424	218	409, 391, 367, 313, 257, 203, 189, 175, 161, 135, 109	β-amyrenone
6	408	218	393, 353, 273, 255, 232, 203, 189, 161, 135	24-norursa-3,12-dien-11-one
7	498	218	483, 468, 408, 393, 311, 241, 203, 189, 161, 129, 69	β-amyrin
8	424	218	409, 393, 311, 257, 245, 203, 189, 175, 161, 135, 121	α-amyrenone
9	498	218	483, 468, 408, 393, 279, 257, 203=189, 175, 135, 119	α-amyrin
10	600	218	585, 510, 495, 382, 292, 203, 189, 161, 147, 135, 107	α-boswellic acid
11	600	218	585, 510, 495, 382, 292, 203, 189, 161, 147, 133	β-boswellic acid
12	570	218	555, 510, 495, 393, 352, 292, 218, 203>189, 161	3-*O*-acetyl-α-boswellic acid
13	570	73	555, 510, 495, 393, 352, 292, 203=189, 161, 133, 119	3-*O*-acetyl-β-boswellic acid

TABLE 3: Identification of key triterpenic compounds in modern and archaeological *Boswellia* spp. samples

corroboration was provided by the presence of incensole and other cembrene and verticillane-type diterpenes in the Mersea samples. This combination of di- and triterpenic compounds is confined to the genus *Boswellia* and may be restricted to certain east African and/or southern Arabian species (Başar 2005, 94; Hamm *et al.* 2003; 2005).

Comparison was also made with modern frankincense samples obtained from Bristol Botanicals Ltd.: *B. serrata*, Sudan; *B. carterii*, Ethiopia and *B. sacra*, Oman. These results showed that the diterpenic compounds (cembrene isomers, verticilla-4(20),7,11-triene, incensole and derivatives) in the Mersea Barrow samples were present in modern exudates from *B. carterii* and *B. serrata* but not in *B. sacra* from Oman. Evaluation of the triterpenic region demonstrated that the compounds in the archaeological materials were identical to those in the modern samples. Significant levels of nor-dienes were present in all of the modern and aged materials. These degradation products of the α- and β-boswellic acids can result from natural ageing processes, environmental interactions or anthropogenic activities such as heating (Başar 2005, 151–84; Mathe *et al.* 2007).

3. Consideration of the anthropogenic and environmental factors involved

The survival of the lower molecular weight mono-and sesquiterpenes showed, however, that the exudates had not been burnt either on the pyre or as incense prior to deposition as these highly volatile components are dissipated by heating in excess of 50°C (Hamm *et al.* 2003). This is supported by both the physical evidence (Mckinley, this volume, 74–80), and the chemical evidence provided by degradation studies of coniferous exudates. Aged Pinaceae resins tend to be characterised by a reduction in the primary resin acids and increased levels of dehydroabietic acid, 7-oxo-dehydroabietic acid and neutral abietadienes (Colombini *et al.* 2000, 2005a). In contrast, an abundance of retene denotes the production of Pinaceae resin tars (Robinson *et al.* 1987; Mills and White 1999, 100) while significant levels of methyl dehydroabietate indicates the pyrolysis of resinous Pinaceae woods (Colombini *et al.* 2003). These markers of heating were not observed in the Mersea samples. Thus, the Pinaceae component was not only unheated but relatively well preserved as it still contained the original diterpenoid resin acids.

With regards to *Boswellia* spp. gum-resins, a reduction of the triterpenic acid moieties and an increase in the abundance of their neutral degradation compounds has been observed as a result of experimental pyrolysis (Başar 2005, 151–84; Mathe *et al.* 2007). Nonetheless, insufficient data is available regarding the impact of environmental factors on the degradation pathways of these compounds over extended time periods. Indeed, similar changes have been observed in both curated modern reference samples and deposits of frankincense from late Roman inhumation burials from Dorchester, Dorset, UK (Brettell *et al.* in review) which suggests that equifinality may make it difficult to distinguish between natural and anthropogenic impacts.

On balance, the chemical evidence indicates that the aromatic substances were deposited in their natural state. For a gum-resin such as frankincense this appears to have been solid fragments both in antiquity (Rackham 1968, 43) and today. This abundance of untreated material, in conjunction with the 'waterlogged' and restricted oxygen microenvironment within the covered cremation urn, ensured the exceptional level of survival. Nonetheless, the material collected did not visibly resemble modern frankincense and had dispersed to coat the human remains. As the urn, was about a third full of liquid when excavated, a simple series of short-term degradation experiments was devised to investigate the effect of immersion in a fluid environment (water and/or wine) on modern frankincense samples. The results demonstrated that the gum components readily dissolved to produce a 'milky' solution containing white amorphous masses shot through with orange crystalline fragments. Visibly, this closely resembled the material from the urn with the lower the pH the more marked the dissolution. GC-MS analysis of the solvent extracted dried residues showed that the resin components were largely unaffected and readily identifiable. No markers for wine were detected in the frankincense samples that were left to stand in the Ponte Guglio white wine. As these were also absent from the Mersea Barrow samples, the most parsimonious explanation for the sequence of events is that solid resinous fragments were scattered over the cremated remains within

the urn which subsequently became partially waterlogged. A contemporaneous libation of wine cannot, however, be precluded.

DISCUSSION

A large number of plants produce exudates which can be categorised as gums and resins (Langenheim 2003, 23–47). 'True' resins (e.g. coniferous exudates, elemi and mastic) are predominantly water-insoluble substances which contain volatile and non-volatile fractions in varying proportions, whereas gums (e.g. almond, gum arabic and tragacanth) consist mainly of water-soluble polysaccharides and the (oleo-) gum-resins (e.g. frankincense and myrrh) are a mixture (Howes 1949, 87–9; Serpico and White 2000a). These sticky, often highly scented, materials have been put to a wide variety of anthropogenic uses as adhesives, protective coatings, varnishes and illuminants with the more fragrant varieties used in perfumes (the volatile components), unguents, medicines, embalming and as incense (Pollard *et al.* 2007, 153–6; Serpico and White 2000b). They can also survive in the archaeological record as the higher molecular mass components are relatively resistant to decay (Pollard and Heron 2008, 235–69).

The main resin producing families are the conifers (Pinaceae, Cupressaceae and Araucariaceae) and certain angiosperms (predominantly the Anacardiaceae, Burseraceae, Dipterocarpaceae, Leguminosae and Styracaceae). Coniferous exudates are characterised by a large volatile fraction dominated by monoterpenes and non-volatile diterpenoid acids with three main skeletal types (abietane, pimarane or labdane), depending on family (Langenheim 2003, 36). In contrast, resins produced by angiosperms generally have volatile fractions dominated by sesquiterpenes and non-volatile fractions by triterpenoids (Langenheim 2003: 38). The volatile mono- and sesquiterpenes are rarely diagnostic, highly variable in nature and prone to losses over archaeological time (Hamm *et al.* 2003; Scalarone *et al.* 2003; Serpico and White 2000a). Characterisation of ancient resins has, therefore, utilized the 'biomarker' approach, which focuses on identification of the more diagnostic and degradation-resistant compounds (di- and triterpenoids) using GC-MS to provide the necessary level of compositional information (Evershed 2008).

Using this approach, analysis of the amorphous material from the early Roman period cremation urn from the Mersea Island barrow, Essex, UK provided evidence for two different resins. The first, present in lower abundance, was found to be a coniferous diterpenoid Pinaceae resin. Exudates are produced by all members of this diverse sub-family and many have been 'commercially' exploited since antiquity (Colombini *et al.* 2005b; Connan and Nissenbaum 2003; Howes 1949, 106–10; Langenheim 2003, 319–22; Modugno and Ribechini 2009). Widespread in the northern hemisphere, the Pinaceae are believed to have had a special significance in Roman mortuary beliefs. Indeed, pinecones, as symbols of immortality or mourning, are often found as finials and carvings on funerary monuments (Alcock 1980; Mackinder 2000, 14–6). This is supported by a growing body of chemical evidence which has shown that coniferous exudates were increasingly employed in embalming processes during the Roman period in Egypt (Buckley and Evershed 2001; Colombini *et al.* 2000; Corcoran and Svoboda 2010; Maurer *et al.* 2002). They have also been identified in inhumation burials in Italy (Ascenzi *et al.* 1993; Devièse *et al.* 2010), Greece (Papageorgopoulou *et al.* 2009), the Rhineland (Reifarth 2009; 2013) and, most recently, Britain (Brettell *et al.* in review).

Of even greater significance, the more abundant resin in the Mersea Island samples is a *Boswellia* spp. exudate. In contrast to the widespread Pinaceae, *Boswellia* spp. are predominantly found in the arid mountainous regions of eastern Africa (Eritrea, Somalia, Sudan), southern Arabia (Oman, Yemen) and north-western India (Howes 1950; Langenheim 2003, 88; Tucker 1986). These small deciduous trees produce an aromatic gum-resin, better known as frankincense, which is characterised by pentacyclic triterpenoid boswellic acids and their derivatives together with low levels of tetracyclic triterpenoids with tirucallane skeletons and/or diterpenic compounds (Başar *et al.* 2001; Hamm *et al.* 2005). Around twenty-three species of *Boswellia* have been described although misidentification and inaccurate nomenclature has created considerable taxonomic confusion, particularly regarding the botanical origin of many commercial products (Hamm *et al.* 2003; Thulin & Warfa 1987). The latter may be derived from a mixture of *Boswellia* spp. exudates and are often adulterated with pine and other less expensive resins (Regert *et al.* 2008; van Vuuren *et al.* 2010). As such 'cutting' of resins is also reported by classical authors (Rackham 1968, 47; Gunther 1959, 45) it is possible that the Pinaceae contribution to the Mersea samples was the result of this unscrupulous practice, rather than being intentional.

So how does this find add to our understanding of Roman mortuary rites? This discovery is of considerable importance as it provides the first molecular confirmation for the use of resinous substances in a Roman period cremation burial. In light of this, it is interesting to note that substances, reported to be frankincense or myrrh, were also observed in Roman period cremation burials within the barrows at Bartlow Hills, Cambridgeshire, UK (Gage 1834, 17). Sadly, much of this collection was later destroyed in a fire. Similarly, an aromatic white residue, described as frankincense, from a 2nd century AD amphora burial at Weston Turville, Buckinghamshire, UK (Waugh 1962) is no longer extant. Thus, prior to our current research project, few studies have chemically identified archaeological frankincense. Those published pertain to sites in Egypt (Mathe *et al.* 2004), Nubia (Evershed *et al.* 1997) and Yemen (Mathe *et al.* 2007; Regert *et al.* 2008). Any such find is significant. Nonetheless, the presence of frankincense in these regions is not unexpected given the known geographical spread of the genus *Boswellia* and the commercial distribution of its exudates in antiquity (de Sélincourt 2003, 217; Casson 1989, 66–9; Rackham 1968, 37–47). Its transportation to Roman Britain is another matter and forms part of a growing corpus of evidence for the widespread use of aromatic exudates as part of Roman mortuary rituals (Brettell *et al.* 2013). Indeed, certain commonalities in terms of the materials employed can be observed between this cremation burial in a high quality glass vessel within a lead casket below a carefully constructed barrow (Hazzledine Warren 1913) and later inhumations which have been found to contain resinous substances, including frankincense (Brettell *et al.* in review).

The mortuary sphere has always provided an opportunity for socio-cultural display with certain individuals accorded more elaborate rites than the 'norm'. In late Republican

and early Imperial Rome this seems to have involved being washed and anointed, crowned with flowers, dressed in richly-decorated garments and placed on a bier draped with purple-dyed cloth prior to being cremated and the remains gathered for burial (Fowler & Fowler 2007, 511; Nagle 2004, 87). In the later Roman period, the preliminary rites continued to be employed but the individual was generally interred in a lead-lined coffin or stone sarcophagus and sometimes encased in a white calcitic substance (Philpott 1991, 92–4; Sparey Green 1977). It appears, therefore, that resinous substances formed a key element of this 'package' and could be employed in a variety of ways: in the unguents applied to the body, sprinkled or pasted onto the textile wrappings or scattered over the cremated or interred remains (Ascenzi *et al.* 1993; Brettell *et al.* 2013; Bruni & Guglielmi 2005; Papageorgopoulou *et al.* 2009, Reifarth 2013). These rites, which originated in the eastern Empire, were designed to propitiate the gods and to cleanse and purify the body in order to facilitate the deceased's journey to the underworld (Groom 1981, 1–14; Langenheim 2003, 284–5; Philpott 1991, 118). On a more practical level, they would also have acted to mask the odour of decomposition during the often extended funerary rites accorded the social elite (Fowler and Fowler 2007, 511; Hope 2009, 71–4).

Thus, plant exudates appear to have played an important and multi-layered role in Roman mortuary practices with the chemical evidence now providing corroboration of descriptions found in the primary sources. These speak of various resinous substances being heaped upon funeral pyres (Duff 1928, 491), the conspicuous consumption of the produce of Arabia during funerary rites (Nagle 2004, 157; Rackham 1968, 61–2) and, of greatest relevance to the current study, express the desire for their ashes to be "*sprinkle*[d]... *with pure wine and fragrant oil; bring balsam too... I have but changed my state, and have not died*" (Evelyn White 1921, 159).

CONCLUSION

Molecular analysis of an amorphous material recovered from a Roman period cremation burial (mid 2nd century) located below a large round barrow on Mersea Island, Essex, UK was undertaken using gas chromatography-mass spectrometry. The biomarkers present showed that it consisted of a mixture of two different resinous plant exudates. These were identified as a coniferous Pinaceae resin and a *Boswellia* spp. gum-resin (frankincense). While the former could have been harvested in north-western Europe, including Britain, the latter must have been transported from the far south-eastern periphery of Roman influence, eastern Africa or southern Arabia. These findings are of some significance as they provide the first molecular confirmation of the use of resinous plant exudates in a Roman period cremation burial. They also provide the earliest evidence for the importation of an exotic resin into Britain and emphasise the extent of Roman cultural influence on mortuary practices within this remote province. These results, in conjunction with recent research demonstrating the use of Pinaceae, *Pistacia* spp. and *Boswellia* spp. resins in late Roman inhumation burials from Britain, provide a new perspective on Roman mortuary practices.

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St Martin, Chipping Ongar: the Romanesque church

Daniel Secker

The brick quoins and dressings of the Romanesque church of St Martin, Chipping Ongar, long thought to be of re-used Roman material, were more recently recognised as medieval. More recently still, luminescence dating showed the brickwork to be of eleventh-century date, earlier than previously thought. A survey of the standing fabric of the church has indicated the details of its construction, and it is suggested the church took eight years to build. The architectural and historical evidence is compared with the luminescence dates, and it is suggested the church was begun c.1068 by Ingelric, a high-status priest under both Edward the Confessor and William I. The broader context of the church is also discussed. It is suggested that the church at Chipping Ongar was the successor to a minster church at High Ongar.

INTRODUCTION

St Martin, Chipping Ongar, the adjacent motte and bailey castle and town defences are prominent monuments of the Norman period in what was a small market town now enlarged by twentieth-century development (Fig. 1). The church is notable for the survival of much Romanesque fabric, despite drastic Victorian alterations.

Antiquarian interest was shown in the church in the eighteenth century, when 'Roman' foundations were reported in the church and churchyard. The church was described by the Royal Commission on Historical Monuments, which included an undifferentiated sketch-plan (RCHM Essex II, 1921, 51–2). At this time, the brickwork was regarded as Roman *spolia* and the church was regarded as being of eleventh-century date. That the bricks were in fact medieval was recognised by Warwick Rodwell (1998, 105). The type was known as 'Coggeshall Abbey' brick after the twelfth-century Cistercian abbey where they were first recognised (Cutts 1858, cited in Rodwell 1998, 100). They are also known as 'great bricks'. Since there were no known examples of medieval 'great bricks' earlier than the middle of the twelfth century, Rodwell suggested St Martin's was of this date. There was not, however, consensus on the age of the bricks, John Potter (2001) maintaining they were Roman.

More recently, St Martin, Chipping Ongar was one of a number of medieval brick buildings which were subject

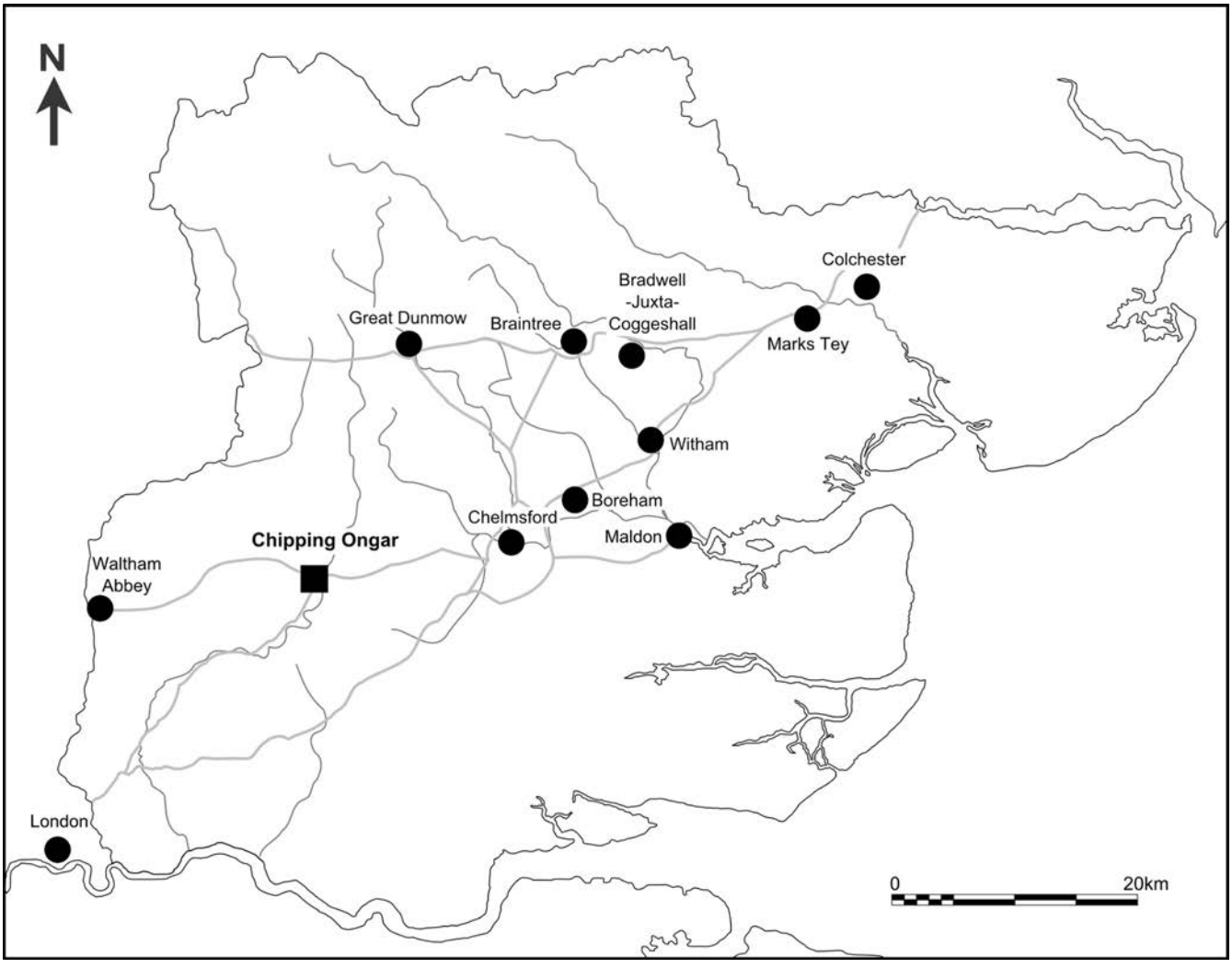

FIGURE 1: Chipping Ongar: location

to a programme of luminescence dating by the University of Durham. Research by Sophie Blain sought to establish scientific dates for early medieval churches in both northern France and southern England (Blain 2009), while Tom Gurling's work had the objective of establishing luminescence dates for both religious and secular buildings in Essex from the early medieval through to the early modern period (Gurling 2009). Blain's research has established beyond doubt that the brickwork at Ongar was medieval (Blain 2009, 273–85). The results of both projects were subsequently synthesised and summarised (Bailiff *et al.* 2010). The dates not only confirmed the bricks were medieval, but that they were of eleventh-century date and the second oldest post-Roman bricks in England, the oldest being at Boreham (Fig. 1), where the brickwork was dated to the tenth century (Gurling 2009, 257–8; Bailiff *et al.* 2010).

While the brickwork at Chipping Ongar has been scientifically dated, the church itself has not been surveyed in detail, the only published plan, to this author's knowledge, being the Royal commission's sketch-plan mentioned above. This paper is an attempt to redress the matter. Survey was conducted using 30m tape and 5m tape. Plans were drawn at a scale of 1:50 and elevations at 1:20 before being reduced. While most of the fabric could be measured precisely, gables and the uppermost walls were not accessible. Where this was the case, visual estimates of the dimensions were made.

The focus of this paper is on the Romanesque church. Post-Romanesque developments are briefly described, but not explored in depth. The roof timbers have been the subject of a separate study (Hewett 1980, 3).

BACKGROUND

Location, topography and geology

Chipping Ongar is situated in south-western Essex, in the middle Roding Valley at the confluence of the River Roding and Cripsey Brook (Fig. 1). The settlement is towards the east of the Domesday hundred (Fig. 2). To the north of the town is the crossroads known as the Four Wantz, a nodal point linking Ongar with London to the south-west, Harlow and Waltham Abbey to the west, Chelmsford and Maldon to the east and the Rodings and Great Dunmow to the north (Fig. 1). The landscape is a gently undulating one, varying from 42m OD on the floodplain to 103m OD at Toot Hill, 3.5km west of Chipping Ongar.

Chipping Ongar is situated on London Clay, though the channels of the Roding and Cripsey Brook are alluvial. The upland areas are of Boulder Clay with occasional Sarsen erratics (Buchanan-Black, n.d, 7). The latter is till-rich, many glacially rolled flint pebbles occurring in the fields. These pebbles are the predominant building material in the church.

Documentary history

In the will of 1044–5 of Thurstan son of Wine, one of his many bequests was the *wude at Aungre buten that derhage that stod the ic per habbe* 'wood at Ongar except for the deer enclosure and stud which I have here' which was made to his retainers (Sawyer 1968, No. 1531). The deer park however was in a detached portion of the parish of High Ongar, not Chipping Ongar (Fig 2). Thurstan, one of the most important thegns in Essex and East Anglia, was the great grandson of ealdorman Brythnoth, the latter being famously killed by the Vikings at the Battle of Maldon in 991 (Scragg 1981, 1–11). Many, but by no means all of Thurstan's estates passed to his widow, Aethelgyth (Wareham 2005, 68–74). She was recorded as having held the manor of Chipping Ongar in Edward the Confessor's reign (Williams and Martin 2002, 992). Aethelgyth did not, however, hold High Ongar at this time, that manor being held by one Leofric (Williams and Martin 2002, 1034). This could mean that Chipping and High Ongar were only partitioned after Thurstan's death, but the topographical evidence discussed below suggests this happened at an earlier date.

After the Conquest, Chipping Ongar was in the possession of Ingelric, a high-status priest of probable German origin. He had already been an important figure in Edward the Confessor's court, and founded the collegiate church of St Martin-le-Grand, London, perhaps as early as 1056 (Taylor 2002, 223–31). Ingelric was to rise to even more prominence after the Conquest. In 1068, William I granted him a substantial group of manors, including Chipping Ongar (VCH London I, 1909, 555). Ingelric died sometime between 1068 and 1075, when the manor passed to Eustace II of Boulogne (VCH Essex IV, 1956, 159). Eustace, however, failed to return Chipping Ongar to St Martin-le-Grand, keeping the manor and presumably the church there as a personal possession. Indeed, St Martin le-Grand itself became a possession of the Counts of Boulogne rather than an autonomous institution. As such, it passed to King Stephen's queen, Matilda of Boulogne (VCH London I, 1909, 555). By the reign of Henry II, Chipping Ongar was in the hands of Richard de Lucy, the king's justiciar, and in the thirteenth century the manor passed to the de Rivers family. They may have forfeited it as a result of the 1322 rebellion (VCH Essex IV, 1956, 160).

Throughout the medieval period, the church was proprietary, due to its appropriation by Eustace II of Boulogne. A mother church at Ongar is mentioned in the Pipe Roll for 1210, when Ongar was held by Robert Peverel ('*Et matrici ecclesie de Angria xs. de anno redditu pro cimiterio*': Pipe Roll Society 1951, 206). This, however, refers to the church at High Ongar, not Chipping Ongar. Despite its situation it what was then a market town, the latter church was always very poor, being valued at only four marks in the 1254 Valuation of Norwich and not being mentioned at all in the *Taxatio* of 1291. The advowson of the church was held by the lords of the manor until 1905 (VCH Essex IV, 1956, 162).

Evidence for a former minster church at High Ongar

St Mary, High Ongar, as noted above, was described as a mother church in 1210 (Pipe Roll Society 1951, 206). That the church was an old minster rather than a later mother church is suggested by its valuation in 1254: whereas Chipping Ongar was only worth £2 13s. 4d., High Ongar was worth £40 (Powell 1953, 11). Further evidence that High Ongar was a minster is suggested by the nearby place name *Nortune*, i.e. Norton Mandeville (Figs 2, 3a). Directional toponyms such as *Nortune* have been interpreted as representing outlying settlements attached to minsters (Blair 2005, 251).

Notably, the later parish of High Ongar has two detached portions (Fig. 2). The latter are probably the remnants of a former *parcohia* coeval with Ongar hundred, with the exceptions of Abbess and Beauchamp Roding, which

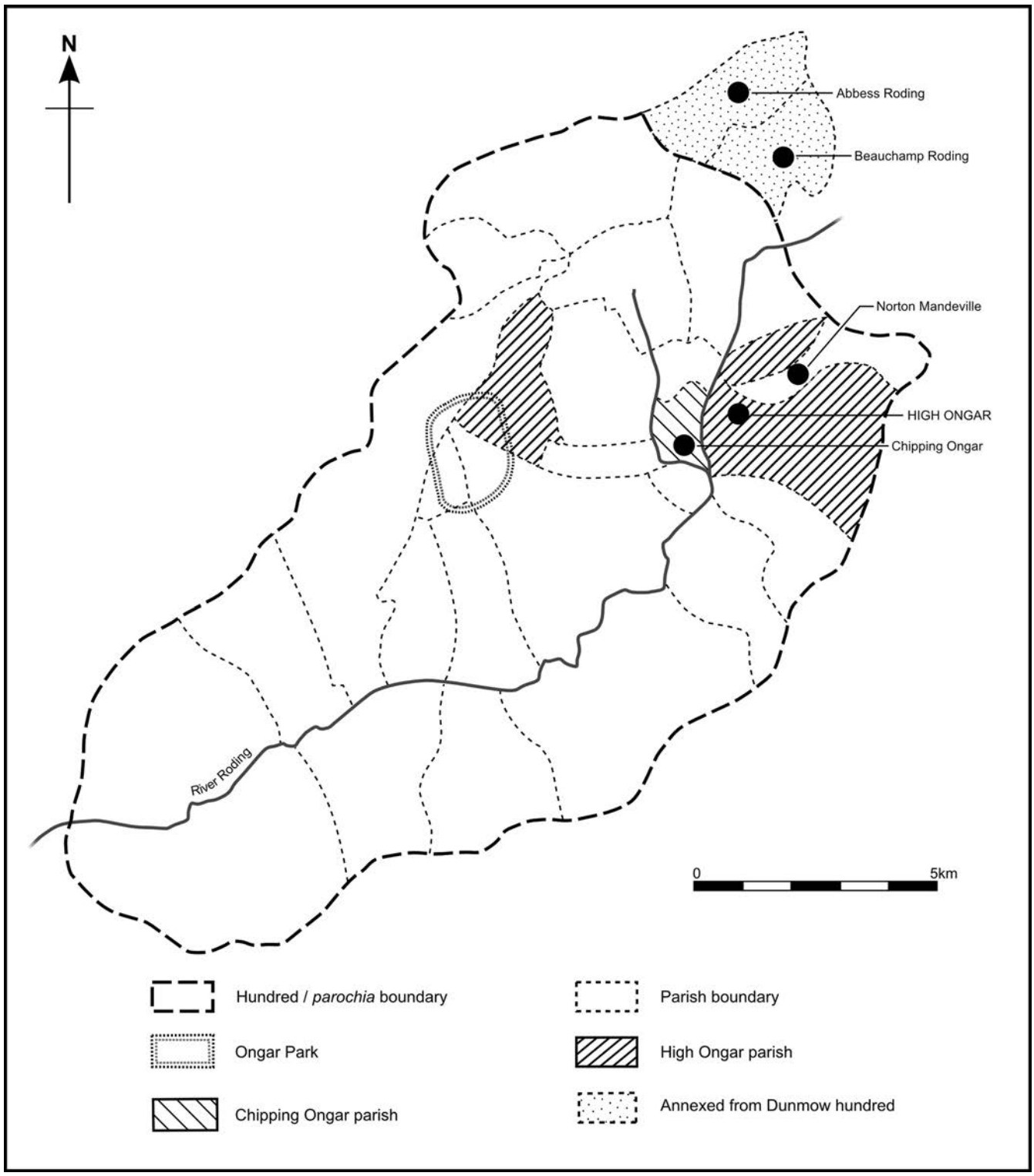

FIGURE 2: Ongar hundred, alias the suggested *parochia* of High Ongar minster

are clearly later additions which have been annexed from Dunmow hundred (Bassett 1997). That the *parochia* and later hundred were one and the same is suggested by two factors: firstly, the hundred boundary forms a coherent unit; secondly, there are no other candidates for minster churches within the hundred.

Both the fabric and primary details of St Mary, High Ongar are of *c*.1120–40. Unfortunately, the building was recently re-floored without any archaeological investigation being undertaken (churchwarden, pers. comm.). The church is situated on a slight eminence between the Roding and a small tributary to the south (Fig. 3a). The topographical position is comparable to other minster sites (Blair 2005, 193).

The parish of Chipping Ongar was apparently carved out of the *parochia* of High Ongar. It has noted that the present town and castle overlie a possible earlier rectilinear enclosure (Fig. 3b; Eddy and Petchey 1983, Fig. 19.1; Rippon 1996). The latter is only recognisable as a relict feature among later boundaries apart from to the south-east, where there is an extant ditch about 4m wide and 1m deep running east from the postulated former enclosure towards Cripsey Brook. Any enclosure here would have had defensive potential, being

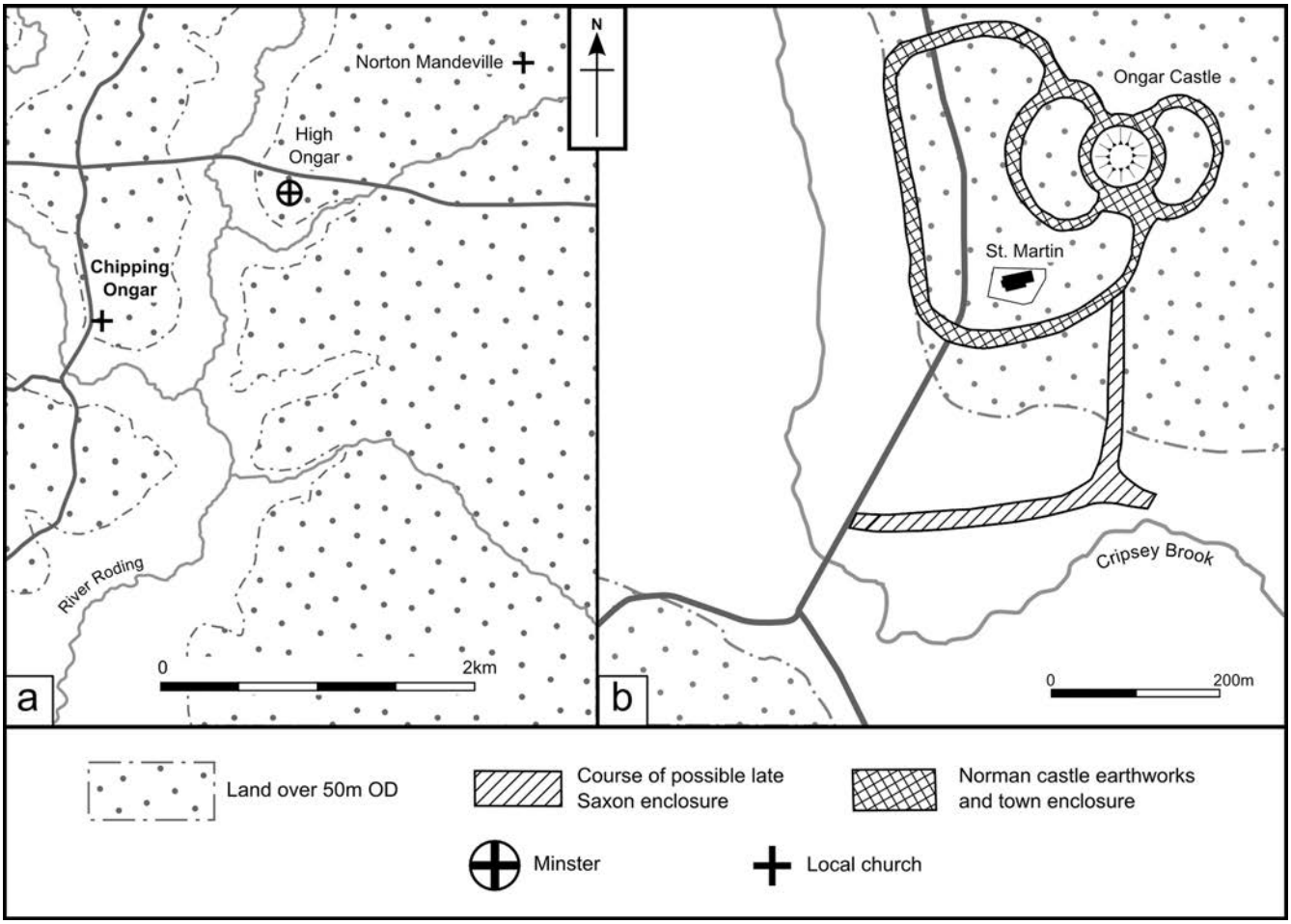

FIGURE 3: Chipping Ongar (a) situation in relation to High Ongar (b) settlement, showing St Martin's in relation to the Norman castle, town enclosure and possible late Saxon rectilinear enclosure

situated within a peninsula bounded by the Roding to the east and Cripsey Brook on the south and west (Fig. 3a).

St Martin's church: situation within the settlement

St Martin's church (TL 5537 0294) is situated within both the postulated pre-Conquest enclosure and the Norman town defences (Fig. 3b). The present churchyard is set back from the street, but it was uncertain whether this was always the case or whether later burgage plots have encroached on an earlier churchyard. The latter is trapezoidal and measures 30m long on its western side, 45m on its southern, 43m on its eastern and 57m long on its southern side. The churchyard contains many good examples of eighteenth- and nineteenth-century tombstones.

The church (Fig. 4) is orientated eleven degrees north of a west-east axis (Fig. 5). The benchmark of the church, which is on the west wall of the Victorian south aisle, is set at 52.23m OD.

THE CHURCH

Architectural summary

The earliest phase of the church is the Romanesque one which is the main subject of this paper. Subsequent alterations to the structure prior to the late nineteenth century were minor. In about the middle of the thirteenth century, a triplet lancet was inserted into the south wall of the chancel. In about the second quarter of the fourteenth century, the chancel arch was rebuilt and a window inserted in the east end. The present nave roof and belfry probably date from the same time. In the early sixteenth century, a brick three light window was inserted into the north wall of the chancel, which also may have been re-roofed then. In the late seventeenth or the eighteenth century, a gallery was erected at the western end of the nave. The most drastic changes to the church were made in 1884, when a new south aisle was built.

The Romanesque church: plan-form and elevations

The nave had internal dimensions of 17.90m by 7.00m at its western end and 6.75m at its east end before the south nave arcade was rebuilt in 1884 (Fig. 5). The chancel measures internally 9.20m west-east by 5.70m north-south. The surviving walls of the Romanesque nave are 1.10m thick. The north wall of the chancel is 1.05m thick, the east and south walls both being 1.00m thick.

There is no sign of a plinth, the walls rising straight from the ground. There is a build-up of grave-earth against the north wall of the nave which has obscured the details of any base-course. Here, the wall is 4.88m high to the eaves to the north-west but only 4.26m high to the north-east (Figs 6–7). The construction of the south aisle has removed the

FIGURE 4: St Martin, Chipping Ongar: general view from north-west

grave-earth here. To the south-west, the quoin rises 5.32m to the eaves. At the south-east corner it is 5.34m high. The north-eastern chancel quoin is 3.76m high to the eaves, the south-east one 4.16m high.

The pitch of the nave roof is currently 45 degrees. That of the chancel roof is 48 degrees (Fig. 7). These are later alterations dating from when the present roofs were constructed in the fourteenth and probably sixteenth centuries respectively. Romanesque roofs tended to have a pitch of about 50 degrees, as has been evidenced at Bradwell-Juxta-Coggeshall (Rodwell 1998, 82). The roofs at Chipping Ongar have been reconstructed on this analogy (Fig. 8).

Building materials

Fabric

The predominant building material is flint. The flints are overwhelmingly small glacially rolled pebbles 40–100mm across. There are, however, some cut nodules up to 150mm across. They are variously grey-black with a white or yellow cortex or yellow-brown throughout. All the material is field flint, being derived from the immediate locality. The mortar is yellow, sandy and quite friable. There are infrequent (<5%) flint occlusions, mainly 3–8mm across and never more than 15mm across, together with shell and chalk ones. The occlusions do not appear to represent a deliberate tempering agent. The latter might have resulted in a harder composition. The chalk occlusions no doubt derive from the raw material for the lime. The nearest source of chalk to Chipping Ongar is in north-west Essex around Stansted Montfichet and Newport (Fig. 1; Lake and Wilson, 1990, 4–6).

A few Sarsen erratics were noted in the eastern part of the north wall of the chancel (Fig. 6). There are also some fragments of undressed Caen stone in both the chancel and the north wall of nave. This is presumably waste material from the manufacture of the Romanesque windows and evidence that the latter were worked on site.

Dressings

The dressings of most importance at Chipping Ongar are the bricks used for the quoins and coursing of the Romanesque church. These are discussed in more detail hereafter. The largest 'great bricks', where intact, are of a remarkably consistent size, being 370–380mm long, 190–200mm wide and generally about 35mm thick, though there are thinner examples only about 20mm thick. While the majority of bricks have been broken into approximate halves or thirds, there also appear to be some complete bricks of a smaller size, about 230 by 170mm, but of the same thickness as the larger examples. The bricks are generally lightly sand-tempered and generally a consistent orange-red in colour, though there are a few reduced examples. In addition, there are smaller, thinner medieval tiles in the fabric, which are almost invariably fragmentary. The majority of the tiles are reduced and a few are vitrified, having a dark green glaze.

Constructional features

Building-lifts

Building-lifts are breaks in the coursing of the masonry which represent the completion of a day's work (Rodwell 1998, 69). At Chipping Ongar, these are easily recognisable. While some are defined by interrupted courses of tile, most take the form of

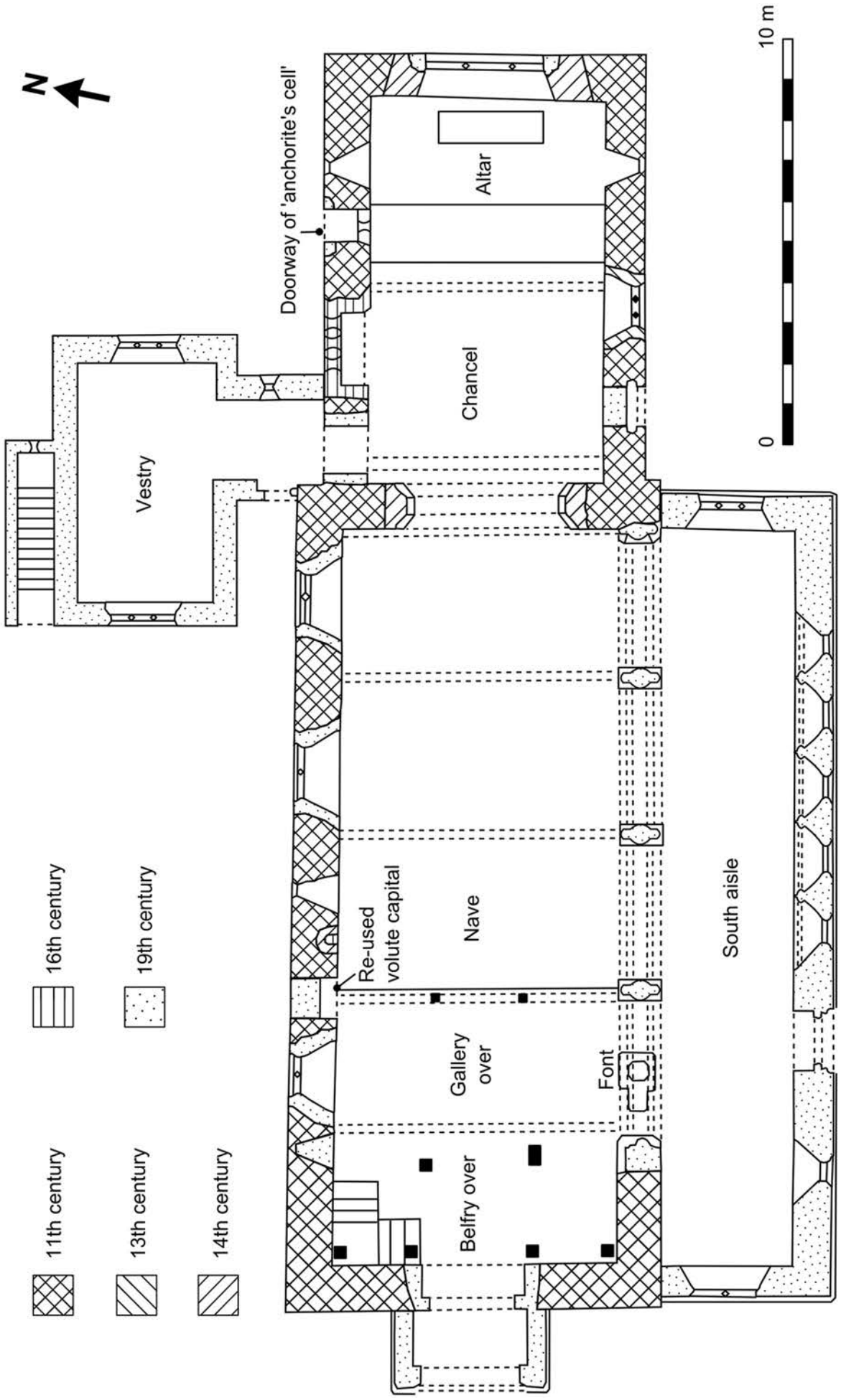

FIGURE 5: St Martin, Chipping Ongar: phased plan of church

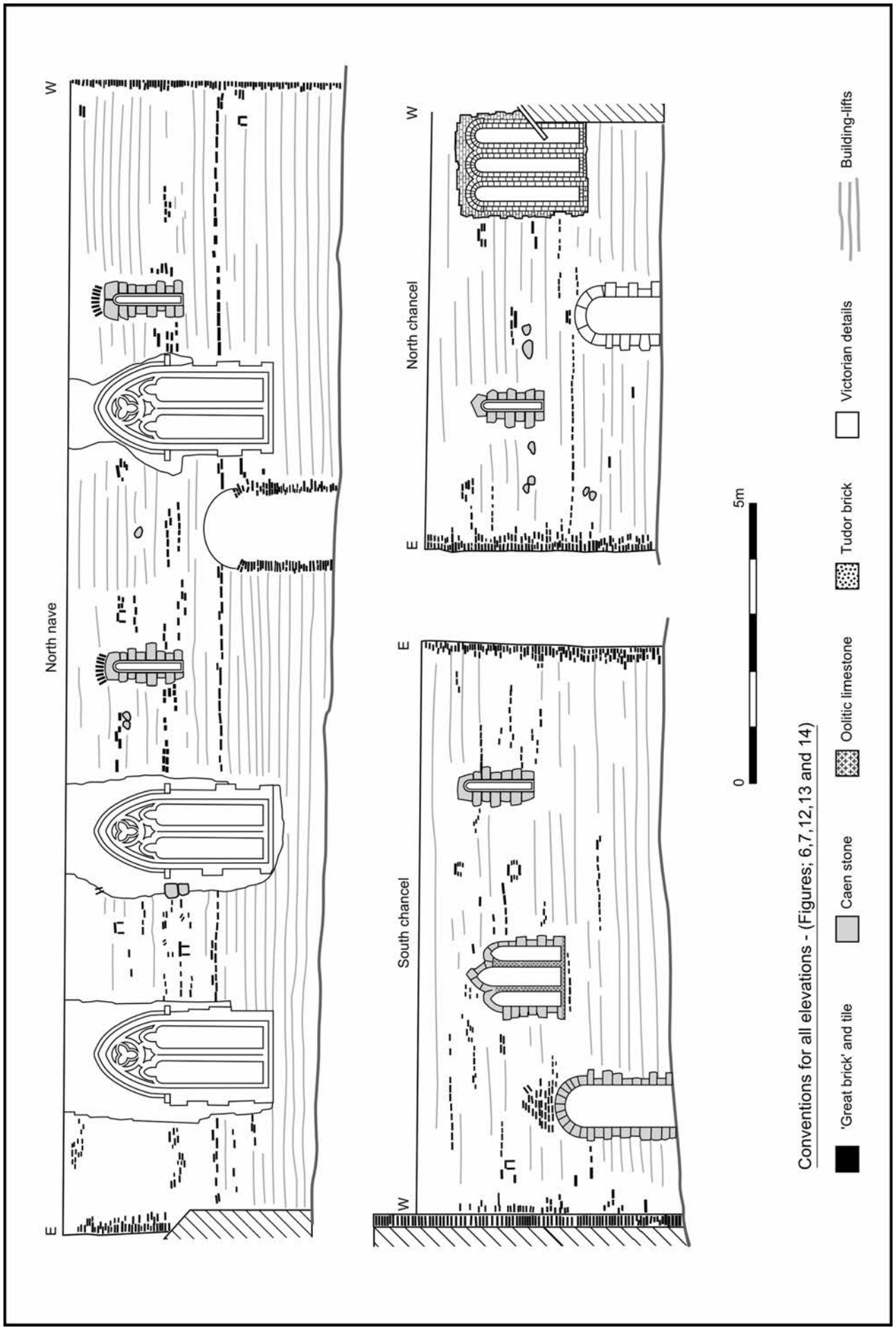

FIGURE 6: Elevations of north nave wall, south chancel wall and eastern part of north chancel wall

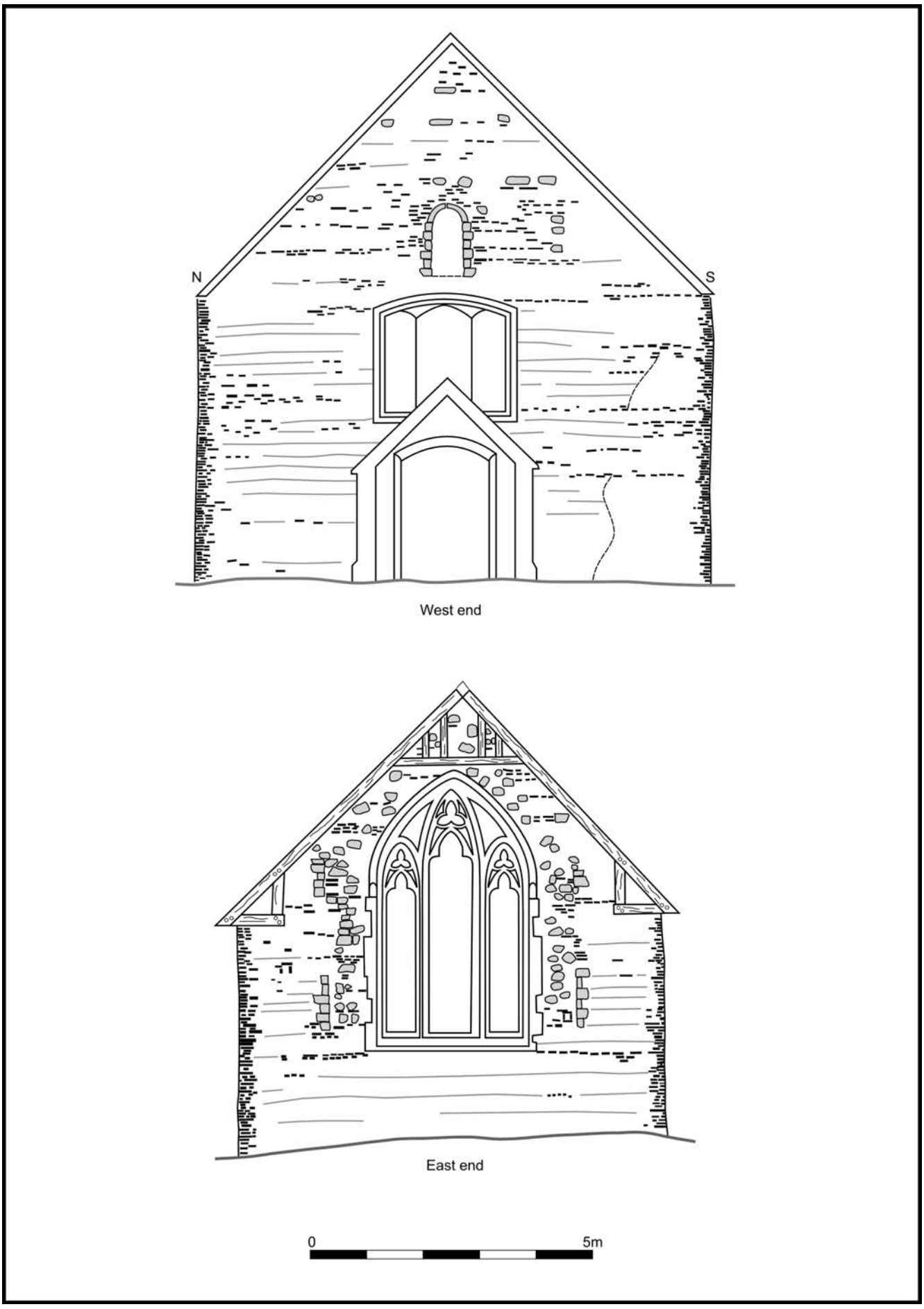

FIGURE 7: Elevations of west and east ends

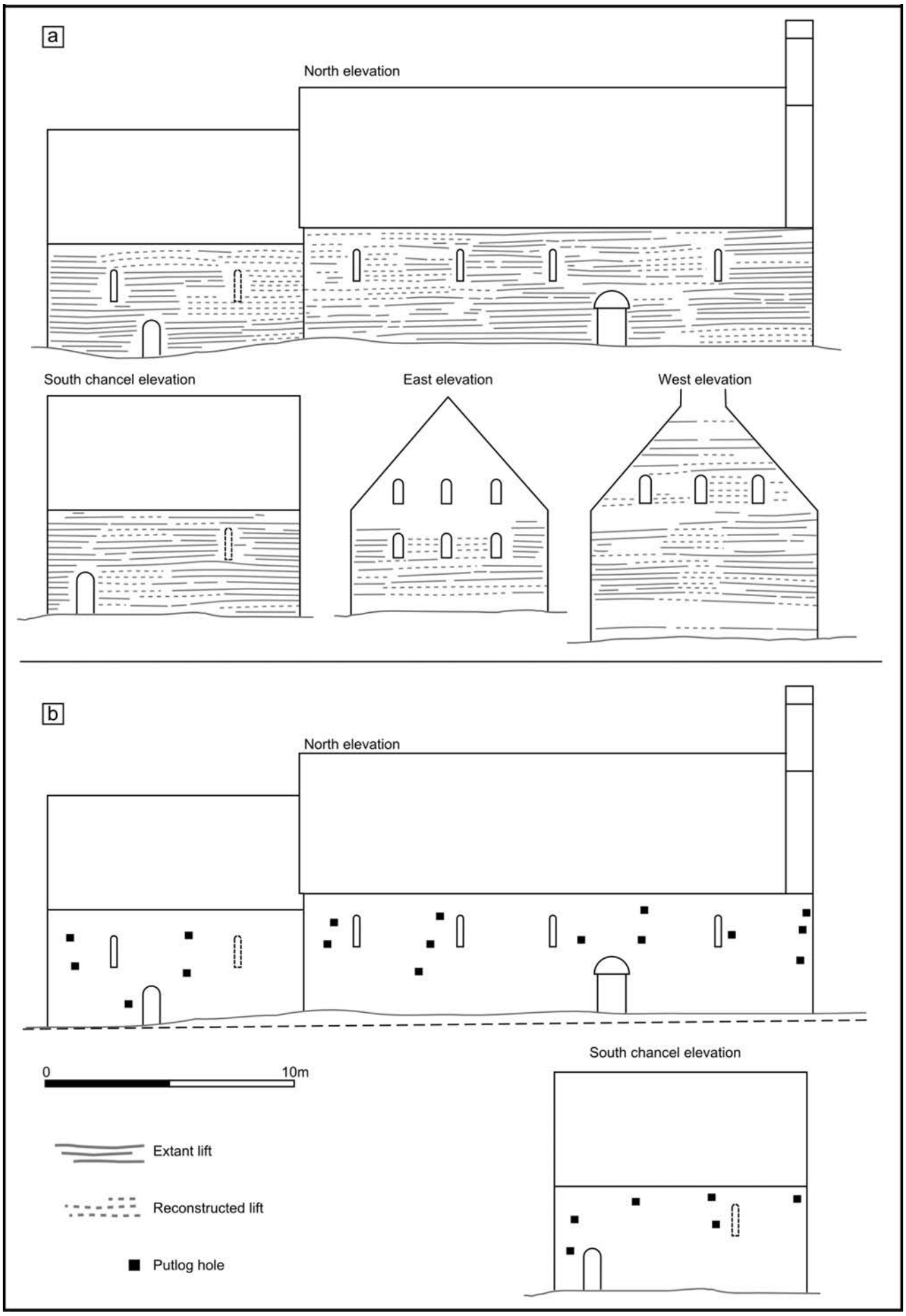

FIGURE 8: Reconstructed elevations of Romanesque church showing (a) building lifts and (b) putlog holes

wide horizontal courses of mortar. The lifts at Chipping Ongar vary from 0.15m to 0.24m in height (Fig. 8a).

The north wall of the nave comprises twenty-seven lifts to the height of the eaves at its western end, though towards the east, the lowest of these have been obscured by grave-earth (Fig. 8b). Lifts were less discernible at the west end, but they were presumably a similar number here (Fig 8a). In the gable of the west end, lifts could only be determined where they were represented by brick coursing; there seem to have been about eighteen. Nineteen lifts were noted in the north wall of the chancel and twenty in the south. In the east end, as with the west end, lifts were harder to identify. Identification was compounded by the insertion of the fourteenth-century window and the rebuilding of the gable.

Putlog holes

Many, though not all, of the original putlog holes which would have supported the scaffolding when the church was under construction are visible (Fig. 8b). In size, they vary from 0.15 to 0.20m square. The putlog holes all have brick caps. The cheeks of some examples consist of vertical bricks (Fig. 9a). They are more commonly however formed of two or three brick fragments set horizontally (Fig. 9b).

The lowest course of putlog holes on the north wall of the nave occurs at a height of 1.72m above the north-west corner of the nave, the second being 1.12m above this and the third 1.12m above the second (Fig. 8b). The vertical tiers of putlog holes here are 2.7–3.4m apart except where they flank the blocked north doorway. Here, they are only 2.20m apart, a contrast with Bradwell-Juxta-Coggeshall, where the spaces between the putlog holes are wider over the entrances (Rodwell 1998, 73). The putlog holes are generally staggered to allow the ledgers to secure the standards, but towards the east of the north wall of the nave are three in a steep diagonal row, perhaps to support a ladder-stair.

On the north wall of the chancel, the lower row of putlog holes occurs at a height of 2.12m above the ground level of the north-west corner of the chancel, the second row being 1.12m above this (Fig. 8b). The tiers at the upper level are as much as 4.40m apart. At the lowest level, however, there is a single putlog hole midway between these tiers. On the south wall of the chancel, the spacing between the holes is as little as 2.0m, with a spacing of 2.91m before the next tier. The putlog holes which must have existed near the east end of the south chancel wall have been lost, though a brick high up in the wall, 3.20m west of the tier west of this, may represent a cap.

The arrangements at the east and west end have clearly been interrupted by later alterations. At the east end, a single original putlog hole occurs in the western part of the wall at a height of 3.40m above the north-eastern corner of the chancel. Despite the west end having fewer alterations, no putlog holes were visible. The southern part of this wall, however, has been heavily re-pointed.

There were clearly more putlog holes than those identifiable by their brick dressings; the remainder perhaps had rubble surrounds, hence they are not easily identifiable.

Brick coursing

The most obvious coursing is that in the north wall of the nave (Fig. 6). This occurs at a height of 2.25m above the ground level of the north-eastern corner of the nave, between the twelfth and thirteenth lift. The coursing is almost entirely of complete stretchers of 'great bricks', though there are some broken examples. Above this, at a height of generally 3.1m above the same corner is a less regular course of tiles.

FIGURE 9: Putlog holes (a) with vertical cheeks (b) with horizontal cheeks

In the north wall of the chancel is a course of tiles at a height of 1.46m above the ground level of the north-eastern corner of the chancel, between the eighth and ninth lift. This is discontinued to the west, but is carried around the east end of the church (Fig. 7). It is, however, absent on the south wall of the chancel except for a small stretch just east and below the inserted triplet lancet window (Fig. 6). Above this, at a height of 2.76m above the ground level of the south-eastern corner of the chancel, between the eleventh and twelfth lift is a course of tiles immediately east of the triple lancet. There are further courses of tile visible above the priest's door. It is unlikely that these courses of tile represent constructional breaks. There are noticeable courses in both nave and chancel two lifts above the sills of primary windows, and above putlog holes. It is hardly likely that windows would be left unfinished two courses high at the end of a season; the tiles must be levelling courses. The course of 'great bricks' in the north wall of the nave, however, does look like a seasonal break in which the arch of the north doorway would be left standing proud when construction was adjourned.

Architectural details

Quoins

The quoins are largely composed of 'great bricks' (Figs 10–11). The majority have been broken into half or even smaller portions, as they were at Bradwell-Juxta-Coggeshall (Rodwell 1998, 78). At Chipping Ongar, the proportion of broken to entire examples is variable according to the quoin. Since the north-eastern quoin is obscured by the corridor to the Victorian

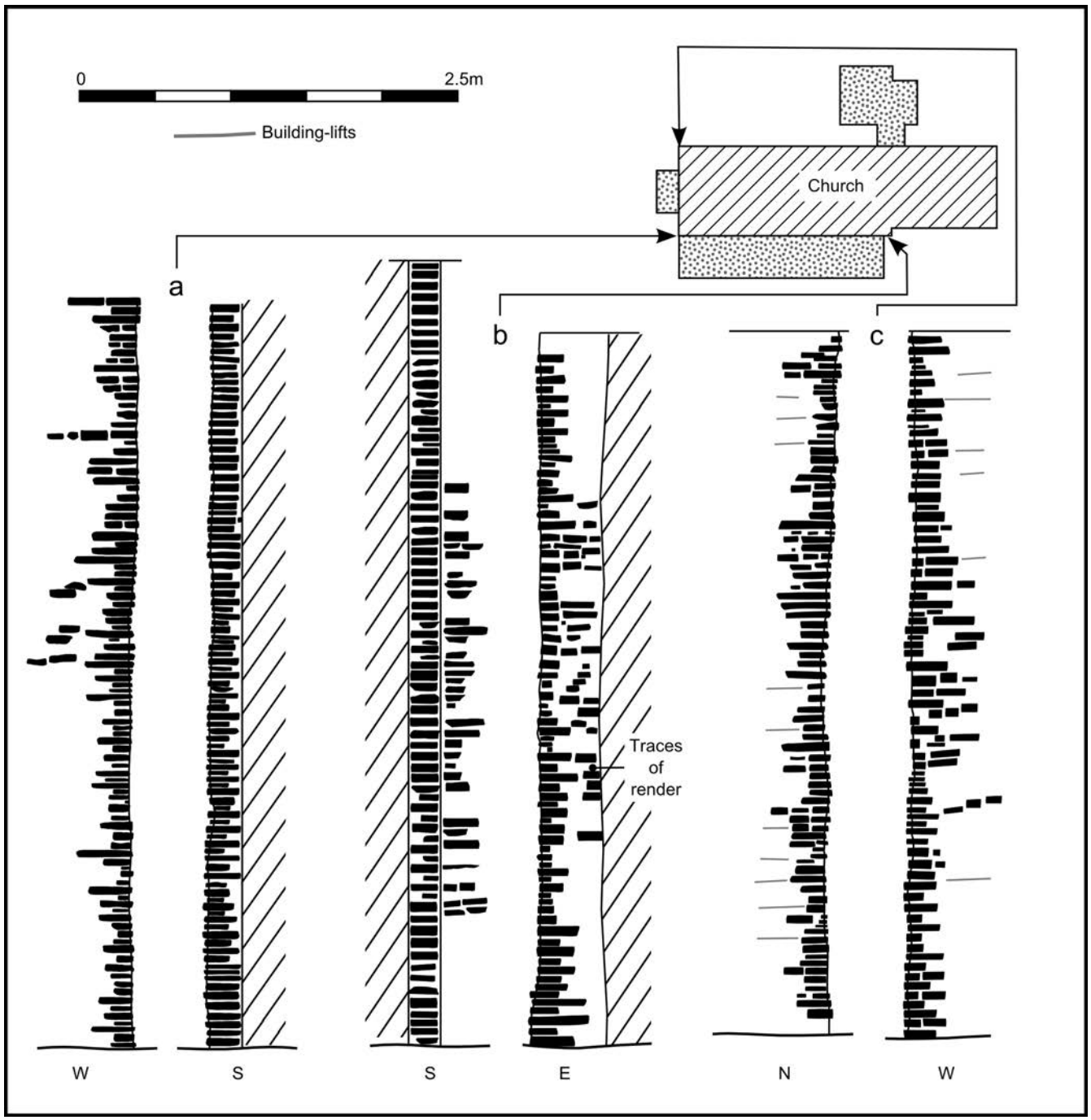

FIGURE 10: Nave quoins (a) south-west (b) south-east (c) north-west

vestry, and the south-western and south-eastern quoins are obscured by the Victorian south aisle (Fig. 10a–b), only three could be assessed (Table 1).

Though only one of the nave quoins could be assessed, the discrepancy between the number of nave and chancel quoins is notable. Moreover, while there is some side-alternation in the chancel, this appears incidental (Fig. 11a–b). In the middle part of the north-west nave quoin, ten courses are truly side-alternate (Fig. 10c). Two reasons suggest themselves for this pattern. Firstly, if the church was begun from east to west, the builders might not have initially mastered the art of bonding in the bricks, but by the time work had started on the upper part of the nave, they had. Secondly, there may have been concern over whether there were enough bricks to complete the job. Initially, the builders conserved supplies by using half-bricks, but as it became clear there were adequate materials, they became more liberal in the use of whole bricks. Another notable feature of the north-west quoin is that entire bricks all occur above the course of 'great bricks' in the north wall of the nave (Fig. 6). Since the latter appears to be a seasonal break, it would appear a new approach to construction was adopted for a new season.

While many of the broken bricks are approximately half-bricks, some are divided into even smaller fragments. A few courses are of smaller tiles, like those used in the coursing of the walls and the blocked north doorway, rather than brick. On the eastern face of the south-eastern nave quoin are traces of a grey render (Fig. 10b).

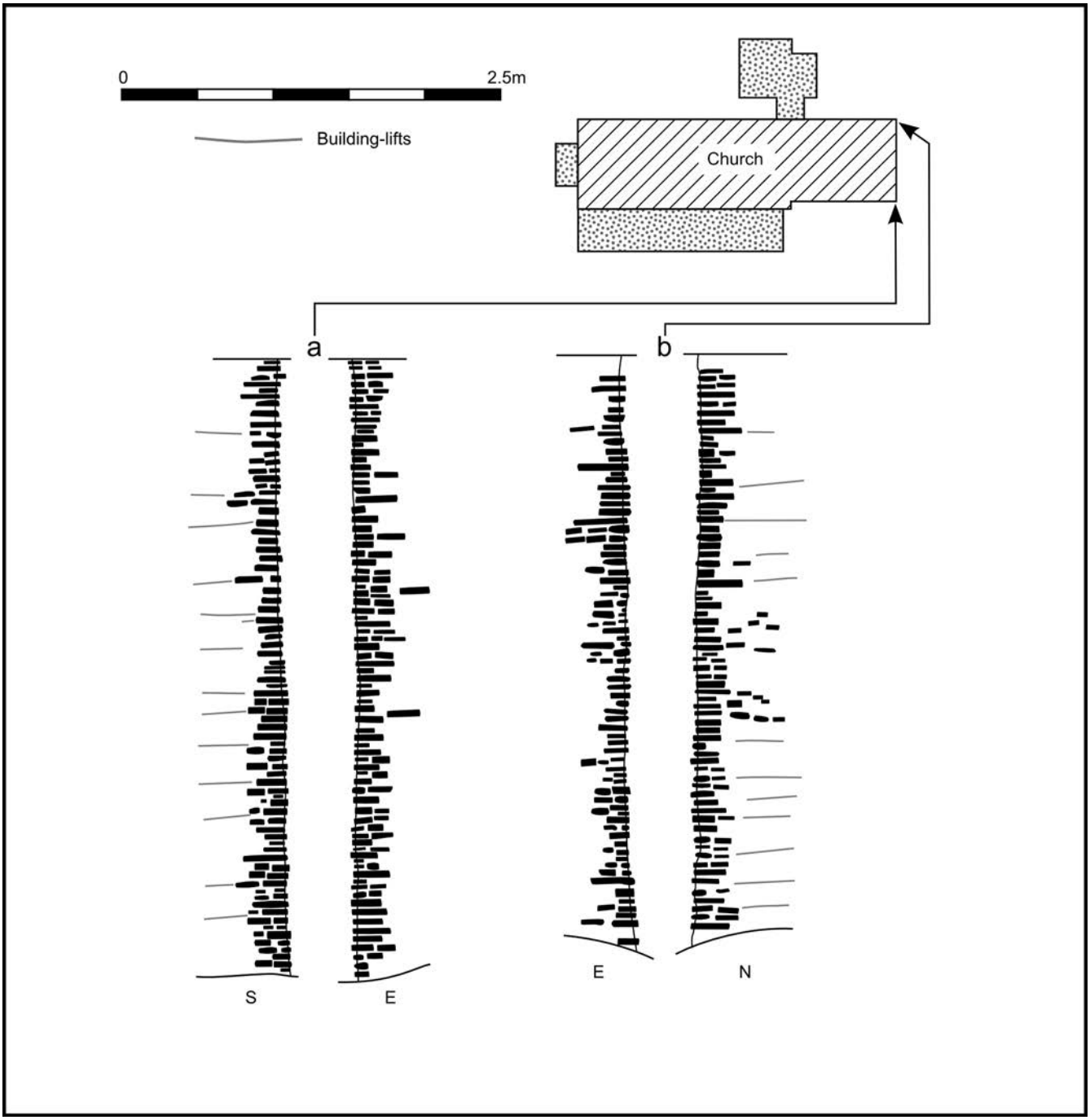

FIGURE 11: Chancel quoins (a) south-east (b) north-east

Doorways

Two primary doorways survive. On the south wall of the chancel towards its western end is the priest's door (Fig. 12). This is 0.76m wide and 2.0m high to the head of the soffit. The dressings are of Caen stone, now fairly badly weathered. Some traces of diagonal tooling survive on the jambs, but the voussoirs have been pick-tooled. The imposts are flush with the face of the chancel wall, but have a triple quirk above a plain chamfer towards the jambs.

The doorway has been blocked at a depth of 0.31m and is only visible as a slight outline through the internal whitewash. There is, however, a drawbar slot just within the rebate as well as an iron hinge-pin. The drawbar slot is outlined in Tudor brick; it is thus questionable whether this is an original feature. The rear-arch, 2.40m high to the head of the soffit is evidenced by brickwork.

The north doorway to the nave has a blocking flush with the wall externally (Fig. 13). The jambs are presently 1.40m high, but there has clearly been a considerable build-up of grave-earth at this point. This is evidenced internally. Here the blocked doorway is represented by a recess 0.34m deep, now plastered over. The internal jambs are 1.93m high to the springer of the arch. The recess is 1.06m wide and the external jambs 1.08m wide. The external arch has been destroyed apart from the springers. The remains of the arch are constructed of broken 'great bricks', but the jambs are largely of fragmentary tile. There are offsets of 40mm between the jambs and the arch.

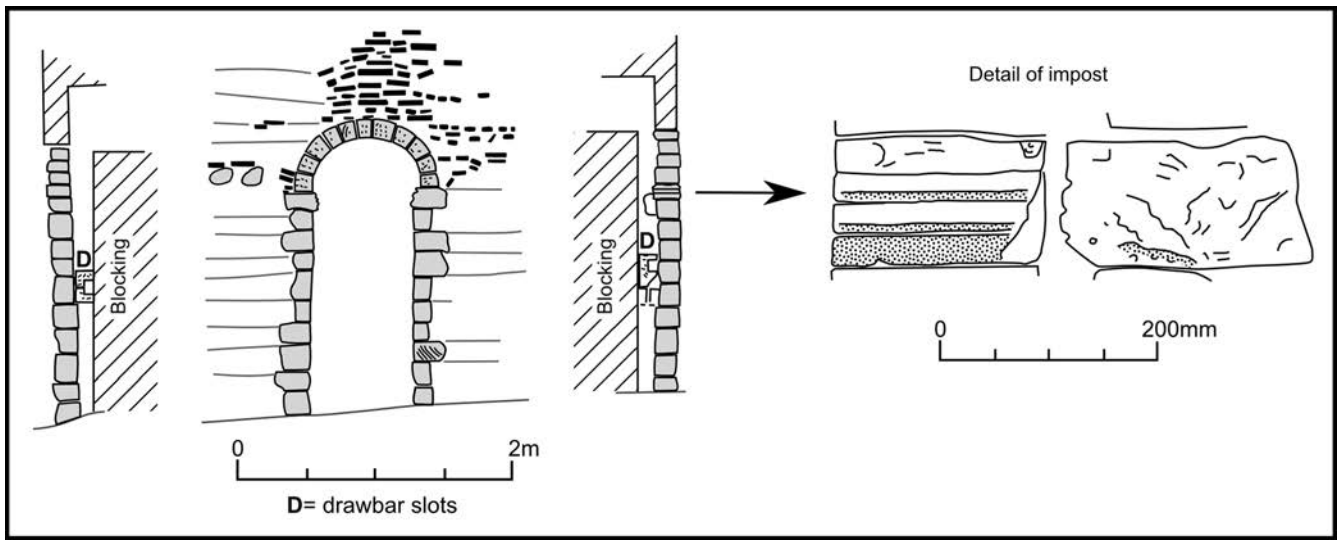

FIGURE 12: Priest's doorway

The almost uniform width of the internal and external jambs suggests the doorway was not rebated. The offsets between the jambs and arch are most likely to be a setting for a tympanum. A Romanesque south doorway was destroyed in the 1884 restoration. The present west doorway is a modern insertion.

Windows

Two complete windows, the western one blocked, survive in the north wall of the nave, together with one window each in the north and south walls of the chancel respectively (Fig. 14a–d). There is also a larger window in the gable of the west end (Fig. 14e). In addition, there is a fragment of a window in the eastern part of the north wall of the nave and fragments of four windows at the east end (Figs 6–8). All have Caen stone dressings. All are, or were, of a long narrow type with slight chamfers, with the exception of the west gable window (Fig. 14e). At the east end, parts of the external jambs survive of four windows in two tiers. The northern jambs and arch of the southern windows and the southern jambs of the northern windows respectively have been destroyed when the Decorated window was inserted.

The westernmost nave window (Fig. 14a) is 3.74m from the north-west corner and 3.36m from the doorway, which is only 1.86m west of the next window east (Fig. 14b). The latter is 3.54m west of the vestiges of the easternmost surviving window (Fig. 5). It is suggested there was a further window east of this one, but that it was entirely destroyed when the window of 1884 was inserted (Fig. 8). Both the surviving nave windows have brick relieving arches (Fig. 14a–b). Only the splay of the central window, 0.85m wide, has survived.

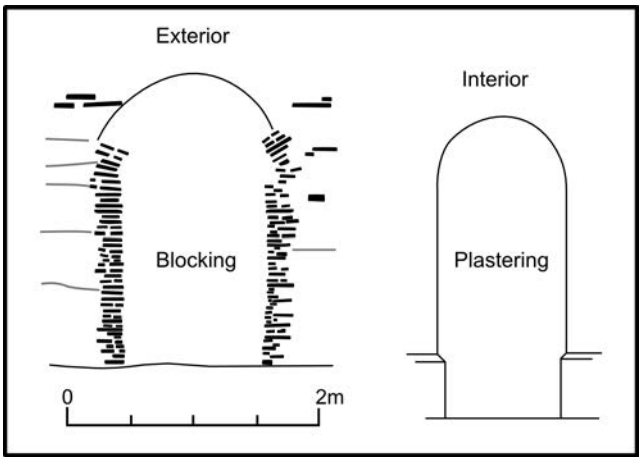

FIGURE 13: Blocked north nave doorway

The chancel windows (Fig. 14c–d) are marginally broader than the nave ones, being 0.24m broad as opposed to 0.20m. They also lack external relieving arches and have broader internal splays of 1.0m. The chamfer of the southern window has been rendered in recent times. Too little of the windows at the east end have survived to be certain of their arrangement other than that they were in two tiers. The RCHM suggested there were originally two rows of three windows (RCHM Essex II, 1921, 52). The upper southern window retains traces of a possible northern jamb (Fig. 7). While only one Romanesque window survives in the north and south wall of the chancel (Fig. 14c–d), it is likely that the present Tudor window in the western part of the north wall of the chancel (Fig. 6) replaces an original window.

	Chancel, S.E.	**Chancel, N.E.**	**Nave, N.W.**
No. of courses	86	77	110
Entire, N–S facing	3	2	9
Entire, W–E facing	1	3	10
Broken	82	72	91

TABLE 1: Proportion of entire to broken bricks in quoins

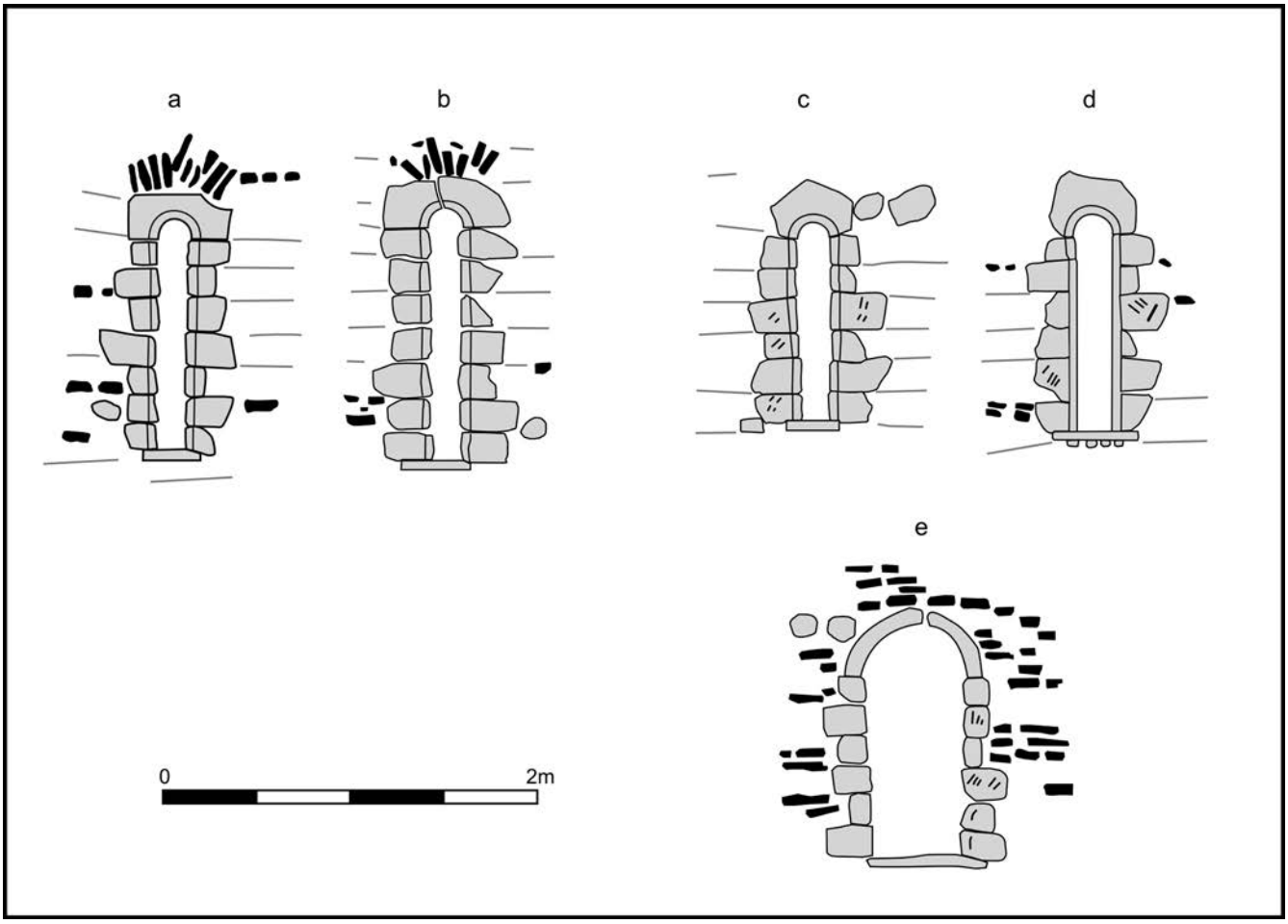

FIGURE 14: Surviving Romanesque windows (a) western north nave (b) central north nave (c) south chancel (d) north chancel (e) west end gable

The large western window (Fig. 14e) is set high up in the gable, in a position analogous to that at Bradwell-Juxta-Coggeshall (Rodwell 1998, 68). Rodwell (1998, 80–1) has suggested the Bradwell window is too high to light the nave and proposed a former western gallery there. It is also suggested this was the case at Chipping Ongar. The original gallery might have been shorter than the present Neo-Classical one, the former probably respecting the position of the blocked north doorway. A difference between Bradwell and Ongar is that in the latter case, the gable window was originally one of three. Splays of the northern and southern windows are visible internally (RCHM Essex II, 1921, 52). These are, however, not presently accessible since the present gallery is structurally unsafe. Some fragments of the jambs of the south window are, however, visible externally (Fig. 7).

Other Romanesque features

In 1893, an 'anchorite's cell' was uncovered in the north wall of the chancel (Essex County Council, Chipping Ongar, undated, 9). The external arch of this is a modern restoration (Figs 5–6), but contemporary engravings show a weathered Romanesque arch here. The internal aperture is Decorated in style. On the north wall of the nave, the arch-brace supporting the tie-beam adjacent to the gallery is supported by a clearly re-used volute capital (Fig. 5). The capital is now so weathered that it is not recognisable for what it is except from the closest of views; even on close-up photographs it appears as an amorphous lump.

LATER MEDIEVAL AND POST-MEDIEVAL ALTERATIONS

Until the 'restoration' of 1884, structural alterations were relatively minor. Probably in the middle of the thirteenth century, a triplet lancet window was inserted into the south wall of the chancel (Fig. 6). The sill and mullions of this window are of a Barnack-type oolitic limestone, but the outer jambs are of Caen stone. The latter may have been recycled from a Romanesque feature. The piscina below the Romanesque south chancel window is probably also of this date.

A subsequent programme of refurbishment was more extensive. This involved the insertion of a new east window (Fig. 7), the rebuilding of the chancel arch, the lowering of the nave gable, the re-roofing of the nave and the construction of the belfry.

The east window (Fig. 7) has had all its external jambs and tracery renewed in 1884, but the internal splay is original. Given that other features of the Victorian alterations are not authentic replicas of medieval features, doubt must be cast on whether the Victorian tracery of the east window resembles the lost medieval tracery. The chancel arch (Fig. 5) has semi-octagonal responds and capitals. It is of a broadly fourteenth-century type. The roof is of crown-post type, with chamfered

tie-beams and posts. The spandrels of the arch-braces are carved with quatrefoils within roundels, a fourteenth- to fifteenth-century motif. The roof is integral with the frame supporting the belfry (Fig. 5). The belfry-frame has plain arch-braces supporting the steeple and spire. The former is weather-boarded, the latter roofed with wood shingles (Fig. 4). Though the structure of the steeple may be an original feature, the external timberwork has probably been renewed. The font-tub rests on a Victorian pedestal (Fig. 5). The tub is octagonal with twin blank lancet carvings in the cardinal faces and miniature flying buttresses at the corners. It might be of fourteenth-century date.

Perpendicular features are conspicuous by their absence. The next period of renewal was in the sixteenth century. From that period is the three-light brick window at the west end of the north wall of the chancel (Fig. 6). The chancel roof is of queen-strut construction. The RCHM suggests the roof is Jacobean, but it could equally be contemporary with the sixteenth-century window in the north wall (RCHM Essex II, 1921, 52).

The work of 1884 consisted of the destruction of the south wall of the nave, the building of the south aisle and vestry, the re-flooring of the nave in yellow brick and the refenestration of the north wall of the nave, as well as more minor alterations (Fig. 5). The external south aisle is of flint rubble with Roman cement dressings. The same material is used for the arcades, while the rebuilt south nave wall in which these are situated is of brick. The wall was apparently completely rebuilt while the medieval roof was retained. Presumably the roof was somehow propped up while rebuilding took place.

DISCUSSION OF THE ROMANESQUE CHURCH

Dating

The overwhelming majority of churches have been dated on architectural style alone. Where there is a good documentary history, a particular patron might be suggested. Very few buildings have been the subject of absolute dating, and we are particularly fortunate in that St Martin, Chipping Ongar has been subject to such methods in the form of luminescence dating. The latter is not without its problems, since results often produce a considerable margin of error (Renfrew and Bahn 2000, 152). In arriving at a date for the construction of the Romanesque church at Chipping Ongar, the architectural, historical and scientific evidence must be considered together.

The Architectural Evidence

The details of the primary Romanesque phase of St Martin, Chipping Ongar are characterised by long round-headed windows with slight chamfers dressed with Caen stone, a priest's door similarly dressed which is rebated and the blocked north doorway, which is not rebated and has brick dressings (Figs 12–14). Rebates are generally regarded as a post-Conquest innovation (Taylor 1978, 801). The apparent lack of a rebate in the north doorway at Chipping Ongar might point to a date sooner than later after the Conquest.

The long single-splayed windows are typically Romanesque (Fig. 14a–d). Early examples of this type of window occur in tenth-century churches in the Loire Valley, for instance at Autreche (Conant 1966, 265). An eleventh-century English example occurs at St Stephen's church, St Albans. Here the window, originally turned in re-used Roman brick, is cut by a Romanesque arch (Taylor and Taylor 1965, 530–1). The style, however, continued well into the twelfth century. There are windows of this type at St Mary, High Ongar, of *c*.1120–40, though the dressings were all renewed in the Victorian period (Fig. 15).

A notable feature of the windows at Chipping and High Ongar is their slight chamfers, generally no more than 50mm broad. Rodwell has suggested that they may be an early to mid-twelfth century innovation, hence his dating for Bradwell-Juxta-Coggeshall (Rodwell 1998, 98). Small chamfers, however, occur on the blank arcading at Sherborne which has been shown to be part of the late Saxon cathedral of 1045 × 75 (Gibb 1975, 92–5). At Aston Tirrold in Oxfordshire, a re-set chamfered window is probably contemporary with the late eleventh-century Saxo-Norman doorway (Secker 2006, Figs 6, 7b). While chamfers certainly become more prevalent in the twelfth century, they were not unknown in the eleventh and should not be a reason to push the date of buildings forward.

Though the bricks at Chipping Ongar are not Roman, the way in which they are deployed is paralleled in numerous eleventh- and early twelfth-century churches in Essex which use genuine Roman *spolia*. From the beginning of the twelfth century, however, there is an increasing use of freestone, usually Barnack-like oolitic limestone, for quoins and dressings. A local example of this, dateable to *c*.1100 is at St Mary Magdalene, Magdalen Laver (RCHM Essex II, 1921, 168–70).

A final Romanesque detail is the *ex situ* volute capital (Fig. 5). This is presumably from the nook-shaft of a primary doorway. The volute capital is a typically early Norman detail, exemplified at St Etienne, Caen (Fernie 1983, 164).

The primary work at St Martin, Chipping Ongar is unequivocally early Romanesque in style. In terms of dating, what is absent is more significant than what is present. With the exception of the volute capital and the quirks and

FIGURE 15: St Mary, High Ongar: Romanesque window in north wall of nave

roll-mouldings on the priest's doorway, ornamentation is non-existent. In contrast, the south doorway at High Ongar is embellished with a chip-carved tympanum and chevron ornament (Fig. 16). The present church at High Ongar was probably built when the alien priory of Rumilly de Comte acquired the advowson sometime before 1125 (VCH Essex IV, 1956, 182). At a local level, the introduction of a more ornate 'high' Romanesque in Essex was probably inspired by the rebuilding of the collegiate church at Waltham Holy Cross (Fig. 1), begun *c*.1090 but becoming more elaborate as work progressed westwards (Huggins 1989, 511–7). At a national level, Eric Fernie (1994, 115) has noted the simplicity in detail of greater churches raised in England in the aftermath of the Norman Conquest in contrast with the more intricate detail of both late Saxon churches and contemporary buildings in Normandy. Stylistically, St Martin, Chipping Ongar belongs to the first group. If it was constructed after *c*.1120, we might expect more ornate details akin to those at High Ongar.

The historical evidence

If Edward the Confessor could commission early Romanesque Westminster before the Conquest (Fernie 1983, 154–6) it is not inconceivable that other members of the contemporary nobility did the same. Aethelgyth, Lady of Chipping Ongar, would certainly have had the resources to commission a high-status church and would almost certainly have been aware of the building works at Westminster. There is, however, no evidence she commissioned the present church at Chipping Ongar. Apart from the assumption that the early Romanesque work here must be post-Conquest unless there is unequivocal evidence to the contrary, the dedication to St Martin suggests a connection with St Martin-le-Grand, London, and a foundation no earlier than Ingelric's acquisition of Chipping Ongar in 1068 (VCH London I, 1909, 555; Taylor 2002, 223–31).

Ingelric is thus a prime candidate as the commissioner of the church, but two objections might be raised to that proposition. Firstly, that the settlement topography suggests the church was part of the planned settlement adjacent to Ongar Castle (Fig. 3b). Since the castle is unlikely to pre-date the tenure of Eustace II of Boulogne (1075–87), this would provide a *terminus post quem* for the church. Secondly, there is the *ex situ* volute capital which as noted above is a Norman feature. It is arguably thus more likely to be associated with the Norman Eustace. We might expect the probably German Ingelric to favour the cushion capital.

Both the above objections, however, do not stand up to scrutiny. Domesday shows there was a settlement here before the Conquest (Williams and Martin 2002, 992). Though the actual archaeological evidence for late Saxon occupation is ephemeral (Clarke 1999), the topography, as discussed above, raises the possibility that a rectilinear ditched settlement preceded the Norman Castle and town earthworks. It is, moreover, notable that the church is aligned on the southern boundary of the postulated enclosure (Fig. 3b). Regarding the volute capital, Romanesque sculptural forms by no means denote ethnicity. The Italian-born Lanfranc, while Abbot of Caen, used volute capitals at his abbey church of St Etienne there, but when he rebuilt Canterbury Cathedral, cushion capitals were deployed. Indeed, patrons of churches may have been attracted by the exotic nature of unfamiliar sculptural forms (Fernie 1994, 110).

FIGURE 16: St Mary, High Ongar: south doorway

On historical grounds, either Ingelric, who held Chipping Ongar between 1068 and *c*.1075), Eustace II (1075–87) or possibly even Eustace III (1087–1125) might have commissioned the church. Though the Counts of Boulogne were patrons of St Martin-le-Grand (VCH London I, 1909, 555), Ingelric was most intimately connected with the foundation. A possibility explored below is that he began the church but did not live to see it completed.

The scientific evidence

The date ranges of the luminescence samples taken from the brickwork at four locations are indicated in Table 2. The original results were assessed both type A and B error terms, but are here simplified to give a *terminus post quem* (TPQ) and *terminus ante quem* (TAQ). The date-ranges are at 68% confidence, in other words, there is a 16% chance they might be too early or too late (Bailiff *et al.* 2010).

The samples, which formed a group, were pooled to give a mean date of 1025 ±56, or AD 969–1081 (Bailiff *et al* 2010, 86). The later end of the date-range is consistent with the architectural and historical evidence cited above.

There is, however, one objection to assigning a later eleventh-century date to the Romanesque church. Are the bricks primary or re-used? While many of the bricks in the quoins are broken, this is almost certainly for economy rather than them having been re-used. One of the samples was from the lower part of the south-east quoin of the chancel (Blain 2009, Fig. 160). The brickwork of the latter is almost certainly primary (Fig. 11b).

Location	Median date	TPQ at sigma B	TAQ at sigma B
Nave, N. doorway arch (1)	AD 1060	AD 996	AD 1124
Nave, N. doorway arch (2)	AD 1011	AD 943	AD 1079
Nave, S.E. quoin	AD 1025	AD 964	AD 1086
Chancel, S.E. quoin	AD 1005	AD 947	AD 1063

TABLE 2: Luminescence dates, with location of sample (after Bailiff et al. 2010, 174)

Dating: conclusions

A combination of architectural, historic and scientific evidence indicates the church was built between the Conquest and *c*.1081. The dedication to St Martin may favour Ingelric as the founder, in which case the church could have been begun as early as *c*.1068.

Discussion of the building materials

The brickwork

The material of the bricks has been subject to analysis which suggests they were locally produced rather than imported (Hughes 2009). Their dimensions of 370–380mm × 190–200mm × 20–35mm have already been noted, as well as the presence of a smaller type of brick, *c*.230 × 170mm, but of a similar thickness. They are thus not analogous to those used at Bradwell-Juxta-Coggeshall. There, while there are some large examples measuring *c*.360mm × 190mm × 60mm, the majority are about 330mm × 160mm × 50mm. In addition to this, Bradwell has some specially moulded bricks with chamfers and bull-noses for use on windows and doorways (Rodwell 1998, 102–3). The latter are completely absent at Chipping Ongar. They would not in any case be required because the dressings, apart from the jambs of the north doorway, were of stone. It is also possible that purpose-moulded bricks had not been developed at the time the church at Chipping Ongar was built. The brickwork at Bradwell was luminescence dated to AD 1010 × 1098, but is almost certainly at the late end of the range (Gurling 2009, 259–61).

Though some bricks have been warped through firing, they are remarkably consistent in size, there being a distortion of about 4% if the ideal was the 380mm long brick. Though the 'great bricks' are different in form from late medieval bricks, they were perhaps manufactured by a similar process. In London, the bricks used to refurbish the city wall in the fifteenth century were probably cast in moulds and fired in clamps. Protruding clay from the moulds produced a flange or 'squodge-mark' on many bricks (Smith 2004). 'Squodge-marks' are also apparent on many bricks at Chipping Ongar, while one example has distinctive finger-marks (Fig. 17).

As well as the 'great bricks', significant quantities of smaller tiles are deployed in the fabric of the church. These are more likely to be reduced or vitrified than the bricks. The vast majority are fragmentary, suggesting they have been recycled. They appear medieval, not Roman. Re-used tile has been noted, albeit in much smaller quantities, at Bradwell, where it was employed in the primary Romanesque church (Rodwell 1998, 76). The brickwork at Bradwell was luminescence dated as part of the same research programme as Chipping Ongar. The dates raise important questions on when medieval roof-tile was first developed. Received opinion is that this was in the mid-late twelfth century (Cherry 1991, 194). The evidence from Chipping Ongar and Bradwell is that roof-tiles were possibly being used before the Conquest. That ceramic building material was being manufactured or imported in the late Saxon period is evidenced by the luminescence dating of brickwork at St Andrew, Boreham (Fig. 1). They were dated to AD 828–964 (Bailiff *et al.* 2010).

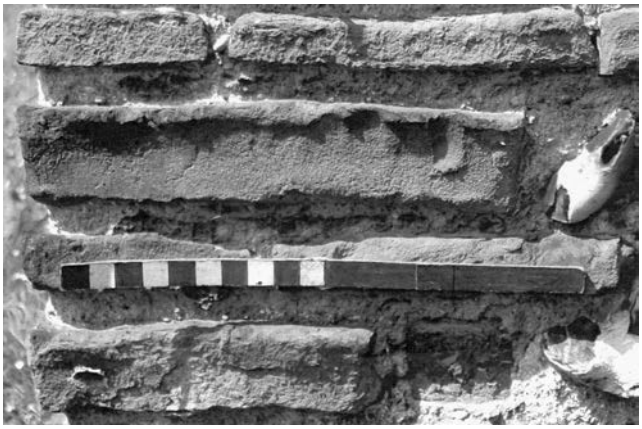

FIGURE 17: St Martin, Chipping Ongar: south-east quoin of nave showing brick with 'squodge marks' and finger mark (scale: 0.2m)

Caen stone

The other significant building material found in the church is Caen stone imported from Normandy. Chipping Ongar is equidistant from the ports of London and Maldon (Fig. 1). Geographically either could have served as an import route. Historically, Maldon is far more likely since both Ingelric and Eustace II of Boulogne held land there in their capacity as patrons of St Martin-le-Grand (Williams and Martin 2002, 991). It is notable that fragments of undressed Caen stone are found in the north wall of the nave and chancel (Figs 6, 8). This indicates the stone for the dressings was cut on site.

The construction of the church

It is fortunate that despite the destruction of the south nave wall, so much Romanesque fabric survives at Chipping Ongar. A complete sequence of lifts is discernible up to eaves level. While the majority of putlog holes survive, some have been lost and not all due to Victorian alterations; there must have been an intervening tier between the present gap of 4.40m in the north wall of the chancel (Fig. 8b).

At Bradwell-Juxta-Coggeshall, Rodwell used the surviving details to calculate the time taken to construct the church. He estimated that it would have taken five years to build: one season for the laying of the foundations, two for the completion of the structure up to eaves level, one year for the building of

the gables and one for the roofing (Rodwell 1998, 96–7). A similar exercise might be attempted for Chipping Ongar.

Acquirement of raw materials and laying-out

At Chipping Ongar, the use of imported freestone might require more forward planning than at Bradwell. The Caen stone would have to be ordered and then imported, probably, as argued above, through Maldon. From there it could be transported by land over what is now the A414 to Chipping Ongar (Fig. 1). The bricks would have to be commissioned and then fired while flint pebbles were gathered from the surrounding area, a laborious task perhaps performed by the lower-ranking peasantry. Scaffolding poles would require coppiced timber. There was probably an abundant supply of this in Ongar Park, as there is today. Sand for mortar would be immediately obtainable from the floodplain of the Roding, but chalk for lime might need to be acquired from further afield.

Procurement of raw materials might take a season, but this also might be concurrent with the laying out of the plan (Figs 5, 18). The composition of the foundations at Chipping Ongar is uncertain, but possibilities are they were of hoggin, a sand, gravel and clay mixture which comprises the foundations of the eleventh-century church at Rivenhall (Rodwell and Rodwell 1986, 91) or flint nodules, as at Bradwell (Rodwell 1998, 66).

Raising of the structure

The standing structure was probably built from east to west. After materials had been stockpiled and the foundations laid out in the first season, the second could be spent on the construction of the chancel, which appears to be of one build (Figs 6–7).

This would have taken twenty working days, as evidenced by the number of lifts in the south wall. The actual number of days involved in construction, however, might have been at least twice as long. That the lifts are consistently level and not humped towards the quoins suggests that, as was probably the case at Bradwell, they were of shuttered construction (Rodwell 1998, 69). Alternate days might be spent moving the shuttering as well as allowing the mortar of the previous day's lift to set.

A fundamental difference between Bradwell and Chipping Ongar is that the former is a single-cell church, thus the gables were raised at the same time, probably in the fourth season (Rodwell 1998, 96–7). At Chipping Ongar, there are three gables, one for the chancel and two for the nave. While the chancel appears to have been completed in a season up to eaves level, the gable might have taken another. If the chancel was to be roofed, the western nave gable would need to be completed before this took place.

The fifth season may have comprised of the construction of the nave up to the course of the 'great bricks' (Fig. 6). This was clearly a more substantial project than the chancel. While building lifts are apparent, there are no joints to suggest the walls were built by discrete gangs. Single large gangs, one for each wall-face, seem likely. Neither Ingelric nor the Counts of Boulogne would have difficulty in raising a large labour force. There are twelve lifts to the height of the brick coursing and fifteen lifts above this to the height of the eaves. The slightly lesser number of lifts up to the suggested seasonal break might be explained by the extra time taken in constructing the doorways. Since the evidence suggests the Caen stone was being carved on site, the working of this may have delayed work on the fabric. The windows of the upper level of the nave might have been constructed more quickly and easily.

The seventh season could be occupied by the building of the nave gable (Figs 7–8a), while the church might have been roofed in the eighth. The original roof has of course been replaced by the present fourteenth-century crown-post structure. The original timbers might have been supplied from Ongar Park.

If the eight-year period for the construction for the church outlined above is accepted, one point is apparent; even if Ingelric commenced work on the church immediately after he acquired Chipping Ongar in 1068, it is unlikely he lived to see it completed by the time of his death, 1075 at latest. In this context, the difference in construction between the lower and upper parts of the west nave quoins may be significant (Fig. 11a, d). As noted above, whole bricks laid side-alternately are more prevalent in the upper level. In addition, it may be significant that the nave windows have relieving arches while the chancel windows lack them (Fig. 14). Could the slight changes in technique coincide with the death of one patron and recommencement of work under another? The five-year period for the completion of the church up to the brick coursing in the nave (Fig. 6) might coincide with the tenure of Ingelric, work being completed by Eustace II of Boulogne after 1075.

The question of surface treatment

Once the church had been completed and roofed, the question arises to whether the walls were rendered or left exposed. The idea that eleventh-century churches were ubiquitously rendered has been challenged by John Potter, who has shown that buildings of this date often had decorative banding that was intended to be exposed. Potter suggests that this 'patterning' of churches was an Anglo-Saxon tradition, while rendering of the fabric was a Norman introduction (Potter 2009). The situation is, however, more complex. The eleventh-century church at Mark's Tey was certainly constructed of patterned bands of flint and cobble (Potter 2009, Fig. 2). In contrast, it has been demonstrated that Bradwell was rendered (Rodwell 1998, 82). Since Bradwell has now been shown to be of late eleventh-century date (Bailiff *et al.* 2010), 'patterned' and rendered churches appear to be contemporary, the choice of treatment being a matter for the individual patron.

Some old rendering survives on the east face of the south-eastern nave quoin at Chipping Ongar (Fig. 10b). It is uncertain whether this is primary. The rough tile coursing, however, does not look like it was intended to be exposed, and there are no indicators of intentional patterning. On balance, it is likely that the church was rendered with the exception of the Caen stone dressings.

Reconstructing the design of the church

Despite the destruction of the south wall of the nave, the design of the Romanesque church is recoverable due to the minor nature of other alterations. It can be understood more easily than, for instance, if it had been provided with fifteenth-century aisles.

Doorways and fenestration

There were originally opposed doorways in the north and south walls of the nave (Fig. 18). At first sight, the spacing of windows in the north wall of the nave appears somewhat irregular, the north doorway being 3.36m from the window to the east, while the latter is 3.54m from where the western jamb of the fragmentary eastern window would have been (Fig. 6). There is then the distance of 5.96m to the north-eastern nave quoin. It is somewhat implausible that there was never a window in this space; a former Romanesque window is postulated in the position of the present Victorian one (Fig. 8).

The windows might make more sense in relation to internal arrangements. It has already been suggested that the surviving large window in the gable of the west end, originally one of three, lit a gallery. The eastern end of this presumably stopped just short of the north doorway. If this was the case, the western nave windows would have been centrally placed in the space above any gallery (Fig. 18).

There was only ever one Romanesque window in the south wall of the chancel. While one Romanesque window has survived in the east of the north wall, it is perhaps most likely that the Tudor window in the western part of the wall (Fig. 6) has obliterated a primary window (Fig. 8). The east end probably had two tiers of three windows and that is how they have been reconstructed (Figs 8a, 18).

Use of space within the church

Four zones have been identified within the church: the present chancel, the nave, a western gallery and a space below the latter (Fig. 18).

The chancel

The chancel might initially appear unusual for a later eleventh-century building for two reasons: firstly, it is oblong. Chancels of this period are more typically square-ended, like that at Rivenhall (Rodwell and Rodwell 1986, Fig. 92). Secondly, there is a priest's door near the western end of the south wall. In some ways, the plan resembles a thirteenth-century chancel rather than an eleventh-century one.

Regarding the length of the chancel, oblong chancels in churches of this date are not as rare as is sometimes thought. Of the seventeen churches selected by the Rodwells as being comparable to Rivenhall in date and design, four possessed oblong chancels (Rodwell and Rodwell 1986, Fig. 95, b, j, m, n).

The so-called 'anchorite's cell' in the north wall of the chancel deserves discussion. It goes without saying that the present appearance of this feature (Fig. 6) is due to the Victorians believing that is what it was. It is also implicit that there is no evidence this was ever an anchorite's cell. The recess might, however, have served to illuminate an altar.

The above theory might be objected to on the grounds that it is situated too far east for a late eleventh-century altar. The latter were typically situated just under or immediately east of the chancel arch (Parsons 1986). There is, however, at least one exception to this rule. At Pontefract, West Yorkshire, excavations in the 'castle chapel' of St Clement (in fact a late Saxon church which was enclosed by the castle: Blair 2005, 365n) have shown that the altar was located towards the east of the chancel (Roberts 2002, 75–6).

The nave

The greater part of the nave, which would have been accessed by the blocked north and vanished south doorways, presumably accommodated the laity. The western part of the nave, it is suggested, housed a gallery (Fig. 18). If this was the case, the latter would presumably be divided from the rest of the nave by a timber partition. The suggested western gallery might be reserved for the lord and other dignitaries. The function of the space beneath any gallery is more problematic. We might speculate on a baptistery. Alternatively, this may have been a vestibule housing a timber staircase or staircases to any gallery.

CONCLUSION

The suggestion that the church at High Ongar originated as a minster with a substantial *parochia* is based on topographical and later documentary evidence. A similar case for a minster at nearby White Roding has been made partly on the basis of later parish boundaries (Bassett 1997).

With the fabric of St Martin's church, detailed survey has indicated both the methods of construction and how long it took to build. The architectural evidence, luminescence dates and dedication suggest the church was founded by Ingelric in *c*.1068, though he probably died before it was completed. It must however be recognised that luminescence dating is an inexact science. Corroboration for the luminescence dates at Ongar might be provided by radiocarbon dates for the mortar.

The above are the domain of the scientist and costly. There is another question: how many early Romanesque churches in Essex with dressings of apparent Roman *spolia* actually employed early medieval bricks? At least a dozen are known (Rodwell 1998, 100–2; Gurling 2009, 290). There are likely to be more. Unlike scientific dating, this question can be answered with a bit of church-crawling and a well-trained eye. Recently, this writer made a casual visit to St Giles, Great Hallingbury, usually dated to the late eleventh century (RCHM Essex II, 1921, 93). The bricks of the south-east quoin resembled the bricks at Chipping Ongar more than any Roman brick. A cost-effective and worthwhile future project might be a distribution map of early Romanesque churches in Essex employing genuine *spolia* and those where the brick dressings were medieval and purpose-made.

This paper is purely concerned with the Romanesque face of the church. That is certainly not to say the later features are unimportant. While the roof timbers have been partially surveyed (Hewett 1980, 3), a comprehensive survey of the roof combined with dendrochronological sampling would be most informative.

Acknowledgements

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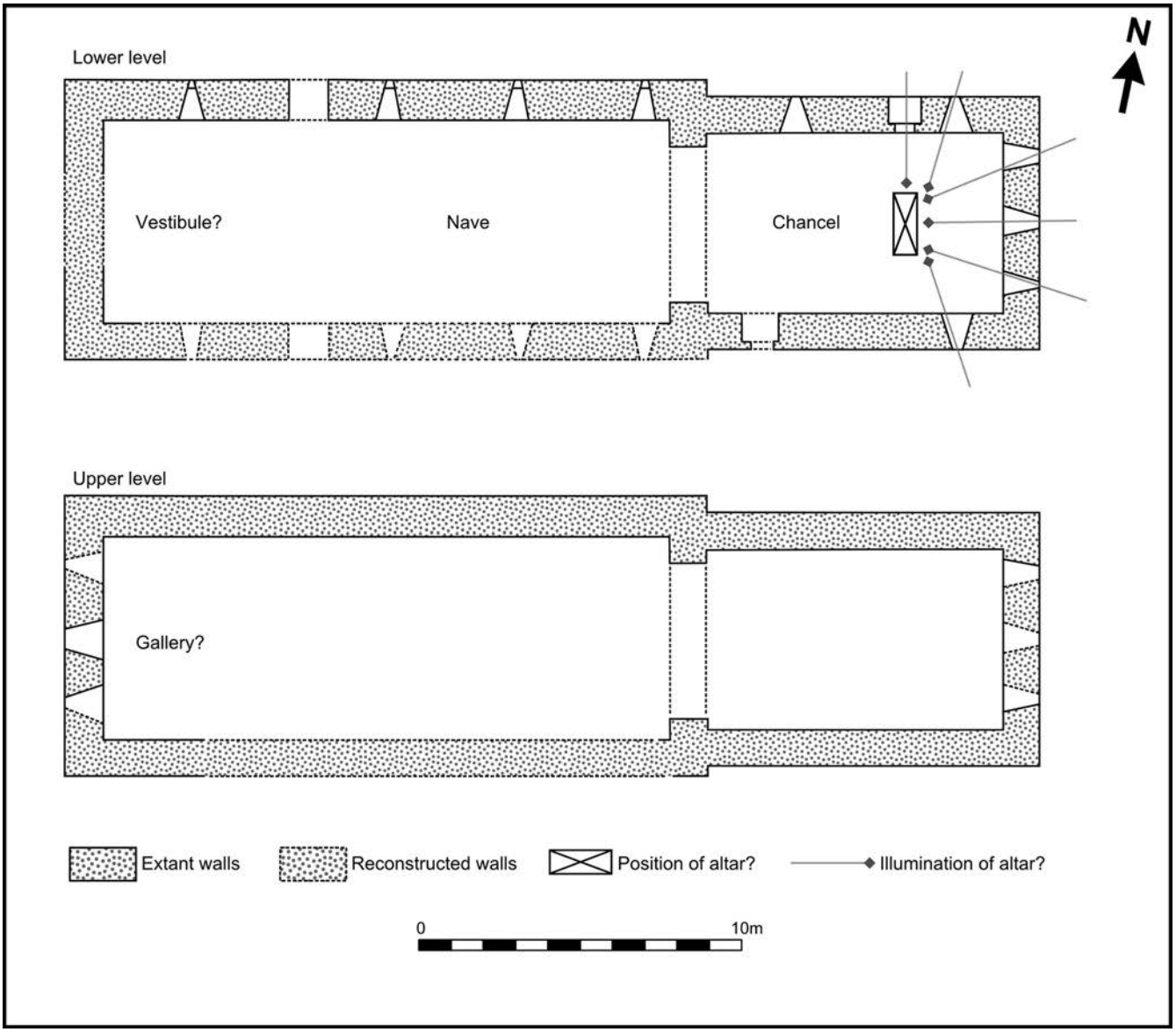

FIGURE 18: reconstructed plans of Romanesque church and suggested use of space

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A Medieval croft at Lodge Farm, St Osyth

M. Germany
with contributions by J. Compton, A. Fawcett, V. Fryer, H. Major, P. Ryan, S. Tyler and H. Walker

Archaeological excavation at Lodge Farm, St Osyth, revealed features of all periods, including part of a late 12th- to late 14th-century croft containing a pond, a large sub-rectangular pit, and three or more timber buildings from more than one phase. The croft is conjectured to have been engaged in small-scale industry, possibly tanning. Other features comprised prehistoric monuments, a Middle Iron Age settlement, Late Iron Age and Roman enclosures and trackways and Early Saxon pits. Descriptions of the prehistoric and Middle Iron Age features and finds can be found in an earlier report concerning the Lodge Farm excavation (Germany 2007).

INTRODUCTION

A large multi-period site was archaeologically excavated in advance of the construction of an agricultural reservoir at Lodge Farm, St Osyth, from May to November 2000 and from August 2001 to February 2003. The archaeological work was funded by D. K. Symes Associates, Essex County Council, and English Heritage via the Aggregates Levy Sustainability Fund. It was carried out by the Essex County Council Field Archaeology Unit and was monitored by the Essex County Council Historic Environment Management team and English Heritage. The site archive is stored at Colchester Museum.

BACKGROUND INFORMATION

The site is located in an arable setting on a spur of 'high' ground overlooking St Osyth Creek, 1km south-east of St Osyth and 4.5km west of Clacton (Fig. 1) (TM 1355 1545). The underlying geology is glaciofluvial drift over Eocene clay comprising sands and gravels, interspersed with occasional bands and patches of silt sand and clay. The overlying topsoil is *c.*0.3m thick, fertile, well-drained and easy to plough. A 40m wide palaeochannel of probable glacial origin cuts the middle of the site. The local soils are non-conducive to the long term survival of bones.

The prehistoric remains at Lodge Farm included Neolithic worked flint, a causewayed enclosure, an Early Bronze Age pond barrow, Middle Bronze Age ring-ditches, and a Middle Iron Age settlement (Germany 2007). The causewayed enclosure was in use during *c.*3600 BC and was defined by three circuits of interrupted ditches. It enclosed more than 120 Early Neolithic pits, many of which lay in small clusters and held large amounts of worked flint and pottery. The pond barrow was associated with cremation burials and had been scorched by a pyre. The Middle Bronze Age ring-ditches lay in two large groups and were associated with cremation burials. The Middle Iron Age settlement consisted of round-houses and post-built structures, focussed on a T-shaped arrangement of trackways (Fig. 2).

St Osyth may have formed part of the large estate with which the East Saxon Kings endowed St Paul's Cathedral, and the settlement is therefore likely to have a Saxon origin (Taylor 2004). 'Cicc', the earliest recorded name of the settlement, possibly derives from the Norse word for 'bent', a reference to the bend in St Osyth creek. The earliest known mention of the town's current name, St Osyth, dates to 1280 (Reaney 1969, 347–8; Coates, 2003–04, 38–9).

St Osyth developed into a prosperous settlement following the foundation of St Osyth priory by the Bishop of London for the Austin Canons in *c.*1125, and the subsequent granting of a market by King Richard I in the late 12th century (Medlycott 1999a; Letters 2003, 135). The priory became an Augustinian abbey in *c.*1200, was suppressed in 1539 and converted into a residence and garden in 1553. As the biggest landowner in the parish, it had a large demesne and many tenants. Major components of the town's economy during the medieval period were probably grazing of sheep on coastal areas, selling of wool, mutton, ewes' milk and cheese, and coastal fishing and trading, facilitated by the market and St Osyth Quay to the west (Medlycott 1999a; Britnell 1986).

THE ARCHAEOLOGICAL FEATURES BY PERIOD

Late Iron Age

Late Iron Age enclosures and trackways succeeded the Middle Iron Age settlement, which by then had been abandoned or shifted (Fig. 2). The eastern arm of the trackway system was altered and narrowed in width (13937, 14074 and 14119), and was supplemented by a north-south spur (13951 and 14115). Middle Iron Age trackway ditch 13937 held many recuts and was probably retained. Two ditches north of the trackway suggested Late Iron Age enclosures (13913 and 13941). Enclosures of Late Iron Age date (ditches 13880, 14033, 14034, 14058, 14059, 15000 and 15001) extended across the western arm of the Middle Iron Age trackway system and possibly implied its discontinuation, although a small break between ditches 13880 and 15000 suggested that it may have carried on in use, albeit in an un-ditched form and on a slightly different alignment. All of the Late Iron Age ditches were dated from their stratigraphy and spatial arrangement because they contained no datable finds. In the north-eastern corner of the site were two Late Iron Age pits (116 and 211), one of which (116) held numerous pieces of baked clay and Late Iron Age pottery. Sherds of Late Iron Age pottery also occurred within a small cluster of Late Iron Age and Roman pits, 100m to the south-west.

Roman

Six Roman ditches (13878, 13953, 14024, 14029 and 14062) defined the realigned western arm of the Middle Iron Age trackway system (Fig. 2). They cut some of the Late Iron Age enclosure ditches and were aligned on the western end of the Late Iron Age trackway, possibly indicating that that both arms of the trackway system were still in use. One or more small Roman enclosures (14026, 14030, 14032 and 15002) sat across the trackway and suggested its eventual demise, although this was questioned by a break between ditches 14026 and 15002. Two Roman pits sat at the far western end of the site, and Roman pits were also present within the aforementioned Late

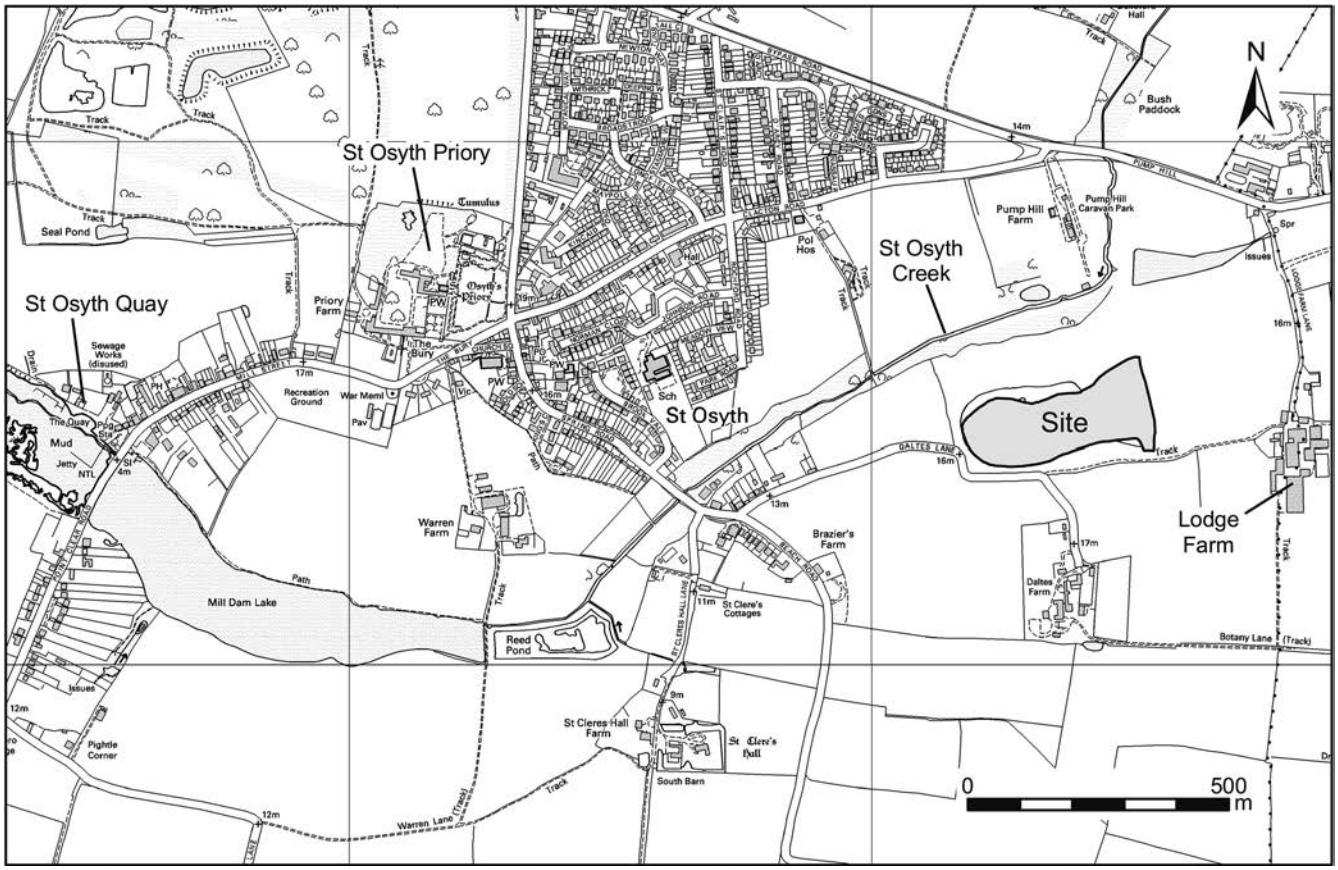

FIGURE 1: Location plan

Iron Age/Roman pit cluster. All of the Roman features were probably in use during the mid 2nd to 3rd centuries.

Early Saxon

Early Saxon pits sat near the site's north-eastern corner (163), its middle (468, 6236 and 7245), and in an inter-cutting group near its southern boundary (3158, 3192, 3195, 3197 and 3201) (Fig. 3). The largest (3158) was 3.5m long, 2.3m wide and 0.5m deep, and the smallest (468) 0.4m long, 0.4m wide and 0.35m deep. Most of them held small amounts of 6th- to 7th-century pottery. Pit 3158 contained a 5th/6th-century knife blade.

Medieval

The excavation identified four phases of medieval settlement (Figs 3 and 4), the second and third of which are conjectured to have been part of the backyard of a late 12th- to late 14th-century croft, the house for which probably lay south of the site boundary. All of the features were situated close to or within the area of the palaeochannel, except for a late 12th- to mid 13th-century pit and ditch at the far western end of the site (Fig. 3, 835 and 14037). Many of the features were only able to be loosely dated because they held no or very few closely datable finds. The middle part of the backyard held a large quarry pit (Fig. 4, 14137), which could have been dug at any time between the Roman period and the mid 13th century.

11th to 12th century

Post-built building 14135 indicated the earliest medieval activity. It lay west of the palaeochannel and was represented by nine evenly-spaced post-holes (6066, 6164, 6710, 6888, 6890, 6985, 7161, 7177 and 7191) and one post-pipe (6892 in 6890) (Figs 4 and 5). The post-holes were between 0.22m and 0.38m deep and the post-pipe 0.25m wide. Two of the post-holes (7161 and 7191) on the north-east side of the structure suggested a rectangular annex.

Post-hole 6710 on the south-east corner of the structure held iron tools and an iron fitting from a horse harness. The iron tools were not closely datable, although the iron fitting was possibly manufactured during the 11th to 12th century. The slightly elongated form of the post-hole possibly implied that the post-hole had been extended and that the tools were interred while the building was still standing.

Late 12th to mid 13th century

The earliest features of the backyard of the croft were a large pond (7244), a large rectangular pit (8195), a group of intercutting pits (14142), and a sequence of small enclosures (5409, 13905, 13906, 14064, 14065, 14066 and 14069).

The pond (7244) had gradual sides and a concave base towards its west side (Figs 4 and 6). It was approximately 15m wide and 1.5m deep and was filled by twenty-six fills, spread across four different sections. The north-west side of the pond extended northwards and connected with pit 8195. Most of the fills in the pond were dark, soft and silty, perhaps due to accumulation of domestic waste and organic matter in standing water. The fills held a wide variety of artefacts dating from the first half of the 13th century, including a copper-alloy bowl and fragments of floor tiles.

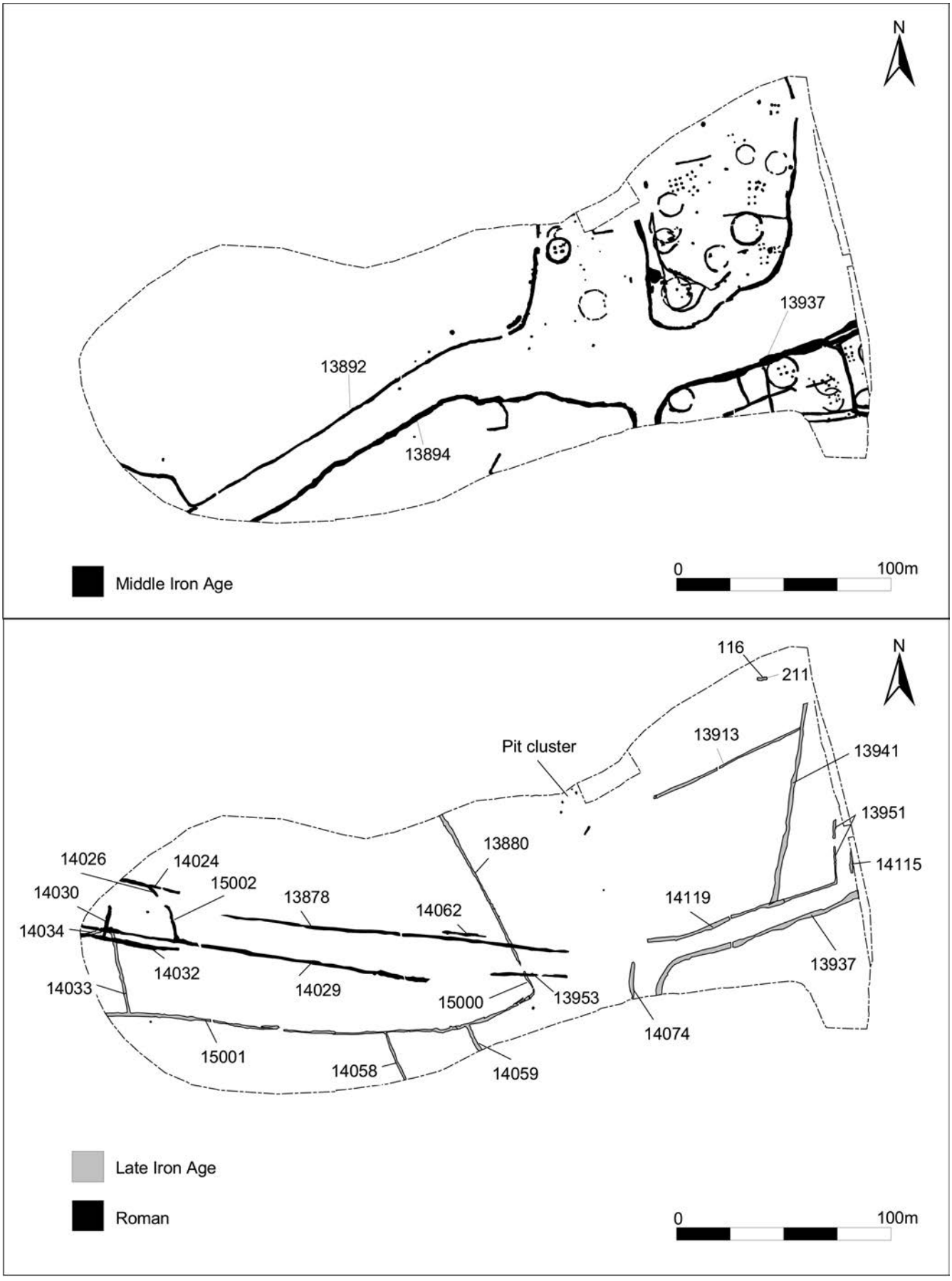

FIGURE 2: Middle Iron Age, Late Iron Age and Roman

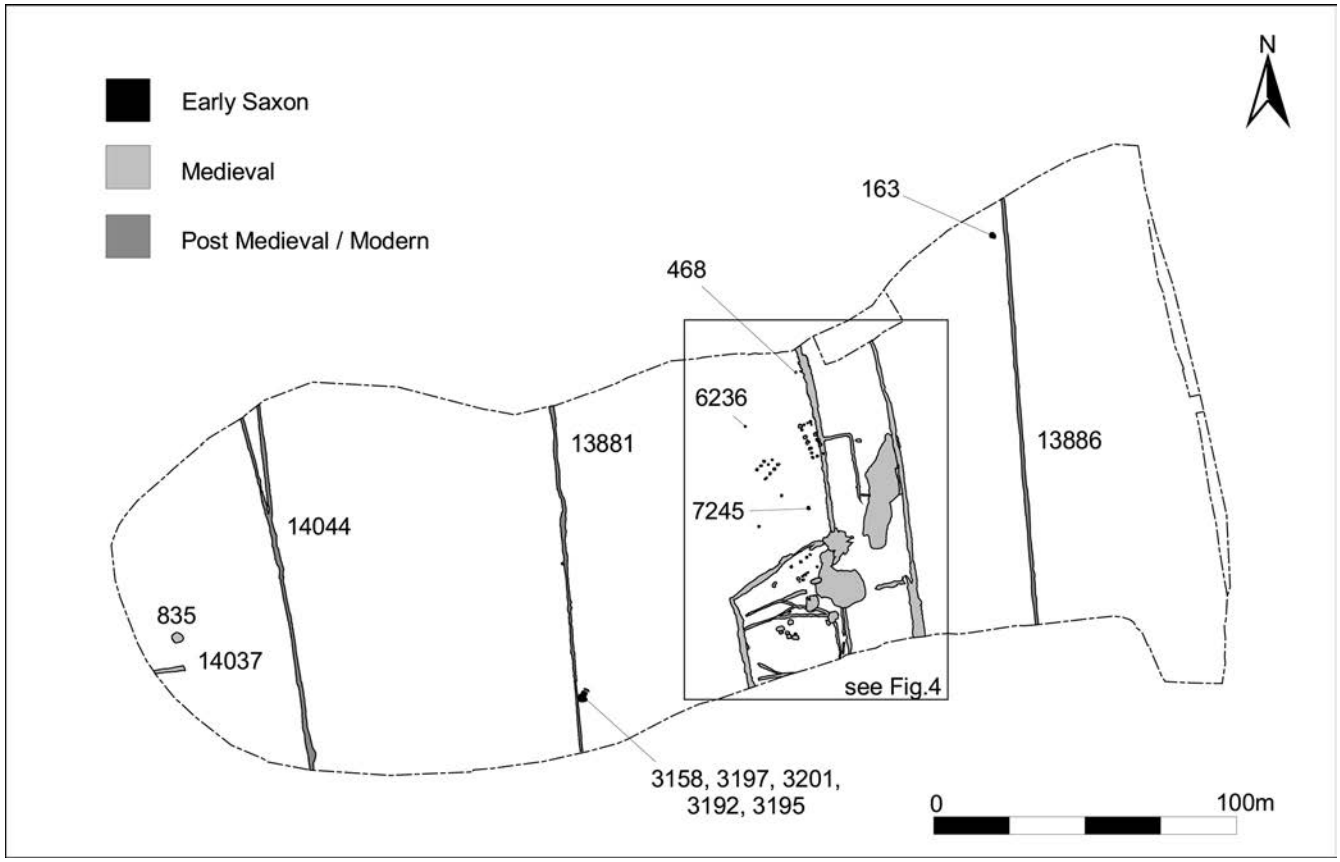

FIGURE 3: Early Saxon and medieval

The pit (8195) on the north-west edge of the pond was very large and box-like, measuring *c.*6m long, 4m wide and 0.5m deep (Figs 4 and 6). The north end and east side of it were mostly no longer present because they had been cut and truncated by a large group of intercutting pits (13884). The base of the pit was open to and flush with the base of the connecting arm of the pond. In the middle of it was a flat sub-rectangular imprint (4m x 2m) defined by narrow low ridges of upstanding natural. Three truncated post-holes (8342, 8398 and 8403), which pre-dated the pit group (13884), formed a line along the eastern side of the pit and suggested a retaining wall or fence. A line of stake-holes (14138), possibly representing an intervening fence or screen, ran between the pit and the deepest part of the pond. Dumping of fragments of unrelated hearth bases or clay floors after the pit had gone out of use was suggested by abundant pieces of baked clay with flat surfaces and no wattle impressions in the secondary and latest fills of the pit and in the single fill of a post-pipe in post-hole 8342. Also present in the pit were infrequent pieces of quern-stone and tile, and numerous pieces of late 12th- to mid 13th-century pottery.

The pit group (14142) sat within an area of naturally occurring clay north of pit 8195 and pond 7244 and comprised seven or more large inter-cutting elongated sub-rectangular pits with steep-sided profiles (Fig. 4). Each of the constituent pits measured between 0.5m to 0.6m deep, 1m to 2.5m wide and 1.5m to 4m long. The pits had undermined sides and primary fills of grey sandy silt and may have been used to hold some sort of liquid. None of them were closely datable; one of them contained a Roman pot sherd, and one of them was cut by a subsequent ditch (13882).

The sequence of small enclosures was represented by seven small ditches, none of which were closely datable, although some were cut by mid 13th- to late 14th-century features (Fig. 4, 5409, 13905, 13906, 14064, 14065, 14066 and 14069). The stratigraphic relationships between the ditches were seldom clear.

Mid 13th to late 14th century

The backyard of the croft was outlined and sub-divided by ditches (Fig. 4, 13882, 13887, 13901, 13902, 13950, 14071, 14075, 14078 and 14131) during this phase, by which time the features of the previous phase were probably no longer in use. Other features present during the mid 13th to late 14th century included a post-built building (13885), a well (14023), an unusual sub-rectangular pit (7248), and a large shallow pit (7577). Also present were eleven, not-closely datable, medieval pits, some of which formed a small cluster (6705, 6936, 6965, 6969, 7015, 7017, 7022, 7063, 7070, 7975 and 9102).

The ditches varied in depth and profile, with some showing evidence for recuts. Ditch 13887 cut ditch 14078, which cut clay pit 14137. Ditch 14071 cut late 12th- to mid 13th-century ditch 14066, and ditch 13882 was cut by a later building (7960) and pit group (13884). Ditch 14071 is likely to have continued across the surface of pond 7244, although this was not detected.

Two parallel rows of rounded and irregular post-holes (6714, 7180, 7204, 7206, 7213, 7214, 7217, 7238, 7242 and 7285) indicated building 13885, which was 7.1m long and 4.4m wide (Figs 4 and 6). On the south-east side of the structure were a further three post-holes (7199, 7223 and 7267), possibly representing an annex, a porch or an outside

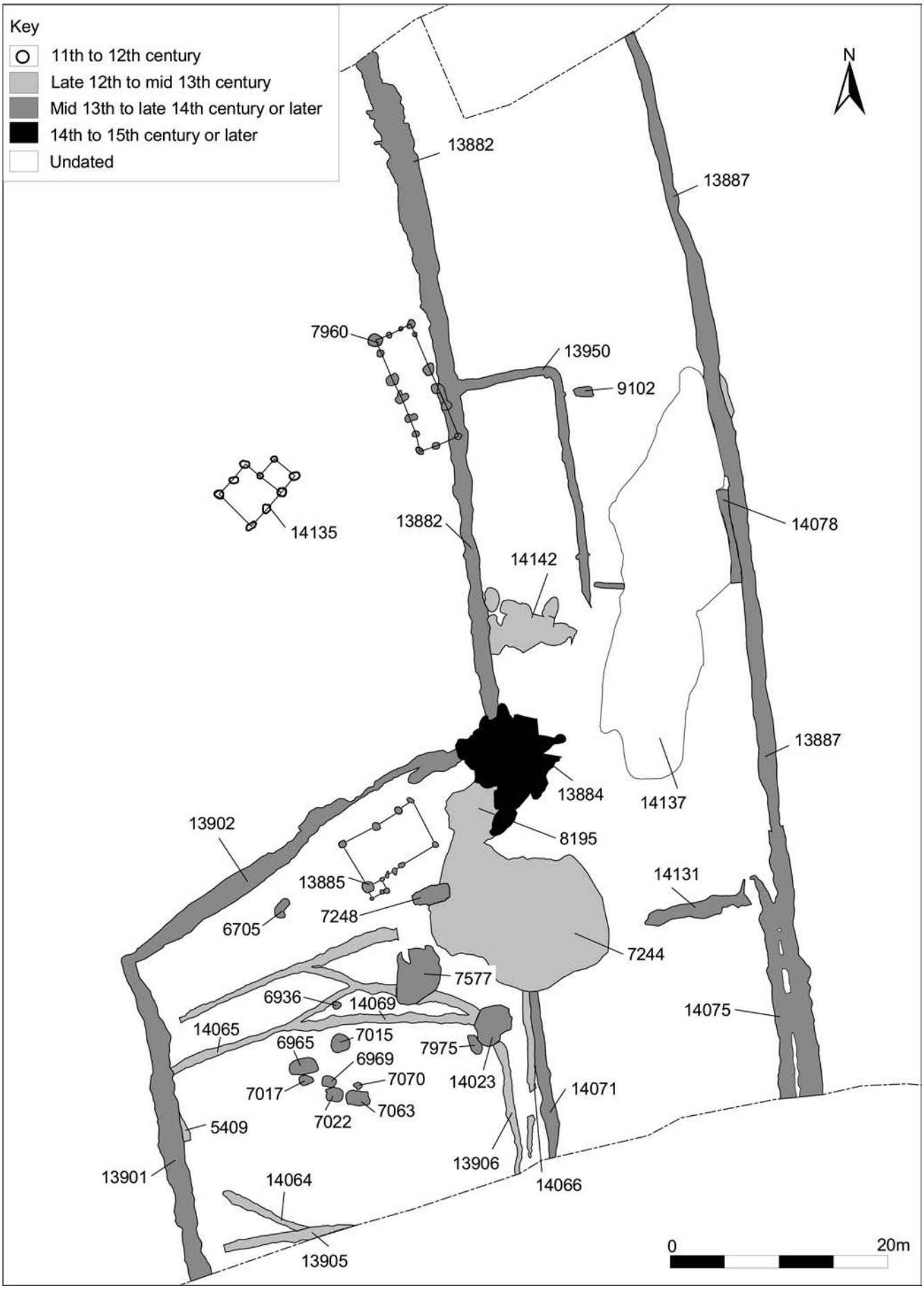

FIGURE 4: Medieval

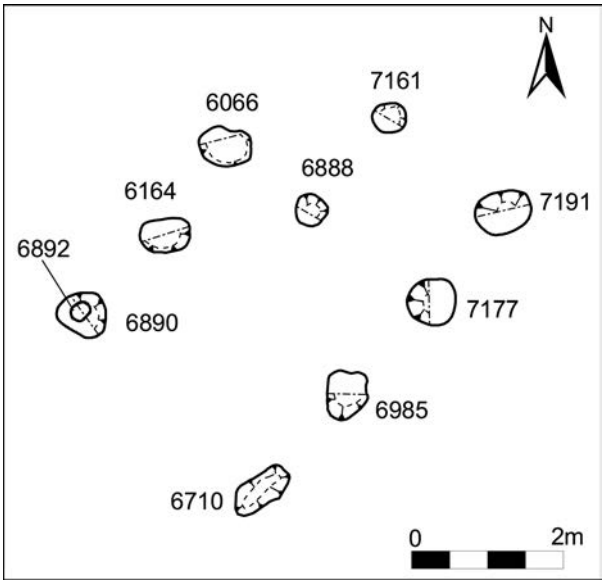

FIGURE 5: Building 14135

set of steps. Post-pipes (7287 and 7240) sat inside post-holes 7285 and 7238. Six of the building's post-holes appeared to be paired (6714 and 7180, 7217 and 7213, and 7238 and 7242). The dating evidence for the structure was slight, consisting of a single sherd of 12th-/early 13th-century pottery, and a shared alignment with ditch 13902.

Well 14023, to the south of the building, was 4m long, 3m wide and 1.2m deep (Figs. 4 and 7). It had steep sides and an slightly uneven, concave base, which cut late 12th- to mid 13th-century ditch 13906. On the base of the feature was an unstructured deposit of decomposing wooden planks, off-cuts and strips, and large lumps of un-worked wood. The planks were approximately 0.19m wide and between 0.32m and 1.16m long. No wood working joints were apparent and no nails were present. Deposits of sand and pockets of silt lay between the pieces of wood, and numerous deposits of silt clay lay within the upper two thirds. It is possible that the feature post-dated the mid 13th to late 14th century as it was uncut by other features and contained no finds apart from residual sherds of 11th-century Thetford-type ware.

Pit 7248 cut late 12th- to mid 13th-century pond 7244 and lay between the well and the building (Figs 4 and 6). It held three fills, had a concave profile and measured 0.3m deep.

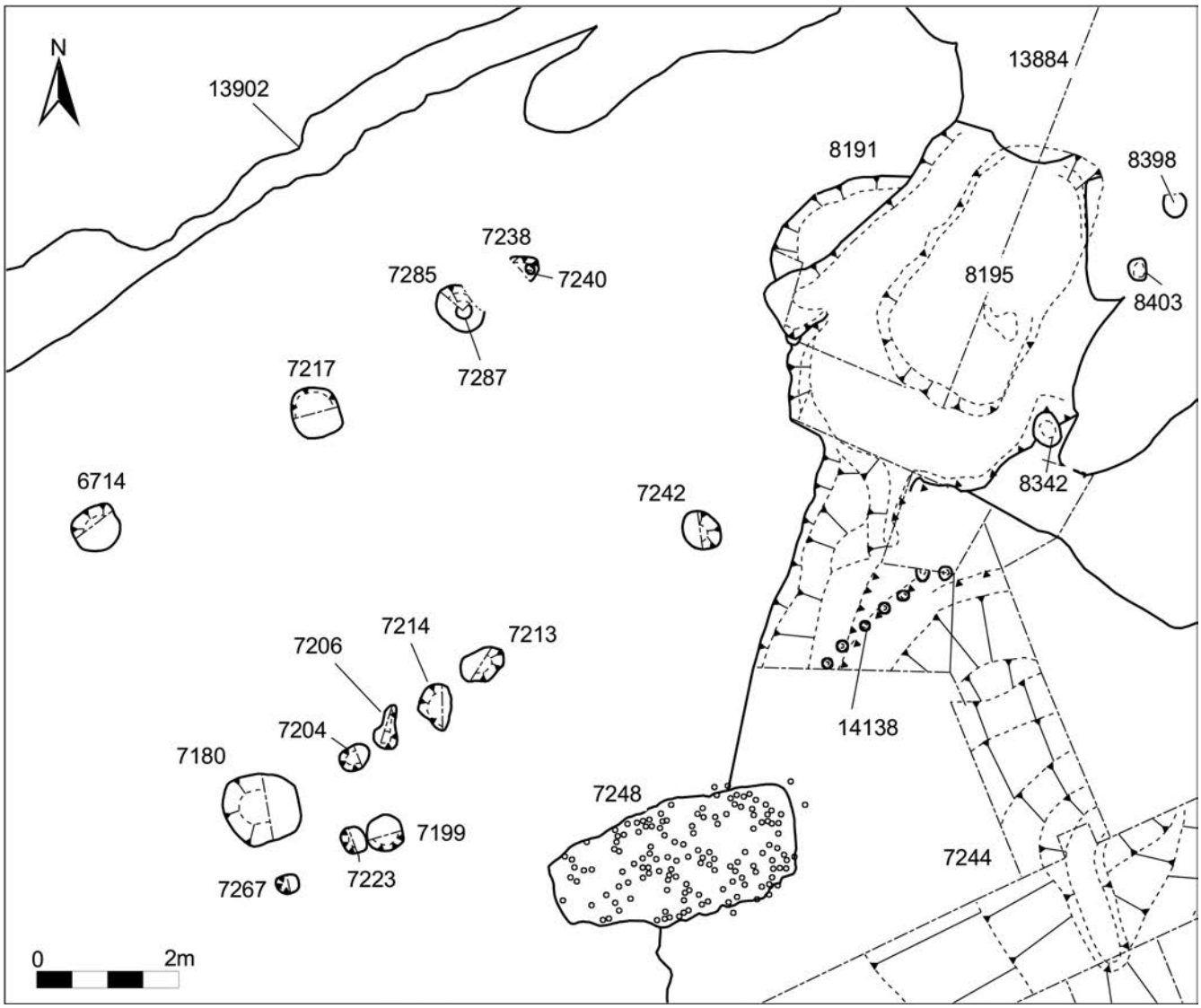

FIGURE 6: Pond 7244, pit 8195, building 13885 and pit 7248

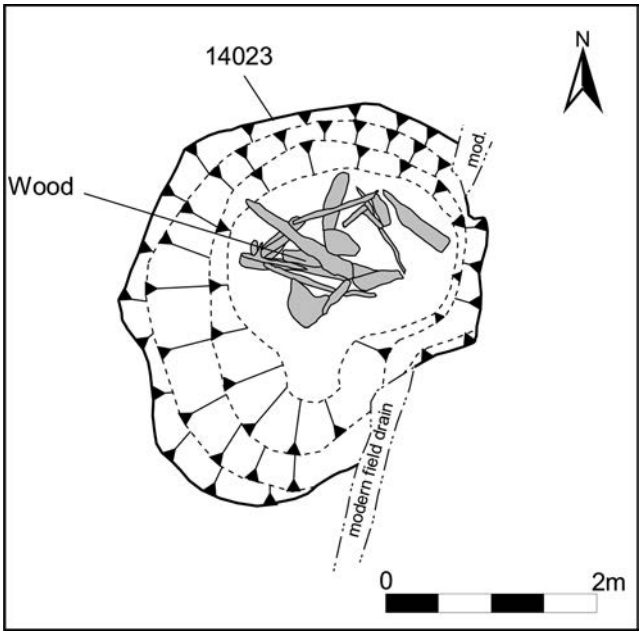

FIGURE 7: Well 14023

Around the perimeter of it and cut into the base and sides of it were numerous vertical and slightly off-vertical stake-holes, approximately 0.08m wide and between 0.03m and 0.16m deep. The arrangement of the stake-holes appeared to be random, and the fills of the stake-holes were indistinguishable from the primary fill of the pit. Sherds of mid 13th- to 14th-century pottery were found within two of the stake-holes and all three fills of the pit.

Pit 7577 lay south of pit 7248 and was a large shallow feature with two deposits (Fig. 4). It cut late 12th- to mid 13th-century ditch 13906 and was possibly in use after the mid 13th to late 14th century as it contained no datable finds apart from three sherds of residual 12th/early 13th-century pottery.

15th century or later

The latest medieval remains were a post-built building (7960) and a large group of intercutting pits (13884), both of which cut ditch 13882 of the previous phase (Figs 4 and 8).

The building measured 11m long and 3.7m wide and was defined by twenty post-holes of varying size and depth (6600, 7643, 7655, 7659, 7661, 7663, 7667, 7670, 7687, 7692, 7694, 7706, 7748, 7754, 7822, 7825, 7838, 7864, 7874 and 7904), two post-pipes (7737 in 7904, and 7673 in 7663), and one short section of wall-trench (7690). Six of the post-holes appeared to be paired (7748 and 7706, 7667 and 7687, and 7694 and 7822), and two others (7692 and 7838) suggested a slightly indented 2m-wide west entranceway. The wall trench had a flat base and was 0.17m deep. Small amounts of undiagnostic residual prehistoric pottery lay in some of the features, and a small piece of medieval or post-medieval tile was present in post-hole 7822.

Forty-seven intercutting pits formed pit group 13884, with many containing pieces of baked clay, quern stone and medieval pottery (Fig. 4). The pits were variable in shape and size and were between 0.3m to 0.55m deep.

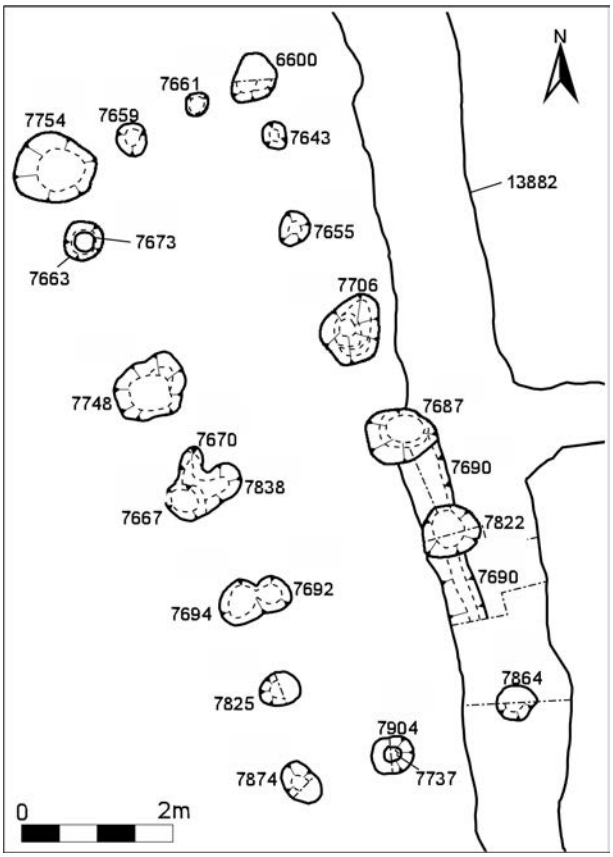

FIGURE 8: Building 7960

Post-medieval/modern

Three post-medieval/modern field ditches on a north-south alignment crossed the excavation area (Fig. 3, 13881, 13886 and 14044). Ditch 13886 appears on the 1880 Ordnance Survey map 1:2,500 (1st edition, 1880) (Fig. 9).

ARTEFACTUAL AND ENVIRONMENTAL REMAINS

Late Iron Age and Roman pottery by Joyce Compton

Introduction and method

A small quantity of Late Iron Age and Roman pottery, 941 sherds weighing 9015g, was recovered from a total of eighty-seven contexts. The pottery has been counted and weighed in grams by fabric and form by context, and the details recorded onto paper proformas which form part of the archive. The pottery fabrics were identified using the Essex County Council Field Archaeology Unit fabric series, and the vessel forms using the type series devised for Chelmsford (Going 1987, 13–54). The *Camulodunum* type series (Hawkes and Hull 1947, 215–75) was used for the few Late Iron Age forms present. Sherds of intrinsic interest were also recorded, for instance, pierced sherds or those with notches, stamps or graffiti. No contexts contained sufficient forms for full quantification by EVE (estimated vessel equivalence) and no pottery has been illustrated.

The average sherd weight is low at 9.6g, indicating a high degree of fragmentation. The assemblage as a whole is in poor condition with sherd surfaces, in some instances, almost totally eroded. This is likely to be a result of adverse soil conditions, since, as noted for the samian assemblage (Fawcett

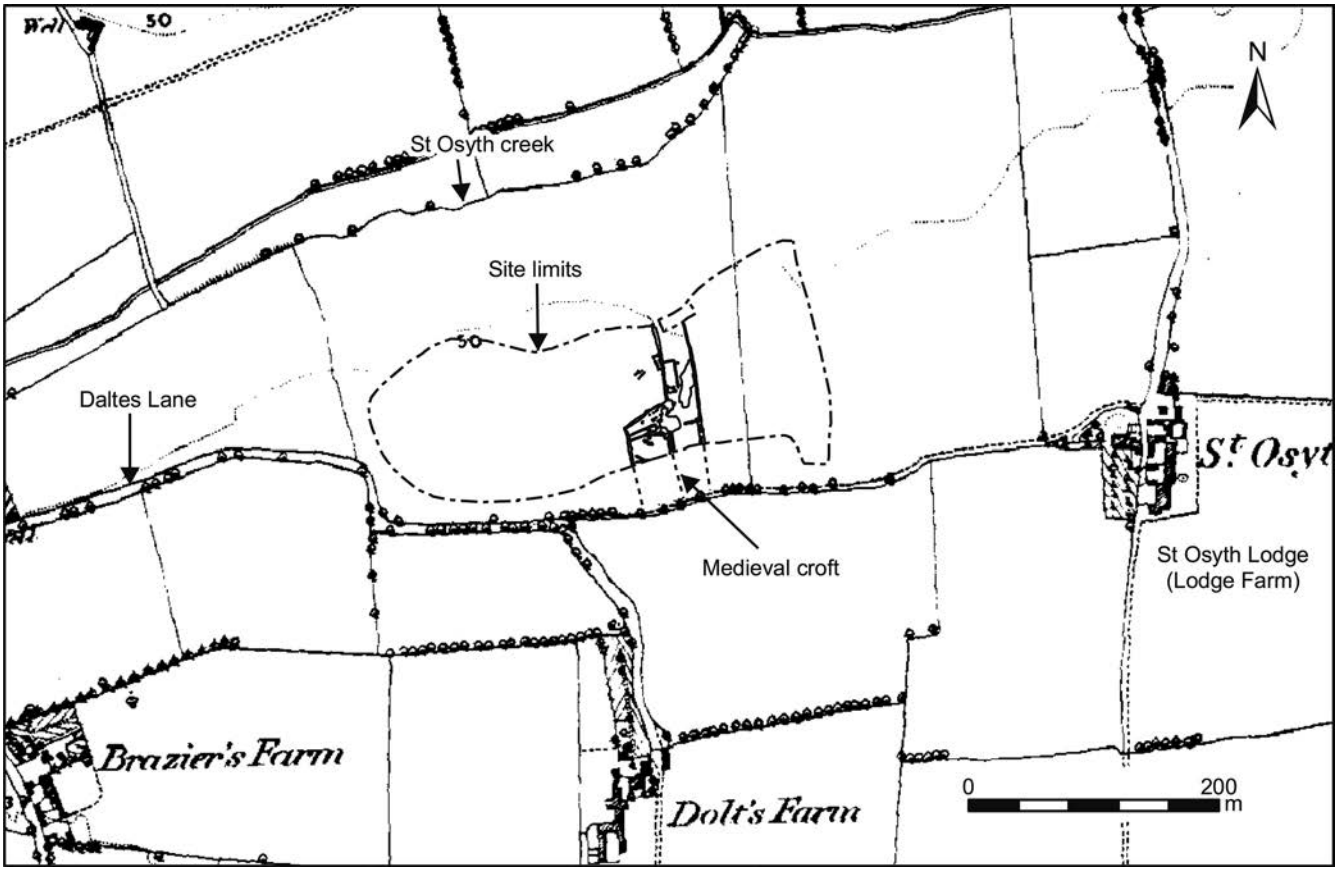

FIGURE 9: Medieval sites plotted on Ordnance Survey 1:10,560 (1st edition, 1870)

below), much of the pottery, especially from the ditch sections, seems to be in its original place of deposition.

The pottery was recorded, in the first instance, to provide dating evidence for site features and layers. A large number of contexts contained single sherds, residual in most cases, and thus undatable within the Roman period. Much of the remaining assemblage could only be identified broadly to vessel class, and consequently close dating for more than half of the contexts with Roman pottery was not possible. Of the datable contexts, more than 65% are dated to the mid 2nd century or later.

Assemblage Composition and Pottery Supply

Twenty-three fabrics and fabric groups were recorded; the range and proportion of which are summarised in Table 1. The samian fabrics were identified by A. Fawcett.

The assemblage is dominated by locally-made coarse wares, mainly of Roman date. Collectively, these wares form more than 75% by weight of the total pottery recovered, with sandy grey wares accounting for half. Late Iron Age coarse wares form less than 10% by weight of the total, and there are no Late Iron Age fine wares. Small quantities of red and buff wares, including mortaria and colour-coated ware from Colchester, are also present. The main regional industries are represented, albeit by small amounts of pottery. Sherds from the Dorset black-burnished ware industry, North Kent grey ware, Nene Valley colour-coated ware and late shell-tempered ware from the Midlands indicate diverse trading links throughout the Roman period. The Oxfordshire industry supplied both red colour-coated and whiteware mortaria. A mortarium from Hadham was also noted. Continental imports are mainly restricted to samian and amphoras. The amphoras comprise mainly body sherds from south Spanish olive oil containers, with an almost entire rim circuit in the fill of ditch 14029. Sherds from a wine amphora came from the same feature. A small sherd of Mayen ware was recovered from the soil sample taken from a fill of ditch 14029. This is a late 4th-century import from the Eifel area of Germany and is an uncommon British site find.

A range of forms is present, although jars accounted for the highest proportion of vessels identified (52% of the total). Bowls, dishes and beakers are also much in evidence. Of interest is the relatively high number of mortaria from a variety of sources, including one from eastern Gaul. Seven separate vessels were recorded, amounting to 8% of the total (7% by weight). The average mortarium proportion for Essex assemblages is less than 5% by weight. Flagons, lids and bowl-jars occur in very small numbers and platters are entirely absent. Since the platter is a Late Iron Age and early Roman form, its absence is only to be expected in a generally mid to late Roman assemblage. As noted above, amphoras mainly comprise Dressel 20 olive oil containers, although sherds from at least one wine amphora, probably Gaulish, were recorded.

Discussion

A thin scatter of Late Iron Age and Roman pottery occurs across the excavated area, much of which is residual as single sherds in features mainly of medieval date. There are, though, three concentrations which merit comment. Roman pottery

Fabric Code	Fabric Name	Count	Weight	% Count	% Weight
AMPH	Amphora fabrics	32	946	3.4	10.5
BB1	Black burnished ware 1	5	20	0.5	0.2
BSW	Black-surfaced wares	72	392	7.7	4.4
BUF	Unsourced buff wares	1	56	0.1	0.6
CGSW	Central Gaulish samian ware	55	169	5.8	1.9
COLB	Colchester buff ware, including mortaria	13	324	1.3	3.6
COLC	Colchester colour-coated ware	4	4	0.4	0.0
EGSW	East Gaulish samian ware	10	270	1.1	3.0
ESH	Early shell-tempered ware	29	624	3.1	6.9
GRF	Fine grey wares	18	108	1.9	1.2
GROG	Grog-tempered ware	22	214	2.3	2.4
GRS	Sandy grey wares	519	4080	55.2	45.3
HAX	Hadham oxidised ware including mortaria	8	122	0.8	1.4
LSH	Late shell-tempered ware	19	40	2.0	0.4
MEK	Mayen ware	1	2	0.1	0.0
MICW	Miscellaneous Late Iron Age coarse wares	2	10	0.2	0.1
NKG	North Kent grey ware	41	112	4.4	1.2
NVC	Nene Valley colour-coated ware	31	69	3.3	0.8
OXRCM	Oxfordshire red colour-coated mortaria	1	16	0.1	0.2
OXWM	Oxfordshire white mortaria	1	54	0.1	0.6
RED	Unsourced oxidised wares	7	2	0.7	0.0
SGSW	South Gaulish samian ware	4	17	0.4	0.2
STOR	Storage jar fabrics	46	1364	4.9	15.1

TABLE 1: Quantification of Roman pottery by fabric, sherd count and weight (in grams)

was recovered from a number of ditches to the west of the site, accounting for almost three-quarters of the total pottery recovered. Of the diagnostic sherds, most date to the 3rd century or later, indicating that these ditches were no longer in use by the end of the 3rd century. There is a high degree of residuality apparent in all of the ditch assemblages and the pottery in ditch 14035 (same as 14029), and adjacent pit 665, is entirely residual.

Sections through a large, not closely-datable feature, 14137, in the centre of the site, perhaps a clay-extraction pit (Fig. 4), produced small amounts of pottery of a similar type and date. This pottery may also be residual.

Towards the north-eastern corner of the site, a pair of associated pits, 116 and 211, produced pottery wholly dating to the Late Iron Age (Fig. 2). The pottery is friable and, except for one sherd, entirely comprises South Essex shell-tempered ware, although the shell has been dissolved out over time leaving voids in the pottery fabric. Pit 116 contained sherds from a bead-rimmed jar, *Cam* 254, and fragments from a cauldron, Going's (1987) form L1, came from pit 211. There are several large sherds present, including a complete lug handle from the cauldron, but there are insufficient sherds to provide full profiles for either vessel.

A cauldron was found in a pit at Ardleigh, associated with several strainer bowls (Sealey 1999, 117). It is interesting that the St Osyth cauldron was the sole vessel in pit 211. Its presence, together with the *Cam* 254 jar from adjacent pit 116, increases the proportion of shell-tempered ware to 7% by weight, which is double the quantity normally found on sites in central and northern Essex. Pottery cauldrons were a speciality of the South Essex shell-tempered ware industry, but the form was always rare (Sealey 1999, 117).

Conclusions

The range and variety of both fabrics and forms in this small assemblage is remarkable, and there are few published groups from this part of Essex with which to compare it. An assemblage from Brightlingsea (8km to the west) retrieved during the 1970s was recently appraised, and similarly high proportions of coarse wares (65% by weight) were noted (Martin 1996, 319; table 1). The Late Iron Age and Roman pottery from two stages of excavation at the villa site near Little Oakley (16km to the north-east) was examined by Barford (2002, 128–56). The largest component was coarse wares, with grey wares comprising the major part (Barford 2002, 131). It was also noted that over 85% of the form assemblage consisted of jars, much higher than at St Osyth. A wide variety of both local and imported types was recorded in all phases (Barford 2002, 154–5), although it is suggested that these were obtained at the Colchester markets rather than directly from their sources.

Further inland, at Hill Farm, Tendring (unpublished), 9km to the north, a large collection of pottery was slightly different in character. Early shell-tempered ware was completely absent, although other Late Iron Age coarse wares were strongly represented at 30% by weight. Coarse wares of all periods amounted to almost 90% of the total. Very small amounts of both regional and imported wares were present, with samian forming just over 1% Hadham and Oxfordshire wares were entirely absent, although this could reflect a lack of later Roman activity at the site.

The Roman pottery from St Osyth is probably too small an assemblage from which to draw any firm conclusions, but the addition of the assemblage to published examples in the area is welcome. The variety of non-local fabrics and forms may be a result of the location of the site near to St Osyth Creek and the

coast. Unfortunately, the indications are that the main focus of activity during the Roman period is nearby, but probably outside the excavated area.

Samian by A. Fawcett

Fabric Codes

LGF SA	La Graufesenque samian ware (southern Gaul)
MON SA	Montans samian ware (southern Gaul)
LEZ SA 2	Lezoux samian ware, category 2 (central Gaul)
RHZ SA	Rheinzabern samian ware (eastern Gaul)
TRI SA	Trier samian ware (eastern Gaul)

A total of seventy-three samian sherds weighing 458g, with a r.eve value of 1.23, have been recovered from the excavation. All of the pottery has been recorded from ditches. The overall condition of the samian may be described as between very abraded to abraded, although the diagnostic survival rate is fair.

The earliest fabric encountered is LGF SA (AD43-110/120) although this is certainly not in its original place of deposition. The remainder of the samian is dated from AD 120 to 210, with the preponderance being placed in the latter half of the date range. Even though there are instances of MON SA, RHZ SA and TRI SA the most frequent fabric is LEZ SA 2.

The form assemblage is basic consisting of one Drg18/31 plate/bowl (MON SA), two Drg31 bowls (both in LEZ SA 2), one Drg37 bowl (LEZ SA 2), one Drg45 mortarium with a lion designed spout (RHZ SA) and finally a Drg38 hemispherical flanged bowl (TRI SA).

The only fragment of decoration is a partial ovolo design, which occurs below the rim of a Drg37. Lastly a single stamp letter is present on the Drg38 base (..\M) from ditch 14024, although not enough to enable any translation, even though the form and fabric combination provide a good date range.

The assemblage is unremarkable and difficult to use to make accurate comparisons with other sites in isolation. Nevertheless, the samian accounts for between 5% and 7% of the total assemblage (sherd number and weight); these figures are consistent with a localised, low status rural economy.

Early Saxon pottery by S. Tyler

Summary

The excavation recovered thirty-eight sherds of Saxon pottery, weighing 306g. The features which produced the Saxon assemblage were pits exhibiting a fairly wide distribution over the site, with the exception of one group of pits located at the southern end of the excavated area. The pottery dates to the period AD 500–700 with a slight emphasis towards the earlier part of this date range. Diagnostic forms and fabrics include a vessel with an applied perforated lug and a single sherd with combed decoration (fill 3188 in pit 3158).

Fabrics

The Early Saxon pottery can be broadly divided into four groups based on their tempering agents: quartz-sand (fabric 1); organic material (fabric 2); a combination of quartz-sand and organic temper (fabric 3); and quartz-sand and shell (fabric 4). The varying proportion of each fabric type within each feature is not thought to be chronologically significant and is not therefore discussed in detail. All fabrics are compatible with a 5th- to 7th-century date range for the assemblage. Although fabric 2 predominates, the presence of fabrics 1, 3 and 4 is supportive of a 5th- to 6th-century date range for the group, as 7th-century pottery is almost exclusively organic tempered.

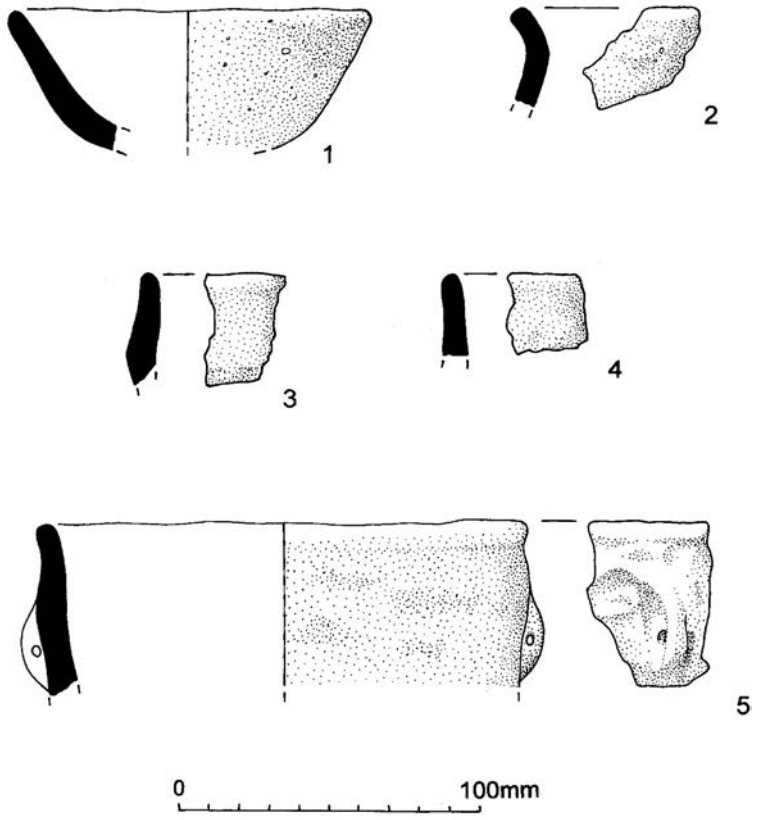

FIGURE 10: Early Saxon pottery

Illustrated sherds (Fig. 10)

1. Globular bowl with upright, rounded rim. Hard smoothed black-brown fabric with abundant organic temper. Wt. 26g. Context 3159, top fill of pit 3158.
2. Rim, everted, rounded. From a medium-sized jar or cooking-pot (slight evidence of sooting on the exterior suggests the latter). Hard, black fabric with common to abundant organic temper. Surfaces smoothed. Wt. 10g. Context 3159, top fill of pit 3158.
3. Rim, slightly everted, rounded. From a medium-sized bowl. Black fabric with abundant organic temper. Wt. 9g. Context 3159, top fill of pit 3158.
4. Rim, upright, rounded. Black medium soft fabric with abundant organic temper. Could be part of No. 3, but rim orientation differs slightly. Wt. 9g. Context 3159, top fill of pit 3158.
5. Medium-sized cooking-pot or bowl with applied side-lug. Rounded, slightly everted, uneven rim. Single lug applied just above the maximum girth of the pot (probably one of an original complement of two or three for the suspension of the vessel above a fire when cooking). Hard, black-brown fabric with common organic temper, sparse large quartz-sand inclusions and common small quartz-sand. Wt. 28g. Context 3188, primary fill of pit 3158).

The date range of the diagnostic vessels

The Early Saxon pottery assemblage does not contain closely datable diagnostic forms. The bowl with applied lug, from the primary fill of pit 3158 (cat. no. 5; Fig. 10) has parallels from several Anglo-Saxon settlement contexts, but cannot be assigned a more precise date of manufacture than within the period AD 450–700. The other cooking-pots, jars and bowls (cat. nos 1–4; Fig. 10) are common finds in settlement contexts dating throughout the Early Saxon period, although the upright or slightly everted rims are more suggestive of the 5th- to mid-6th centuries.

In excavated contexts from the 5th- to 8th-century settlement at Mucking, Thurrock, eight examples of pots with applied lugs occurred in grubenhauser fills. In her study of the distribution of pots with applied lugs Hamerow (1993, 41–2) concluded that only those with swallow's nest lugs had any clear patterning, indicating a 6th- or 7th-century date; but those with simple applied, perforated lugs had no discernable chronological distribution and occurred in all phases of the settlement.

The combed sherd from the top fill of the same pit (3158) that produced the bowl with applied lug is more useful for dating purposes. At Mucking, Hamerow (1993, 37) found that combing and finger rustication occurred less frequently in the 6th- and 7th-century hut assemblages, and that the use of combing in particular appeared to die out in the course of those centuries. This suggests an earlier date for St Osyth pit 3158, perhaps late 5th to early 6th century.

Medieval and post-medieval pottery by H. Walker

Summary

A small assemblage totalling 830 sherds weighing 13kg was excavated; this total comprises all pottery from phased, un-phased and surface contexts. Most of the pottery is datable to the 13th century, with the addition of a very small amount of 14th- to 15th-century pottery. The report includes a large group comprising mainly fine ware jugs in London-type ware, Hedingham ware and early Colchester ware. Non-local wares include single examples of Rouen-type ware, Lyveden-Stanion ware and possible Pingsdorf ware (the latter found unstratified). Coarse ware pottery comprises mainly early medieval ware and medieval coarse ware with a few sherds of residual Thetford-type ware.

Method

The pottery has been classified according to Cunningham's typology for post-Roman pottery in Essex (Cunningham 1985, 1–16, expanded by Cotter 2000) and Cunningham's rim types are quoted in this report. The pottery has been written up by phase and major feature. Quantification is by sherd count, weight and estimated vessel equivalent (EVES), calculated by adding together the percentage of rim present. However, only the most important groups have been fully quantified for the publication, although this information is available in the archive, both as a Word document and in Essex County Council's EFASYS database. Features that are poorly stratified or contain only small amounts of pottery are published in summary form. The more developed cooking-pot rims (B2–H1) have been dated using Drury's chronology at Rivenhall (Drury *et al*. 1993, 81–4) and the earlier type rims are dated from their occurrence at Colchester Castle (Cunningham 1982, 362). Most of the wares present have been described in previous volumes of *Essex Archaeology and History* and by Cotter (2000).

Late 12th- to mid 13th-century groups (Fig. 4)

(a) Enclosure ditches 5409, 13905 to 13906, 14064 to 14066 and 14069 (Fig. 11)

Very little pottery was recovered from the sequence of late 12th- to mid 13th-century enclosure ditches (twenty-one sherds, weighing 192g). Ditch 14066 stratified below the pond produced the socket from a socketed bowl in early medieval ware (No. 1) datable to the 12th to early 13th centuries. Also present in ditch 14066 was a sherd of London-type ware, which is possibly intrusive because it comes from a section cut and truncated by the pond.

Single sherds of Hedingham ware and early medieval ware were recovered from ditch 13906; this is similar to pottery from the pond (see below) and hence provides an early to mid 13th-century date. No pottery was recovered from ditches 14065 and 14069, and ditch 13905 produced only sherds of undiagnostic early medieval ware and medieval coarse ware.

Illustrated pottery from the enclosure ditches (Fig. 11)

1 Socket from socketed bowl: early medieval ware. Fill 7264, section 7261, ditch 14066

(b) Pond 7244 (Figs 11–12)

This produced a very large group of pottery weighing just over 5kg (with an average sherd weight of 17.2g). Pottery was found in all pond deposits apart from the primary fill and the top fill. Sherd-linkages between virtually all fills show that either the pond fills were deposited at the same time or that the fills have become mixed. The pottery has therefore been considered as a single group and is quantified by ware in Table 2. There are also external sherd-linkages with pit 8195 indicating that these two feature groups were contemporary.

The group is unusual it that it produced a large number of glazed jugs decorated in a variety of styles, and only a few coarse wares. The decorated jugs occur mainly in Hedingham ware and London-type ware with a few examples in locally-made early Colchester ware, and sandy orange ware (the latter a general fabric category of which Colchester ware is a particular type). There are also single examples of decorated jugs in from farther afield, namely Rouen-type ware and Lyveden-Stanion

Fabric	% Eves	Sherd Nos	Weight (g)
Thetford-type ware	0	1	8
Early medieval ware	20	82	1592
Early medieval ware with grog/clay pellets	0	4	64
Medieval coarse ware	58	18	473
Sandy orange ware	12	51	548
Colchester ware	11	24	435
Hedingham ware	50	76	1197
Rouen ware	0	1	19
Buff ware	0	7	78
London-type ware	70	37	771
Lyveden-Stanion ware	0	1	13
Totals	221	302	5198

TABLE 2: Quantification of pottery from pond 7244

ware. The former is a fine white ware made at Rouen and other centres in the Seine Valley in northern France and imported during the late 12th to mid 13th century (Barton 1966, 73–85; Vince 1985, 47–8). Its styles of decoration were widely copied by English manufacturers including the Hedingham and London-type industries. Lyveden-Stanion ware has an oolitic tempering and was made near Oundle in Northamptonshire, from the late 12th/early 13th century onwards, although its principle period of production was the 13th to early 14th centuries (Webster 1975, 63; McCarthy 1979, 228; Pearson 1983, 28). A number of sherds in an unidentified glazed buff fabric are probably also from jugs. At least seventeen jugs are represented in the group, all the most complete jugs have been illustrated, and the jug types are itemised in Table 3.

The range of coarse wares (also shown in Table 3) is limited to bowls (two vessels represented), cooking-pots (five vessels represented), the collared rim from a jug and fragments from perhaps a single storage jar. Early medieval ware and medieval coarse ware are the only coarse wares present; the former is by far the more common accounting for over 70% of the total coarse ware (by weight). A few of the early medieval ware sherds are tempered with sparse grog or clay pellets as well as sand. Most of the pottery identified as medieval coarse ware is in fact borderline with early medieval ware. Also present is a single abraded sherd of Saxo-Norman Thetford-type ware, residual in this context.

Illustrated pottery from pond 7244 (Figs 11–12)

2 Base of jug: Rouen-type ware; chalky white fabric; spots of clear glaze on the sides and undersides of the base. Pond fill 7679.

3 Sherd from shoulder of jug: Lyveden-Stanion ware; pale orange internal surface, pitted where oolites have dissolved or fallen out, otherwise sherd is pale grey; decorated with an applied strip and ring-and-dot-stamp; strip has a pronounced ridge as if applied with a pallet knife or similar tool; a plain lead glaze gives a yellowish slip and pale olive-green background. Decoration is typical of 13th-century Lyveden-Stanion ware (*cf.* McCarthy and Brooks 1988, Fig. 172, 1019). Pond fill 7245.

4 Jug rim: London-type ware; pouring lip; slip-painted decoration, apparent greenish glaze; from an early rounded jug (*cf.* Pearce *et al.* 1985, Fig. 11). Pond fill 7676.

5 Body of jug: Hedingham ware; buff internal surfaces and grey core; decorated with rows of applied scales beneath a mottled-green glaze. This is not a typical style of decoration for Hedingham ware but similar decoration is found on London-type ware early rounded jugs and early style baluster jugs (Pearce *et al.* 1985, Figs 17.28, 24.50). Pit fill 7676.

6 Jug rim: Hedingham ware; pale orange surfaces, thick grey core; decorated with rows of applied pellets under a clear glaze, as found on

Vessel form	Sub-form/decorative style (with suggested date range)	Fabrics
Fine ware jugs	London or London-style early rounded (Later 12th C)	London-type ware (No. 4) Hedingham ware (No. 5)
	Scarborough-style early rounded (Later 12th to mid 13th C)	Hedingham ware (Nos 6–8)
	Early baluster style (13th C)	Colchester ware (Nos 9 and 10)
	Rouen or Rouen-style (late 12th to mid 13th C)	Rouen-type ware (No. 2) London-type ware (No. 11) Hedingham ware (Nos 12–13)
	North French style (early to mid 13th C)	London-type ware
	Stamped strip jugs (*c.*1225–1300)	Hedingham ware (Nos 15–16)
	Slip-decorated – general	Lyveden-Stanion ware (No. 3) Colchester ware (No. 18)
	Other styles	London-type ware (No. 14) Hedingham ware (No. 17)
	Undecorated fragments	Buff ware; sandy orange ware
Coarse ware jug	-	Medieval coarse ware
Storage jars	-	Early medieval ware (No. 19)
Bowls	-	Early medieval ware Medieval coarse ware (No. 20)
Cooking-pots	Beaded rims (12th C)	Early medieval ware
	B4 rims (*c.*1200)	Early medieval ware (No. 21)
	H2 rims (early to mid 13th C)	Medieval coarse ware (Nos 22–3)
	H4 rims (?earlier 13th C)	Early medieval ware

TABLE 3: Vessel forms in pond 7244 and the fabrics they occur in

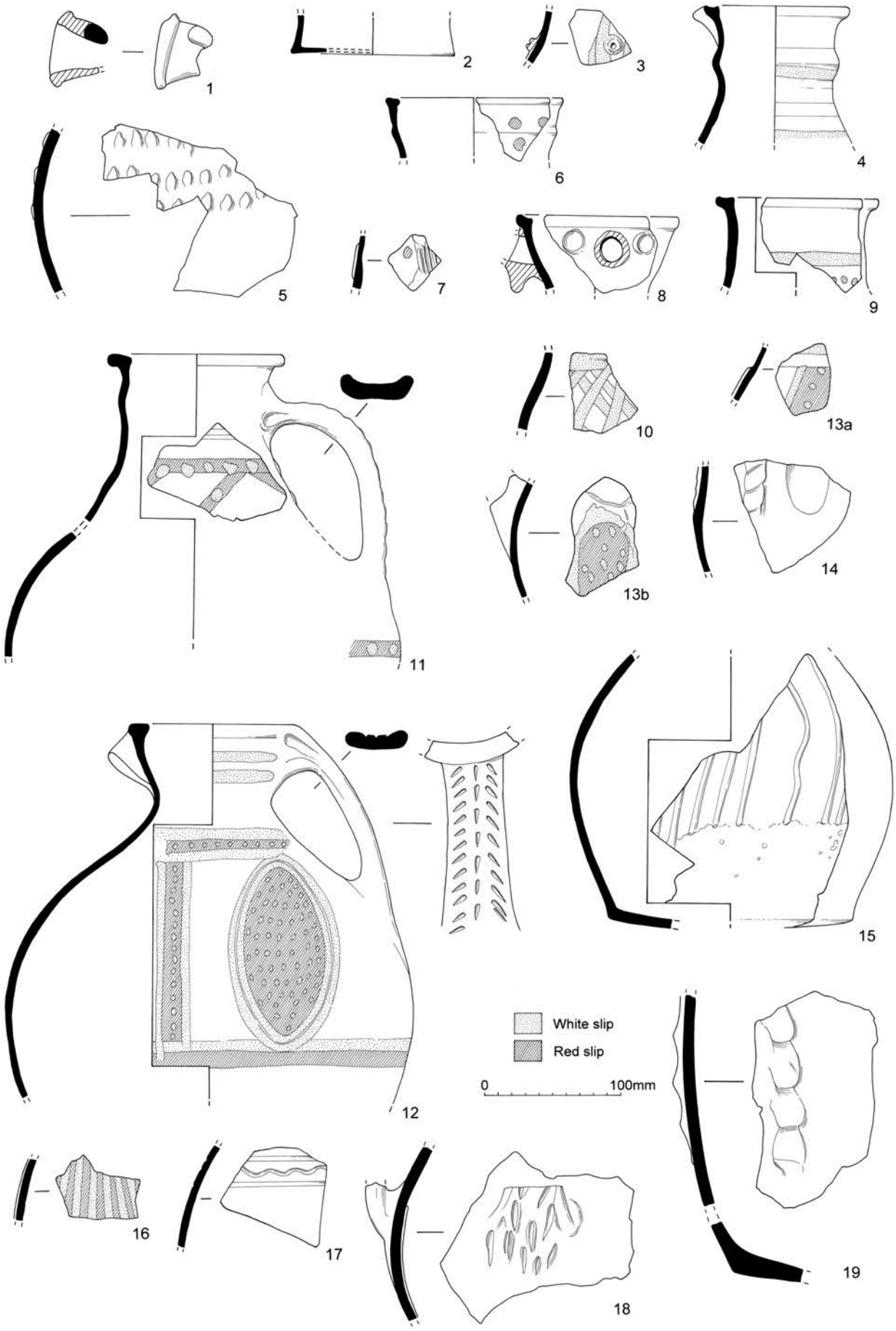

FIGURE 11: Medieval pottery (1 to 19)

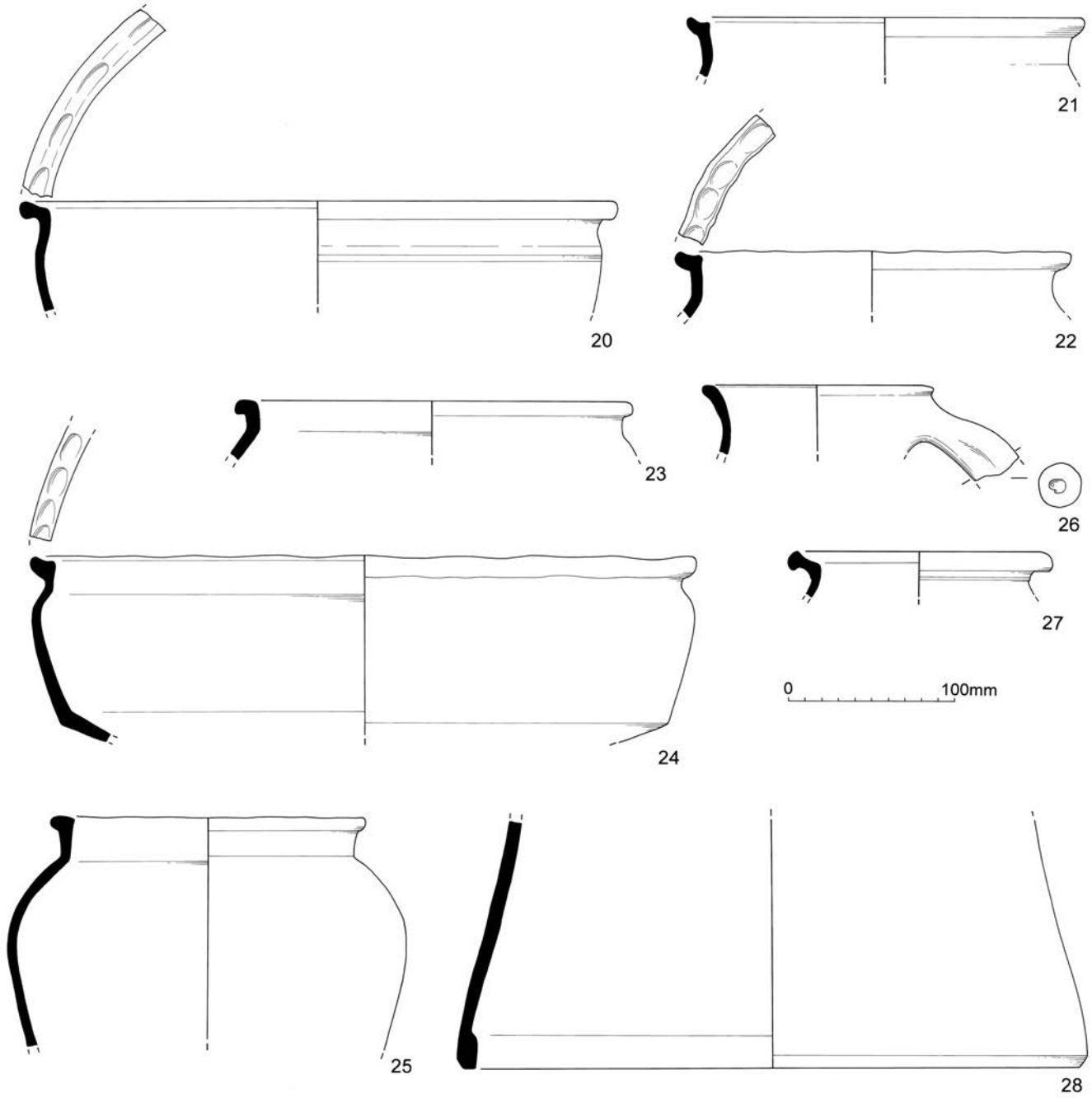

FIGURE 12: Medieval pottery (20 to 28)

Scarborough-style early rounded jugs (*cf.* Cotter 2000, Fig. 49.3). Pond fill 8120.

7 Sherd from jug: Hedingham ware; sandy fabric, buff-orange surfaces, grey core; decorated with applied red slip pellet and combed applied strip under a greenish glaze, as found on Scarborough-style early rounded jugs (*cf*. Cotter 2000, Fig. 48). Pond fill 7676.

8 Jug rim: Hedingham ware; anthropomorphic decoration comprising two dimples for eyes either side of the nose formed by a tubular spout, which has broken off; two-tone clear and pale green glaze; patch of fire-blackening on rim; probably from a Scarborough-style large early rounded jug. Pond fill 7245.

9 Jug rim: Colchester ware; coarse thick-walled fabric, decorated with thick slip band and slip pellets, possibly Rouen-style; perhaps from an early style baluster jug (*cf.* Cotter 2000, Fig. 71.9). Pond fills 7247, 7679.

10 Sherd from jug: Colchester ware; same coarse fabric as No. 9 and could be part of the same vessel; thick applied slip strips in a lattice pattern under a partial plain lead glaze. Pond fill 7676.

11 Jug: London-type ware; laminated fabric with abraded surfaces; decorated with remains of red slip ?lattice pattern and white slip pellets applied on top of the lattice; an example of Rouen-style decoration; somewhat decomposed pitted greenish glaze; comparable to Pearce (*et al*. 1985, Fig.19.36; Fig. 31.84–5, 87–8). Pond fill 7679.

12 Semi-complete rounded jug: Hedingham ware; parrot-beak spout; Rouen-style decoration; greenish glaze. The jug is incomplete but the decoration appears to consist of pointed ovals delineated by two curving white slip strips, infilled with red slip-coating under applied white slip dots. The ovals probably alternate with a pair of vertical applied strips also infilled with red slip-coating beneath a column of white slip dots. The handle shows stabbed decoration. Similar Rouen-style decoration is found on London-type ware jugs (*cf*. Pearce *et al.* 1985, Fig. 29). Some areas of the jug are abraded and some are not, this may have more to do with deposition in a pond environment rather than residuality. Most of this jug actually occurs in fill 7221 of pit 8195. Sherds also occurred in pond fills 7245, 7676 and in fills 8196 and 8198 of pit 8195.

13 a, b Sherds from a jug: Hedingham ware; Rouen-style decoration similar to that found on No. 12; a) from the shoulder, shows a slight carination typical of London-type ware jugs but the fabric is consistent with that of Hedingham ware. Fill 7678

b) the lower handle attachment and remains of a rod handle, showing a zone of decoration below the handle attachment. Fill 7679.

Not illust. Body sherd: London-type ware; slip-coated with a rouletted applied strip as found on North French style jugs (*cf.* Pearce *et al.* 1985, Fig. 40.136). Fill 7676.

14 Body sherd: London-type ware; probably from lower part of jug; thumbed applied strip and slight faceting of surface; mottled-green glaze; no parallel found. Pond fill 7676.

15 Part of rounded jug: Hedingham ware; pale orange fabric with buff internal surface probably from a stamped strip jug but the single wavy strip is untypical; dark mottled-green glaze. Pond fill 7678.

Not illust. Twisted rod handle; Hedingham ware; as found on stamped strip jugs (*cf.* Cotter 2000, Fig. 50.23). Pond fill 8120.

16 Fragment from jug: Hedingham ware; showing vertical applied strips in clay paler in colour than that used for the body of the pot, overlying a coating of red slip; the glaze imparts a greenish colour to the strips and a red-brown background; from a stamped strip jug (*cf.* Cotter 2000, Fig. 50.17). Pond fill 7675.

17 Body sherd from jug: Hedingham ware; incised line decoration, dull mottled-green glaze; cannot be assigned a decorative style but is paralleled by a Hedingham ware jug from Stebbingford, belonging to a late 12th- to early 13th-century phase (Walker 1996, Fig. 17.1). Pond fill 7679.

18 Lower handle attachment from squat or rounded jug: ?Colchester ware; slip-coated and unglazed; stabbed decoration on handle; possible fire-blackening on one side; jug appears to be mid way between a fine and a coarse ware. Pond fill 7247.

19 Sherds from storage jar; early medieval ware; showing thumbed applied strip. Pond fills 7247, 7676 (sherds from this vessel occur in several other features).

20 Bowl: medieval coarse ware; buff fabric; smooth surfaces, borderline early medieval ware; dimpling on rim; fire-blackened on internal surface; comparable bowls were made at Mile End near Colchester (Drury and Petchey 1975, Fig 6.31). Fill 7678.

21 Cooking-pot rim: early medieval ware. Pond fill 7676.

22 Cooking-pot rim; medieval coarse ware; thumbed rim; borderline early medieval ware. Fill 7676.

23 Cooking-pot rim; medieval coarse ware; buff surface, ill-defined grey core; fire-blackening around rim and shoulder. Fill 7679.

Many of the jugs can be dated by their style of decoration (as outlined by Cotter 2000, 76–91; 113–180 and Pearce et al. 1985, 19–21). These suggested date ranges (shown on Table 2), indicate that nearly all styles could have been current during the second quarter of the 13th century and deposited in the pond at this date or sometime after. Only the London-style early rounded jugs are earlier. As for the coarse wares, the beaded cooking-pots are generally datable to the 12th century, but the B4 and H2 cooking-pot rims from the pond are, in common with majority of fine wares, consistent with an early to mid 13th-century date. The squared H4 rim does not occur in Drury's typology, but it is present at the Mile End production site (Drury and Petchey 1975, Fig. 6.27) and probably dates to the earlier 13th century. The assemblage in the pond therefore spans the later 12th to mid 13th centuries and the high ratio of fine wares to coarse wares suggests that the pottery is from a living rather than a service area.

Some of the Hedingham ware and London-type ware jugs are very alike. The similarities between the two industries have been noted elsewhere (Drury *et al.* 1993, 86) and could mean that they were related in some way. The presence of jugs with similar decorative styles but made by different manufacturers also elicits the question of consumer choice. For example, could the medieval consumer tell the difference between London-type ware and Hedingham ware? It is also interesting to note that the contemporary Colchester ware is coarser, with poorer quality glaze and decoration (at least to modern eyes), yet it still appears with the better quality Hedingham and London-type ware products and was not eschewed by the consumer.

(c) Pit 8195

This group produced a smaller amount of pottery, sixty-four sherds weighing 1139g (average sherd size 17.8g). The top fill of post-pipe 8342 (fill 8346) and the two main sections (8195 and 7220) across the feature all contained pottery, including material similar to that from the pond, both in terms of fabrics present and their ratios, as well as sherd-linkages. The range of wares is limited to Hedingham ware, sandy orange ware, early medieval ware and medieval coarse ware. Vessels comprise most of Hedingham ware Rouen-style jug No. 12, and fragments from a Hedingham ware strip jug with a red slip-coating beneath the applied strips (not from the same strip jug as found in the pond).

Coarse wares forms comprise further sherds from storage jar No. 19 and a medieval coarse ware B2 cooking-pot rim. The similarity of the assemblages and the sherd-linkages between pond 7244 and pit 8195 indicate that the assemblages from these adjacent features were deposited at the same time. This is corroborated by the similar average sherd size of both groups (17.2g in the pond and 17.9g in pit 8195) showing that the material from the pit is unlikely to be residual.

Mid 13th to 14th century or later (Fig. 4)

This phase produced far less pottery than the previous phase, a total of 102 sherds weighing 1974g.

(a) Building 13885 and pit 7577

No diagnostic pottery was recovered from either of these groups, and both produced very small amounts of early medieval ware, most likely dating from the 12th to early 13th centuries. As pit 7577 cut ditch 13906, the pottery could derive from the earlier feature.

(b) Pit 7248 (Fig. 13)

This feature cut pond 7244 and some of the pottery is similar, although no sherd-linkages between the two features were noted. Pit 7248 produced a relatively large group of over 1kg (average sherd weight 19g) from three fills (summarised in Tables 4 and 5). The primary fill (7251) produced only single sherds of early medieval ware and medieval coarse ware. Most of the pottery came from middle fill 7250, this contained all the diagnostic material described or illustrated below, there were also a few sherds of similar material from top fill 7249.

The composition of this group differs markedly from that of the pond, as there is a much higher ratio of coarse wares to fine wares (see Table 4). Diagnostic fine wares comprise a sherd of Hedingham ware showing an applied strip and red pellets, probably from a Scarborough-style early rounded jug (similar to that in the pond group (No. 7)). There is also a sandy orange ware sherd showing combed decoration though a cream slip-coating, beneath a mottled-green glaze. This is a copy of Mill Green ware and provides a mid-13th to mid-14th century date.

Coarse ware fabrics comprise early medieval ware and medieval coarse ware, and as with the earlier phase, the former is far more abundant than the latter. The coarse ware forms are itemised in Table 5 and the most complete examples are

Fabric	% Eves	Sherd Nos	Weight (g)
Early medieval ware	40	54	1072
Medieval coarse ware	37	11	248
Sandy orange ware	0	2	7
Hedingham ware	0	4	40
Totals	77	71	1367

TABLE 4: Quantification of pottery from pit 7248

Vessel form	Sub-form/ decorative style	Fabrics
Fine ware jugs	Scarborough-style	Hedingham ware (sherd only)
	Mill Green style combed decoration	Sandy orange ware (sherd only)
Bowl	-	Early medieval ware (No. 24)
Storage jar	-	Early medieval ware
Cooking-pots	H2 rims	Early medieval ware; medieval coarse ware
	H1 rims	Medieval coarse ware (No. 25)

TABLE 5: Vessel forms in pit 7248 and the fabrics they occur in

illustrated, comprising bowl No. 24 and cooking-pot No. 25. The fragment of storage jar present is probably from the same vessel as No. 19 in the pond. The remains of four cooking-pots are represented; the examples with H2 rims are datable to the early to mid 13th century and H1 rims were current throughout the 13th century according to Drury's typology. Taking into account the dating of the sandy orange ware Mill Green copy, this pit group probably dates to the mid 13th century or later and therefore may be only slightly later than that from pond 7244. The preponderance of coarse wares over fine wares suggests this pottery is from a service area. However, this is only one pit group and does not mean that there was a change in function during this phase.

Illustrated pottery (all from pit 7248 fill 7250) (Fig. 12)

24 Bowl: early medieval ware; thumbed rim; fire-blackning around sides and inside of base; paralleled at Mile End (Drury and Petchey 1975, Fig. 6.31) similar to No. 20 from pond 7244

25 Cooking-pot: medieval coarse ware; pale grey fabric; sparse flint inclusions; pitted internal surface; some fire-blackening on rim and sides

(c) Well 14023

Very little pottery was excavated from the well, which cut a number of late 12th- to mid 13th-century features. A total of seven sherds, weighing 129g was excavated from the second, ninth and eleventh fills of well section 7489 (fills 7490, 7497, 7545 and 7486). The earliest fill produced single sherds of shell-tempered ware, early medieval ware, and a sherd from a Thetford-type ware storage jar with a broad thumbed applied strip (*cf*. Rogerson and Dallas 1984, Fig. 164.228). Further sherds of early medieval ware and Thetford-type ware were excavated from subsequent fills of well section 7489, the latter including a thickened flat base, perhaps from a storage jar, and a U-shaped spout from a spouted pitcher (*cf*. Rogerson and Dallas 1984, Fig. 159. 173). The spouted jar is a relatively common form and is found, for example, at Norwich where it seems to appear later than other Thetford-type ware forms (Jennings 1981, 14, Fig. 6.133–4). However, it is unlikely to be later than *c*.1100 as Thetford-type ware was not traded to nearby Colchester after this date (Crummy 1981, 40). As this is a late form at Norwich, an 11th-century rather than a 10th-century date is likely. Most, if not all, the pottery from the well is residual and would appear to pre-date the late 12th- to mid-13th century groups.

(d) Ditches 13882, 13887, 13901, 13902, 13950, 14071, 14075, 14078 and 14131 (Fig. 12)

These ditches produced little pottery. Ditch 13902 produced eight sherds weighing 210g (of early medieval ware and medieval coarse ware), which include part of a jug rim with a hollow rod handle (No. 26). The jug, despite its unusual handle, has a fabric typical of locally made medieval coarse ware and is probably 13th century.

Ditch 13882 produced five sherds weighing 109g. The earliest pieces comprise a single sherd of early medieval ware and an abraded Hedingham ware jug rim and handle. The handle shows stabbed decoration (*cf*. Cotter 2000, Fig. 50.15) as found on Rouen-style jugs and is therefore similar to the material from pond 7244 (see No.12). Single small abraded sherds of sandy orange ware also discovered and could be late medieval in date (see below).

Ditch 13950 produced a single sherd of medieval coarse ware (wt 15g), and two sherds of abraded sandy orange ware (wt 5g), similar to that from ditch 13882. Ditch 14131 produced a single sherd of early medieval ware (wt 3g).

Ditch 13887/14078 did not produce pottery, but three sherds of sandy orange ware (wt 50g) including a lid-seated jar rim (No.27) found in clay pit 14137 are thought to have actually originated from this ditch. Number 27 is a late medieval type datable to the 14th to 15th centuries (*cf*. Cotter 2000, Fig. 90). The abraded sherds of sandy orange ware found in ditches 13882 and 13950 are similar and could belong to this vessel.

Illustrated pottery (Fig. 12)

26 Jug rim: medieval coarse ware; hollow rod handle; dimple on inside of neck where handle attachment has been poked through. Fill 6732 (section 6731) ditch 13902

27 Lid-seated jar rim; sandy orange ware; unglazed; reduced external surface. Ditches 13887/14078

The ditches show spatial differences in the deposition of the pottery. All the 13th-century material similar to that from pond 7244, pit 8195, and later pit 7248 occurs, unsurprisingly, in the ditches and ditch sections nearest the medieval enclosure. However, ditch sections 368, and 6547 of ditch 13382, section 8758 of ditch 13950 and ditches 13887/14078, containing the late medieval sandy orange ware all occur at the northern end of the site. The presence of this late medieval pottery probably indicates that although these ditches were cut in the medieval period, parts of them may have remained open over a long period of time.

14th to 15th century or later (Fig. 4)

(a) Pit group 13884 (Fig. 12)

This was the only feature group in this phase to produce pottery, and comprised a series of inter-cutting pits whose stratigraphic relationships could not be determined. Pits from this group cut pit 8195 and later ditch 13882. A total of 154 sherds weighing 2219g were recovered and the pottery from all pits in this group is shown in Tables 6 and 7. Most features produced only a handful of pottery, although larger groups of around a kilo were excavated from pits 8385 and 8477. The pottery comprises a somewhat disparate assemblage; while some features such as pits 8309 and 8988, produced sherds from storage jars and decorated Hedingham ware as found in pond 7244 and pit 8195, a very different assemblage was excavated from pits 8374, 8385, 8416, 8478, 8479 and 8386. Here, there were fragments from at least two roughly cylindrical hollow forms in a coarse sandy orange ware fabric, one has been illustrated (No. 28). They could be pipes, some kind of garden furniture, or roof furniture, but show no signs of fire-blackening or other types of use. They were found in association with 13th-century pottery including a sherd of Rouen-style Hedingham ware and a large fragment of medieval coarse ware squat jug, but the objects appear to be of later date than this pottery.

Also present are number of sherds of medieval coarse ware, these tend to be of the typical grey-firing type of the 13th to 14th centuries, and are not transitional between early medieval ware, as were the coarse wares from the earlier phases. Coarse ware vessels include a small bowl with a beaded rim. Most sherds are very abraded and many have iron oxide accretions. Sherd linkages between these pits indicate that either they were infilled at the same time, or that the pottery has become mixed. The latest datable pottery comprises sherds from a lid-seated sandy orange ware jar rim, very similar to No. 27 in ditch 13887/14078. This provides a 14th- to 15th-century date for the group.

Fabric	% Eves	Sherd Nos	Weight (g)
Early medieval ware	0	7	168
Medieval coarse ware	17	38	592
Hedingham ware	0	5	58
London-type ware	0	1	6
Sandy orange ware	21	103	1395
Totals	38	154	2219

TABLE 6: Quantification of pottery from pit group 13884

Vessel form	Sub-form	Fabrics
Fine ware jugs	–	London-type ware; Hedingham ware
Unidentified vessel	–	Sandy orange ware (No. 28)
Bowls	–	Medieval coarse ware
Storage jar	–	Early medieval ware
Jars	Lid-seated rim	Sandy orange ware
Cooking-pots	H2 rim	Medieval coarse ware

TABLE 7: Vessel forms in pit group 13884 and the fabrics they occur in

Illustrated pottery from pit group 13884 (Fig. 12)

28 Unidentified object: sandy orange ware; unglazed; friable fabric; roughly knife-trimmed at base. Fill 8386 (pit 8385)

Pottery from other features

There are a number of pits and other features containing small amounts of medieval pottery (a total of seventy-nine sherds weighing 632g), that do not have stratigraphic links and are not attributable to a particular phase. Most of this pottery is of later 12th- to mid 13th-century date similar to that from phased contexts and is described in the archive but not published. Worth further mention however, is pit 9102, which produced two tiny abraded joining sherds of sandy orange ware, unglazed but with reduced external surfaces; these appear to be late medieval and could be from the same vessels as found in adjacent ditches 13887/14078, 13882 and 13950. Pit 835, 210m west of the croft, produced 357g of pottery, including a fragment of Hedingham ware stamped strip jug and a medieval coarse ware H2 cooking-pot rim, very similar to the material from pond 7244. The sherds are rather abraded, but the average sherd size is quite high, 22.6g, so the pottery is unlikely to be residual and indicates there was late 12th- to mid 13th-century activity at the periphery of the site. In addition, a sherd from a Hedingham ware strip jug and sherds of medieval coarse ware were found in nearby ditch 922.

Of intrinsic interest from surface find context 7100, are two small sherds with a very white fabric but a buff external surface. The fabric has abundant inclusions of fine sands and is highly fired almost to stoneware. The sherds are unglazed and undecorated but may be examples of Pingsdorf ware made in the Meuse-Rhine area of northern Europe, and which occurs in London from the early 12th to early 13th century (Vince and Jenner 1991, 100–2).

Discussion

(a) Dating

The sherds of Thetford-type ware although residual, indicate activity on site perhaps as early as the 11th century and there are also small quantities of 12th-century pottery. However, the pottery evidence shows that the peak period of settlement occurred during the middle decades of the 13th century. While sherds dating to the 14th to 15th century are present, only one or two vessels may be represented, and show that settlement ended or contracted during this phase. This late medieval activity took place to the north of the main medieval settlement. There is no evidence of activity during the post-medieval period, finds of this date comprising a single sherd of post-medieval red earthenware found in a modern feature. Settlement of this site may therefore have been fairly short lived. As there is no evidence of wide-scale horizontal movement of pottery across the site, it is unlikely that the settlement was deliberately dismantled and levelled as is sometimes the case at rural sites (for example at two of the Stansted Airport sites, Walker 2004, 398–9).

(b) Pottery supply

Thetford-type ware is not uncommon in this area, and has been found at Colchester (Cotter 2000, 28), Little Clacton (Walker 2008, 41) and at several sites in Maldon (Medlycott 1999b). Thetford-type ware is not very common in central Essex and this may be evidence of the influence of an East Anglian tradition in this part of the county.

Finds of Lyveden-Stanion ware are very rare in Essex; to the author's knowledge it has only hitherto been found at Chelmsford, where finds comprise an almost complete spouted jug (Nenk and Walker 1991, Fig. 3) (exact location of the find spot unknown) and a jug rim found at the Dominican Priory site, from a context relating to the construction of the priory (Cunningham unpublished).

Rouen-type ware is also unusual but it does occur in small quantities at Colchester (Cotter 2000, 261) and has recently be found at Maldon (Walker forthcoming a). It also occurs at Fordham, a village near Colchester and may have been redistributed *via* Colchester (Walker forthcoming b).

The finds of London-type ware and Hedingham ware are to be expected as London-type ware has a coastal distribution (Pearce *et al.* 1985, 6–7) and Hedingham ware is also common on sites along the Essex coast (Walker 2012). Worth noting is the absence of Mill Green ware. This occurs throughout Essex, but is perhaps less common in the Tendring area and is not particularly abundant at Colchester (Cotter 2000, 182). It is also possible that the medieval phase is too early for Mill Green ware, an industry which probably began in the mid-13th century and was of regional importance by *c.*1270 when it was traded into London (Pearce *et al*. 1982, 272–5).

It is more difficult to identify the source of the coarse wares, but two of the bowls are similar to those produced at Mile End, near Colchester, and this is the nearest known production site to St Osyth. The virtual absence of early medieval shelly wares (comprising one sherd of shell-tempered ware from well 14023 and one sherd of shell-and-sand-tempered ware from an unphased context) is surprising given the proximity of St Osyth to estuarine and coastal shell. However, shell-tempered wares are also uncommon at Colchester (Cotter 2000, 36–7) and, in general, shelly wares are much more abundant in the south of the county, especially at sites near the River Thames, where shelly wares are common into the 13th century.

The pottery is similar to other medieval assemblages in the area, namely Montana Nursery in the parish of Little Clacton, Gutteridge Hall in the parish of Weeley and Langford Lodge in the parish of St Osyth (Walker 2008a, 2008b and 2012). All produced Hedingham ware, Colchester ware and sandy orange ware. However, none produced London-type ware, showing that in spite of its coastal trade it is not ubiquitous in this area. Mill Green ware is also either sparse or absent at these sites. Perhaps Colchester ware was the local alternative to Mill Green ware. In addition, if goods were being traded overland, the absence of Mill Green ware may be due in part to the geographical isolation of this part of Tendring. The only other instance of imported pottery was at Gutteridge Hall where a few sherds of Saintonge ware were found (Walker 2008b, 21, Fig. 13.22), this is another French white ware, but unlike Rouen-type ware came from south-west France and is slightly later in date. As with Lodge Farm, shelly wares are sparse or absent at these sites. Another point of similarity is that all sites produced sherds from storage jars, which are not a particularly a common form.

(c) Status

Groups of decorated fine ware jugs are quite common at rural farmstead sites, for example at Stebbingford (Walker 1996, 150) and Stansted (Walker 2004). However, such an abundance of jugs may indicate the householder was relatively affluent, having surplus funds with which to buy decorative items and a home of a sufficient standard of comfort to display these wares. The large number of Rouen-style jugs is interesting and may be the nearest thing in the medieval period to a matching set. The presence of actual Rouen-type ware imported from northern France probably reflects the site's access to the coast and hence to overseas trade, rather than high status.

(d) Function

As a croft, the settlement may have had a tenurial relationship with the nearby priory, and as such may have been an undertaker of priory-related work. The only and extremely tentative evidence for a link with the priory is the Lyveden-Stanion ware, which also occurred at a priory site at Chelmsford. However, the Chelmsford Priory was a Dominican Priory and the St Osyth Priory was a house of Augustinian Canons.

The assemblage appears to be almost entirely domestic, however, the relatively high numbers of bowls to cooking-pots could indicate some kind of specialised activity, but as bowls were also used in cooking and food preparation, only residue analysis will provide the answers. Unidentified object No. 28 may also indicate specialised activity. Thetford-type ware storage jars may have been used to transport grain (Kilmurry 1980, 170), so the presence of this vessel form (in early medieval ware and Thetford-type ware) may indicate that the croft was engaged in producing grain on a commercial basis, perhaps to supply the priory.

Late Iron Age and Roman Metalwork by H. Major

Three Late Iron Age and Roman contexts contained iron objects. In one context (ditch 14029) were six hobnails, and in another (ditch 14032), a short section of bar, possibly the arm of a staple.

1. Unidentified implement, in poor condition, most of the surface flaked off. It comprises a thin plate with a rounded end, tapering to a rod with a ?square section. The rod is thicker than the plate, and there is a sharp step at their junction, on one face only. The end of the rod is broken. The rounded end of the plate has a projecting narrower strip, which has been turned back onto the plate to form a rather flat loop. L. 151mm, max. W. of handle 20mm, W of tang *c.* 7mm. SF1, Deposit 188, Pit 116, Late Iron Age. Fig. 13

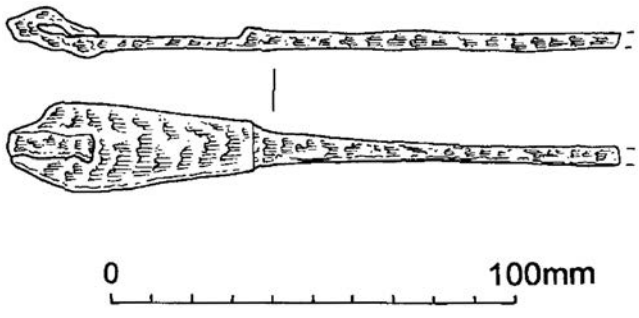

FIGURE 13: Middle/Late Iron Age to Roman iron object

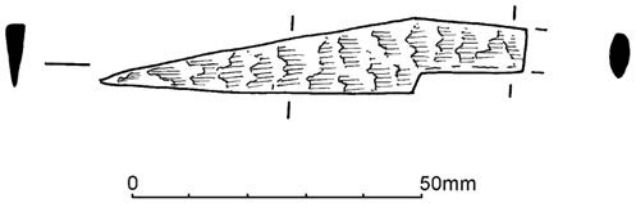

FIGURE 14: Early Saxon iron knife

Early Saxon Metalwork by S. Tyler

The excavation produced an iron knife of Early Saxon date. In pit 3195 was a small fragment of strip, *c.*32mm by 13mm.

Saxon knives are not closely datable, but generally speaking, type A (curved back) and B (straight back) knives were superseded by type C (with a step towards the point) in the 7th century (Böhner 1958, 214; Evison 1987, 113–16). The Lodge Farm knife is a type A, so belongs to the 5th to 6th centuries.

Härke (1989) has argued that length of the knife blade is a more important indicator of both function and date, with longer knives forming a higher proportion of 7th-century finds. The Lodge Farm knife falls into his group 1 (45–99mm), the shortest and most common type, which he dates to the 5th to 6th centuries.

1. Iron knife: both blade and tang present. X-radiograph shows it to be fairly complete but in very poor condition. Surface flaking from corrosion. Böhner's type 'A' exhibiting a curved back (Evison's type I). Length: 72mm, max. thickness 8mm. SF 4, context 3159, top fill of pit 3158. Fig. 14

Medieval Metalwork by H. Major

The bulk of the medieval metalwork came from just two features, pond 7244 and post-hole 6710, which is part of 11th- to 12th-century building 14135. The only other metal finds were a small unidentifiable iron lump and an iron nail shaft, both from pits.

The most notable find from the pond was a complete copper alloy bowl. Made from thin sheet, it was in a very fragile state when found. It was probably still in a usable condition when lost, but had been repaired in three places, and was presumably quite old. The other finds from the pond comprise a key, a lock component, two blade fragments, one of them horticultural, and three horseshoe fragments. None of the horseshoe fragments is large enough to identify as to type. The finds come from various contexts within the pond, and are probably just rubbish, apart, perhaps, from the bowl, which would have had some value as a recyclable object, even if not usable, and which may have been an accidental loss in the pond.

In contrast to the scattered finds from the pond, the group of finds from post-hole 6710 is an unusual concentration of ironwork in a relatively small feature. It comprises at least six objects and two nails, and there are no other finds from the context. If this were a Roman context, it would be counted as a 'hoard'. The objects are a complete axe, a dagger (possibly complete when buried), a possible trowel blade with the ring-stop from the handle, a bar fragment, two strip fragments, and a harness? ring inlaid with transverse strips of ?tin. Several of the pieces are incomplete, with fresh breaks, and fragments must have been lost during excavation. The disposition of the objects within the feature was not recorded, but from scars in the corrosion products it can be surmised that the cylinder (ring-stop?) was lying at one corner of the broken end of the possible trowel, with the hole perpendicular to the plate. The axe was probably also lying over (or under) the ?trowel. Thus at least some of the objects were in close proximity to each other when buried. The ironwork could have been deposited before or after the removal of the post; the post-hole is noticeably more elongated than the other post-holes of the building, and the objects could have been placed in a hole adjacent to the post while the building was still standing. The presence of mineralised wood on the nail shafts suggests that the objects could have been in a wooden box. The evidence points to the objects having been deliberately buried as a group while the building was still standing.

The date of deposition is very uncertain. These objects were the only finds from the building except for a very small amount of undiagnostic prehistoric pottery. The axe and ?trowel are undatable, while the affinities of the dagger are not clear enough to assign a date. The inlaid ring has an 11th- to 12th-century parallel. The date of deposition could therefore be at the earlier end of the medieval occupation of the site.

The following finds are iron unless otherwise specified.

(a) Finds from pond 7244 (Late 12th to mid 13th century) (Fig. 15).

1. Copper alloy. A shallow bowl with a simple, narrow, everted rim, and a flat base. It is made from thin sheet, with traces of tinning internally. The bowl is slightly buckled, particularly the rim, and parts of the bowl had crumbled in the ground. Although it is now rather holey, with parts of the rim missing, this may be entirely due to damage to the thin sheet during burial, and the bowl was probably complete when deposited. The rim had cracked in three places prior to discard, and had been repaired. The most obvious repair consists of a sheet patch *c.*20mm wide applied to the inside of the bowl and fastened by two rivets. Part of the patch has broken off; it would have continued across the rim, as there are two more rivets surviving in the rim. The second repair has a strip of sheet (now incomplete) folded over the rim, and attached by two rivets through the rim. The sheet patch is missing from the third repair, but there are two rivet holes through the rim. Diam. 274mm, depth *c.*35mm. SF6, Deposit 7247.
2. Key, complete bar slight damage to the bit. Circular loop with slight moulding at the base, solid stem with simple non-symmetrical cut-out bit terminating flush with the stem. Winchester type 6 (Goodall 1990). The surface has traces of a very black material, which may be the remains of a non-ferrous coating. L. 104mm. Deposit 7245.
3. Lock bolt. One end has a blunt point, the other is squared. Complete as buried. L. 180mm. SF12, Deposit 7674.
4. Knife, point missing. Straight-backed, probably with an incomplete whittle tang. L. *c.*68mm, max. W. *c.*20mm. Deposit 7675.
5. Pruning knife blade in two pieces, tang missing. The tip is sharply beaked. L. 98mm, blade W. 25mm. SF10, Deposit 8120.
6. (Not ill.) Horseshoe fragment with 4? square? nail-holes, one probably with the nail still in place. Toe missing? L. *c.*74mm, max. W. 26mm. Deposit 7675.
7. (Not ill.) Possible second horseshoe fragment, possibly with a calkin. One nail may be *in situ*. There may be a (non-horseshoe) nail corroded onto it, or part of the tang from the knife. L. *c.*65mm, max. W. 23mm. Deposit 7675.
8. (Not ill.) Horseshoe fragment, with large, countersunk holes, one complete and one partial. Web W. *c.*21mm. SF13, Deposit 8400.

(b) Group of iron objects from post-hole 6710 (SF20, deposit 6711, 11th to 12th century) (Fig. 16).

9. Axe. Complete bar slight damage to the edge. The tear-drop shaped socket has cracked down the back, where the socket would have been welded. L. 185mm, blade W. *c.*65mm.

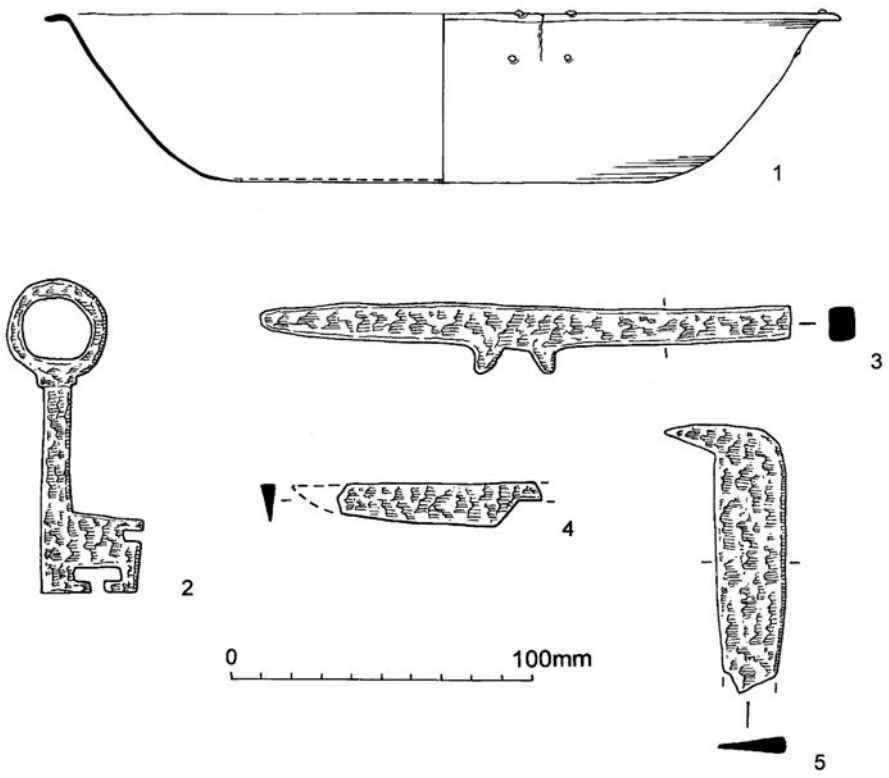

FIGURE 15: Medieval copper-alloy and iron objects, pond 7244

10. Ring, in four fragments, inlaid with transverse strips of cream-coloured material on the outer face only, possibly very decayed metal. The inlay did not show up on the X-ray. It is probably present all the way round the ring, though the object was heavily concreted and only part cleaned. There is a fragment of a similar ring from Trowbridge (Mills 1993, 92, No. 23), with tin inlay, associated with 11th- to 12th-century pottery. The purpose of the ring is unknown. It is clearly a decorative piece, and is most likely from horse-harness. External diam. *c.*80mm, th. 6mm.
The inlay was examined by the conservator (E. Hogarth) who comments: 'The inlay consists of thin strips of a whitish powder, compacted into very shallow grooves in the iron surface. It is missing in many places, leaving only a faint trace upon the surface. The inlay is slightly discoloured by iron corrosion. The friable nature of the inlay suggests that it is not bone; likewise it does not appear calcareous when tested. The shallowness of the deposit may be from metal inlay/plating, which can corrode to a purely powder layer (*e.g.* tin), but this was unable to be ascertained.' XRF analysis was recommended, but not undertaken.
11. Tapering plate of constant thickness. The narrower end is original, and slightly rounded. The other end was broken in antiquity. This is possibly a trowel blade, and the cylinder (below) may be the ring stop from the handle, particularly given that the cylinder was lying over the plate. If this is a trowel, the tang was evidently not with the other fragments when buried. The forms of trowels have varied little over the years, and there is a 16th-century parallel from Peterborough with a broad, rather squat blade, complete with its ring stop (Cessford 1998, 117, Fig. 32.8). L. 100mm, W. 68-100mm, th. *c.*3mm.
12. Cylinder. The object is short and thick-walled, with rounded edges top and bottom. Diam. *c.*38mm, Ht. 24mm, th. *c.*15mm.
13. Two joining fragments of a rectangular-sectioned bar with a short tang formed by folding the sides of the bar together and hammering them into a rod. The other end has one squared corner and one rounded corner. There is possibly a slight flange along one long side. This is complete as buried, but may have been broken prior to burial. L. *c.*149mm, W. 28mm.
14. Four joining pieces of a tanged blade, fresh breaks, point missing. The tang is set centrally, with sloping shoulders either side, which marks it as a single-edged dagger. The tang has traces of a wooden? handle, and is probably complete. There is a suggestion of a very low central rib on the blade. L. 220mm, tang L. *c.*90mm, blade W. *c.*30mm.
15. (Not ill.) Strip fragment. Rectangular? section. Slightly tapering, with a fresh break at the wider end. There is possibly a circular hole in the narrower end, but the metal is extremely mineralised, and the X-ray is unclear. L. 64mm, W. 13–17mm.
16. (Not ill.) Strip fragment. Lenticular? section. Slightly tapering, with a fresh break at the wider end. L. 31mm, W. 7–12mm.
17. (Not ill.) Two nail shafts, mineralised wood present. Fresh breaks.

Worked stone by H. Major

Fragments of lava quern came from twelve contexts, weighing a total of 7161g. Many of the fragments were very eroded, but where grinding surfaces survived, they were pecked. Over half of the total amount came from late 12th- to mid 13th-century pit 8195, including a substantial piece from a ?lower stone, now very fragmented. Only one other piece (from pit group 13884) had the full thickness surviving (21mm). The stones are probably all flat querns.

Two schist whetstones were recovered. The stone was not identified petrologically, but is probably imported Norwegian Rag, commonly used for medieval whetstones in the area. One came from late 12th to mid 13th-century pond 7244, which also yielded a fragment of a ?Purbeck Marble slab, very eroded, and of uncertain original shape. Purbeck Marble is not a common stone type from medieval sites in Essex. In the Middle Ages, the stone was mainly used for mortars, or as a decorative architectural stone, particularly in ecclesiastical establishments. The fragment from Lodge Farm is unlikely to have derived from a mortar, so it may have been a decorative element from the priory or one of its outbuildings.

Selected catalogue (Fig. 17)

1. (Not ill.) Rhenish lava quern. Fragmented, possibly lower stone with a pecked grinding surface, other surface irregular where it survives. Although there is a considerable amount of this quern, there is only one piece that could be from the edge, so the diameter is not measurable. Th. at edge 19mm, max. th. 38mm. Wt. 4272g. Deposit 8197, pit 8195, late 12th to mid 13th century.

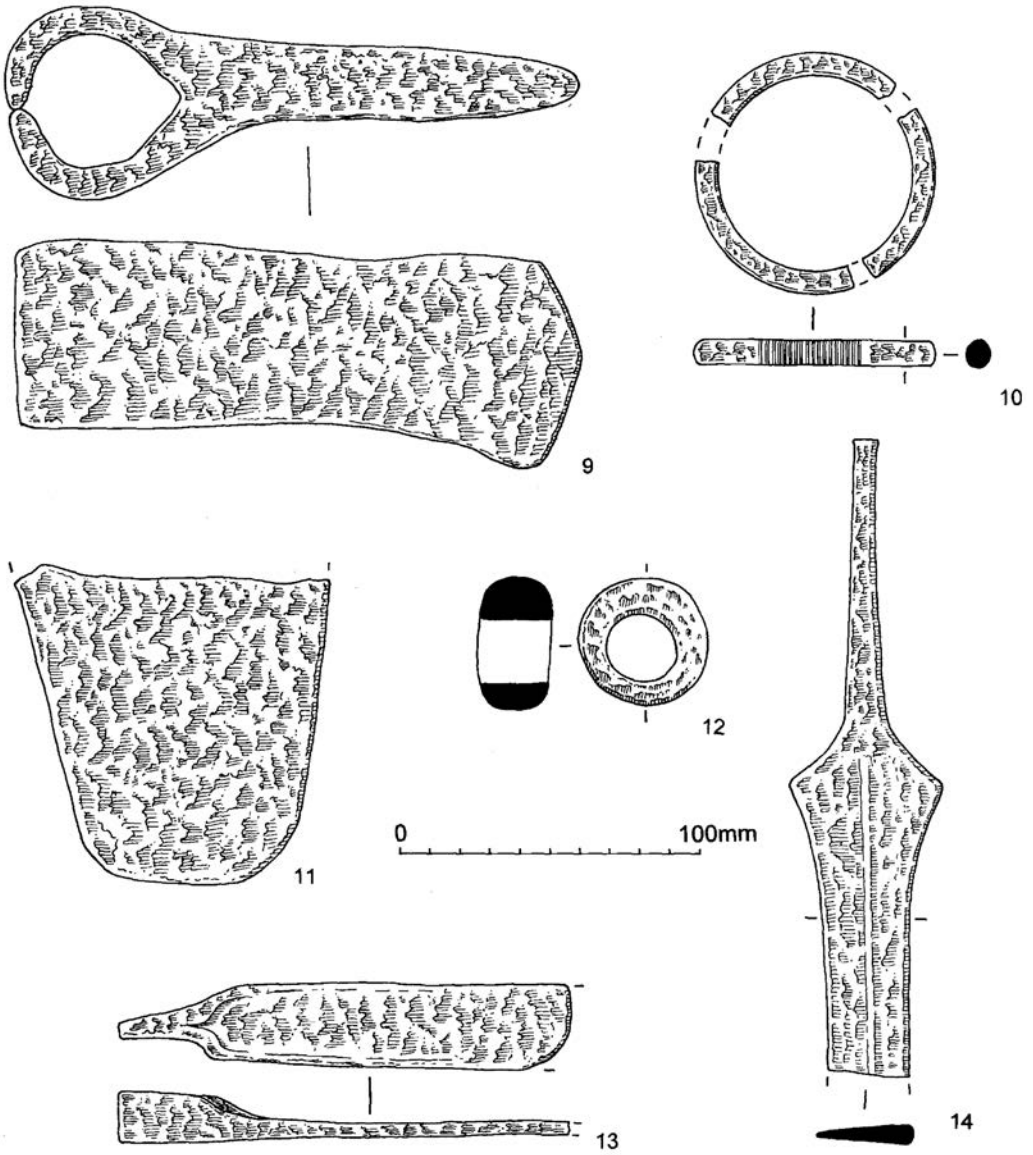

FIGURE 16: Medieval iron objects, post-hole 6710

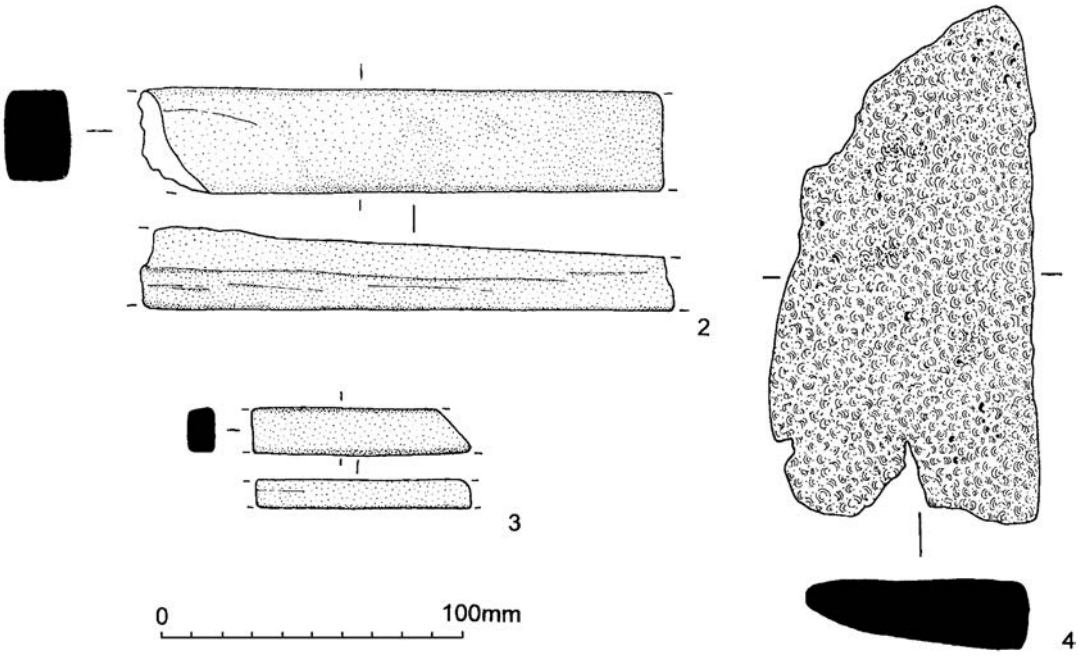

FIGURE 17: Medieval worked stone

2. A large whetstone in pale buff-coloured schist. Rectangular section, thickness slightly variable. Both ends are broken. L. 176mm, section 32x17 – 34x25mm. SF2, Deposit 839, pit 835, late 12th to mid 13th century.
3. Whetstone in pale buff-coloured schist. Rectangular section, with one end bevelled, the other rough. Three faces and the bevelled end have been smoothed. L. 72mm, section 15x9mm. Deposit 7675, pond 7244, late 12th to mid 13th century.
4. Probably Purbeck Marble. Surface eroded. Four joining fragments (recent breaks) forming a slab in the shape of a D with one apex truncated. This is not necessarily its original shape, but it is difficult telling which edges are original. The straight side is *c.* 20mm thick, tapering across the slab. L. 170mm, W. 86mm. Deposit 8120, pond 7244, late 12th to mid 13th century.

Roman Brick and Tile by H. Major

A small amount of Roman brick and tile was recovered, a total of fifty-nine pieces, weighing 5374g. No feature contained more than four pieces of Roman tile, and it was not considered worthwhile cataloguing the material fully. The majority of the identifiable material was Roman brick, with small amounts of roof tile and box flue tile. The only unusual piece was a rather irregular disc, diam. 80mm, chipped from a sherd of *tegula*.

Medieval Brick and Tile by P. Ryan

The excavation recovered 153 pieces (10.2kg) of brick and tile. Included amongst the assemblage, most of which was Roman, were fragments of medieval floor tile. Most pieces came from pond 7244, which was in use in the late 12th to mid 13th century.

Much of the medieval material is very fragmentary and abraded, making it impossible to identify whether it is brick, floor tile or fired daub. The fabric is easily distinguished from Roman brick and tile, however, because it is very distinctive. Fragments, 35mm thick, formed in a mould, with slightly undercut knife-trimmed edges, often with a worn upper surface, can be identified as floor tile. The sandy coarse-grained fabric is very similar to that of the Coggeshall bricks dated to the late 12th/early 13th centuries. Gardiner describes unglazed floor tiles, 9 inches square (230mm), found during his excavations at Coggeshall Abbey (Gardiner 1955, 24 and 31). Glazed floor tile, 35mm thick and approximately 205mm long with similar fabric to the Coggeshall bricks, was found during the excavation of the Templar chapel at Cressing Temple. Most of the Coggeshall ceramic building is very precisely made. I would suggest that the material found at St Osyth may have been made at a similar period, but by a much less skilled worker.

Baked clay by H. Major

Late Iron Age and Roman

718 fragments of structural daub were recovered from late Iron Age features, weighing a total of 7756g. Most of the daub came from pit 116 (7340g), including some fragments with wattle impressions, none very extensive. Most of the wattles were *c.* 13mm in diameter, although there were a few larger impressions of uncertain diameter. One piece may have the imprint of a squared or split timber, and a second piece was possibly from the squared edge of a door or window. The depth of clay over the wattles varied from *c.* 5mm to 30mm. The surface often had fine striations, possibly through being wiped with a piece of wood.

Only one Roman context (ditch 14029) had possible structural daub. There were no wattle impressions, but the surface had a cream-coloured wash.

Minor amounts of other burnt clay fragments were recovered from late Iron Age and Roman contexts. Most are probably from daub, but fragments from pit 665 and segment 667 across ditch 14029 are possibly from triangular loomweights. If so, they are probably residual Middle Iron Age finds. A small fragment in a vegetable tempered fabric from ditch 13913 is possibly salt briquetage.

Early Saxon

A very small amount of baked clay was recovered from Early Saxon contexts, a total of fourteen fragments weighing 118g. None of it is definitely identifiable as to purpose, and at least one piece may be residual.

Medieval

A considerable amount of baked clay was collected, nearly 47kg. Over half of this was structural daub, in a rather sandy fabric. Many pieces had flat surfaces, but there were no wattle impressions, and the fragments are probably from floors or hearth bases rather than walls. One fragment, from pit 8314 in 14th- to 15th-century or later pit group 13884, had a half-rounded profile. Most of the daub was from one particular area of the site, in and adjacent to pond 7244 (pit 8195). There was also a small amount from one of the post-holes of building 7960.

The only 'object' was a fragmentary and incomplete piece with an L-shaped section, heavily grass-marked on one face. This was possibly luting from an oven or such-like.

Most of the remainder of the baked clay (87%) was in a similar fabric to the structural daub, making it likely that the bulk of it is also daub. Some may be residual material. Clay pit 14137, in particular, contained a scatter of Middle Iron Age triangular loomweight fragments (twenty-six fragments, weighing 2128g), reported on in the prehistoric report (Germany 2007).

Charred plant macrofossils and other materials by V. Fryer

Introduction and Method

The following three features contained moderately high densities of plant macrofossils and were selected for detailed analysis:

Sample 10	Pit 116	Late Iron Age
Sample 229	Pit 6936	Medieval
Sample 230	Pit 7248	Mid 13th to late 14th century or later

The samples were bulk floated, collecting the flots in a 500 micron mesh sieve. The dried flots were sorted under a binocular microscope at magnifications up to x16, and the plant macrofossils and other remains noted are listed on Table 8. Identifications were made by comparison with modern reference specimens. Nomenclature within the table follows Stace (1997). For the purposes of this analysis only embryo ends or complete cereal grains and large grass seeds were counted.

Results

Cereal grains/chaff and seeds of common weed plants were present at varying densities in all three samples. Preservation

Sample No.		**10**	**229**	**230**
Context No.		**188**	**6937**	**7250**
Context type		**Pit**	**Pit**	**Pit**
Date		**LIA**	**MED**	**13/14thC.**
Cereals and other food plants	Common name			
Avena sp. (grains)	Oat	22	70	73
(awn frags.)			1fg	
Cereal indet. (grains)		19	136	60
(grain frgs.)			xxx	xx
(sprout frags.)			18	
(detached embryos)		4		1
(rachis node frags.)				8
Large Fabaceae indet.	Pulses	24cotyfg		
Hordeum sp. (grains)	Barley	28	18	16
(rachis nodes)			2	3cf
H. vulgare L. (asymmetrical lateral grains)	Six-row barley	1cf		
Secale cereale L. (grains)	Rye	28	140	6+10cf
(rachis node)			12	16
Hordeum/Secale cereale type (rachis nodes)	Barley/rye type			3
Triticum sp. (grains)	Wheat	7	88	35
T. aestivum/compactum type (rachis nodes)	Bread wheat type			2
Vicia faba L.	Field bean	6+4coty		
Herbs				
Agrostemma githago L.	Corn cockle	2	2	
Anagallis arvensis L.	Scarlet pimpernel	2		
Anthemis arvensis L.	Corn chamomile		24	2
A. cotula L.	Stinking mayweed	201	108	19
Aphanes arvensis L.	Parsley-piert	1		1
Bromus sp.	Brome	3+3fg	12	
Centaurea sp.	Cornflower			7+1fg
Chenopodium album L.	Fat hen	46	48	4
C. rubrum/glaucum	Goosefoot	1cf		
Chenopodiaceae indet.		31	12	2
Chrysanthemum segetum L.	Corn marigold		160	3
Fallopia convolvulus (L.) A.Love	Black bindweed	5+2cf		
Lapsana communis L.	Nipplewort		2	
Linum usitatissimum L.	Flax	1		
Medicago/Trifolium/Lotus sp.	Medick/clover/trefoil		1cf	1
Mentha sp.	Mint	2		
Onorpordon acanthium L.	Scotch thistle			2+1fg
Persicaria maculosa/lapathifolia	Persicaria	5	8+4fg	
Plantago lanceolata L.	Ribwort plantain	7		
Small Poaceae indet.	Grasses	44	6	
Large Poaceae indet.		3	12	4
Polygonum aviculare L.	Knotgrass	1	8	6
Prunella vulgaris L.	Self-heal	1		
Ranunculus acris/repens/bulbosus	Buttercup	7		
Raphanus raphanistrum L. (siliquae)	Wild radish		6fg	3+1fg
Rumex sp.	Dock	9+4fg	10	4+1cf
R. acetosella L.	Sheep's sorrel	55	14	7
Scleranthus annuus L.	Knawel	1cf	2	5
Silene sp.	Campion	1+1cf		
Spergula arvensis L.	Corn spurrey		42	
Stellaria graminea L.	Lesser stitchwort	11	2	
S. media (L.)Vill.	Chickweed		2	
Tripleurospermum inodorum (L.) Schultz-Bip	Scentless mayweed	2		
Vicia/Lathyrus sp.	Vetch/vetchling	8+6coty	34+42coty	26+13coty

Sample No.		**10**	**229**	**230**
Context No.		**188**	**6937**	**7250**
Context type		**Pit**	**Pit**	**Pit**
Date		**LIA**	**MED**	**13/14thC.**
Wetland plants				
Eleocharis sp.	Spike-rush	1		
Montia fontana L.	Blinks			3
Tree/shrub macrofossils				
Corylus avellana L.	Hazel	4fg		
Other plant macrofossils				
Charcoal <2mm		xxx	xxx	xx
Charcoal >2mm		xx	x	x
Charred root/rhizome/stem		x		x
Indet.culm node frags.				12
Indet.seeds		53	52	12
Indet.tuber frags.		2		
Other materials				
Siliceous globules		xx		
Small coal frags.				x
Small mammal/amphibian bones			x	
Vitrified material		x		
Sample volume (litres)		**8**	**10**	**10**
Volume of flot (litres)		**<0.1**	**<0.1**	**<0.1**
% flot sorted		**100%**	**100%**	**100%**

x = 1 to 10 specimens, xx = 10 to 100 specimens, xxx = more than 100 specimens, fg = fragment, coty = cotyledon

TABLE 8: Charred plant macrofossils and other materials

was moderately good, although a large number of cereal grains had become severely puffed and distorted during charring and could not be specifically identified.

(a) Cereals

Oat (*Avena* sp.), barley (*Hordeum* sp.), rye (*Secale cereale*) and wheat (*Triticum* sp.) grains were recorded with oats and rye being numerically more common. In the absence of floret bases, it was not possible to ascertain whether the recorded oat grains were from wild or cultivated types. However, given that all three assemblages appear to be partly or wholly derived from cereal processing detritus, this differentiation may not be significant, as the oats were probably present as a contaminant of the main crop or crops.

Due to the relatively small number of identifiable grains within the assemblages, the exact composition of this main crop is somewhat elusive. Rye, which because of its extensive root system is well suited to cultivation on the local light sandy soils, is particularly common in sample 229 (medieval), but is also present in the other two samples. Wheat, which is less well adapted to dry conditions but does tolerate heavier clay soils, is also recorded, but at a lower density. A small number of 'drop form' grains typical of spelt wheat (*T. spelta*) were present in sample 10, but it should be noted that due to poor preservation of the material, some spelt grains may have been mis-identified as rye. Rounded hexaploid wheat grains were reasonably common in the medieval assemblages. Although it is possible that a mixed crop or maslin of rye and wheat was being processed on the site during the medieval period, the weed seed assemblage (see below Wild Flora) does appear to indicate that both light sands and clay soils were being cultivated, and therefore the material studied may be derived from the processing of different batches of grain at different times.

Although barley was the least common grain recorded in the medieval deposits, it was slightly more abundant in sample 10 from the Late Iron Age pit. A single possible asymmetrical lateral grain of six-row barley (*H. vulgare*) was recorded from this assemblage.

Chaff was entirely absent from sample 10 and was not particularly common in the medieval assemblages. Barley and rye rachis nodes were recorded along with a small number of rachis nodes of bread wheat (*T. aestivum/compactum*) type with characteristic 'crumpled' glume inserts and deciduous glume bases.

Other food plant remains were only noted in sample 10. Six large angled legumes, probably of field bean (*Vicia faba*) were recorded although none retains an intact *hilum*. A number of cotyledon fragments of pea/bean type were also recovered from the same assemblage.

(b) Wild flora

Seeds/fruits of common corn field weed species were recovered from all three samples, with seeds of corn chamomile (*Anthemis arvensis*), fat hen (*Chenopodium album*), corn marigold (*Chrysanthemum segetum*), indeterminate grasses (Poaceae), dock (*Rumex* sp.) and corn spurrey (*Spergula arvensis*) occurring most frequently. The

abundance of stinking mayweed (*Anthemis cotula*) seeds in sample 10 may indicate that heavy clay soils were coming into cultivation during the Late Iron Age/Roman period, possibly for the first time. This agricultural expansion, which was made possible by improvements in plough technology, is witnessed across the eastern region by a marked increase in weeds specific to both heavier soils and marginal wet grassland areas, although the latter are surprisingly infrequent at the current site. Conversely, the presence of sheep's sorrel (*Rumex acetosella*), which is particular to acid sand habitats, indicates that the local light soils still remained important for agricultural production throughout the Late Iron Age, Roman and medieval periods. Vetch/vetchling (*Vicia/Lathyrus* sp.) seeds were especially common in the assemblages from the medieval pit fills. This increased frequency in the number of leguminous weed seeds, which is commonly seen in assemblages of earlier medieval date, is almost certainly a result of the deliberate rotational cultivation of these plants for their soil improving properties.

It is perhaps of note that brome (*Bromus* sp.), which formed a major component of a number of the earlier assemblages studied (Fryer 2007), was virtually absent from the current samples. The exact reason for this is not known, but it may in part be a reflection of changes in crop husbandry as brome favours autumn sowing but, by the Late Iron Age/Roman period and certainly into the medieval period, both autumn and spring sowing were being practised.

As mentioned above, seeds of wetland plant taxa and tree/shrub macrofossils were extremely rare. A single spike-rush (*Eleocharis* sp.) nutlet was noted in sample 10 and a small number of blinks (*Montia fontana*) seeds were present in sample 230. Only four small hazel (*Corylus avellana*) nutshell fragments were recovered from sample 10.

(c) Other plant macrofossils

Charcoal fragments and unidentifiable seeds/seed fragments were present throughout. A small number of cereal/grass culm nodes were recorded from sample 230, and indeterminate tuber fragments were noted in sample 10.

Discussion

Although from different periods of the site's occupation and use, the three assemblages are very alike and it appears most likely that they are derived from a similar source, namely cereal processing detritus. However, as so few samples were suitable for analysis, these results can, at best, only be applied to what may have been happening in two small areas of the site. They should not be used as a generalised statement of practice across the occupied area.

The assemblage from sample 10 (Late Iron Age) is somewhat unusual, as cereal chaff is entirely absent. However, the abundance of weed seeds (with a seed to grain ratio of 4:1) almost certainly indicates that either burnt processing waste and/or animal fodder is represented. Large contaminants, including semi-intact *capitulae* (seed heads), large seeds and legumes are present, and may indicate an advanced stage of processing.

Cereals are more common in the medieval assemblages from samples 229 and 230, with weed seed to grain ratios of approximately 1:1 and 1:2 respectively. Many of the grains have the distinct concave profiles commonly associated with malted grains, but detached sprouts only occur in sample 229, and then at an insufficient density to indicate deliberate germination. It is therefore considered most likely that the poor condition of the grains may be the result of spoiling due to inadequate storage conditions. These spoiled grains would have been burnt along with processing waste in the form of weed seeds and straw (culm nodes). The puffed and fragmented condition of macrofossils in both assemblages may indicate that the material had been burnt repeatedly, and this may account for the lower density of chaff.

In summary, although the analysis of only three samples from Late Iron Age and medieval contexts does not allow conclusive interpretation of these periods of occupation, it may be possible to speculate about activities in specific areas of the site. The composition of the single assemblage of Late Iron Age date appears to indicate that small-scale cereal processing was probably being undertaken in the north western area of the site. Cereals were being grown on both light sandy soils and heavy clays, the latter possibly newly coming into cultivation.

Cereal processing and storage was also probably being undertaken in the medieval croft to the south of the site. Storage conditions may have been less than adequate, with some grains being spoiled and burnt along with processing waste. Light lands and clay soils were both still being utilised, with soils being improved by the deliberate cultivation of leguminous weeds.

CONCLUSIONS

Late Iron Age, Roman and Early Saxon

The Late Iron Age and Roman trackways, enclosures and discrete features and the Early Saxon pits serve as indirect evidence for human occupation and other forms of activity having take place either within or close to the site during those periods. The Late Iron Age remains relate to the redevelopment and the re-organization of the newly available space brought about by the abandonment or shifting of the previous Middle Iron Age settlement and the western arm of the Middle Iron Age trackway system. Late Iron Age and Roman settlement sites are conjectured to have existed close to, but outside, the north-eastern and western parts of the site respectively, where most of the Late Iron Age and Roman finds were discovered. The Late Iron Age and Roman trackways suggest that the site continued to be used as a thoroughfare throughout those periods. The reason for the re-alignment of the western arm of the trackway system is not known.

Medieval

The medieval remains, particularly those of the late 12th- to mid 13th-century, and mid 13th- to late 14th-century or later phases, probably represent the backyard of a messuage or croft fronting a postulated forerunner of the present day trackway running from Daltes Lane to Lodge Farm (Fig. 9). The croft is likely to have been part of the demesne of the major landowner of the area, the nearby abbey, and to have been occupied by tenants, operating within a tenurial or other economic relationship.

11th to 12th century

The remains of 11th- to 12th-century building 14135 probably represent a barn or workshop (Fig. 5). The dating evidence

for the structure is slight and consists of the possible 11th- to 12th-century horse harness fitting from post-hole 6710. Other signs of early activity are the residual sherds of 11th to possible 12th-century Thetford-type ware from mid 13th to late 14th century or later well 14023. The iron tools in post-hole 6710 are conjectured to have been buried for temporary safe keeping while the building was still standing, as the south-eastern corner of the building is likely to have served as an easily re-locatable marker.

Late 12th to mid 13th century, and mid 13th to late 14th century or later

Ditches 13882, 13887, 13901 and 13902 follow the edges of the palaeochannel and represent the limits of the croft within the area of the site during the second half of the 13th century (Fig. 4). The siting of the croft on a thin strip of marginal land shows an awareness of the characteristics of the underlying geology and probably indicates that the more extensive areas of sand and gravel to either side of it were restricted to grazing of livestock and/or or growing of crops.

Most of the late 12th- to mid 13th-century, and mid 13th- to late 14th-century remains relate to commercial or agricultural activity. Pit 8195 and pond 7244 (Fig. 6) are linked together and are suggested to have been part of a cottage industry, perhaps the washing of fleeces after shearing or the cleaning of skins after slaughter or steeping. As previously stated, earlier on in this article, keeping of sheep and processing and selling of sheep-related products are likely to have been a major component of the medieval St Osyth economy. The three post-holes (8342, 8398 and 8403) along the eastern side of the pit are probably supports for a roof or for a retaining wall or fence, while the line of stake holes (14138) are possibly the remains of a protective screen, which would have separated the pit from the deepest part of the pond. The rectangular impression in the middle of the pit is thought to be the imprint of a wooden container or platform. The large amounts of baked clay found in the top two fills of the pit represent the dumping of unwanted material after the pit had gone out of use. The pieces of baked clay are unlikely to have been part of the pit's superstructure as they have flat surfaces, making it more likely that they come from an unrelated clay floor or hearth. The sub-rectangular pits in the pit group (14142) to the north of pit 8195 are suggested to have been used to steep animal skins in effluent or vegetable liquor, possibly for tanning, as they appear to have been used to hold some form of liquid (Fig. 4).

Pit 7248 cuts the pond, but nevertheless possibly indicates that the backyard of the croft was still being used for cottage industry after the pond and pit 8195 had gone out of use (Fig. 6). The many stake-holes in the base of it make no coherent pattern and as such perhaps represent repeated use of frames to support animal skins for drying, scraping or stretching. Well 14023 is not well-dated, but may have replaced the pond as the main source of water (Fig. 7). Building 13885 is probably a barn, store-house or workshop because of the surrounding cottage industry, and its likely location towards the back of the croft (Fig. 6). A similar-looking building, thought to be a shed or barn, has been excavated and recorded at Chignall St James (Brooks 1992).

Domestic activity associated with the croft is represented by the many finds from the pond. The most likely location for the associated dwelling is to the south of the site, close to the present-day trackway. The late- 12th to mid 13th-century sequence of small enclosures and the subsequent sub-division of the croft by ditches probably imply that the croft was not singularly engaged in a cottage industry, but was also growing crops and keeping farm animals. The prosperity of the croft is evident in the presence of the copper-alloy bowl and the high number of fineware jugs, perhaps implying that its occupants were of lower-middle or middle status. St Osyth quay and market are likely to have facilitated the selling and dispersal of any goods produced by the croft as the town served as the main centre for trade for the south-western part of the Tendring peninsula up until the development of Clacton in the 19th century (Medlycott 1999a).

The nearby presence of St Osyth church and abbey manifests itself in the pieces of medieval floor tile and the fragment of Purbeck marble, as such items were expensive during the medieval period and were normally exclusive to high status sites. The sherds of Lyvden-Stanion ware possibly relate to the existence of the abbey as well, as such items have also been found at the Dominican priory in Chelmsford.

15th century or later

Building 7960 is thought to be a barn or byre (Fig. 8). In support of this is the 2m wide entranceway on its west side, which is probably too broad for a small house. The structure cuts across the west side of the croft and the croft may no longer have been present when the building was built. It is not known if the building was in use at the same time as pit group 13884 as both features are not closely dated. The pits represent piecemeal extraction of clay, the purpose of which is not known.

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A Henrican fort and its associated foreshore structures: archaeological investigations in Cudmore Grove Country Park, East Mersea 2002–3

E. M. Heppell

with D. Goodburn and contributions by H. Walker, J. Compton, D.E. Robinson, S.K. Haslett, C. Locattelli, C. Groves, I. Tyers, J. Meadows, A. Bayliss and N. Brown

The exposure of timber structures by coastal erosion on the foreshore at Cudmore Grove Country Park, East Mersea, prompted a programme of archaeological works. The structures comprised a timber framed quay, a revetment, a beacon and other alignments of upright posts. They were located in close proximity to East Mersea Fort that partially survives as an earthwork on the saltmarsh. The fort, occupying a strategic location at the mouth of the River Colne, was constructed in 1547 and periodically abandoned and re-garrisoned through the following centuries. The date, construction methods and purpose of the wooden structures on the foreshore are considered and coastal change at Cudmore Grove, which has been observed through field survey and reference to historic mapping, discussed.

INTRODUCTION

Cudmore Grove Country Park is situated at the eastern point of Mersea Island, at the confluence of the rivers Colne and Blackwater (Fig. 1a). It is a nationally important area for nature conservation, being part of the Colne National Nature Reserve. Less well known is the importance of the archaeological remains in the park which range from Pleistocene interglacial sediments, associated with the former Medway Valley, to the remains of World War II defences. A key, though less easily recognised, component of the historic environment of the park is a triangular 16th/17th century bulwark fort that partially survives as an earthwork, which is a scheduled monument (SAM 24881), which lies in the exposed saltmarsh, fronted by the mobile beach deposits and mudflats of the Mersea Flats (Plate 1).

In 2002 Dougal Urquart, the Essex County Council (ECC) Head Ranger of the park, noted that not only was the bulwark fort being subject to erosion but that substantial wooden structures were emerging on the mudflats of the intertidal zone to the south and east of the fort. An initial site visit indicated that these foreshore structures were very substantial and of an unusual form and warranted further study. A rapid survey was carried out by ECC Field Archaeology Unit (Heppell 2002), which was followed by excavations (Heppell 2004). This fieldwork aimed to better understand these structures, their character and relationship to the fort. In addition to the fieldwork further historical studies were carried out. English Heritage facilitated the excavations, additional studies and dissemination, by providing grant funding. This identified remains of a quay and revetment as well as other timber structures.

The impetus for field investigation was the threat to these archaeological remains. East Mersea, like much of the low-lying Essex coast, is subject to a great deal of coastal erosion, perhaps most clearly demonstrated at the cliffs along its southern shore, where the World War II gun emplacements which once stood on the clifftop have now collapsed onto the beach. A number of schemes have been put in place in recent years to combat this, including the construction of brushwood polders (to provide protection from the waves and encourage deposition of sediments), reinforcing the extant sea defences and constructing embankments. It is this coastal erosion that has exposed the archaeological remains on the foreshore and continues through to the present day.

This article presents the results of the archaeological investigations, placing these within their historical context, as well as considering wider issues of coastal change and historic environment management. As the majority of the work at Cudmore Grove concentrated on the wooden structures the wood technology assessment formed a significant part of the study. Therefore the content of wood technology reports, by Dr D. Goodburn (2004), have therefore been closely incorporated into this article rather than being presented as separate specialist reports. The assessment report can be found in the project archive, along with the other specialist reports, site records (written, drawn and photographic) and artefacts. The archive will be deposited at Colchester Museum.

EXTANT REMAINS

Situated on the saltmarsh, outside the seawall, the remains of the bulwark fort comprise two linear earthwork banks, around 50m long, forming a triangle against the seawall which delineates the western side of the fort, having destroyed the original landward bank (Figs 2 and 4). A ditch runs around the fort, presumably the remnants of the moat, although there is little water in it as it is being infilled by sands from the beach, which lies to the east of the marsh. Beyond the beach lies a band of sands and gravels, exposed clays and mudflats. It is in this foreshore zone, below mean high water, that the majority of the wooden structures were noted.

Three distinct groups of timbers were noted in this area (Fig. 1b); substantial horizontal structural timbers along with a variety of uprights thought to be the remains of a revetment and quay, (Site A), further upright timbers to the north-east of these (Site B) and substantial timbers which may be part of a beacon. In addition some 1km to the west, within the area protected by the brushwood polders below the East Mersea Cliffs, substantial untrimmed timber posts were exposed (Site C).

The initial site visits and conversations with the country park rangers and others familiar with the area established that the structures on the foreshore were vulnerable to erosion; hence a fieldwork programme was designed to clarify the

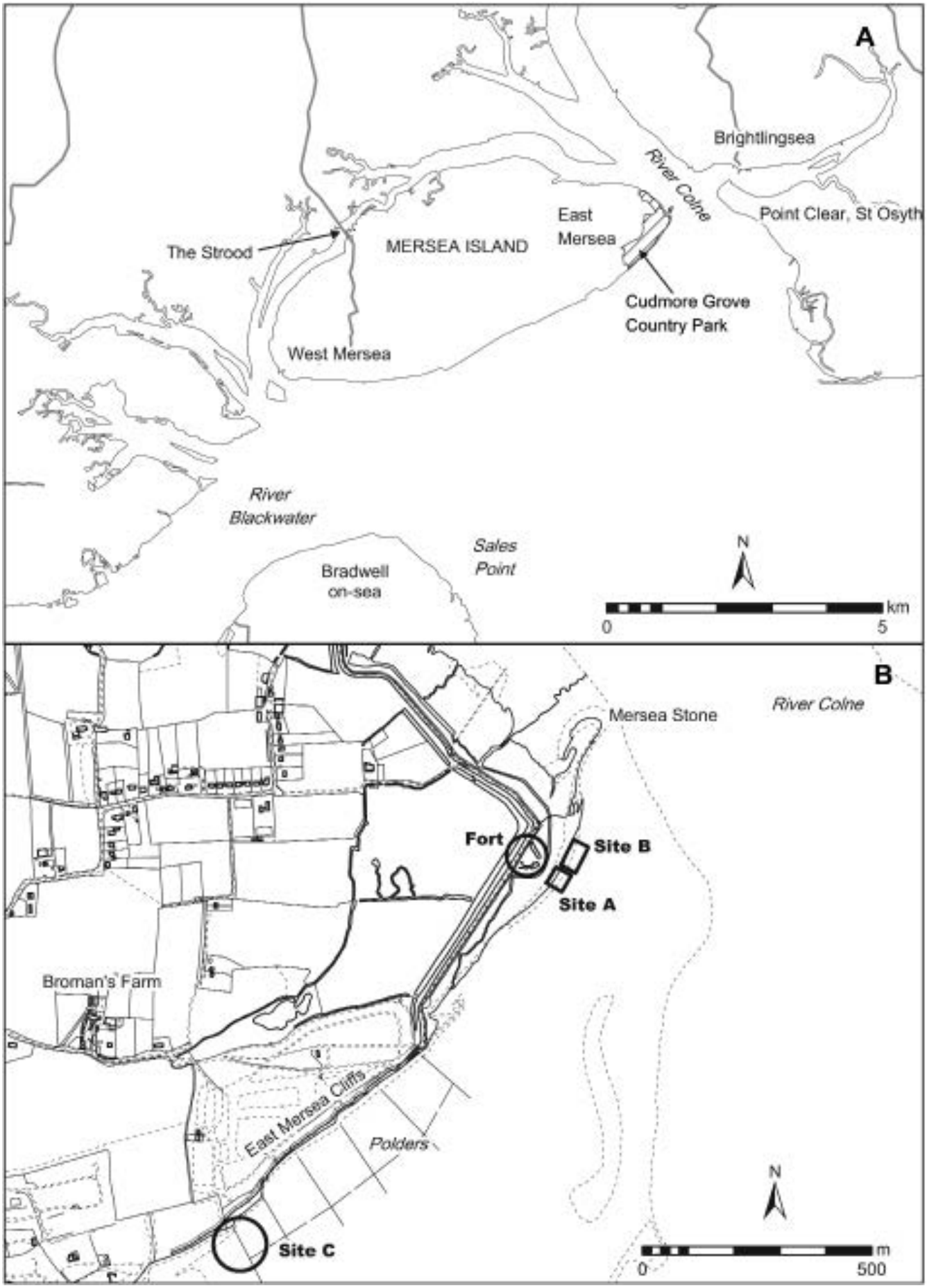

FIGURE 1: (a and b) Location

PLATE 1: The remains of the bulwark fort, looking east towards Point Clear

form, function and date of these structures, and consider their relationship to the fort. It also allowed for the added complexities of working in an intertidal context where the structures were covered by each incoming tide. The most obvious constraint was timetabling, with fieldwork having to take place when tidal conditions were suitable and there was sufficient daylight. Tasks also generally took longer, for example the tidal waters and silts needed to be bailed from excavated test pits on a daily basis. This also limited the size of test pits that could be employed; too large and a significant proportion of the working day was taken up by bailing. Methodologies were adapted as the fieldwork progressed. In the case of each of the foreshore structures varied degrees of intrusive excavation were utlised to best address the aims of the project. Samples of timbers were taken from each of the site areas for dendrochronological and/or radiocarbon dating.

The main aim of the project was to characterise and date the wooden structures on the foreshore before they were lost to coastal erosion. The project was also to consider how the archaeological remains fitted into the natural landscape; had this had an affect on choosing sites, did the changeable nature of the landscape effect the development of the site? In addition the investigations afforded the opportunity to study coastal change in general, touching on issues of erosion and flood management.

THE FORT

In 1538 hostilities between France and the Holy Roman Empire, traditional rivals who had looked to each other rather than to England, ended and early the following year they 'bound one another to not make separate war'. Between them these allies controlled the coastline of mainland Europe from Hamburg to Spain. In addition Pope Paul III was threatening Henry VIII with excommunication, to encourage the Catholic powers in Europe to break communications and economic ties and ultimately invade England. In 1539 Thomas Cromwell advised his representative in Germany, Christopher Munt, that "The bruit [rumour] has been very sore that the Emperor will attack the King, and the French King also, at the Bishop of Rome's intercession … " (quoted in Loades 2009, 74). Thus Henry became convinced that an invasion was imminent.

Although the perceived threat of invasion ultimately passed without military incident it had demonstrated the importance of establishing the safety of the realm. The navy had been reviewed, musters were held and " … he sent dyvers of his nobles and counsaylours to view and search all the Portes and daungers on the coastes were any meete or convienient landing place might be supposed … And in all suche doubtfulle places his hyness caused dyvers & many Bulwarks and fortifications to be made" (Edwards Hall; quoted in Colvin 1982, 369). The East Mersea fort was one of these.

It was considered critical to defend the Thames, and access to London, hence the construction of Henrican fortifications at Tilbury, East Tilbury, Milton, Higham and Gravesend. At first glance the low-lying coastline of Essex would also appear to be vulnerable to invasion, being both easily accessible from the continent and within reach of the capital, and hence in need of fortification. However, it presented more natural difficulties for invaders to overcome in the form of its extensive mudflats and saltmarsh. The commissioners identified the rivers as

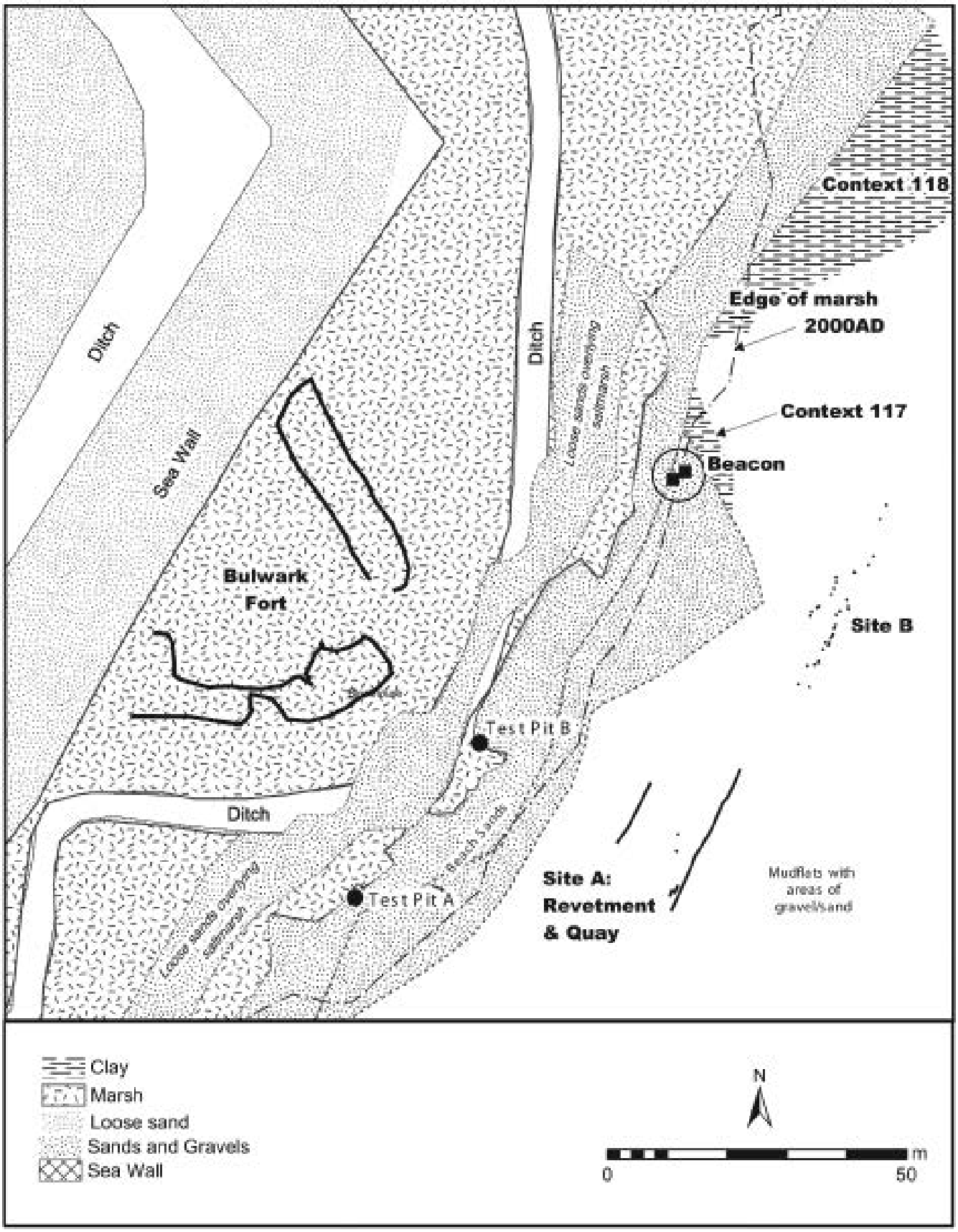

FIGURE 2: Detailed location of the Fort and the associated structures

vulnerable points, in particular the Colne, and the port at Harwich. Although the townspeople began to improve the defences of Harwich in 1539 in response to the commissioners' conclusions, little else progressed until 1543, when Richard Lee and Richard Cawarden received £1300 for works at Harwich and St Osyth (Colvin 1982, 471). Later accounts identify seven bulwarks defending the Essex coast; three at Harwich, one at Langar Point, one at Langar Rode, one at St Osyth and the one at East Mersea (Fig. 3). In contrast to the Henrican defences at West Tilbury, where the blockhouse was constructed with brick, those guarding the Colne were earthen enclosures described by Edward VI as 'bulwarkes of earth and board' (Colvin 1982, 471). Accommodation would have been in a wooden structure inside the enclosed area.

A plan in the British Library depicts one of the Colne Bulwarks (Cotton MS. Augustus I.i.68); dating to 1540–50, it may well be the original design. This shows a hexagonal moated enclosure with earthen ramparts supplemented by rows of 'maunds', large round baskets filled with earth. Within this enclosure is a blockhouse, possibly of two storeys with a turret on its left gable end (no compass point is marked). What is probably the river is represented schematically along the top of the drawing. There is some debate as to whether this represents the fort at Mersea or St Osyth. The indorsement on the plan reads 'Bulwark for Essex' and the text 'The bulwark on M ____e Stone'; the British Library catalogue interprets this as *Marsh Stone* and Colvin as *Mersea Stone*. Both interpretations could reasonably apply to the site at East Mersea, situated on the marsh at the point of the island that is still known as Mersea Stone (Fig. 3), but the hexagonal plan does not match that of the extant, triangular, fort shown on 17th century mapping (Fig. 4). This difference could perhaps be accounted for by the interlude between design and construction. The St Osyth bulwark is no longer extant, and its precise location and type is unknown although it would seem reasonable to suggest that it would be in the vicinity of the Martello tower at Point Clear, close to St Osyth Stone Point (Fig. 3). Each of the Colne bulwarks would have had a garrison of captain, lieutenant, two soldiers and two, four or six gunners. Maintenance of the East Mersea garrison was discontinued in 1552/3, the cannon dismounted and sent to the Tower of London.

In 1558, the first year of the reign of Elizabeth I, a reference mentions captains, officers and company serving at the blockhouse, whose wages were unpaid (PRO SP12/1/12). This may allude to re-garrisoning of the fort or to unpaid accounts relating to the discontinuation of the earlier garrison. The Elizabethan period saw an almost continuous threat of invasion and this is reflected in the increased emphasis on the defence of the realm. An account dating to June 1574 mentions "....we have assembled ourselves and repaired to the decayed blockhouses at the towns of Harwich, East Mersea and West Tilburie which be to our knowledge the only places where her Majesty giveth any entertainment or hath any munition bestowed in this county. 15 June 1574" (ERO D/DCr L5/1), a visitation which may perhaps coincide with the ascent of Henry III to the throne of France, who had been active against the Protestants in the 1572–3 Wars of Religion and could therefore be considered a threat to the English.

In 1583 the threat was from both the Netherlands and Spain. An extensive review of coastal defence took place and the warrants for expenditure included sums for the Colne forts. However, by 1586 the Mersea fort had been appropriated as a residence by an old woman, its ditch fallen in and its four remaining guns dismounted and clogged with earth (Kent 1988, 56; Colvin 1982, 471). It is thought that some repairs were made at the time of the Armada in 1588, although this remains unconfirmed (Kent 1988, 56).

The early 17th century coastal defences were reviewed again. Although there were proposals for a new fort at East Mersea the defence of Harwich was considered more important and thus resources were focussed there and the extant fort at Mersea was repaired and considered sufficient for its purpose in 1631 (Kent 1988, 56).

The only time the East Mersea fort saw action was during the Second Civil War, in the opening days of the siege of Colchester, when initially under Royalist control. Royalist forces, under Lord Goring, approached the town on 12th June 1648, closely pursued by the Parliamentarian forces under Lord Fairfax, who forced them to retreat into the town walls the following day. By the 14th it had become clear to Fairfax that he would have to besiege the town, thus he sent for reinforcements and raised trained bands. Against this backdrop East Mersea was in a critical position, controlling the entrance to the Colne, and hence the Hythe at Colchester. Indeed, on the 17th June, the Royalists were able to get supplies into the town by this route. The fort was soon captured by a troop of Parliamentary dragoons under Captain Zanchie, who found '2 culverins 2 sacres [sakers] and one drake in it' (i.e. types of cannon; Williams 1899) which allowed Parliamentary Men-of-War up the river. On the 20th a party of horse, supported by 300 foot left the town and attacked the fort in order to occupy the garrison there whilst corn and other supplies were taken into the town (ERO TZ 597/1/2; Defoe 1722). Although the Siege of Colchester ended on the 28th August 1648 with the surrender of the Royalist forces in the town, and the execution of Sir George Lisle and Sir George Lucas, the garrison at East Mersea was maintained. The fort was extensively repaired over the next three years, with turf used to strengthen the ramparts, a timber house for the garrison and additional guns. In 1653 Captain William Burrell, the Governor of the island, refers to a house for the gunners and their assistants. In the same year the cost of turf for the fort amounted to £17 10s (Barrett 1892).

In 1654 the Anglo-Dutch War, which had started in 1652, was concluded. Parliament voted for the reduction in funding for the army and navy and East Mersea fort was included in a list of garrisons to be reduced completely and demolished. The landowner would not allow it to be destroyed and as such it was merely 'dismantled and disarmed' (Kent 1988, 58), presumably the latter may refer to the dismantling of the structures within the bulwark. This incarnation of the fort is illustrated on a map of 1656 (ERO D/DEt P2) which shows the triangular fort with circular outworks at each point (Fig. 4). The whole is surrounded by a ditch, fed from a creek crossing the salt marsh, with a crossing point on the northwest face of the triangle, on the seaward side of the fort. What would appear to be a house is also shown outside the fort, to its east, and a path leading to Mersea point. It was described as ruinous by the 18th century antiquarian Rev. Phillip Morant (1768) and Chapman and André do not show the fort on their 1777 county map.

The threat presented by the outbreak of the French Revolutionary Wars in 1794 resulted in the construction of

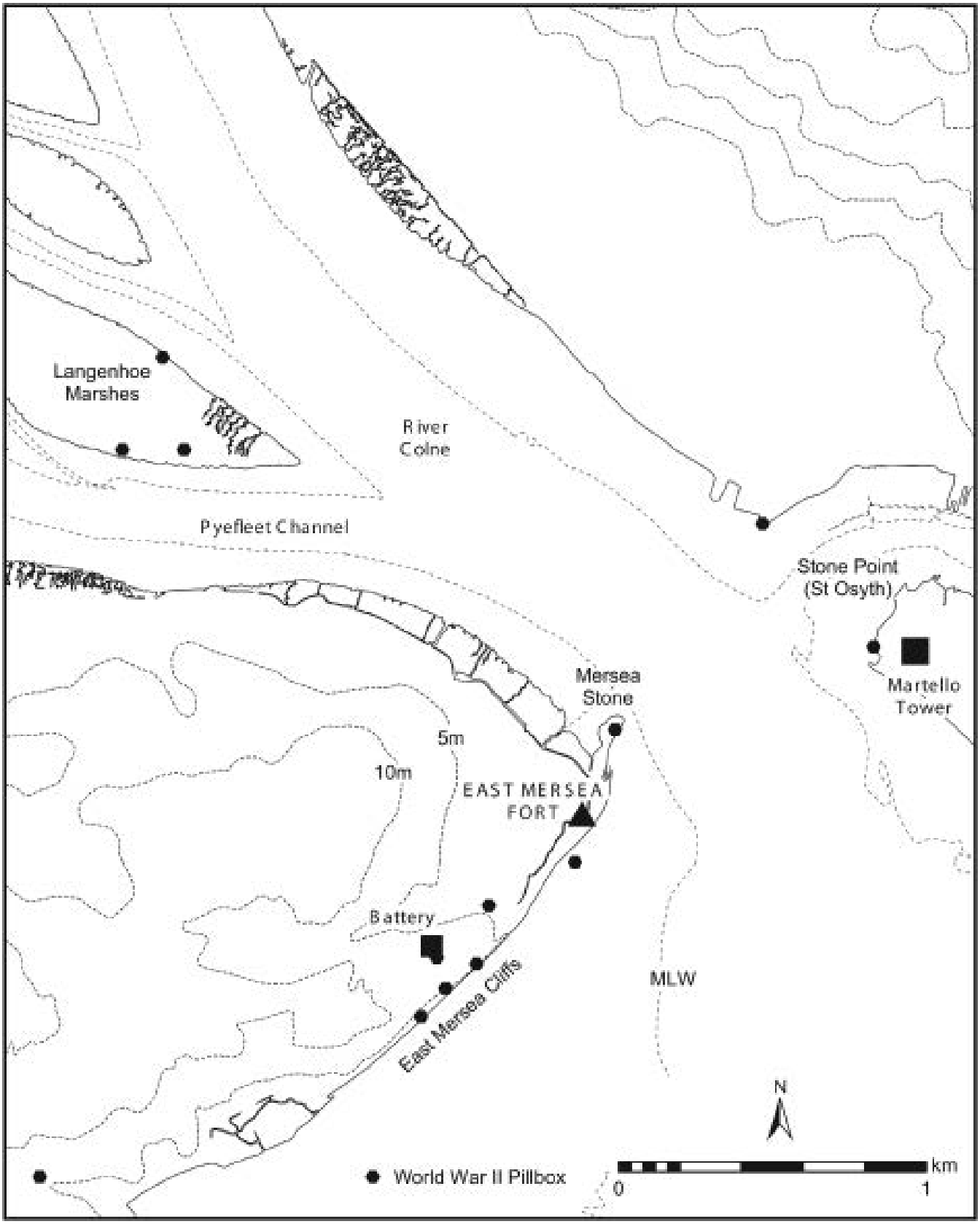

FIGURE 3: Military remains around East Mersea and the mouth of the River Colne

a battery into the 'seaward' face of the old fort. Subsequent mapping of the fort by the Ordnance Survey in the 1860s shows a gap at its seaward point, perhaps the result of the insertion of this battery. This would appear to be the last phase of activity at the fort although there were clearly subsequent reviews and renewal of coastal defence such as that which followed the collapse of the Peace of Amiens in 1803 (Thomson 1966, 59). At this time coastal defence works around the Essex coast largely involved the restoration of guns to existing batteries, supplemented by floating batteries moored at the mouths of the Colne and Blackwater. Whether the East Mersea fort was included in this is uncertain; there are no specific references to its restoration at this time.

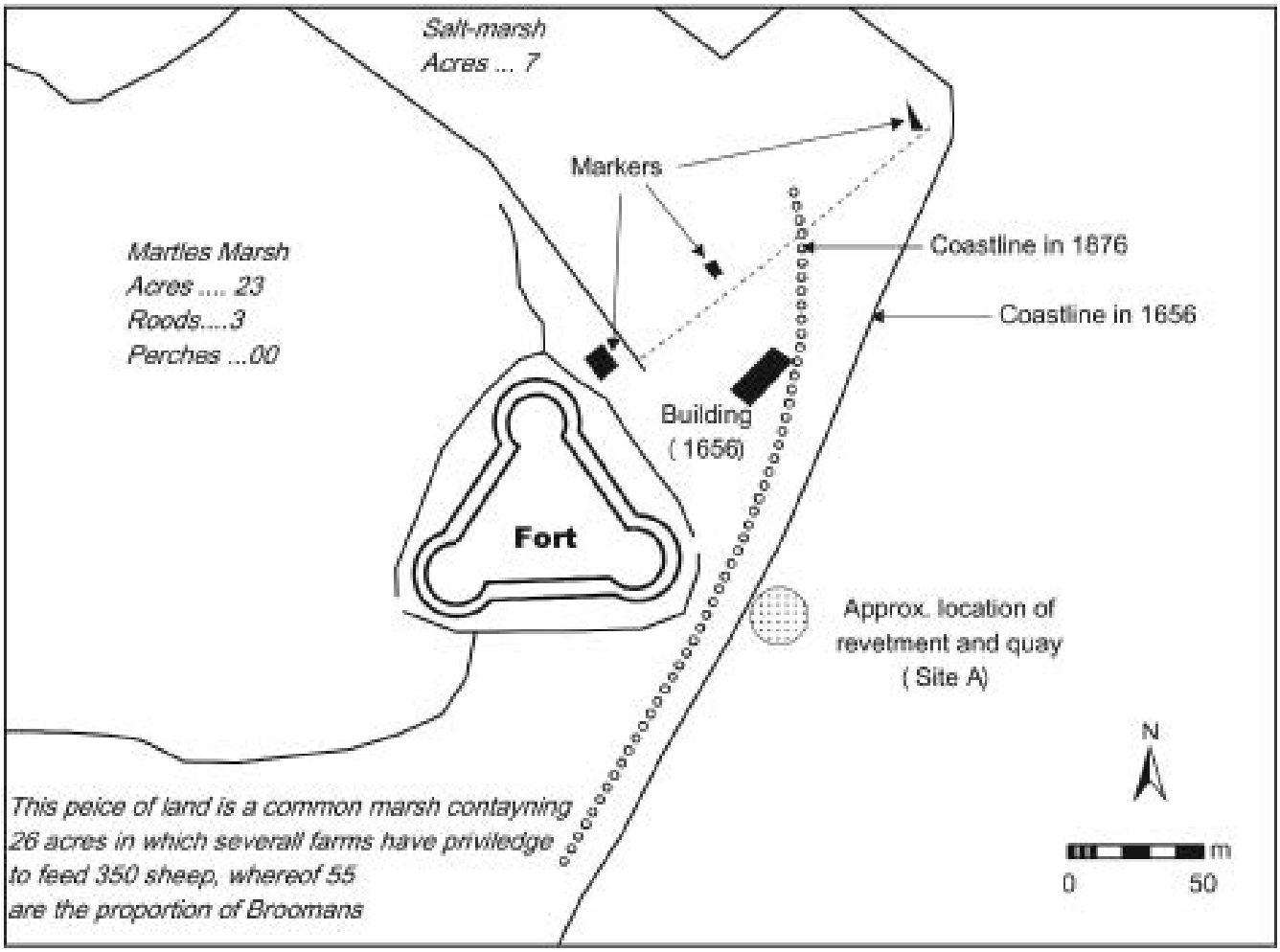

FIGURE 4: East Mersea Fort and environs in 1656 (derived from ERO D/DEt P2) and the progress of coastal erosion at Cudmore Grove

The earthwork fort would appear to have been finally abandoned by 1838 as it is not shown on the Tithe map of that date (ERO D/CT 238B) and the seawall is mapped in its current configuration, which cuts the landward side of the fort. The discontinuation of the centuries old fortification is likely to reflect both military developments and practical concerns. The French threat at the turn of the 19th century had led to yet another review of coastal defences and, increasingly, the emphasis was on masonry towers, like that at Mortella Point, Corsica which in 1793–4 had shown strong resistance to British forces. Martello towers were constructed around the English coast, A–K in Essex between 1808–12 (Kent 1988, 60). The construction and early life of the Essex towers was fraught with problems, the " . . .sea proved to be the Martello's greatest enemy" (Kent 1988, 61). The tower at St Osyth beach (Fig. 3) gave way, sinking on one side, hence the soil was excavated from below the other side in an attempt to level it (*The Times*, February 11, 1811). Towers G, H and I guarded the Holland Marshes and were sold and demolished in 1819. Tower J, at Walton-on-the-Naze, was demolished in the 1830s before coastal erosion could claim it.

Although still a strategically important point the fort at East Mersea was not replaced with a Martello. Perhaps a single tower was now considered sufficient to defend the Colne and the site at St Osyth was more suitable than that at East Mersea. In the latter area the focus of military activity shifted to the top of the cliffs (Fig. 3). Aerial photographs show what would appear to be defensive works in an area known as 'Old Battery Bushes' (Priddy 1983, 147 and Sier 1921, 223–4). Although the date of these works is unknown it would seem reasonable to suggest that they are Napoleonic as the site is not associated with World War I defence lines (the London Position and the open coastline to the north of Mersea) or known World War II sites (Fig. 3). By the mid to late 19th century the Henrican fort lay forgotten on the saltmarsh, with the shifting sands gradually encroaching over the remains and coastal erosion moving closer as the years pass.

COASTAL ENVIRONS

Historic cartographic sources clearly illustrate the progression of coastal change at East Mersea from the largely natural landscape depicted by Chapman and André (1777), to the managed landscape of the 19th century when the seawall behind the fort was constructed, and through to the landscape of today where the sea defences are a prominent part of the landscape.

As noted previously the coastline at East Mersea, and that in front of the fort in particular, has been subject to erosion, the long-term trends of which can be clearly traced on historic mapping (Fig. 4) and most recent changes through field survey in 2000–3 (Fig. 5). Using this data the loss of some 30m of saltmarsh can be measured between 1876 and 2003. Whilst this would not necessarily seem dramatic, averaging out at 0.25m per annum, the erosion does not necessarily occur at

a steady rate and it can be affected by, for example, localised factors, storm events and bad winters. These changeable rates can be demonstrated by the fact that between 2000 and 2003 *c.*6–10m of marshland was lost in front of the fort (Fig. 5).

Although the rates of change along the coastline at Cudmore Grove are variable through time, and complex in that they include both erosion and deposition, the broad pattern is clearly one dominated by the continuing erosion of the cliffs and saltmarsh, accompanied by the movement of mobile sands and other loose foreshore deposits. In modern times a variety of efforts have been made to protect the coastline, including the construction of brushwood polders at the base of the cliffs and a hard engineered revetment where the 'solid' geology and the soft alluvial deposits of the marsh meet (Fig. 1).

Two 1m square test pits (Test Pits A and B) were excavated against the edge of the salt marsh (Fig. 2) to gain a more detailed picture of coastline change through the application of sedimentology and forminifera analysis. No artefacts were recovered from either pit.

Test pit A was excavated to a depth of 1.10m on the edge of the saltmarsh to the south west of the fort. A total of six contexts were identified in section comprising a sequence of clays, gravels and sands (Table 1).

Test Pit B was excavated immediately in front of the fort, to a depth of 1.15m from the top of the saltmarsh, revealing a more complex sequence (Table 2).

The sedimentology described above and forminifera assessment (detailed below) illustrate the coastal processes active at East Mersea, the lower clays (Test Pit A) representing the development of lower salt marsh, the top of which is at *c.*2.19m OD. These clays and silts are then covered by the bands of sands and gravels likely to have been deposited during more active periods, such as storm surges, and through the drift of beach material from elsewhere. The more complex sequence in Test Pit B is thought to represent the type of sequence found in a channel or pool; the lower marsh clays are the base of the feature, at *c.*1.8m OD, infilled by a sequence of sands and gravels, with establishment of higher marsh over it once stabilised. A similar process can be seen at work at the present time, where the ditch around the fort is gradually being engulfed by shifting sands.

Forminifera Analysis by Simon K. Haslett

Six samples were collected from Test Pit A for analysis of their foraminifera content, with a view to establish their abundance, preservation and usefulness as marine palaeoenvironmental indicators in sediments. Foraminiferal analysis is now a well-established technique for assigning tidal level and depositional environment information to Holocene sediments (see Allen and Haslett, 2002, for a recent review). Haslett *et al.* (1997) provide distributional data for foraminifera living on the modern salt marshes of Great Britain, and it is this dataset, with updates (Haslett 2000; Haslett *et al.* 2001; Allen and Haslett 2002), that enables the calibration of fossil data.

All six samples yielded foraminifera, but with variable abundance ranging from 432 to 3120 specimens per sample. Preservation of foraminifera was generally excellent with little indication of post-mortem alteration. Percentage species counts are held in the archive. All species recovered are typical of intertidal estuarine environments. The foraminifera characteristics of the samples are as follows:

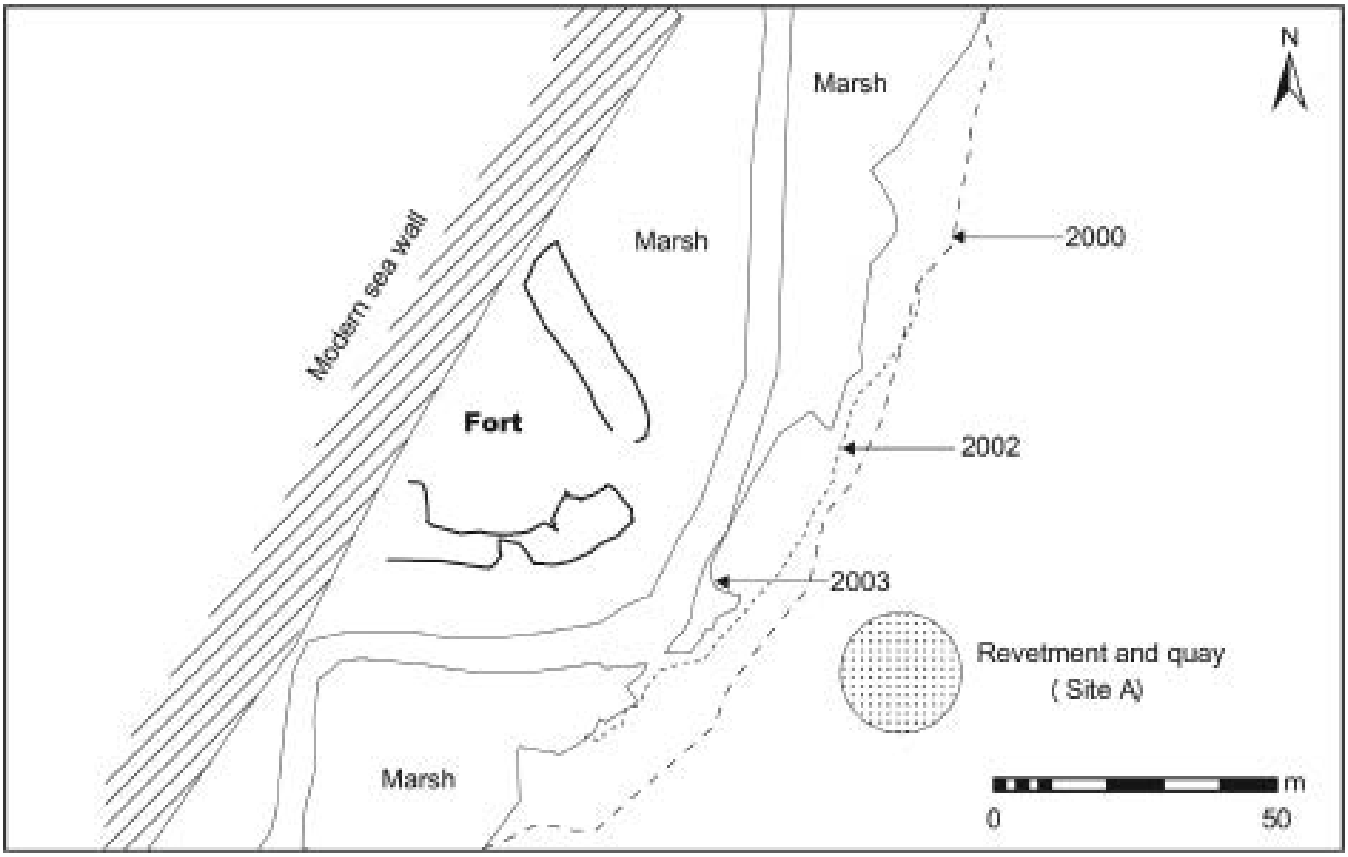

FIGURE 5: Coastal change at Cudmore Grove recorded 2000–03

No.	Description	Thickness
01	Grey brown clay (high saltmarsh) Samples <1> & <2>	0.45m
02	Dark brown/black cemented gravels	0.12m
03	Reddish Orange sandy gravel	0.05m
04	Firm light grey clay	0.01m
05	Pale grey sand	0.03m
06	Mid blue grey clay with laminated organic staining (low saltmarsh) Samples <3> and <4>	0.60m

TABLE 1: Deposit sequence in Test Pit A

No.	Description	Thickness
07	Grey Brown clay (high saltmarsh)	0.20m
08	Brown sandy gravel (equivalent of 02 and 03?)	0.10m
09	Pale brown coarse sands and gravels	0.23m
10	Pale brown fine sand	0.05m
11	Grey clay	0.07m
12	Concreted gravels	variable
13	Grey sand	0.05m
14	Mottled orange sands and gravels	0.20m
15	Grey sands and gravels	0.20m
16	Orange sands and gravels	0.15m
17	Grey sands and gravels	>0.10m

TABLE 2: Deposit sequence in Test Pit B

Samples 1 and 2 (from Context 01, the upper layer of clays, Test Pit A) both yielded foraminifera assemblages dominated by *J. macrescens* with subordinate *T. inflata*. These agglutinating foraminifera assemblages are typical of deposition on a high salt marsh surface around mean high water, spring tides (MHWST), any lower in the tidal frame then *A. beccarii* would also be expected to co-occur, any higher and *T. inflata* would become absent. The higher number of specimens per gram in sample 2, coupled with a low % >0.063mm fraction reflects the deposition at a slightly higher position in the tidal frame compared to sample 1.

Samples 3 and 4 (from Context 06, the lower clays, Test Pit A) yielded foraminifera assemblages dominated by *Haynesina germanica* with subordinate *Ammonia beccarii*, *Elphidium williamsoni*, *Jadammina macrescens* and *Trochammina inflata*. *Haynesina gemanica* often dominates tidal flat faunas with subordinate *A. beccarii* and/or *E. williamsoni*, but when these species co-occur with *J. macrescens* and *T. inflata* the diverse assemblage is indicative of a vegetated intertidal surface relatively low in the tidal frame, such as a low salt marsh environment between mean high water and neap tides mean high water.

Sample 6 (from the upper clays adjacent to the wooden revetment – see below and Fig. 7) yielded an assemblage dominated by agglutinating species (*J. macrescens* and *T. inflata*) apparently indicating deposition on a vegetated high salt marsh surface. However, the calcareous species present are dominated by *H. germanica* and not *A. beccarii* as would be expected for a higher salt marsh depositional surface. Therefore, it would seem that the assemblage may be mixed and not representing an *in situ* fauna. This is supported by the very low number of foraminifera specimens per gram (8.9) and the high >0.063mm coarse fraction concentration (24%). Such a combination of characteristics might indicate emplacement by a naturally occurring high magnitude event, such as a storm, or through human activity.

Sample 5 (from the lower clays excavated around the wooden revetment; Fig. 7) also yielded ostracod fragments and was more minerogenic (quartz-rich) than the other samples, possibly indicating deposition on a low salt marsh surface near a junction with unvegetated tidal flats. The number of foraminifera specimens per gram of sediment is in the relatively narrow range of 30.4 to 58 which indicates relatively uniform sedimentation rates within this depositional setting. The particle size information indicates >0.063mm concentrations of up to 15% which is consistent with a low salt marsh depositional setting.

THE WOODEN STRUCTURES

The bulwark fort was built, maintained and periodically re-modelled within this complex and dynamic natural environment in which both erosion and deposition was taking place. The historical assessment of the fort has demonstrated the strategic importance of the Colne and Blackwater in siting the installation. These rivers would also have been critical for its supply, land communication would have been limited in general and further complicated by the limits on road access to Mersea across The Strood causeway. As such, some form of landing for such materials and victualling would be needed, although these are not specifically mentioned in the historical documentation. Like the fort itself such features, located on the historic foreshore, have since been lost in the marshes but as coastal deposits have eroded away over time wooden structures, including the remains of a quay, are exposed on the foreshore. Scientific dating, although providing a broad range, would seem to support the hypothesis that these structures are associated with the fort.

During fieldwork each context, including timbers, were recorded individually, the record sheets are held in the site archive. For the purposes of this article group numbers have been assigned to key elements of structures (e.g. Fig. 6). Where individual timbers are referred to, for example those sent for scientific dating, their number is given in square brackets.

SITE A

Designated Site A during fieldwork the foreshore area in front of the fort was the site of the wooden remains of a revetment, quay and other timber alignments (Fig. 6). The quay and revetment comprises a series of rows of timbers, orientated southwest to northeast. These are made up of three distinct groups of timbers; the revetment (Group 86), quay (Group 126) and a further row (Group 127). The timber alignments are located on a slight promontory of firm gravels, at a height of *c*.1.5m OD. In the area between the timber alignments the substrata comprised clays, deposited in a low salt marsh environment, with the upper level having been disturbed by human activity (perhaps during construction) as outlined in the foraminifera assessment, above. These marsh clays would once have covered much of the foreshore but have since been eroded down to the gravels. It is likely that they have survived

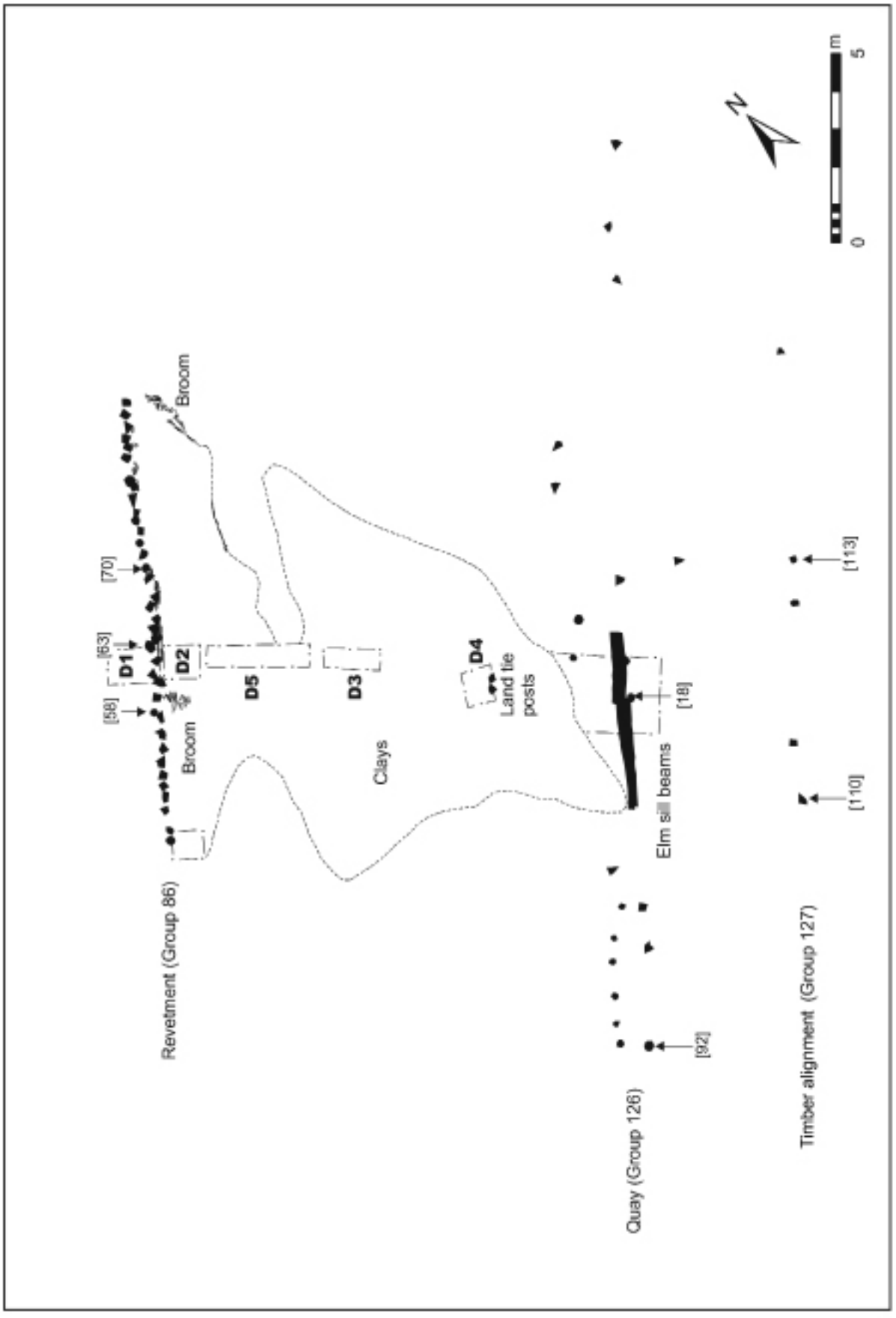

FIGURE 6: Plan of Site A

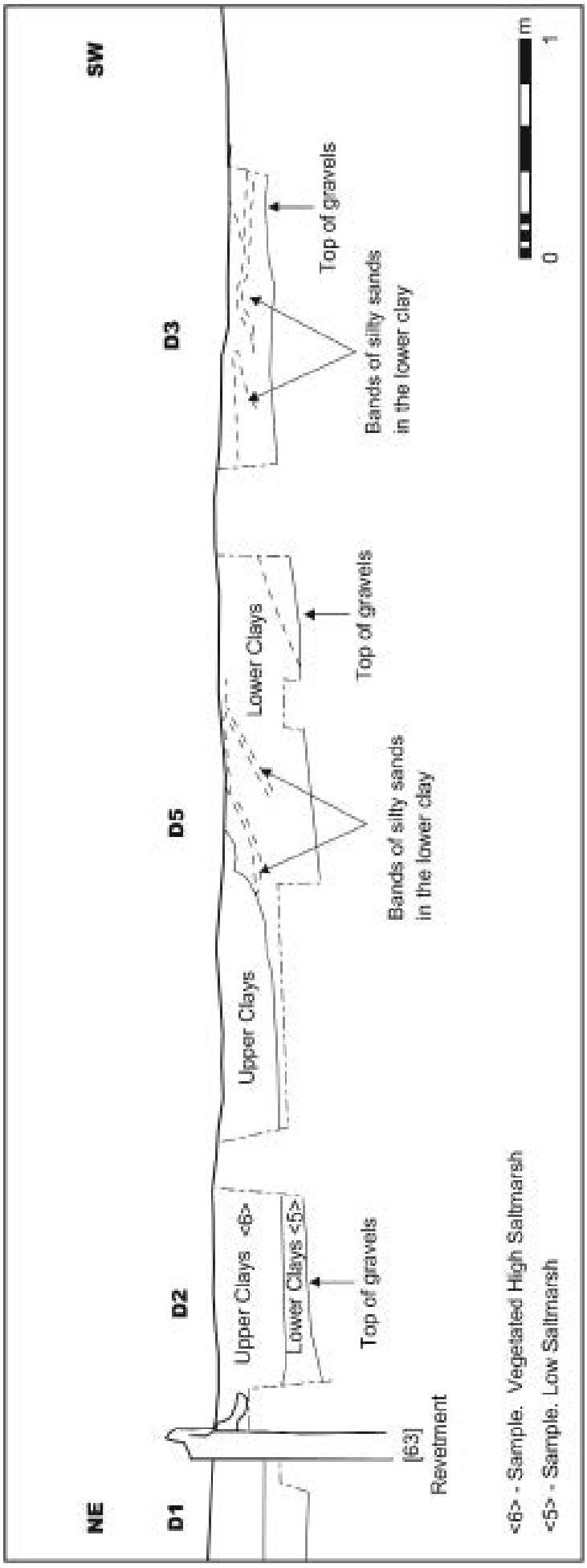

FIGURE 7: Section across the revetment and clay deposits

in this area because of the protection that the quay and revetment remains provided.

The Revetment (Group 86)

The landward row of posts/piles are thought to have been a revetment (Group 86), probably used for securing boats broadside to the shoreline (Fig. 6). It was made up of thirty-eight timbers (small piles and large stakes), mainly of cleft elm. This row was 12m long and faced on the seaward side with broom facines or faggots which were still extant in places, sealed below a thin clay deposit. The uprights varied from roundwood 100mm in diameter to irregular cleft half logs *c*.200mm in diameter to fine radially cleft elements up to 200mm wide and *c*.80mm thick. The piles were set *c*.0.4m apart except in the middle area where they were closer spaced. Any planking or other reveting timbers they must have once retained had been removed by erosion, decay and possibly salvaging. Many of the piles stood proud of the foreshore by up to 300mm and all those lightly cleaned (e.g. [60]–[63]) showed the clear characteristics of timber of the elm family (Goodburn 2004).

It is unusual to see elm piles, made by deliberate splitting or cleaving, then minimally trimmed with axes. Elm timber, rarely amongst native timber, has interlocked grain which normally prevents controlled splitting of long lengths in logs over a few centimeters in diameter. Although it proved impossible to fully extract any one example it is clear they must have survived in the region of 1 to 1.2m long, whilst their original length would probably have been *c*.2.3m to extend to the level of the contemporary mean high water spring tide level. The parent logs varied from 100mm to 400mm in diameter for the widest cleft uprights e.g. piles [57] and [62]. Some of the lower, butt logs were straight enough to allow fine radial cleaving whilst other smaller logs were too knotty to allow more than quartering or halving e.g. piles [53], and [63]. The shape, conversion type and size of the uprights in the revetment (Group 86) suggests that all the useable parts of perhaps two medium sized elms were used to make them (Goodburn 2004). Timber [58], an oak roundwood pile toward the south west end of the revetment, was sampled for scientific dating. A date of 270 ± 50 was established by radiocarbon dating, this was calibrated to 1480–1950. Timber [70] an elm roundwood pile from this row was also sampled. This dated to 240 ± 50, calibrated to 1510–1950. The 'brushwood layer' was identified as broom faggots which was used to make besom-type brooms, laid down as a working surface.

Two test pits were excavated to the northwest and southeast of this row of timbers (Test Pits D1 and D2; Fig. 6) to establish if these posts/piles were driven or placed in post-holes. These pits were excavated to a depth of 0.5m and 0.4m below present surface level, through the clay deposits down to a loose sandy gravel layer at which point excavation had to be abandoned due to flooding. No evidence of post-hole cuts was identified suggesting that the timbers were pile driven. Attempts to lift one of these piles for detailed assessment proved to be impossible (Plate 3). The sand and gravel deposits were excavated from around the base of timber [62], until 1.2m of it was exposed. There was no evidence of the pile narrowing to a point and it remained firmly embedded in the sands and gravels.

To the south-west of the revetment three further test pits were excavated (Test Pits D 3, 4 and 5: Fig. 6) through the clay deposits noted in the centre of the structure to establish the stratigraphic sequence and to recover artefactual and environmental evidence. The limits of the clay deposits to the south west of the revetment (Group 86) were clear in plan. However, to the north-west (landward) of this row it was difficult to establish the limits (if any) due to the presence of shifting loose sands and gravels. A similar sequence of clays to that observed in test pits D1 and D2 was noted in these trenches (Fig. 7). This was interspersed at the lower levels with black stained layers of silty sand. These layers were, in general dipping southwards, perhaps suggesting the infilling of a slight hollow or channel landward of a possible sand/gravel ridge noted at the south west end of D5. As with the other test pits the clay deposits overlay sands and gravels, when this horizon was encountered excavation had to be abandoned due to flooding. There was a paucity of artefactual material with only the occasional fragment of post medieval roof tile and brick recovered.

The Quay (Group 126)

Seaward of the revetment, and parallel with it, the preliminary survey identified two substantial elm sill beams [20] and [21], with associated upright piles (Fig. 6; Plate 2). The main pile line including the sill beams are thought to be part of a timber quay frontage, again allowing boats to tie up broadside on. The quay remains were located 12m from the revetment, to the southeast of the eroded layer of clays and brushwood.

The main pile-line comprised oak timbers either whole or quartered, with additional row of posts/piles, *c*.1m landward of these beams, also of oak. Both ran for approximately 16m, but the landward row was more fragmentary. In contrast with the revetment, the remains of which stood proud of the foreshore, only the very tops of the majority of this row of piles was visible.

The landward pile-line was made of small stakes and piles. The seaward row was generally constructed using larger uprights and much more widely spaced. The latter were clearly of largish oak roundwood mostly whole but with some cleft examples from poles *c*.90–140mm in diameter. Two of this seaward row, timbers [18] and [19], were in contact with the frontages of the elm sill beams. This would suggest that this row was used as retaining piles for the base of the timber framed quay frontage, which would have been a greater length to that which survived as two slightly displaced elm beams. These were once joined by a simple edge halved scarf, originally fastened by two 34mm (13/8th'') diameter pegs. The projecting parts of the simple scarf had been rather crudely trimmed after initial cutting, probably during the installing of the quay (Goodburn 2004).

The upper faces of the sill beams had mortices cut in them which would have held now disappeared posts set into a top plate and retaining planking. The mortices were of two types with two un-pegged examples between pegged examples. The single oak pegs were *c*.20mm in diameter and were used to hold the principal post more securely (Plate 4), a pattern known from London dock and quay frontages. The spacing of the posts was irregular varying between *c*.0.25 and 0.40 m in no very clear pattern. The major posts probably articulated with land-tie assemblies to reduce the tendency for the structure to gradually lean out into the river. Evidence for the existence of land-ties for these posts survived here as a pair of closely set anchor stakes (Fig. 6). These would have clasped the

PLATE 2: The elm sill beams of the quay (foreground) and the revetment (rear row of posts). The beach deposits and the edge of the foreshore can be seen at the top of the photograph

PLATE 3: Excavation of the revetment (Group 86)

PLATE 4: The elm sill beams. Note the in situ peg in the third mortice hole from the foreground

sides of a beam and provided an anchor for a lock bar set into the main land-tie beam (Goodburn 2004).

Each main post was provided with a deeper mortice than the unpegged examples, up to *c*.120mm in beam [21], whilst the mortices for the secondary posts varied from *c*.70mm to 100mm deep. All the mortices were neatly cut to a fairly uniform width of 50mm (2'') but the widths varied from *c*.110mm to 160mm implying that the posts were of varying widths but probably similar thickness perhaps around 150mm thick. Spoon auger holes 34mm diameter and 15mm wide chisel marks were still visible in some of the mortices. In London there is evidence from the 1550's for the use of new shell augers rather than the ancient spoon augers but there is no reason to expect that the new tools were introduced rapidly in rural areas (Goodburn 2004).

Although the upper faces of the beams were slightly eroded and no fine carpenters 'setting out marks' were found, striations from pit-sawing and narrow axe stop marks up to a maximum of 80mm wide were found on different faces of the beams. The beams were of boxed ¼ type conversion made by pit-sawing a rather irregular elm log, that had already been roughly axe hewn, into a baulk. The baulk was then sawn in half and then into quarters. The flat, true sawn faces and edges were positioned to face to face outward and upward presenting the most regular appearance and making joint cutting easier. The often rough and wavey, lightly hewn, faces and edges were concealed. The maximum scantling of beam [20] was 250mm wide by 145mm thick and a surviving length of 2.67m, while beam [21] was 240mm × 180mm with a surviving length of 1.92m (Goodburn 2004).

Retaining planking was probably set behind (landward of) the posts but comparison with 17th century London examples would suggest fastening on the seaward side as a possibility. A pit-sawn oak plank fragment [35] 25mm (1'') thick which was found near the sills is likely to have been an off cut from the sheathing planking. It is probable that the framed area of the quay front originally extended substantially further both NE and SW especially as both ends of the sill had been broken away, possibly quite recently. The presence of a chiselled '1' in the mating faces of both sill beam scarf faces suggests that there would have been other beams of a similar form extending the length of the sill with which beams [20] and [21] could have been confused. Thus the quay frontage would have been longer that that which survived, the retaining pile line may better represent the original dimensions. The parent tree/s are likely to have been similar to those used for the cleft elm piles of the revetment (Group 86), and were of fast growth (*c*.65 annual rings were visible in the beam) with perhaps a total age at felling of around 75–80 years. The parent log/s were *c*.0.55 to 0.60m in diameter at the greatest (Goodburn 2004).

By reference to the checklist of dateable features of 16th to 17th century waterfront carpentry in London this structure seems to be of that date bracket, or 15th to early 18th century at the very widest (Goodburn 2004). Two timbers from this group were submitted for scientific dating. Timber [92], an elm pile on the south west end of the group, was dated by radio carbon to 270 ± 50 BP, calibrated to 1480–1950. Timber [18], one of the oak roundwood piles retaining elm sill beam [21], dated to 180 ± 50 BP, calibrated to 1640–1960.

Timber Alignment (Group 127)

South east of the quay frontage, approximately 4m seaward, a more fragmentary row of post/piles was identified, driven into a compacted gravel deposit (Fig. 6). None of these had been noted during the preliminary survey, perhaps unsurprising as only the very tips of the piles survived. They were generally of square or triangular section, axe hewn and of cleft elm. They were not very regularly spaced *c*.1m apart. Two stakes tips were lifted [111] and [112] neither was more than *c*.60 × 30mm. The fragmentary nature of this row of piles makes characterisation difficult but it was noted on site that typologically they were similar to the piles at Site B (below) which lay to the north east. In general the alignment is also similar. It is difficult to be sure what the alignment was used for but it might possibly represent the remains of a revetment for barge bed, a foreshore structure to prevent barges from sinking in the river mud when moored. This group of posts is likely to be associated with the operation of the timber framed quay.

Two of the stakes from this group were sampled for scientific dating, and produced the narrowest date range of any of the timbers on the site. Timber [110], a section of elm heartwood, produced a date of 340 ± BP, calibrated to 1440–1660. Timber [113], also elm heartwood, produced a date of 380 ± 50 calibrated to 1430–1650.

SITE B

Site B (TM 07296 15162) was located to the north west of the revetment and quay (Fig. 2). Although in relatively close

proximity to these structures there was no clear link between the two, and none was established by excavation. However it was noted that the general alignment was similar to that of Group 127. The layout of the stakes was difficult to discern (Fig. 8). There are two possible rows, in what could be a 'V' shape. The seaward row, orientated southwest to northeast (parallel with the shoreline) runs for 50m, although there are gaps in this line. The western end of the landward row ran parallel with this, gradually curving towards it. No piles or other structures were noted at the 'point' of these two rough alignments.

Selective cleaning located a total of forty small, cleft elm stake tips and small piles, the majority of which were square cut 0.05m by 0.05m with the occasional larger post (0.06m by 0.08m). Although some of the posts stood proud of the foreshore some were barely visible above the sands and gravels which they were driven into. The remains may perhaps be those of some type of fishing or wildfowling structure or, alternatively, reveting used to protect a vulnerable marsh edge. Two of the stakes were sampled for radio carbon dating. Timber [124] dated to 330 ± 50, calibrated to 1440–1660. Timber [125] dated to 270 ± 50, calibrated to 1480–1950. Although no direct evidence to link these alignments with the fort has been established the date range of those timbers sampled would certainly suggest that some association was possible.

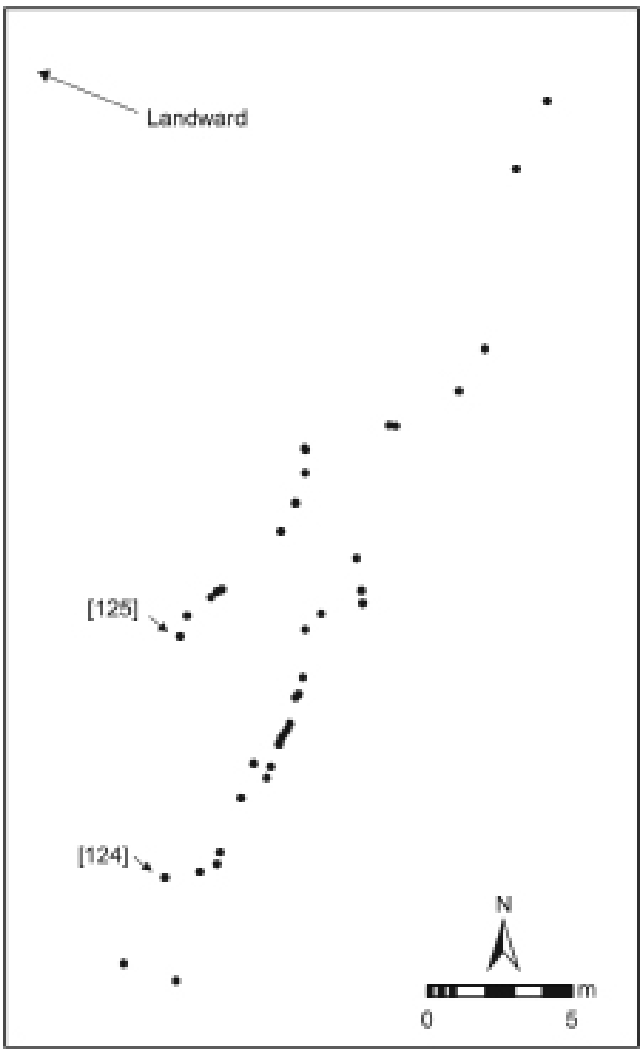

FIGURE 8: Plan of Site B

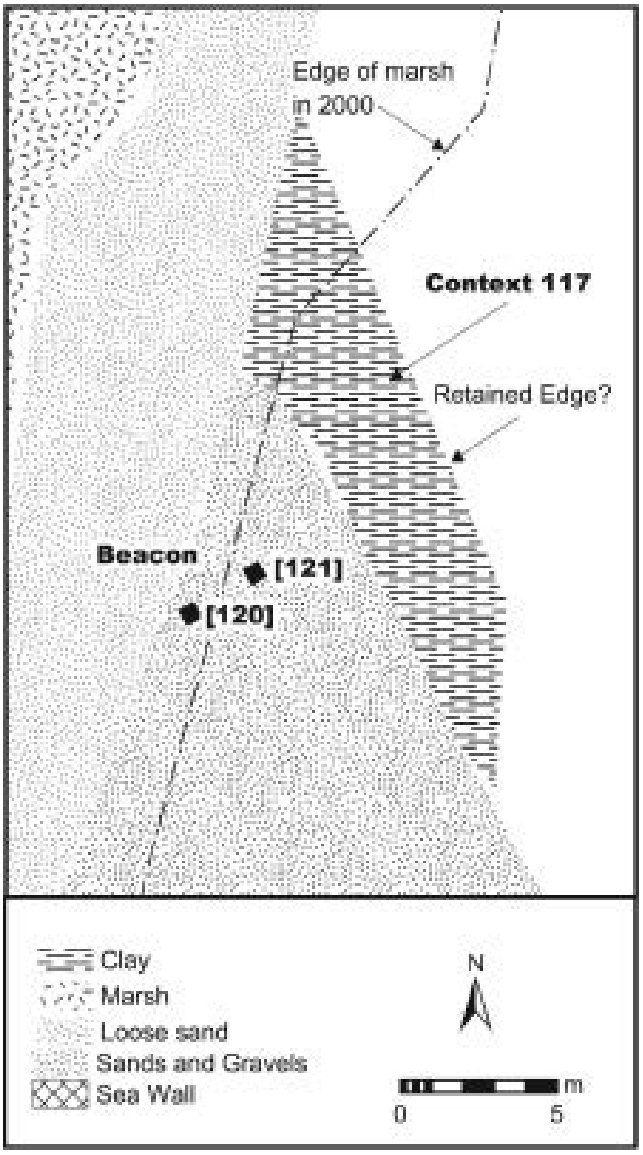

FIGURE 9: Plan of Beacon and Context 117

Two elm stakes tips were lifted for more detailed recording [124] and [125]. Stake [124] had a surviving length of just over 0.6m and was 80 × 40mm in cross section. It had been radially cleft to a 1/16th section and the four-facetted tip bore faint axe or hachet marks (Goodburn 2004).

THE BEACON

To the north-west of the timber alignments at Site B the top of two large oak uprights were noted (Fig. 2). These lay close to the edge of the salt marsh and in an area of mobile beach sands (Fig. 9). These timbers therefore had not been noted during the early phases of fieldwork, having probably been obscured by the sands. The two timbers were 2.8m apart, the most erosion threatened post [120] was lifted and assessed off-site. It survived *c*.0.62m long and was *c*.220 × 170mm in cross section but as one side had been split off some time in the distant past it was probably at least 270mm wide originally. The base had a neatly chamfered central tenon with shoulders cut carefully at *c*.70 degrees to the timbers long axis, showing that the slope as found was roughly the original position of the timber. The single peg hole in the tenon was 25mm (1'') in diameter and had clearly been draw bored. Its surfaces were

somewhat eroded but very faint axe marks appeared to be visible and the grain pattern showed that it was of 'boxed heart' conversion (from a whole log). Part of a large knot and some sapwood were seen suggesting that the timber was used upside down as the parent tree grew, as is typical of major building posts at this time which were normally jowled at the top. The post was set in a sill beam that was partially exposed during excavation, but was not possible to lift (Goodburn 2004).

Timber [121] was sampled for dendrochronological dating (Plate 5), unfortunately no match was found (Ian Tyers pers. com). Stylistically the carpentry is not closely datable and could be of any date from perhaps the 14th to 18th centuries, but the pottery found close by (see the pottery report below) suggests a broad dating to the 16th to 17th centuries is likely. A radiocarbon sample of timber [120], dated to 300 ± 50 AD calibrated to 1460 to 1800. This range is broadly similar to that suggested by the wood technology and artefact assessment. Ideally more excavation would be needed to provide a clearer picture of what the structure was originally but the size, slope and proximity to the fort is strongly suggestive of several possible functions. Perhaps the most likely is that the posts and sill beams were part of the base of a timber framed beacon.

The uprights were associated with a clay deposit (117), (Fig. 9) which contained artefacts dating to the mid 16th to 18th centuries (see below). The edge of this deposit was notably straight, and on the same alignment as that of the posts, this perhaps suggesting that it may have been reveted. A further clay deposit (118) was noted to the north east of this (Fig. 2).

Post medieval pottery by Helen Walker

A small group of pottery, perhaps dating to 17th century was recovered from clay deposit 117. It comprises a semi-complete flared mug and dripping dish, and the more fragmented remains of jar(s), and a bowl, all in red earthenware (Fig. 10). A source in the Colchester area is suggested for these wares. In addition, there is an imported sherd of Low Countries red ware and fragment of Roman pottery vessel. The post-medieval pottery has been classified according to Cunningham's typology for post-Roman pottery in Essex (Cunningham 1985a, 1–16. The Medieval Pottery Research Group's Classification of Medieval Ceramic Forms was also referred to (MPRG 1998). The detailed catalogue is held with the archive:

1 Two-handled flared mug: Post-Medieval Red Earthenware; sandy fabric; all over mottled olive-green and black glaze, somewhat patchy in places.
2 Dripping dish: Early Post-Medieval Red Earthenware.
3 Jar rim and thickened or pad base probably from same vessel: Post-Medieval Red Earthenware
Not illus. Flat base and part of wall from large flared bowl: Post-Medieval Red Earthenware
Not illus. Fragment from sides of hollow ware perhaps from a second jar: Post-Medieval Red Earthenware; relatively coarse fabric
Not illus. Body sherd: Low Countries Redware; internal white slip-coating beneath a clear, crazed lead glaze

PLATE 5: Ian Black of English Nature takes a sample from one of the beacon timbers for scientific dating

imparting a lemon-yellow colour; partial honey-coloured glaze on outer surface; probably early post-medieval
Not illus. Flat base and lower wall of Roman jar: sandy grey ware;

As a presumably residual Roman vessel found its way into this context, then this is not a discrete group and the post-medieval vessels may have been deposited at different times. However, the flared mug and the jar could both have been current during the 17th century. There are several indicators to suggest that the dripping dish is 16th century, but this type may have continued into the 17th century, or was old when discarded. The more fragmented vessels are not closely datable.

The two-handled flared mug, more commonly known as a Tyg (Fig. 10.1), when complete would have had a capacity of about 1.3 pints (738mm) if filled to brim: these are classified as Brears' type 1 (Brears 1971, 37) and were manufactured at a number of centres around the country. Although this vessel is very similar to those produced at Harlow, a major supplier of post-medieval redwares (Davey and Walker 2009, fig. 26.130–4), its fabric is too sandy to be from this manufacturing centre. Similar mugs occur at consumer sites in Colchester (Cotter 2000, fig.146.141–2) where they first occur in late 16th century deposits, but continue with little change into the early 18th century (Cotter 2000, 212). A similar date for the inception of flared mugs was found to be the case at Chelmsford (Cunningham 1985b, 74).

The Dripping dish (Fig. 10.2) is likely to have been wheel-thrown rather than slab-built. Splashes, and an uneven edge to the glaze-cover indicate this is a swirl glaze. The drawing has been reconstructed following the curvature of the vessel wall, and shows the handle to be off-centre. Typically dripping

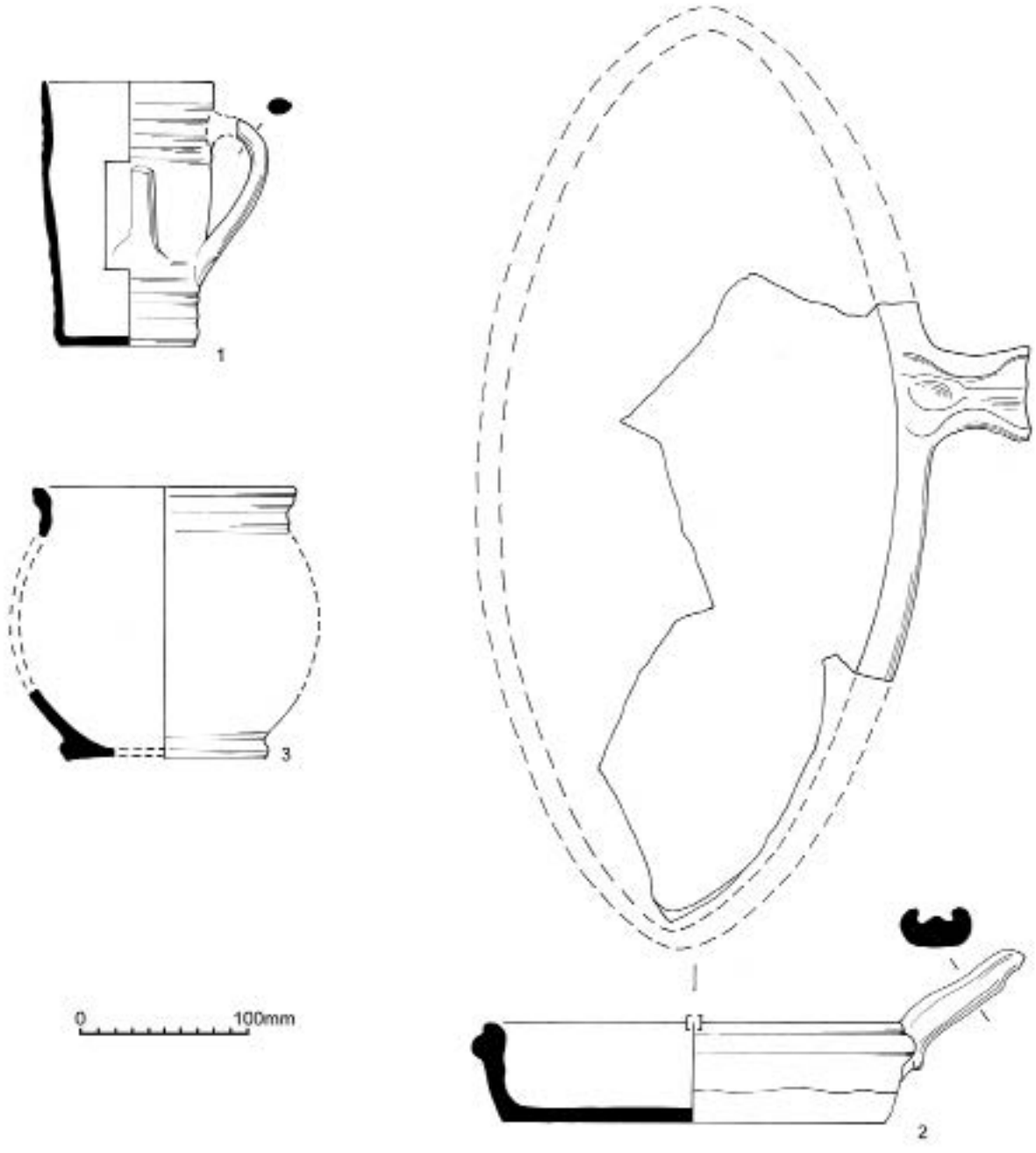

FIGURE 10: Post Medieval Pottery

dishes have one handle placed centrally, although some later dripping dishes have two adjacent handles (e.g. Cotter 2000, fig. 148.173). As there is no evidence of a second handle on this vessel, it is possible that the handle is in fact central, but appears off-set when reconstructed because the vessel is not exactly symmetrical. Militating against this is the size; dripping dishes are large vessels, but if the handle is centrally placed, this dripping dish would measure about 640mm in length. This is considerably larger than most other dripping dishes (compare with examples from Norwich, length 420mm (Jennings 1981, fig. 76.1286); Fulmodeston, length 420mm (Wade-Martins 1983, fig. 9.43); Harlow transitional ware, length 360mm, Harlow Post-Medieval Red Earthenware length 490mm (Davey and Walker 2009, fig. 16.3, fig. 64.376).

Dripping dishes are not unlike present-day grill-pans and were used for catching the juices from spit-roasted meat. They may have served other purposes and are sometimes described as fish dishes, and as this example shows a patch of limescale, water may have been boiled in it at some point. However, their uses would have been very limited as their large size and small handle(s) would have made them cumbersome to move around. No exact parallel could be found; it is similar to examples produced in Harlow transitional fabrics of the 16th century (Davey and Walker 2009, fig. 16.3), whereas a dripping dish from later a 17th group at Harlow differs in that it has two loop handles instead of a straight handle. In addition, later post-medieval examples often have flanged rims (Cotter 2000, 215). The swirl glaze, early type fabric, simple rim and single straight handle would indicate a 16th century date for this dripping dish

The Post-Medieval Red earthenware recovered comprised part of a jar rim (Fig. 10.3), a large flared bowl and a second jar (not illus.). The jar rim was around 160mm in diameter, with an internal glaze and a pad bases. Such vessels often possessed a single loop handle and were sometimes used as chamber pots (cf. Cotter 2000, fig. 142). At Colchester such jars are commonest during the second half of the 17th to early 18th centuries (Cotter 2000, 207). The remaining bowl and jar are also internally glazed and would not be out of place in a 17th century context.

As discussed above, the flared Post-Medieval Red Earthenware from Cudmore Grove has too coarse a fabric to have been manufactured at Harlow (or other related central Essex potteries), perhaps a source in the Colchester area might be expected. Indeed, the fabrics are consistent with the Post-Medieval Red Earthenware 'standard fabric' found at Colchester and described by Cotter (2000, 192). A source at Tiptree and/or Ardleigh, close to Colchester, is suggested for the 'standard fabric'. The only import is the sherd of Low Countries Redware, a relatively common import, found at east-coast ports including Colchester, and penetrating inland, as it also occurs at Chelmsford in central Essex, albeit in small quantities (Cunningham 1985b, 64).

SITE C

Site C was located approximately 1km to the south-west of Sites A and B, on the foreshore below the East Mersea Cliffs (Fig. 1b) within the south west corner of brushwood polders which have been constructed in the area in an attempt to alleviate the continuing erosion of the cliffs (TM 06584 14319). It comprised an alignment of posts and post-holes (Fig. 11). The former were very irregular, minimally trimmed, cleft logs and occasional gnarled whole logs set in clear post pits. Some were set inverted and others the 'right' way up. All were relatively fast grown. The posts varied in size but some were as much as 400 × 250mm across. Towards the landward and seaward end they were of elm with the middle section of oak. Interspersed with the posts were small elm stakes a maximum of *c*.150 × 100mm across.

These eroded remains would appear to represent probably two attempts to revet and protect the foot of the historic edge of the soft cliff when it extended *c*.120m to the east in the earlier post medieval period. There are a number of timbers and post holes which appear to delineate a slightly curving line, running north west from the southernmost polder, gradually curving around to run in a more westerly direction. There is a further group of post holes to the north of this which may be a separate group. It was not clear if the bases of posts were extant in these below the exposed level having been broken off, or if they had been removed.

Samples of the larger oak timbers were submitted for dendrochronological dating which was unfortunately unsuccessful. The examination of the timbers did however show disturbed growth in the form of periodic bands of narrow rings, occurring approximately every 10–15 years (Groves and Locatelli 2003, 4). Two of the elms from the same row were also submitted for radio carbon dating. As with most of the majority of the samples from the site a very broad calibrated date range of 1650 to 1960 was established.

DISCUSSION

Interpretation and Chronology

The earliest of the recorded timber structures is thought to be the quay, although dating of the structure is problematic given the absence of closely dated stratified artefacts and the wide range established through scientific dating. The date range of 16th or 17th century suggested by the wood technology would however fit within the general post medieval date suggested by other means (pottery analysis and scientific dating) and it would therefore seem reasonable to suggest that it is correct. Although the detailed chronological correlation of the quayside to the various phases of activity known to have occurred at the earthwork fort is not possible, the postulated 16th–17th century date would certainly support the theory this structure was present during the earliest phases of the fort; that is, its Henrican construction, Elizabethan and Second Civil War re-use. Presumably it would have been repaired to such a level as to be fit for purpose each time fort was garrisoned until it was beyond repair and replaced with the revetment.

The continued presence of clays overlying sands and gravels landward of the quay would suggest that the quayside had been approached across established salt marsh, which has subsequently eroded away (Fig. 12a). The height of the quay front was probably around 1.8m above the upper face of the sills at *c*.3m OD, so as to be generally dry except for a few exceptional tides and in strong gales. The depth of the quay would have enabled, barges and small coasters to come along side on the top of the tide except during rough weather. In front of the quay timber alignment 127 is thought to be the remains of a low 'barge bed' revetment. At 4.2m it is rather narrow for the larger estuarine vessels but would have been suitable for local vessels and lighters. These can still be still be seen on the banks of the

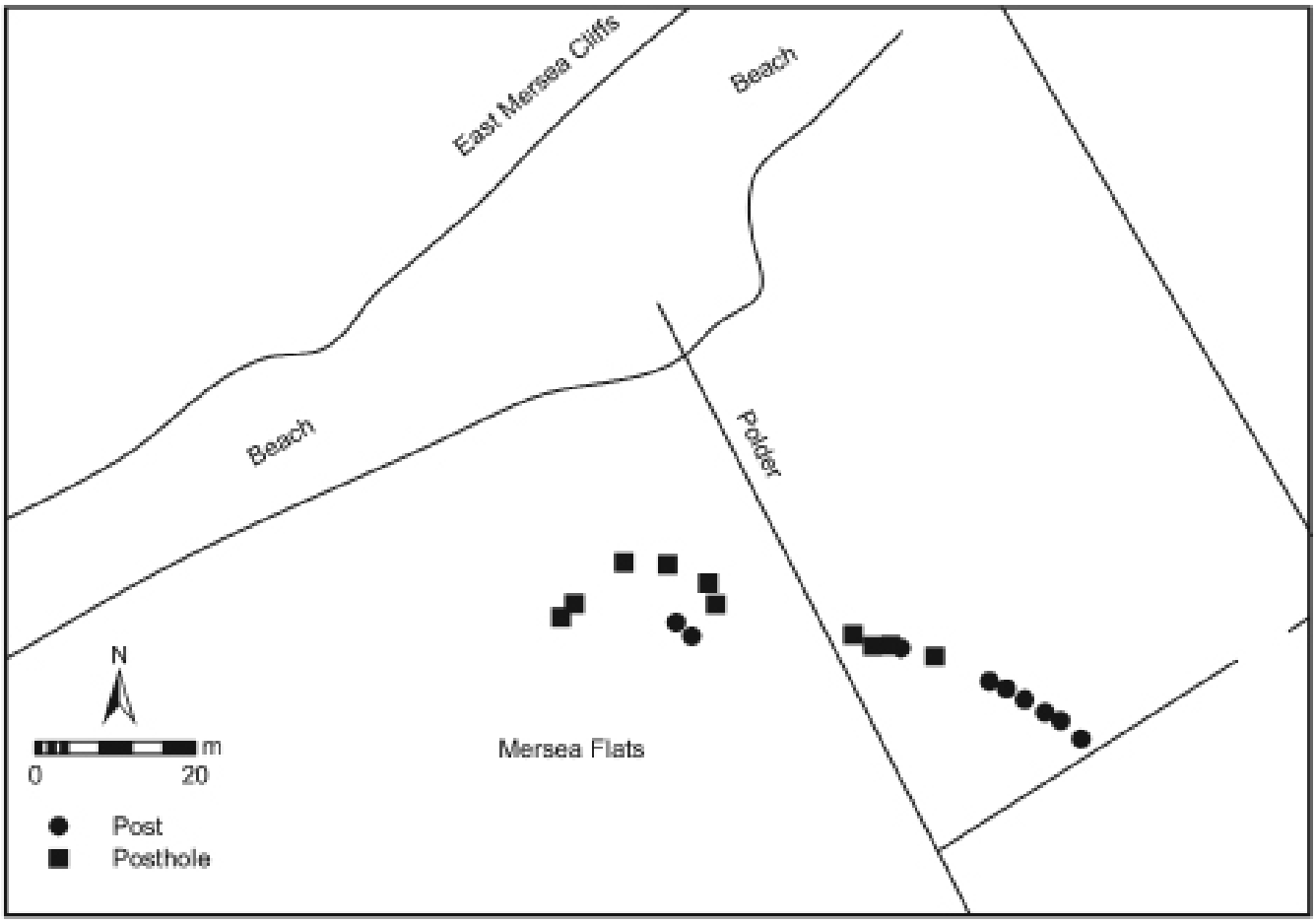

FIGURE 11: Plan of Site C

tidal Thames in London where they are used to maintain a level shelf on the sloping shore, thus allowing flat bottomed craft to take the ground more safely (Goodburn 2004).

A chronological relationship between the quay and the beacon cannot be definitively established but the similarity of techniques utilised during the construction of both would perhaps suggest that they were perhaps built at the same time. Strategically the garrison at the fort would have observed shipping approaching the Colne and its tributaries but its position on the low marshland meant it lacked elevation to communicate using a beacon or signal-fire, hence the need for a wooden structure (Goodburn 2004).

The relationship of the quay to the revetment (Group 86), the close-set elm piles which lay landward, is more problematic, particularly given the absence of close dating evidence. If the two structures are contemporary it is difficult to imagine the purpose of the revetment, unless it is supporting some type of superstructure. As there is nothing to suggest this was the case it is proposed that the revetment represents a separate phase of construction. The fort was abandoned and dismantled in 1656, it would seem likely that the quay too was at least was partially dismantled at this time, the timber perhaps re-used elsewhere. The structures would not have been demolished beyond the levels necessary to present hazards to shipping, hence the survival of piles and the lower parts of the structure. Historical analysis has demonstrated that the soft saltmarsh around Cudmore Grove has been subject to a great deal of coastal erosion for centuries. This is likely to have had an adverse impact upon the remaining elements of the quay's super-structure. Thus, by the late 18th century, when a battery was inserted into the face of the fort, new facilities would have been needed. The revetment was probably built as part of this phase of activity at the fort.

The position of the revetment relative to the quay (Fig. 12a and b) would suggest 12m of marsh was lost in the 17th–18th centuries, which is entirely possible considering 6–10m of saltmarsh was lost between 2000 and 2003. It should also be noted that deposition of material would also have occurred, hence the covering of some elements of the structures, particularly the beacon, with estuarine clays.

Interpreting and dating the timber remains at Site B and C is more problematical, no clear function is apparent, scientific dating was only able to provide a broad date range of the post-medieval period and only limited information was available through the wood technology assessment. The timbers at Site B were similar in type to those of the barge-bed revetment (Group 127), small square elm stakes, which are thought to be associated with the quay; the earliest of the timber structures on the foreshore. Site C remains undated, with few similarities with the other sites which would allow parallels to be drawn.

Wood Technology by D. Goodburn

The use of elm in the Cudmore Grove structures, particularly those elements converted by clefting, is unusual and represents a more 'rustic' tradition of work when compared to that seen on the Thames frontage in London during the 16th century and probably utilised local timber. Today elms can be found growing along the banks of the Thames estuary and its

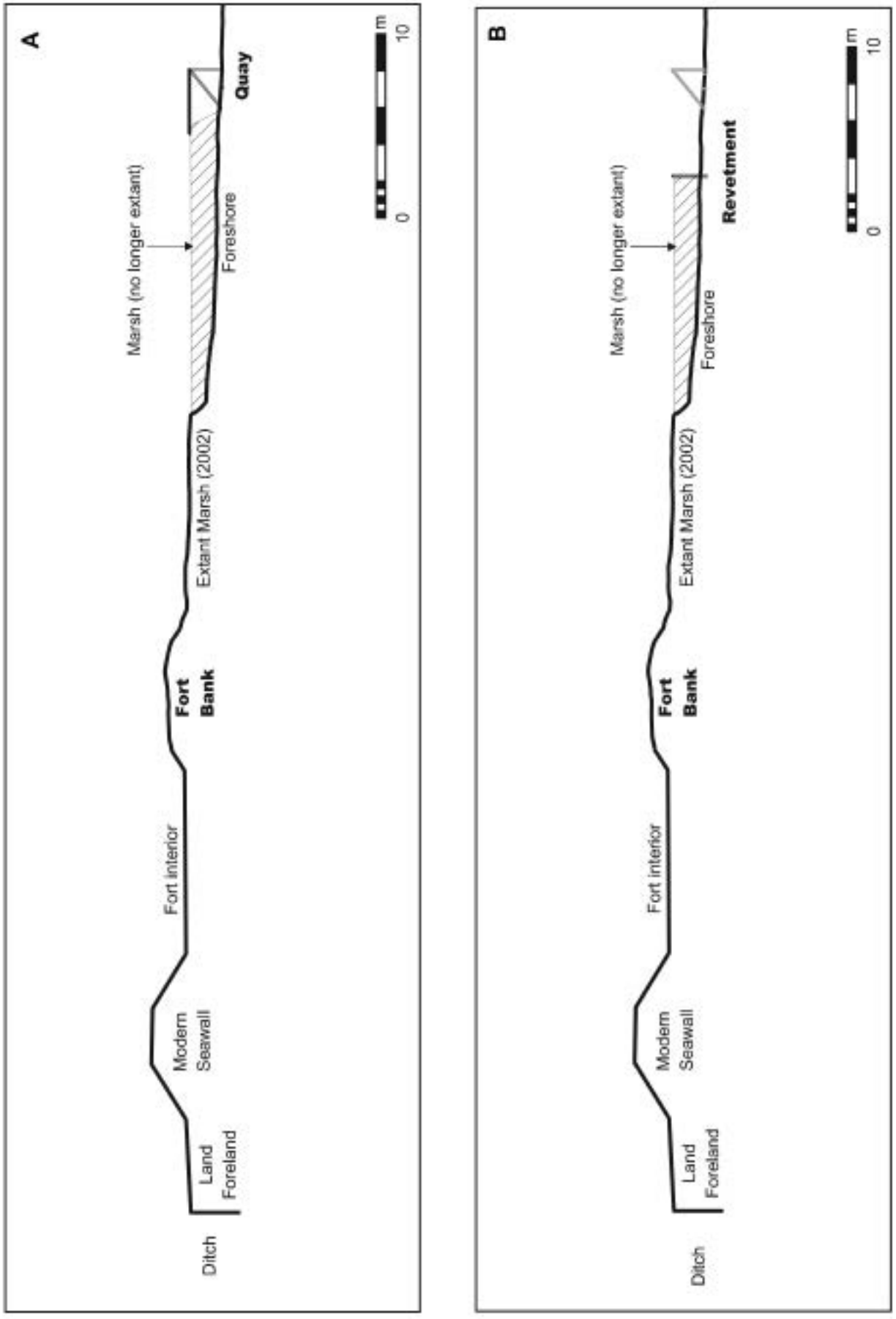

FIGURE 12: (a and b) Schematic sections showing the fort and quay

tributaries even down to the edge of the foreshore in some places, and archaeological work has shown that this was the case in late medieval and early Post-Medieval times. In coastal south Essex and north Kent the timber can also be found used with often rather knotty, distorted oak in standing buildings, for example in the moved remains of Hornchurch Chaplaincy. It seems that such materials were local to this site and the rather gnarled, twisted oaks of what remains of the Cudmore Grove wood on top of the East Mersea Cliffs (and used at Site C) may well be survivors of this local woodland type minus the elm component due to the recent Dutch Elm Disease epidemic. Since the quay's superstructure has been lost it is not known what materials would have been used to provide the posts which would have placed in the elm sill beams. From trends in the London evidence it could be suggested that oak would have been used as it has a longer life in an environment which alternates between wet and dry. The broom fascines would also have been sourced locally. Broom now grows just inland of the site and must have been widely used for fuel faggots on Mersea, so it is likely they would have been easily available.

The construction of this timber-framed quay and the beacon would have been carried out by trained carpenters as they were clearly prefabricated structures made in a similar way to timber framed building walls. The irregular layout compared to a typical building work would perhaps suggest that construction took place speedily, with little concern for appearance. In contrast the revetment (Group 86) was a simple structure. The tool kit required for producing the piles would have appears to have included a felling axe, and maul with set of wedges, with these simple tools the woodworkers felled and lopped the parent elms. They may have been cross-cut with either a large saw and/or by axe. Although faint axe marks could be in some places on the lower parts of the exposed elements, the pointed tips were not seen and in consequence no clear full axe stop marks could be recorded. The larger piles must have been driven using a two person post rammer of some kind or perhaps most likely a small pile driver. Simple pile drivers operated from a large boat or barge would have been the most likely option perhaps requiring a minimum crew of 5 men to operate. The smaller piles, such of those of the barge-bed revetment (127) and Site B are likely to have been driven by a large maul (heavy hammer). The only timbers that were placed in postholes were the larger examples at Site C. As these had been minimally trimmed driving them into the firm clays would have been very difficult.

Garrison Life by H. Walker

The small assemblage of pottery was not recovered from features but presents some insight into life at the fort; the dripping dish suggests the roasting of meat, so the consumer(s) lived well. Dripping dishes are generally indicators of high status as they imply the user could afford joints of meat and the fuel to roast them, boiling is much more fuel-efficient. It could also have been used as a 'fish dish', perhaps more likely given the reference to the garrison not being paid at the onset of the Elizabethan era and the obvious proximity of the river. It is possible that the timber alignments at Site B may be the remains of a simple fish weir or wildfowl trapping structure. This would have provided an activity for the garrison and a source of fresh food. The jar fragment with its patch of sooting suggests cooking or heating. Such jars were also used as chamber pots.

It would appear that the group is entirely domestic in nature with nothing to necessarily indicate military occupation, such as the high incidence of flasks and Rhenish stoneware drinking jugs recovered from Camber Castle. The very substantial post-medieval pottery assemblage from Tilbury Fort was also entirely domestic, most vessels being used for the preparation and serving of food and it may be that the Camber assemblage derives from a different group, perhaps the builders rather than the occupying garrison (Meddens 2000, 55).

Coastal Change and Historic Environment Management

The archaeological remains at Cudmore Grove are situated within a dynamic and complex environment. The degree of coastal change at Cudmore Grove through the centuries is well attested to in the historic mapping, modern survey and the range of archaeological remains exposed on the foreshore. The landscape that we see today is one that is managed to minimise the flood risk to the low-lying grazing marsh behind it. Outside the hard defences the analysis of historic Ordnance Survey mapping and the recent survey data has measured the loss of 30m of marsh at the front of the fort between 1876 and 2003 (which would average at 0.25m per annum). The pattern is however not as steady as the bald statistics would imply, *c*.6–10m of marshland was lost from the front of the fort between 2000 and 2003. This means that once archaeological features are exposed by erosion there may be a very limited window during which they can be recorded before they are lost.

The results of the excavation of the test-pits, along with the associated sediment and foraminifera analysis, demonstrate the complexity of deposition in an intertidal-environment. Despite their proximity the two reveal differing environments; the deposition of beach deposits over a vegetated low saltmarsh, and the subsequent establishment of high saltmarsh over the beach (Test Pit A), and the gradual infilling of a ditch or pool during tidal surges and storm events and the eventual establishment of high saltmarsh once levels had stabilised (Test Pit B). The excavation of the test pits was a useful exercise in providing a 'snapshot' of coastal development. The use of a greater number of such pits would perhaps enable a wider analysis to take place. Foraminifera analysis proved to be especially useful in providing an interpretation of the depositional environments for deposit sequences. This was of particular importance in the area of the revetment and quay where differentiating between the types of estuarine clay deposits by means of colour (which can change when exposed to air) and texture in the field was difficult. Establishing their depositional environment allowed a better understanding of the structures and their function.

It is likely that further remains will be exposed on the foreshore as saltmarsh is lost and beach deposits shifted, which will continue to occur. Ideally regular re-visits and surveys could usefully be carried out on the foreshore at Cudmore so that remains can be recorded as they are exposed. This type of monitoring survey has proved to be an effective means of investigation intertidal remains (e.g. Heppell and Brown 2008), particularly wooden structures, where excavation can be problematic and expensive.

The new Essex and South Suffolk Shoreline Management Plan, which sets-out approaches to managing flood risk in the future, is being finalised. Cudmore Grove is currently designated as an area where the existing defence line will be held. The fort will therefore not be threatened by re-alignment but will continue to be affected by the on-going erosion at Cudmore Grove. Part of the fort has also already been lost through the construction of the sea wall. Although at last visit (2006) the fort was to some degree protected by banks of beach sands such deposits are very mobile and can be washed away during, for example, storm surges. The fort therefore remains threatened by erosion. It is a rare survival of national importance that has never been subject to archaeological excavation. Further excavation within the fort could elucidate the types of internal structures that were present and allow them to be compared with the examples on the Thames (e.g. Gravesend). The timbers and other organic remains in the clays on the foreshore were well preserved and it is likely that a similar environment is present within the fort. As such there is the potential for the range archaeological deposits and artefacts at the fort to include organic remains. The opportunity to be able to carry out such investigations is finite.

In conclusion the archaeological and historical investigations at Cudmore Grove have proved to be valuable in not only in recording and understanding the archaeological sites but also in placing them within their wider landscape context. It has also enabled the development of the coastline to be better understood; at a detailed and landscape level. This is of particular importance given the challenges presented by sea-level change and erosion around our low-lying coast.

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'Young Gentlemen are at a reasonable Rate to be Boarded'. An account of the Free Grammar School, Colchester *c.*1690–*c.*1820

David Tomlinson

Colchester's Free Grammar School, today known as the Colchester Royal Grammar School, has a long history and has been educating boys for over four hundred years. It was established in 1584 when Elizabeth I issued letters patent. Its roots go back to the reign of Henry VIII, when in 1539 the king gave a grant of the property belonging to two chantries in Colchester, one in St Helen's Chapel and the other in St Mary's-at-the-Wall, to the bailiffs and commonalty of Colchester to establish a grammar school. At an inquest held at Stratford-Langthorne *c.*1583, it was discovered that the bailiffs and commonalty of Colchester had not settled or appropriated any revenues of the chantries for the use of the school. As there was some doubt about the validity of Henry VIII's grant, it was decided that Henry's letters patent should be surrendered and new ones issued to clarify the situation.[1] The new ones (6 July 1584) required the Bishop of London and the Dean of St Paul's to draw up statutes for the governing of the school. The bailiffs and commonalty of Colchester issued a deed about ten months later (1 May 1585) setting up the school and bought Westons, the building used for the previous foundation (Henry VIII's) and before that for the grammar school founded by Thomas Christmas in 1520.[2] Sixteen boys, the sons of poor free burgesses, were to be educated at the expense of the foundation. The master could have up to sixty scholars including the sixteen free boys. The statutes laid down the duties and requirements of the master, the curriculum to be taught, and various regulations concerning the pupils.[3] During the first hundred years of its life, the school more or less met the requirements of its statutes. The income from the property granted by letters patent to the foundation was to be used for maintaining the school and paying the master.

The purpose of this paper is to give an account of the school, its masters and its administration during the long 18th century, covering approximately the years 1690 to 1820. Information has been gleaned from many sources including trustees's papers, the correspondence of several bishops of London, and newspapers. Unfortunately, for the period to be considered the school itself has no records except for a list of pupils enrolled and even that is incomplete.

THE ADMINISTRATION OF THE SCHOOL

In some ways the statutes establishing the school were imprecise, particularly concerning its administration. The Bishop of London as its Visitor had ultimate authority over the running of the school and occasionally had to intervene.

In Chancery

Bishop Henry Compton's interest in the school's financial affairs probably begun in 1691, if not before. In that year, the mayor, recorder, chamberlain and town clerk were summoned to wait on the bishop at Doctor's Commons.[4] Colchester's Assembly Book records that they were 'to make such defense as shall be advised at a hearing to be had before the Lord Bishop of London and his counsellers touching the free school and the revenue thereof.' Whilst in London they came to an agreement concerning the payment of the master, who, for some while, had not received from the school's estate all the revenue to which he was entitled. The Revd Richard Reynolds, who was elected master a few days after the agreement was made, was to receive £40 for each of his first two years as master, paid in quarterly installments, and then the rent from the Three Crowns Inn 'deducting only ye taxes according to the late agreement settled before the Lord Bishop of London'.[5] In January 1695, Compton wrote again to the mayor and corporation.[6] Why he did is not known. Probably the master was still not receiving his full entitlement of the school's revenue. The mayor and corporation replied immediately, hoping the disagreement with the bishop could be settled without a court action. They feared that it would not and wrote that they would reply to the bill (complaint) once it was known. The suit came before the Lord Chancellor in 1696. In April 1698, the bishop sent a letter requesting that persons authorized by the town to come to London to 'adjust ye suit now pending in Chancery'. The mayor (Ralph Creffield, Junior), Alderman Potter and the town clerk agreed to represent the town.[7]

On 31 October 1698, the Lord Chancellor gave his decision in favour of the plaintiff and ordered Sir Richard Holford, one of the masters of the court, to supervise the settlement, once the lands belonging to the school had been ascertained:[8]

1. Sir Richard was to receive from both parties the names of people suitable to be trustees and to report to the court. He also had to inform the court how the lands and property should be administered in future.
2. The mayor and corporation of Colchester were to account to Sir Richard for the rents received from the Three Crowns Inn since Lady Day 1684, at the rate of £32 per annum, and for 'all the profits and fines by them made and received since that time'. In making his assessment, Sir Richard was to allow for the cost of repairs and taxes paid by the defendants and for any money paid to the masters.
3. The mayor and corporation were instructed to pay the present schoolmaster £30 within a week of the payment being requested. If there still remained a surplus in the defendants' hands, the court was to decide who should receive it.
4. The mayor and corporation were to pay the plaintiff's costs of the suit up to 31 October 1698, and if further costs were incurred, a decision about them would be given once Sir Richard had made his report.

Almost certainly the mayor and corporation were reluctant to bring the case to a conclusion, as only on one occasion did their representative attend the court and that was to obtain a

Income:	
Rent from premises that included the Three Crowns Inn	£640
Rents and profits from certain charity lands of the yearly value of £8	£160
Fine for lease made to Henry Fitzer	£100
Interest on money	£117
	£1017
Outgoings:	
Salary paid to William Slinger (1684–91), £16 per annum	£112
Salary paid to Richard Reynolds (1691–1702), £32 per annum	£352
Salary paid to Thomas Allen (1702–04), £32 per annum	£64
	£528
Money still owing (court to direct how it should be allocated):	£489

TABLE 1: Income from the school's estates, 1684–1704

copy of the plaintiff's charge.[9] On 3 August 1704, Sir Richard announced a settlement of the financial aspects of the case and said that the plaintiff had temporarily waived the first part of the Lord Chancellor's order (the appointment of trustees and the settlement of how the estates should be managed). In calculating the income that the corporation had received from the school's estates, Sir Richard reckoned that for the period from Lady Day 1684 to Lady Day 1704 the corporation kept £489 to which it was not entitled (Table 1).[10] He decided that the defendants should pay the plaintiff £48 in costs and pointed out that the defendants had made no claim for taxes and other allowances (repairs etc.).

It took another three years for Sir Richard Holford to bring the proceedings to a conclusion. The court accepted his recommendations in August 1707. Trustees were appointed and the school's property handed over to them. What the precise details of the ruling were cannot be established, as Sir Richard's papers for the case cannot be found. In many aspects it was probably imprecise, for there seems to have been no guidance on how, when and who should be appointed trustees,[11] and possibly no direction on who should pay the taxes on the school building and be responsible for its maintenance.

In the late 1720s, the bishop (Edmund Gibson) was again lodging a bill in Chancery against the mayor and corporation. It concerned money owed to Thomas Allen (master between 1702 and 1723). The Revd Thomas Goodwin, married to Allen's widow, was claiming it on her behalf. When Allen was appointed, he received £32 a year clear of all taxes from Henry Fitzer, the lessee of the Three Crowns Inn (the school's principal source of income). In 1705 the mayor and corporation insisted that Allen should be responsible for the parliamentary taxes and so from then until his death he received less than £32 a year, as the taxes were deducted. At Christmas 1722, the chief trustee promised Allen that he should be allowed the money he had paid in tax (£71 3s. 0d.). The Lord Chancellor referred the matter to Thomas Bennett, a master in Chancery, and ordered that the corporation should repay the money paid or allowed by Allen for the taxes on the Three Crowns Inn.[12]

The Trustees

The first trustees were Sir William Lucking of Messing, Sir Isaac Rebow of Colchester, Joseph Thurston, Hope Gifford, John Potter, Nathaniel Lawrence the Younger, and Thomas Ruse, men considered suitable by both the bishop and the mayor and commonalty of Colchester. What their precise responsibilities were is not known. Obviously the trustees had to ensure that the master received adequate rents regularly from the endowed properties, and that the buildings were kept in a good state of repair. They certainly had no control over the curriculum, as that was stated in the statutes. They were not responsible for electing the master or for nominating the boys to be educated at the expense of the foundation. In 1727 when only one of the original trustees was alive, twelve more were appointed. This practice was followed in 1752 when fifteen new trustees were created and in 1789 when there were fourteen.[13] Neither the procedure for appointing a trustee nor who was eligible to be one is known. There was certainly no requirement that he should be a communicant member of the established church. In 1814, the Revd Edward Crosse complained to the bishop (William Howley) that regrettably the majority of the remaining trustees were Dissenters and that the only surviving Churchman was over eighty.[14] Nothing was done to correct this imbalance, but did it matter as the duties of the trustees only concerned real estate? Usually the trustees were either local gentry or were successful professional men, wealthy merchants or prosperous manufacturers.

For the first fifty years of the trust, there is almost no evidence concerning the activities of the trustees except for a list of points to be made in replying to the Revd Palmer Smythies' application to be elected master (below, page 164). Only from the 1750s onwards is it possible to gain an impression of how the trustees fulfilled their responsibilities.

It would seem that the trustees met periodically to deal with matters such as new leases and repairs to the property. They met, for instance, at the White Hart on 11 October 1762 to consider the renewal of George Baker's lease,[15] and on 6 March 1777 when they agreed to sanction the necessary repairs to the school house whilst legal opinion was sought as to whether the cost should be met by Palmer Smythies' executor or the trustees.[16]

In the 1760s and 1770s, Charles Gray, an old boy of the school and an attorney, probably acted as chairman, for there are a number of comments of his, or perhaps they should be referred to as orders, to Peter Daniell.[17] Peter Daniell, another of the trustees and also an attorney, seems to have acted as the trustees' attorney and possibly their secretary. He often received rents from the lessees of the school's properties, dealt with leases, and took action against the executors of Palmer Smythies. When Daniell was being bombarded by a series of letters from Samuel Parr (Master between 1777 and 1779) complaining, with justification, about rents being overdue, Parr, who, without doubt, could be a difficult man at times, apparently irritated him. He called at Daniell's office when Daniell was out and left a message for the attorney about his not having received an acknowledgement of his letter dated 26 October 1778. Consequently, Daniell wrote to Parr about the duties of a trustee, which, the attorney thought, were different from those supposed by Parr: 'I am under no obligation more than any other of the trustees to collect Rent, summons Trustees, do ye business of the meeting, write receipts – go to

FIGURE 1: Central Colchester (within the town walls) in the early nineteenth century. Map reproduced from: T. Cromwell, *History and Description of the Ancient town of Colchester in Essex*, Vol. I (London, 1825).
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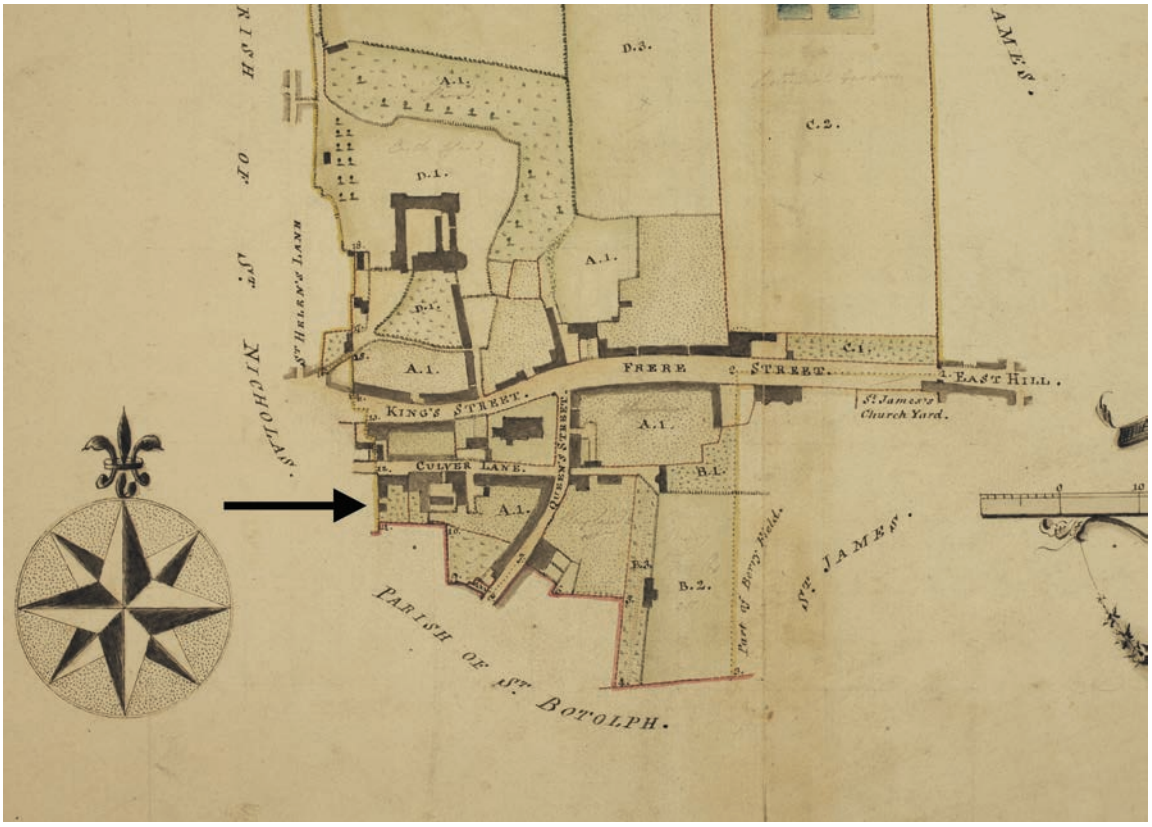

FIGURE 2: The school house (Westons) was located in Culver Lane (East) as indicated on this plan by the black arrow.
ERO, D/DHt P60, Plate No. II: William Cole [surveyed], A Plan of part of the Parish of All Saints, in the Borough of Colchester, in the County of Essex, 1794.
Reproduced by courtesy of the Essex Record Office

tenants and keep accounts – What I have done heretofore in point of civility cannot now be expected – and as I am not according to the nature of the trust bound to do these things more than another Trustee – so I conceive the Trustees are not bound jointly to do it. Their duty I conceive is to appoint a receiver and pay him for looking after the estates, receiving rents and to examine and allow his accounts. The Trustees are not to be ye Master's vassals. As they have not (whatever have been insinuated) knowingly injured the trust and can wipe their hands of all lucrative advantages by it, they will be very cautious how they act as they neither see their actions are so misconstrued'.[18] Perhaps Parr realised that he had been too outspoken, for, about a month later, he commented in a letter to Daniell: 'I do not object to your behaviour. – I believe that you are an honest and a well meaning man'.[19]

There is no doubt that the trustees had been casual in their management of the school's properties, but in the 18th century such an approach was not uncommon. In the final months of 1778, the school's trustees became very aware that their profile in the town was poor. There were comments circulating that they had mismanaged the estate of the school, particularly the leasing of the Three Crowns Inn. To put an end to the 'untrue and scandalous things' being reported, the surviving trustees (Charles Gray, Michael Hills, Peter Daniell and Samuel Todd) issued a four-page leaflet addressed to the free burgesses.[20] In it, they gave an account of the founding of the school, the leasing of the Three Crowns Inn to Henry Fitzer in 1684, the outcome of the bishop's suit in Chancery, and the establishment of trustees in 1707 and the appointment of new ones in 1727 and 1752. They stated that the trustees had allowed the previous master, Palmer Smythies, from 1752 until his death, to collect the rents and trusted him to carry out all necessary repairs. They gave the current rental of the school's estate as £63 10s. 0d. a year.[21] Much space was given to the leasing of the Three Crowns Inn. The burgesses were also informed that the school building was in a dreadful state of repair and that Smythies' executors had refused to put the damage right. The trustees had paid over £40 in repair bills out of their own pockets and had little hope of being reimbursed. They felt that Timothy Walford, the current lessee of the Three Crowns Inn, was entitled to an extension of his lease, as he had spent large sums of money (at least £300) on the property. The burgesses were assured that none of the trustees had gained any benefit from the new lease and had no connection with Timothy Walford or any of his family.

Such was Parr's dissatisfaction with the trustees' handling of the school's estate, that, in mid-1778, at the Moot Hall, he took the trustees to task. Whether this happened at a public meeting or in court is not known.[22] His attempt to have the trustees replaced failed, but Parr did not give up his fight easily, for he then decided to write a pamphlet attacking them. He showed it to a friend, the Revd Dr Nathaniel Forster, Rector of All Saints', Colchester, for his opinion. Forster suggested some minor corrections and expressed his doubts about the merits of publishing it.[23] Parr consulted Sir William Jones, a school friend of his, who was an eminent lawyer and also had a reputation as a classical scholar, a poet and an orientalist, and was advised that his remarks were too violent and too strong. Jones also thought the lease over which Parr was making a fuss was a trifling concern.[24] It was only after Parr had moved to Norwich did he decide not to publish the pamphlet.[25] As a result of the difficult time the trustees had from Parr, they began to take more seriously their obligations to the master. Daniell kept receipts for all the rents that were paid to him and the receipts indicate that the lessees began to pay more promptly.[26] Even though this aspect of the trustees' responsibilities was more efficiently fulfilled, the trustees continued to be casual in their approach to their other obligations.

The Property

The school's estate consisted of a school house (Westons) in the parish of All Saints', land and buildings (including the Three Crowns Inn) mainly in the parish of St Mary's-at-the-Wall and, to a much smaller extent, in the parish of St Peter's, as well as eight acres of land in Mile End and four acres in Lexden.[27]

Westons was bought by the borough in 1585 and was situated in Back Lane (now Culver Street East) (Figs 1 and 2). Possibly it was not a good buy, as there were many occasions when repairs were needed, and often there seems to have been uncertainty as to who was responsible for the repair bills. In 1723, a cellar was dug, 'and a new floor laid over the East part of the School, even with the floor over the West'.[28] Who paid for these repairs is not known, but it is interesting to note that Palmer Smythies in his letter of application to the mayor and commonalty stated that he would use the first three years' income he received from the school estate to do the necessary repairs.[29] It was a fairly small building,[30] Parr having to rent a house along the street to house many of his boarders.[31] In a letter to the bishop dated 11 January 1804, Hewitt wrote about the school building suggesting that, as the lease to the Three Crowns Inn was to expire at Michaelmas, it might be worth considering moving the school to premises there: 'In part of the premises a very considerable English school, about 15 years ago, near as I can remember was kept'.[32] Hewitt, to give weight to his suggestion, described the school building and its surroundings. The building 'is so very limited that it will scarcely contain a sufficient number of common boarders to recompense the master for his trouble. It is moreover very badly situated. There are two publick-houses near it; from the premises of one, the playground is separated by nothing more than a common pale fence: and the backgate of the other opens directly opposite the school door. This gate is that which affords ingress and egress to all the houses put up there, and the dragoon horses, for want of room in the stable-yard, are usually cleaned in the narrow street or lane opposite to the school and house'.[33]

When Crosse became master he found that the schoolroom had been used as a storeroom for wood and hay and the building in a dreadful state of repair. Though he took up residence on 27 September 1806, it was not until 26 January 1807 that he was able to open the school, as so much refurbishment was needed, it costing him between £300 and £400 of his own money.[34] Crosse in a letter to Bishop Howley wrote of the building's poor accommodation:[35] 'While I am on this subject I ought to mention to your Lordship with regard my present residence, that in consequence of its inadequacy to the purpose of a school, I have recently been induced to hire a house almost contiguous in order to remove thither, should your Lordship as Visitor see no objection, for the better accommodation of my domestic pupils. The schoolhouse which I now reside has no convenient playground and is altogether unadapted for the reception of boarders ... I have lately had eight boarders in my

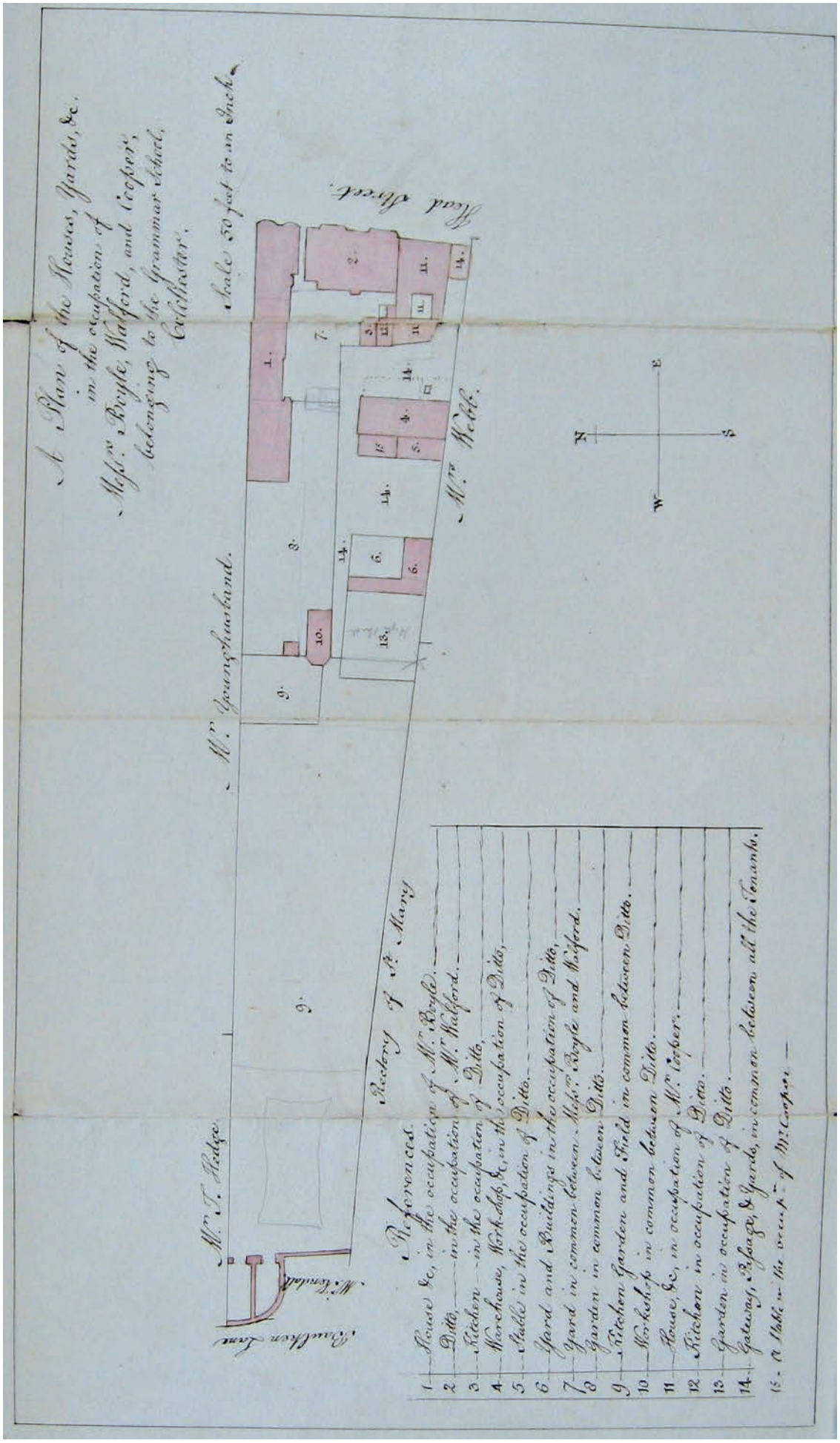

FIGURE 3: Plan showing the division of the school's main income-generating property of the Three Crowns Inn, *c.*1800. ERO, Acc. C16, Box 2.
Reproduced by courtesy of the Essex Record Office

house but have had considerable difficulty in accommodating them. The school it is my intention to keep where it is now, and, with your Lordship's permission, I would put my assistant in the House which I now occupy'.[36]

During the 18th century the trustees were faced, on several occasions, with difficulties over the state of repair of the school. On Palmer Smithies' death (Christmas Day 1776), the trustees discovered that the building had been badly neglected and that the pumps and well had been destroyed.[37] They decided that the property should be put in good order, and that they would lend the money for the work to be done 'without prejudice to their case against Francis Smythies, executor to the Revd Palmer Smithies',[38] as they were anxious for Samuel Parr, the incoming master, to take up residence as soon as possible. The case went to court and the judge found in favour of the defendant. He ruled that, in the lifetime of Palmer Smythies, the trustees should have insisted on Smythies carrying out the necessary repairs or kept back some of the income to pay for them. Probably the trustees had to meet the cost of the repairs themselves, for there is no indication that as trustees they received any income to meet such expenses. From a series of points concerning the case against Francis Smythies, it would seem that the trustees had not appreciated that one of their duties was to ensure that the master kept the building in a good state of repair. 'Trustees did not know their power nor their duty, till the very late recovery of the title deeds'.[39]

The main source of revenue came from the Three Crowns Inn, which was situated in Head Street, near the top of North Hill and looking down the High Street (Fig. 3).[40] It was a substantial property with a large piece of land attached to it. During the 17th century the property seems to have been regarded as a good building to lease. For several reasons, one probably being the slow decline of the cloth industry and another possibly being the increasing amount of maintenance that the building required, its value as property to lease began to fall. In 1684, Henry Fitzer had renewed the lease for thirty-two years at a rent of £32 a year.[41] By 1727, the inn had been divided into tenancies,[42] and, according to Philip Morant, the rent in 1748 from all the estate (including the parcels of land) was £41 a year.[43] In 1778, the rents from the estate amounted to £53 10s. 0d.[44]

Possibly the trustees had difficulty in finding a lessee for the Three Crowns Inn, as more than one lessee became bankrupt. In 1759, the trustees decided to auction the lease and advertised its sale in the 6 October issue of the *Ipswich Journal*. The auction was held on 10 October at the 'Coffee House, between the hours of Four and Six in the Afternoon'. Fisher Walford, a barber and peruke maker, was the highest bidder, offering to pay £11 11s. 0d. a year for twenty-one years. The property comprised a capital messuage, with stables, outhouses, vaults, cellars, a bowling green, and yards, and also a small tenement. Walford agreed to pay all the taxes, quit rents, land taxes and parish charges whatsoever and keep all the buildings, houses, and stables with the appurtenances (except the middle stable, the granary and part of the brew house) in good repair and to pay the rent half yearly in advance.[45] The lease was renewed in 1773, but no longer included the bowling green, the bowling-green house, and the orchard above the bowling green.[46]

A plan of the property, drawn towards the end of the century, when the building was leased to cabinet maker Timothy Walford (Fisher Walford's son), his brother-in-law Michael Boyle, a schoolmaster until 1785 and then a ribbon manufacturer, and John Cooper, showed the building was on a large plot of land, its frontage on Head Street measuring 110 feet (Fig. 3). The plot, tapering a little, stretched to Balkerne Lane and was approximately 560 feet in length.[47] When some of the leases were renewed in 1806, the master's annual rent from all the property amounted to £117.[48]

In 1811, a small portion of the land (2 rods, 2 perches) attached to the Three Crowns property was sold to the Colchester Water Company for £270. This action was permitted under an Act of Parliament passed in 1808 granting powers to the company to supply the town including East Street and the Hythe with water. One of the stipulations was that if more than £200 was raised by the sale of the land, the money had to be paid into the Bank of England and then invested by the Accountant-General of the Court of Chancery in 3 per cent annuities. Instead, the trustees' solicitor (Samuel Daniell) invested £250 of the money in a mortgage and the income from it was paid regularly to Edward Crosse until shortly before his death.[49]

The Election of the Master

The statutes give no instructions for the election of the master except to state he is 'chosen according to the foundation of the Town of Colchester'.[50] Once elected the master had to take a letter from the commonalty to the bishop or his chancellor giving proof of his election, and if the bishop approved of the man, he issued him with a licence to teach. The electoral procedure, well established by the 18th century, involved the free burgesses electing whom they thought was the most suitable candidate and presumably the bishop still giving his approval of the elected candidate. Information about the candidates must have been circulated, though no evidence of this occurring has been found except for the election of 1778. Generally the election took place without fuss and sometimes was held over several days, whilst on other occasions took place at an especially convened meeting. Certainly by the mid-18th century if not before, the post would have been advertised, but as no advertisements for it have been found in the *Ipswich Journal* or the *Chelmsford Chronicle*, the corporation may have advertised in one of the London papers. As there were usually only two candidates at an election, there must have been some selection before the vote occurred. D'Cruze indicated this was so in 1778.[51]

The Revd Palmer Smythies' candidature

In the 1720s, the Revd Palmer Smythies was a candidate on three occasions and was elected on the third (20 December 1727). When he first stood for election (April 1723), Smythies wrote to the mayor and corporation suggesting a number of proposals if he were elected:[52]

1. He stated that he would use the first three years of his income as master to repair the school, which was in a very bad state.
2. He was prepared to support those electors who were endeavouring to introduce a new statute, which would require the master to resign if the number of scholars fell below a certain figure.

3. He would follow the method of teaching used at Charterhouse School, one of the best schools in the country and where he was educated. He was already using that method with 'such success' with three scholars whom he was preparing for university.
4. He promised to treat all the boys equally.

He was aware that, for various reasons, some of the free burgesses did not wish him to be elected. Those opposed to him claimed that his candidature was invalid, as he already held two benefices, a situation, they argued, not permitted by the statutes; that he had no need for the additional money the stipend would provide; and that no man can care satisfactorily for two parishes and a school. In replying to these objections he argued that as he was already in possession of two livings, the statute forbidding a master to hold another benefice besides that of the school only came into force when a master accepted a living whilst he held the mastership. He acknowledged that he could 'not pretend to be in want of a substance', for if he were he would not have offered to repair the school at his expense. He agreed that 'ye care of a parish minister and a schoolmaster to be both great, but yet humbly conceives they are not inconsistent'. He pointed out that, in at least two thirds of the schools in the kingdom, the master teaches and has care of a parish, and so saw no reason why this could not occur in Colchester. To give weight to his argument, he stated that a previous master, the Revd Richard Reynolds, had been permitted to hold a living besides the mastership and was the last master 'to hold a good school'.[53] When it came to the vote, Smythies was heavily defeated, William Turner receiving 214 votes and Smythies 129.[54]

Amongst the papers of the trustees is one headed 'Hints of an Answer to Mr Smythies' Proposals touching the Approaching Election of the Free School-master of Colchester'.[55] Possibly it was written by or for one of the trustees opposed to Palmer Smythies. It has the initials J.B. at the bottom and is dated 9 March 1723.[56] The writer commented on the four points that Smythies made in his letter to the mayor and corporation. On the first concerning repairs, J.B. wrote 'a man who would bribe a town, before he is elected, to get an office of that kind, gives but a bad justification of which may be expected of him, after he is chosen'. J.B. did not approve of Smythies supporting the introduction of a statute that required a master to quit the school if numbers became too low: 'We have a saying that has long been applied to Parliament Elections, and I take to be applied to the present case, viz. that he that buys must intend to sell, if he manages prudently; and for this reason, I am not trusting a man too far, who offers to give near £100 to be elected'. That Smythies intended to use the teaching method used at Charterhouse did not impress J.B., as other great schools had successful methods too. As to Smythies' last point about treating all pupils equally, J.B. thought anyone applying for the post would do the same. Then he adds 'The man who should be guilty in that respect, ought to be treated with the utmost contempt'.

J.B. believed that the statutes were clear in forbidding the master to hold any other benefice whilst he was in office, and was of the opinion that school and parochial duties were incompatible. He deplored Smithies' behaviour when in 1722 he removed a Mr Fiske from his position in the management of the workhouse to give it to his brother 'who was (as he [Smythies] called it) in want and unprovided for, and Mr Fiske was not'.

On Turner's death, Palmer Smythies decided to seek the mastership once more. On this occasion he wrote to the bishop, Edmund Gibson, putting his case and hoping for the bishop's support. Unfortunately Smythies' first letter no longer exists, but in a subsequent one he provided the bishop with imperfect extracts from the school's statutes, as 'not with all ye search and enquiry we could hither to make, ye Book of Statutes cannot be found'.[57] He transcribed from an imperfect copy of the statutes the relevant sections to which those who were eager to prevent him from being elected were referring. One concerns the master taking the boys every Sunday to the church where the general sermon was preached and his questioning the pupils about its content on the following Monday morning. When in the mid-17th century the general sermon ceased to be preached, the statute was modified and required the master to take the scholars to church in the parish where the school was situated. Smythies argued that the ruling was made 'without sufficient authority' and consequently could not be enforced. He sought Gibson's opinion on the matter and informed the bishop that he could not find any evidence to suggest that it was ever observed. It is not known what the bishop's response to Smythies was. The ballot took place in March and Smythies received a smaller percentage of the votes than he did on the previous occasion (Comarque 105 votes, Smythies 45).[58]

On the third occasion (December 1727), Smythies was elected with a substantial majority over the Revd William Dixon, 209 votes to 115.[59] He held the mastership until his death on Christmas Day 1776. In some ways it seems strange that Smythies was elected on the third occasion, when on the previous two there had been so much opposition to his candidature.[60] Perhaps he was the lesser of two evils or perhaps the opposition to his candidature had ceased.

The Revd Dr Samuel Parr's election

The election to fill the vacancy on Smythies' death was fixed by the mayor, Thomas Boggis, a wealthy baymaker, for 19 February 1777. The two candidates were the Revd Dr Samuel Parr and a Mr Causely, but towards the end of January Mr Causely withdrew his candidature.[61] The candidates were asked to provide letters of recommendation. Whether this was a new procedure is not known; probably it was not. Parr approached Bennet Langton, a friend of Dr Johnson and an enthusiast of Ancient Greece, who had been impressed by Parr's production of a Greek play at Stanmore, to ask if Dr Johnson could write a letter on his behalf.[62] Bennet Langton called upon Dr Johnson, who willingly agreed to his request on Parr's behalf, and reported the Doctor's willingness to Parr: 'It is, I assure you, dear Sir, but doing justice to his expressions [Dr Johnson's], on our application to say, that nothing could be more friendly than they were. He said he knew few, if of any, that were so well entitled to success as yourself in an application for presiding over a seminary of education; and expressed the opinion of your possessing all the kinds of learning requisite for that purpose, in the very high terms of praise'.[63] Thomas Boggis wrote to Parr in early February, 'I have fixed the election for a master of our free Grammar-School to be on Wednesday the 19th of this month; at which time, if convenient to you, shall be glad to see you here, when I make no doubt shall be able to give you joy of being elected. I had the honour of a letter this

day from your friend Dr Johnston on your behalf. Have had a meeting with our Corporation, the members of which all wish you success'.[64] When the free burgesses met, Parr was elected unanimously.[65]

Parr did not remain master for long. Possibly he was exasperated by his dealings with the trustees with whom he seemed to be constantly at loggerheads. But it must not be forgotten that the poor relationship between him and the trustees was due, probably to a large extent, to Parr himself, who was not an easy man to deal with and had a tendency to over react. Of him, his friend the Revd Dr Nathaniel Forster wrote 'His heart is equal to his head. But the impetuosity of his temper is against the former as are his prejudices against the latter. I mean to superficial observers'.[66] In September 1778, Parr obtained the mastership of Norwich Grammar School and left Colchester in early January 1779.

The Revd Charles Hewitt's election

When it was known that Parr was leaving, the Revd Charles Hewitt, an usher at Bristol Grammar School, issued on 26 October a printed notice addressed to the town dignitaries and free burgesses indicating that he would be applying for the position.[67] Three days later the Revd John Duddell, who had been the curate at Coggeshall since 1766 and ran a small school there, announced his candidacy. His printed notice[68] was similar to Hewitt's.

At this time, there was considerable dissatisfaction with the trustees concerning the leasing of the Three Crowns Inn because it was thought that the property had been leased at too low a rent and to Timothy Walford's advantage. This dissatisfaction was to play an important role in the election and probably was one of the main reasons for the election receiving so much interest and causing so much activity. Added to this was the religious divide prevalent in the town. Hewitt was an 'establishment' churchman whereas Duddell was an Evangelical. The town split into two camps: Francis Smythies, the town clerk and son of Palmer Smythies, led the Church and Tory party in supporting Hewitt, whilst the trustees, led by Peter Daniell and Charles Gray and supported by Dissenters and many Whigs, were in favour of Duddell.

On 17 November 1778, a leaflet addressed to the free burgesses of Colchester was issued.[69] Its aim was to lay the facts before the voters and to ask them when casting their votes to bear in mind the good of the school and not to be influenced by friendship or 'consideration of party'. There were seven points. The first four concerned the testimonials of the two candidates. The writer questioned whether some of the testimonials were of real worth, as they were either perfunctory such as those from the men's colleges giving assurance of their good conduct whilst at university, or were from fellow clerics who had no knowledge of the candidates' teaching abilities. Hewitt, the leaflet claimed, had the better testimonials as some of them showed knowledge of the man's suitability for teaching and included recommendations from Hewitt's bishop and the Bishop of Norwich, both prelates being recognized for their erudition. The fifth point concerned Hewitt's winning the Chancellor's gold medal for classics whilst at Cambridge University, and stated that it would not have been awarded to him if he had not deserved it. The sixth point stressed the importance of the master being prepared to maintain the rights of the school and referred to the matter of the leasing of the Three Crowns Inn. It ended: 'Do you wish to elect a master who will quietly submit to this agreement [the lease to Timothy Walford] or one who is determined to vindicate his rights and those of his successors? I am sure you will prefer the latter. I am sure you must prefer Mr Hewitt'. The final point states that Duddell's supporters are the two leading trustees, the men who justify the agreement with Timothy Walford, and suggests if voters disapprove of the lease for the Three Crowns, they should vote for Hewitt.

The trustees in their defence issued a statement on 26 November (see above, page 161). Thirteen days later (9 December) a reply to the trustees' statement was published by the man who had attacked them in the handbill dated 17 November.[70] It stated that though the agreement between the trustees and the tenants no longer existed, its terms did. The writer thought that the three houses occupied by the Walford family were let at too low a rent, claimed that the lease was drawn up without consulting the master, and that the covenants favoured Timothy Walford too much, even though he had spent £300 on the building.

On 16 December a leaflet addressed to the Free Burgesses and in support of Duddell was circulated.[71] Its first point referred to testimonials, stating that college recommendations were of no real worth and pointing out that the suggestion that Duddell's testimonials from local clergy were easily obtained could also be said of Hewitt's. The writer believed Duddell to be a worthy schoolmaster and stated that five of Duddell's testimonials were from men 'of distinguished merit in classical learning' and are 'particularly full and expressive in regard to his being in every respect qualified for the post'. He thought the leaflet in favour of Hewitt gave too much importance to Hewitt's winning a gold medal. 'This golden Hare is so much set forth and insisted upon, as if it were the only Rule by which we could form a proper Judgement of a Person's Abilities; yet we are told, that the loss of Mr Parr is scarce in our Power to repair, tho' the Merits of that Gentleman were never distinguished by so valuable an Acquisition'.

The next point refers to the trustees' administration of the estate, their treatment of Samuel Parr and the unjust attack upon them and asks what has this to do with Duddell's candidacy. 'Is he [Duddell] to suffer for the misconduct of others? . . . and are we to reject him because his Friends [Gray and Daniell] have done amiss? But it is plain that the trustees have done their Duty both in Conscience and Equity, without receiving Emolument and Gratuity. . . . The most that can be alledged against them is, that they have taken too much pains to accommodate the present Master [Parr], who has the Effrontery to assign his Resignation to what was done four Years before he came to this Town [the new lease with Walford]: To what he must, or ought to have known, before he accepted the School. — But it seems, that is not the first Time of his differing with Trustees'.

Then it is claimed that the trustees are not guilty of neglect, as the rent from the Three Crowns Inn nearly doubled on the signing of the latest lease (1773), the source of the dispute. The fourth point refers to Hewitt's claim that he will try to get the agreement declared void and questions whether this is fair to the Walfords. The following point considers the suggested action of Hewitt and wonders whether it is to be recommended. Finally the writer asks whether it is right to use epithets such as 'Methodist', 'fanatic', 'enthusiast' etc. when

referring to Duddell. It is signed 'A Freeman and a Lover of Justice'.

Ten days later (26 December), a leaflet defending Duddell and signed 'A Freeman and a Lover of Truth' was ready for distribution. It criticised various statements that had been made and asked the burgesses to give careful thought to the way that they cast their votes.[72] According to the writer of a handbill dated 12 January 1779,[73] the 26 December leaflet was circulated amongst only a few people 'and had not yet been made public'. On 28 December another address in favour of Duddell was distributed in the town.[74]

As the election approached, Hewitt was possibly a little worried by its outcome, so he issued a handbill on 12 January in which he refuted the suggestion that he was responsible for the leaflets attacking Duddell.[75] At the bottom he asked the burgesses to vote for him. On the same day, a leaflet, supporting Duddell, pointed out several misrepresentations in the privately circulated handbill dated 26 December 1778.[76] The first concerned testimonials and their true worth, and reminded readers that it was not necessary to have a gold medal to be a good scholar. 'The next instance of misrepresentation relates to Mr Duddell, and the *irreligion* of making him, an innocent man, a sufferer by the misconduct of the trustees and a partner in their guilt. It would shock us to think, that the slightest suspicion of guilt should fall on so *good*, so *holy* a man as Mr Duddell; of that he should partake of the punishment due to the sins of others'. The writer then turned to the 'uncandid and uncharitable imputations by Mr Hewitt and his advocates, upon the character and conduct of the trustees (who it seems are the most excellent and most amiable of men)'. He felt the charges against the trustees were mainly of their own making. It was up to voters to decide the merits or demerits of the trustees' conduct, whether the Three Crowns Inn had been let in the best interest of the school, and whether £12 a year was a fair rent for the Three Crowns exclusive of the bowling green. A footnote, probably included as an afterthought, concerned Timothy Walford. As Walford had let a tenement included in the lease for 5 guineas for the first year and then 7 guineas for the subsequent 14½ years, in reality he was only paying £4 4s.0d. a year (actually £4 13s. 0d.) for the part of the Three Crowns Inn in which he lived.

On 13 January, hot off the press came yet another small handbill addressed to the free burgesses of Colchester, this time with the title 'A Man may buy GOLD too dear'.[77] Trustees' papers indicate that Peter Daniell drafted it, arranged for it to be printed in Ipswich and was prepared to pay a little extra for it to be printed quickly. The handbill begs voters not to be taken in by Hewitt's gold medal and claims that some of Hewitt's supporters have behaved badly, using threats which they hoped would intimidate voters. It is signed 'A Brother Freeman'.

Voting began on Friday 15 January and closed the following Tuesday morning, when, according to a report in the *Ipswich Journal*, Duddell declined.[78] Hewitt received 487 votes and Duddell 470. The reporter commented: 'It is remarkable that though the salary … is not more than £50 per annum, the spirit of electioneering arose so high, that the voters, who were all freemen of Colchester, were sent for from London, Lynn, Norwich, Yarmouth and other distant parts, and it is computed that nearly £1400 have been expended on the occasion'.

For Daniell, supporting Duddell's candidature was not only time-consuming but also expensive. He must have worked hard on Duddell's behalf, as amongst the trustees' papers are lists of voters to be approached, correspondence concerning voters, and a request for expenses. There is also a list of burgesses who had not voted by the Saturday (16 January) and it is interesting to note that they resided all over the county. The expense in supporting Duddell was considerable, so Daniell drafted a letter asking for subscriptions to defray the cost. Whether or not the letter was sent is not known.[79] The account in the *Chelmsford Chronicle* (22 January) refers to Duddell withdrawing from the election and then continues 'there were then upon the road near 100 voters more in Mr Hewitt's favour. Mr Hewitt was supported by the worshipful the mayor and corporation, by all the clergy of the town, and by many gentlemen of the utmost respectable character, both of the town and neighbourhood'.

Naturally the local clergy took an interest in the election, particularly as it caused such a stir in the town. Within a day or so of the result being known, Thomas Twining wrote to his friend Parr about the proceedings. He first informed him that Keymer (a local printer and Quaker) had told him that Hewitt had said that he would give £1000 never to have engaged in this affair. Then he described the procession round the town: 'I am not fond of the insult of a triumph; but many of Hewitt's friends would not be satisfied without parading about the town. I would not desert him, but went intrepidly through all the blackguardism of electioneering. We marched with the military band before us; stopped before old Gray's door, and treated him with a dead march. They intended to have given him a holla; but indignation converted it, as it came out, into groans and hisses. He has given immortal offence to his best friends by his conduct in the matter'.[80]

Nathaniel Forster wrote to his cousin Peter describing the election: 'The wings of the wind, or at least of the Ipswich Mercury, must have already conveyed to you the tidings of our success. Hard fought was the battle from Friday morning to Tuesday. On Monday evening we found ourselves for the first time ahead; but no more than five. On Tuesday morning we entered the field with all the assurance of victory. The scarlet mayor, the sable recorder, with many a squire and many a person upon the bench, and I even I alone at the table, with the clerk of the poll. When lo! instead of an enemy appeared an emissary, with a scrip of paper, which when opened informed Mr Hewitt that Mr Duddell declined standing the Pole. Thus spelleth the Rev. Mr Duddell Master of Arts! Hurra! Hear mechanically from a certain Doctor. We then polled a few votes which we had at hand, and the numbers upon casting up were, for Hewitt 487, for Doddle 470. Upwards of fifty voters, as they tell me came in for us in the course of the day. Could you know the circumstances of this contest, you would rejoice with us. I rejoice most upon Parr's account. He would have been hurt beyond conception by Duddell's success'.[81]

Duddell placed an advertisement in the form of a letter in the following Friday's issue (22 January) of the *Chelmsford Chronicle* addressed to the free burgesses of Colchester:

'Gentlemen

Permit me to return you my sincere Thanks for your kind and generous support during the contested election for

> the mastership of your FREE GRAMMAR SCHOOL, but as I have not the least probability of success, without putting my friends to a very great addition of expense and trouble, I thought it most prudent to decline the poll; however, I have the great pleasure to be well assured, that had you been left to your Choice, I should have had a very great majority in my favour, and therefore I think myself under equal obligations to you as if I had been honoured with success.
>
> I am, Gentlemen, with great respect
> Your most obliged humble servant
> John Duddell'

The Revd Edward Crosse was elected master in 1806 when the bishop forced Hewitt to resign (see below, page 170).

THE SCHOOL

The curriculum and entrance requirements

Little is known about the school and its teaching. One of its statutes stated that the master was to teach the grammar called the 'King's Grammar' (often referred to as Lily)[82] and 'Latin and Greek authors both in prose and verse'. He was to use his discretion in choosing material appropriate to his pupils' capabilities and to avoid 'those authors which be rather nurseries of looseness of life and filthy behaviour, than meet for honest and chast ears'.[83] He was to train the boys to translate from one language to another, and ensure that they, once a week, wrote 'Epistles, Theams, Orations, or Verses in Latine or Greek'.[84] Almost certainly there must have been some religious instruction and possibly some number work too. As the masters had to have an M.A., they were well able to fulfil the requirements of the curriculum.

The boys taught at the expense of the foundation had to be at least eight years old and able to read printed and hand-written material and to write. Whether this stipulation applied to the master's private pupils is not known, but almost certainly it did. However, another stipulation that new entrants had to be in good health, have no incurable diseases and had not been in contact with any infectious illnesses would certainly have applied to all pupils. Illness was something that all school proprietors feared, as an outbreak of an infectious disease could result in many of the pupils being removed and a school being closed permanently.

By the beginning of the 18th century, the curriculum was certainly unsuitable for most, if not all, the sons of poor burgesses, as it had no relevance to the types of employment they were likely to pursue. Nor did it provide any opportunity for the boys to learn of the latest developments in science and of the current understanding of the universe. Many of the sons of poor burgesses probably could not read, especially at the beginning of the century. The master could, if he so wished, provide for his private pupils a much broader curriculum. Consequently this limited curriculum was one of the factors contributing to the small number of free boys being taught. Parr realised this: 'There is happily both for the town and the master another institution [the Blue Coat School] where the children of the lower people are instructed in such inferior branches of knowledge as are more suited to their station and conducive to their advantage'.[85]

Samuel Parr certainly did well by his pupils. In a letter to Lord Dartmouth, Parr informed him that the school was to be run on similar lines to his school at Stanmore, that his assistant would be responsible for the lower boys out of school, and that there would be a 'distinct supper for boys in the highest class'.[86] He comments that the 'school is placed in a more remote part of the town, and I intend to assign particular spots and particular times for the boys to go out'. In late July 1777, he arranged for his scholars to entertain their parents and townsfolk by giving a performance in the theatre: 'Last Monday, the young gentlemen of the school in this town declaimed Demosthenes, Cicero, Sallust, Terrence, Akenside and Pope, in our theatre; there were present near 500 ladies and gentlemen of this place [Colchester] and neighbourhood, who were highly pleased with the performance'.[87]

The Revd Dr Nathaniel Forster sent his son Edward to the school in the early days of Hewitt's mastership and was, at first, pleased with Hewitt's teaching: 'He [Edward] now goes to our own school with tolerable constancy and is gradually picking up a little Latin. Hewitt teaches him just as I like. You may be sure I insisted an absolute prohibition of Lilly'.[88] Why the boy left to go to the Revd Dr Grimwood's at Dedham is not mentioned in Forster's letters, but it would seem that the boy's progress was not as rapid as his father would have wished.[89]

When Bishop Porteus was seeking information about Charles Hewitt from the Revd James Round, his informant wrote 'I fancy he has not the patience to teach freemen's children and not treating them very kindly, the parents did not care to send them and therefore he has had no scholars for many years. The trustees cannot approve his conduct, and it has been whispered to me, that they intend to remonstrate'.[90] Porteus admitted to Round that 'some years ago complaints were made to me against Mr Hewitt, and if I am not much mistaken, one was his neglect of the school, and his making it almost a sine-cure and of little use to the town, although it had formerly been in a very flourishing condition'.[91] The Revd Edward Crosse in a letter to the bishop (William Howley) informed him that Hewitt had not had any scholars for many years.[92]

Under Crosse the school began to function once more and opened in January 1807 with a small number on roll. In the previous November, he announced in the *Chelmsford Chronicle* that his charges would be 40 guineas (plus an entrance fee of 3 guineas) for boarders and 8 guineas (plus a 1 guinea entrance fee) for day-boys.[93] As Crosse could only accommodate six boarders,[94] he moved in 1815 from the master's house so that he could take more.[95] At the same time, the Revd Mr Tweed, Crosse's usher, moved into the master's house and was seeking a few boarders, who would receive much of their education at the Free Grammar School.[96] Three years later, when Nicholas Carlisle's findings on endowed grammar schools were published, the school had between thirty and forty pupils and the charge for day scholars was 10 guineas per annum.[97] For textbooks, Crosse mainly used the Eton grammars, and his system of education was generally similar to that of Eton's. Occasionally he taught from other books than those used at Eton. For the few private pupils that Crosse lodged in his house, his terms varied according to age, the fee for the younger ones being 80 guineas a year and for the older ones 120 guineas. His assistant, the Revd Mr Rogers, who had been a fellow of Sydney Sussex College, Cambridge, before he came to replace Mr Tweed, resided in the school house and took a few private pupils at 60 guineas a year. The school hours

were 7–9 a.m., 10 a.m.–1 p.m., and 3–5 p.m. (in winter the school did not start until 8 a.m.). Crosse's curriculum was probably fairly limited, as in his April 1815 advertisement, he stated that he was willing to take a few pupils in his house to instruct them in English, Latin, and Greek literature.[98] His curriculum was nowhere so comprehensive as the one Thomas White was offering at his Colchester Academy in 1804.[99]

Sir George Airy (1801–92), the Astronomer Royal, was a pupil at the school between January 1814 and June 1819. According to his autobiography, he was taught grammar, Greek and Latin and had to learn at least one hundred lines of Latin or Greek poetry each week: 'At Michaelmas 1816 I had repeated 2394 lines, probably without missing a word'.[100] The Revd Mr Rogers tutored Airy in mathematics, but it was not long before Airy realised that he had a better understanding of the subject than his tutor did. Eventually the tutor stopped coaching him and Airy suggested that Rogers realised he was no match for his pupil. Airy's success in his finals at Cambridge was reported in a local paper: 'It seems to be generally believed that such a mathematician has not been known in Cambridge since the days of Newton, as Mr Airy, son of Mr Airy, late of this town. He has published some articles in the Philosophical Transactions, and has made an improvement in the Telescope. It is said that he has 700 marks above the Second Wrangler, Jefferys, and no discredit to the latter either. Mr A, previous to commencing his studies at Cambridge, was under the tuition of the Revd E. Crosse, of this town'.[101]

For much of the period under consideration, there is no information whether the master employed an usher (assistant). Masters with a reasonable number of pupils would certainly have needed one. When Parr came to Colchester, his usher was William Julius, who had been his first head boy at Stanmore. David Roderick, Parr's usher at Stanmore, also came to Colchester to be the private tutor to one of Parr's pupils, Heneage Legge, a son of Lord Dartmouth.[102] Before he left Colchester, Parr employed another usher called Rooke, a demy (scholar) of Magdalen College, Oxford, who went with him to Norwich.[103] As already indicated, Crosse employed ushers (Tweed and Rogers and probably there were others, too).

Register of pupils

For the first four hundred years of the school's existence, many of the masters kept a register of the pupils enrolled,[104] and from it can be obtained for much of the 18th century a fairly accurate assessment of the number of pupils being educated at any one time. Numbers on the whole were small, but that was typical of most schools then, and when a private school had between twenty and thirty pupils it was beginning to be regarded as quite large. Of course the top public schools and a few outstanding private schools had a much greater number, and it was only towards the end of the period being considered did numbers grow appreciably. The grammar school's register lists the boys when they enrolled, commenting occasionally when a scholar was re-admitted, but there is no indication when a pupil left or died. If it is assumed that the majority of pupils stayed between five and seven years at the school, it is possible to obtain some idea of its size. Using this rule of thumb, it can be reckoned that Thomas AlIen had in the first ten years of his mastership (1702–12) approximately twenty-five pupils at any one time. During that period he enrolled fifteen foundation scholars. William Turner, in his short headship, recorded twenty-four pupils in 1723, twenty-six in 1724, and thirteen in 1725. The list seems to suggest that Turner had at any one time a fairly large number of boys, as most of the boys would have stayed for more than a year. It also indicates that he might have had his full complement of free scholars. David Comarque, who remained at the school under two years, admitted nine boys in 1726 and seven in 1727, probably six of them being foundation scholars. Of course he would also have had some of the pupils whom Turner had taught. In his first two years at the school, Palmer Smythies enrolled eleven pupils including one re-admission. Between 1741 and 1763 when there was no mayor or corporation, Palmer admitted seventy-five pupils, none of whom was a foundation scholar as there was no system for nominating free boys. In fact, Smythies was at a loss to know what to do about his obligation to have free scholars, so he resorted to advertising in June 1750: 'Mr Smythies takes this method of informing the Free Burgesses of the Town, that there are several Vacancies for Free Scholars in his School, and as there are not at present a Mayor and Aldermen, who are appointed to fill up such vacancies, he is ready to do it with such of the Sons as they think fit to send him for that purpose'.[105] In the 1760s Smythies admitted a few pupils, fourteen altogether, and in 1770 he received his last two. A comment by the trustees in a leaflet dated 26 November 1778,[106] possibly suggests that Smythies did not have any pupils for some time, but that comment could be misleading as it may have referred to foundation scholars. Samuel Parr, on his arrival in Colchester, wrote in a letter to Lord Dartmouth that the 'mastership has for twenty years been a sinecure, but upon enquiry I find that it has not been unusual for any boys to be sent to the grammar school, unless such were of more genteel families and intended for some liberal profession'.[107]

The Revd Samuel Parr arrived in 1777 with twenty-three pupils from his school in Stamnore and during his short stay in Colchester his school contained thirty-four boarders, seven foundation scholars and eleven other boys from the town. At that time, there must have been some concern in the town that only a few foundation scholars had been admitted to the school in the past thirty-five years, otherwise would a resolution restating the purpose of the school have been passed by the Assembly on 30 July 1777? It stated that henceforth 'sixteen Sons of Freemen of this Borough born within the Liberties thereof shall be chosen and allowed by the Mayor for the time being and Five Aldermen of the said Town who shall from time to time by note in writing to be by them signed direct the Master of the Free Grammar School for the Time being to take all or any of the said Sixteen Sons of Freemen'.[108] The town clerk was ordered to record in the Book of the Law Hundred Court (the Monday Court) the names of the boys recommended for a free education. For his trouble he was to be paid five shillings for every entry. No such recording has been found. He was instructed to send a copy of the resolution to the master.

For Charles Hewitt there are no figures. He certainly had one or two pupils at the commencement of his mastership, but for much of the time the school did not function (see below, page 170). When Crosse opened in early 1807, he had eight free scholars and three fee-paying ones and in a letter to Bishop Howley in 1814 he stated that he had between thirty and forty boys (including three or four free scholars).[109]

As to holidays, the Free Grammar School would have been similar to most other schools. There would have had a vacation of several weeks at Christmas and another one near Whitsuntide, running from sometime in June until the latter half of July.

The Masters

For the period under consideration little is known about the masters, especially their teaching abilities. They all had the required qualifications, an M.A. obtained at Oxford or Cambridge and were in holy orders (fuller details are given in Appendix 1). Between 1684 and 1835 there were nine altogether, all graduating from Cambridge colleges. They were:

William Slinger	1684–1691
Richard Reynolds	1691–1702
Thomas AlIen	1702–23
William Turner	1723–26
David Comarque	1726–27
Palmer Smythies	1727–76
Samuel Parr	1777–78
Charles Hewitt	1779–1806
Edward Crosse	1806–35

It is interesting to note that three of them (Reynolds, Smythies and Crosse) were at Sydney Sussex College and there seems to be no reason why this was so. Some of the clerics were schoolmasters by calling, whilst others possibly thought the position was worth holding, as its stipend was greater than many of the Colchester livings. Richard Reynolds may have been Master of Yarmouth Grammar School between 1675 and 1691 before coming to Colchester,[110] and William Turner, prior to his election as master, was Master of Stamford Grammar School (1693–1723).[111] Turner wrote several textbooks to aid his pupils' learning, some running to more than one edition. Amongst them are *Exercises to the Accidence and Grammar* (8th edition, 1752); *A Short Grammar for the English Tongue: for the Use of English Schools* (1710); *The Art of Spelling and Reading* (2nd edition, 1718); and *Troporum et Figurarum Rhetorices Praecipuarum Institutio Brevis* (1725).

When David Comarque, a Huguenot, came to the school, he seemed keen to be head of a successful school with a good reputation for learning. He advertised the details of his curriculum in the *Ipswich Journal* four weeks running, an unusual action at the time. 'Young Gentlemen are at a reasonable Rate to be Boarded, and taught Latin, Greek, and French; and entered in the University Learning, by D. Comarque, AM. Note, The Family is entirely French, whereby Boarders, will have the Advantage to learn that Language most effectually, and with very little hindrance to their other Studies.'[112] He did not stay for long as he felt that the rents that he was receiving from the school's properties had been fixed at too low a rate (see next column).

The longest serving master was Palmer Smythies. It would be interesting to know why he wanted the post, as he already held two livings in Colchester (St Michael's, Mile End, and St Mary Magdalen's). Probably he had a genuine interest in education, as he had pupils whilst he was resident at Mile End.[113] He seems to have acquired a good reputation as a teacher, for Daniel Twining sent his son Thomas to the school in 1754, when he realized that his son was more suited to academic work than to being employed in the family tea business.[114] Twining stayed with him for a year or so before going up to Cambridge (Sydney Sussex College). Samuel Parr, a man of considerable learning, was an outstanding teacher. He taught first at Harrow before setting up his own school in Stanmore (Middlesex), which he moved to Colchester when he became Master in early 1777. His stay in Colchester was less than two years and then he obtained the mastership of Norwich Grammar School, which he held until 1786. The Revd Thomas Twining, translator of Aristotle's *Poetics*, recommended Parr as a teacher for his nephew Richard: 'Of Mr Parr's abilities, learning, taste, manner of teaching and finding out the dispositions, talents and characters of the boys, I have the highest idea. I never met with such a man in the shape of a schoolmaster. ... I have been told he flogs too much, but I doubt, those from whom I have heard it, think any use of punishment too much. In conversing with him, I have heard his disapproval of beating children. I have heard him say that words were his worst rod; that what all the boys most dreaded was his talking to them, and shaming them before the whole school. ... that had I a son, and determined to send him to any school, I should certainly send him to Mr Parr's'.[115] Johnstone, in his biographical essay of the man, stated that whilst at Colchester Parr established his reputation as a teacher.[116]

It would seem that Hewitt met his obligations at first but soon lost interest in the school. For many years before his resignation in 1806, the school did not function. Under his successor, the Revd Edward Crosse, the school became once more an active community.

Benefices

One of the stipulations laid down in the statutes (Item 21) was that 'if the schoole-master shall, after he is placed, enter into the Ministry, and accept eyther of any Benefice, cure, preachership, either in the town of Colchester, or out of town, another Schoole-master to be chosen by the Bailiefs of the said town, within six weeks after knowledge had thereof, ...'.[117] This statute was irksome to some of the masters. Richard Reynolds, Thomas AlIen and William Turner accepted it, even though they may not have been too happy about the situation. Palmer Smythies was probably not elected in 1723 and 1726 as he already held two benefices, but when he stood for a third time in 1727, his holding of these benefices did not prevent him from becoming master.

Within months of his becoming master, Comarque was concerned about finance, as the rent from the Three Crowns Inn was lower than it should have been for a building of its size. The mayor, Captain Martin, offered Comarque the living of Arlesford (stipend £60 a year) provided the bishop thought 'it fit to alter the statutes'.[118] Comarque corresponded with Edmund Gibson, asking if he could hold both positions until the lease on the Three Crowns Inn came up for renewal in twelve years' time.[119] Gibson felt that it would be difficult to change the statute, so Comarque resigned to become the Rector of Arlesford.

The question of holding more than one benefice was not to raise its head again until 1803. Samuel Parr held at least one curacy, that of Holy Trinity. Nathaniel Forster, who was suffering from 'gouty feet' at the time, wrote (29 January 1777) offering him 'the care of two churches in this town, for which I

wish to have a curate. One of them is small [Holy Trinity] and very near you; the other not large, but at the distance of near a mile [St Leonard's]'.[120] Nobody suggested the statutes forbade Parr from doing so.

A few years after he came to Colchester, the Revd Charles Hewitt acquired additional responsibilities. In 1783 he became Rector of St James's, Colchester, and retained the living until 1798, when he was granted the living of Pitsea. A year later he also obtained that of Greenstead.[121] There seems to have been no opposition to his holding two benefices besides the mastership of the school. The difficulty only arose in 1803, when he sought permission from the Revd Dr Beilby Porteus, Bishop of London, to be non-resident in Greenstead.[122] The request itself was reasonable, as the parsonage house was not fit to live in. Before the bishop gave Hewitt his decision, he wrote to the Revd James Round of Birch Hall, Rector of St Runwald's in Colchester, seeking answers to ten questions about Hewitt.[123] In doing this he assured Round that he would not reveal who was the source of his information. Porteus wanted details about the school and the parish of Greenstead. Round replied that he was not prepared to enquire too minutely into Hewitt's circumstances, but would answer the bishop's questions from his own knowledge: 'I will however speak my mind to your Lordship very freely, having a very high esteem both for the interests of Religion and the Church, and no private friendship I trust will ever prevent me from doing my duty'.[124] He reported that Hewitt lived in the schoolhouse and that, at present, he had no pupils. When he did have scholars, he taught them himself, but has had no foundation boys for many years. Occasionally he has had a private pupil for a few months.

On receiving this information, the bishop corresponded with Hewitt.[125] He wished to know about the value and state of the livings of Greenstead and Pitsea, whether each parish had a parsonage, who the curates were and whether Hewitt resided in the parish or elsewhere. Hewitt explained that the parsonage in Greenstead was not fit to live in, that he had had plans drawn for a new house and hoped building would start soon.[126] He also informed the bishop that he had a curate at Pitsea. Porteus replied within a day or so of receiving Hewitt's letter asking him how many scholars he was teaching, how many of them were free, and whether he had any boarders. In answering the bishop's questions, Hewitt did not reply truthfully. He informed the bishop that he had five free scholars at present and that he was taking a pupil to Cambridge the next day.[127] As James Round had informed Porteus a month or so earlier that Hewitt had no scholars at present (29 September 1803),[128] the bishop wrote to Round again about pupil numbers. Round replied 'I have endeavoured to learn the truth of Mr Hewitt's having five scholars, But have not been able to discover that he has even one – But your Lordship will have the goodness to observe, that I was obliged to be very circumspect and cautious in my enquiries, lest I should be suspected of sending you this unpleasant intelligence, which nothing would have induced me to do, but a strong sense of duty and the high respect entertained of your Lordship'.[129] In the meanwhile the bishop consulted Morant's *History of Colchester* to establish what the provisions of the statutes were. On 6 December 1803, Porteus wrote once more to Hewitt, informing him that Item 21 of the statutes expressed clearly that the master could hold no other benefice whilst he was master of the school. He also pointed out that he, as the Bishop of London, was the Visitor to the school. His letter continued: 'I do not see how it is possible for me as Visitor of the School to connive at the breach of this express statute; much less how on account of that office for which you have plainly disqualified yourself, I can grant a licence of non-residence upon two livings when in fact as schoolmaster you ought not to hold one. To this I must add (tho' it gives me real pain to notice it) the present deplorable state (some say the total failure) of the school; which you yourself acknowledge to be reduced to five scholars, whereas, if I am not misinformed, it was in the time of your predecessors nearly ten times that number. .... But, under the circumstances, I have stated, I feel it utterly inconsistent with my duty both as your visitor and your diocesan to give you a licence of non-residence: and must on the contrary require you to put your house at Greenstead in a condition to receive you as soon as possible, and then go and reside in it'.[130]

In his reply to Porteus' letter, Hewitt writes that he was perfectly happy with the bishop's decision and will build a house at Greenstead and reside there.[131] Two years later Hewitt is still master and his house in Greenstead is not yet finished. As Hewitt's wife, who had been ill for many months, had just died, the bishop became determined that Hewitt should fulfil the two promises that he had made in December 1803. In his letter, dated 2 February 1806, he insists that Hewitt should resign from being master and comments that in 'Dr Parr's time it [the school] was a flourishing one and is now and has been for many years reduced to nothing'.[132] He concluded by writing, 'You must pardon me, Sir, if I cannot digest, nor any longer submit to this sort of trifling. By 1 May you must be in residence in Greenstead and resigned the mastership'.[133] Hewitt resigned and went to reside in Greenstead.

In 1812, Edward Crosse wrote to the bishop (now William Howley) to ask if he might accept the living of Mount Bures. He explained that he would hold it for only a limited number of years, as the patron wished to bestow it on a pupil of Crosse's when he is qualified to take up such a position. The bishop agreed to this suggestion.[134] During his time at Colchester, Crosse's name was at one time associated with St Nicholas's and on another occasion with St Runwald's. Whether he was the curate at either of the parishes is not known and there is no reference to them in Crosse's details in Venn's *Alumni Cantabrigienses.*

CONCLUSIONS

The Colchester Free Grammar School was in many ways typical of other small grammar schools of the time, fulfilling, to some extent, its founder's purpose for at least part of the century but not making the best of the opportunities available. It was correctly called a grammar school as its curriculum included grammar and classics, its masters were educated at Oxford or Cambridge, and some of its pupils went on to university. For much of the period under consideration, the Free Grammar School functioned reasonably well, certainly for the private pupils, if not for the free scholars. From the few comments that have been found, it would seem that many Colcestrians thought well of their school and believed it to be an asset of which Colcestrians could be proud. Certainly some of the boys who received part of their education there had successful careers. Charles Gray became an attorney and represented Colchester in six parliaments, Thomas Twining acquired fame

as an eminent classicist and translator of Aristotle's *Poetics*, Peter Daniel trained to be an attorney, and George Airy gained an international reputation as an astronomer.

As the century progressed, the school's curriculum became even more inappropriate for the boys eligible for free places. The situation was not helped by there being no mayor and corporation between 1746 and 1761 to nominate boys for the free places. Perhaps if there had been, the curriculum might have received some modifications to accommodate their needs if the master and the bishop had thought that such action was appropriate and possible. As it was, the curriculum mainly appealed to the sons of the aristocracy and gentry who were destined for university or a career in the law. Another reason why the curriculum remained almost static was that, at the time, it fulfilled people's expectations of a grammar school. Though there were from the beginning of the 18th century educationalists advocating fundamental changes to school curricula, many grammar schools including Colchester's ignored their proposals. Often their masters were tied by statutes as to what they could teach, as happened in Colchester, or were not sufficiently interested in the rapidly growing knowledge of science and the natural world to want to include it in their curricula. Towards the end of the century, when middle-class parents were becoming much more demanding in their expectations of what a school should provide, did changes slowly begin to occur in the curriculum.

It would seem that some of the school's masters provided a good education for the boys within the narrow limits of the curriculum. William Turner, who wrote several textbooks, must have had a good understanding of how boys learnt and no doubt provided them with a good grounding. Samuel Parr would have used his learning to advantage and must have created a stimulating atmosphere for his pupils. Possibly Palmer Smythies had a good reputation for teaching classics, as Daniel Twining sent his son Thomas to Smythies to be prepared for entrance into university.

Though corruption was common throughout the 18th century, the trustees, despite their casual attitude to their responsibilities, did not take advantage of their position. The leaflet produced in 1778 defending their actions indicates that they were concerned for their professional reputations. The outcome of the attack on them was a tightening up on the payment of rents and record keeping.

One of the main reasons for the school's survival in the 18th century when so many grammar schools went under, was its income from the school's estate. Though the income was not large, it was adequate to support a cleric and his family whilst he obtained fee-paying pupils to augment his stipend. Another contributing factor was that, for much of the century, pluralism was acceptable to the visitor (the bishop) and most Colcestrians, so it is not surprising that Palmer Smythies, Charles Hewitt and, for a limited period, Edward Crosse were able to hold other benefices besides that of the school. And no one questioned whether it was permissible for Samuel Parr to be the curate at Holy Trinity. A third possible factor was that, for clergy, 18th-century Colchester must have been a very attractive town in which to reside because several clerics lived there, and so would have appealed to would-be masters.

One of the difficulties in making the most of the opportunities available to the school was that there was no central controlling body. The mayor and corporation appointed the master and nominated the free boys, the trustees looked after the finances, but no one supervised the master and his ushers except the bishop, who almost certainly was too occupied with other matters to concern himself with the general running of the school. Only when there were serious breaches in the statutes, such as the mayor and corporation withholding from the master some of his income, did the bishop take action to right matters. Had not the mayor and corporation misappropriated the school's finances in the late 17th century, they would have had much more control over the running of the charity.

With the opening of the 19th century and the increased demand for education, the Free Grammar School's chances of survival looked promising. But that was not to be so. There were periods when there were only a few pupils on roll, and an ambitious master was limited to the number of scholars he could have by the statutes and the size of the Culver-Street premises. When the school moved to its present site in 1853, there was a possibility that numbers might increase. It was only at the beginning of the 20th century did the school at last begin to gain in strength: in 1900 there were only twenty-nine boys on roll, but by 1905 there were 105.[135] Gradually the school developed into the one that today has a considerable reputation for academic excellence and achievement.

APPENDIX 1: A LIST OF THE MASTERS

(Most of the information given below has come from J.A. Venn, *Alumni Cantabrigiensis*, 10 vols, 1922–54)

William Slinger 1654?–1733/34

Pensioner St John's College, Cambridge, 1672; BA 1675–6, M.A. 1681.
Master Colchester Free Grammar School 1674–91
Rector East Donyland 1786–1823
Rector Layer Breton 1692–1733

Richard Reynolds 1651–1702

Pensioner Sydney Sussex College, Cambridge, 1665.
B.A. 1668–9, Fellow 1670, M.A. 1672.
Possibly Master of Yarmouth Grammar School 1675–91.
Master of Colchester Free Grammar School 1691–1702

Thomas Allen (Alleyn) 1652–1723

Pensioner St John's College, Cambridge
B.A. 1672–3, Fellow 1674–98, M.A. 1676.
Master of Colchester Free Grammar School 1702–23.

William Turner 1658–1725/6

Sizar Clare College Cambridge, 1676
B.A. 1680–1, M.A. 1684
Master of Stamford School, 1695–1723
Master of Colchester Free Grammar School, 1723–25/6
Author of several textbooks.

David Comarque 1700?–1748

Benet College, Cambridge, 1717
B.A. 1720–1, M.A. 1726
Master of Colchester Free Grammar School, 1726–7
Vicar of Alresford, 1727–30
Rector of Halsal, Lancashire, 1730–46
Rector of Putney, 1739–48

Palmer Smythies 1691–1776
Sizar Sydney Sussex College, Cambridge, 1709
B.A. 1712–13, Fellow 1714, M.A. 1716
Rector St Michael's, Mile End, Colchester, 1720–76 (succeeded father)
Rector St Mary Magdalen's and Master of the Hospital, Colchester, 1723–73
Master of Colchester Free Grammar School, 1727–76.

Samuel Parr 1747–1825
Sizar Emmanuel College, Cambridge 1765 did not complete course as his stepmother withdrew him after the death of his father, M.A. *per Lit Reg.* 1772, LL.D. 1781
Usher Harrow School, 1767–1771
Master of Stanmore (own school), 1771–7
Master Colchester Free Grammar School, 1777–8
Master Norwich Grammar School, 1779–86
Curate Holy Trinity, Colchester, 1778–9.
Rector Asterby, 1780–3
Vicar of Hatton, 1783–9
Rector of Wadenhoe, 1789–1825

Charles Hewitt 1754–1848
Sizar Caius College, Cambridge, 1770
B.A. 1775, M.A. 1778, Fellow 1779–81, Chancellor's gold medal (classics) 1775
Usher Bristol Grammar School
Master Colchester Free Grammar School, 1779–1806
Rector St James's, Colchester, 1783–98
Rector of Pitsea, 1798–1848
Rector of Greenstead, Colchester, 1799–1840
Chaplain to the Marquis of Bath

Edward Crosse 1750–1835
Pensioner Sydney Sussex College, Cambridge, 1772
B.A. 1776, M.A. ??
Master of Colchester Free Grammar School, 1806–35
Rector of Mount Bures, 1812–19

APPENDIX 2: A LIST OF THE TRUSTEES
1707
Sir William Lucking of Messing, Bart.
Sir Isaac Rebow of Colchester, Kt
James Thurston, Esq.
Hope Gifford, Esq.
John Potter, Esq.
Nathaniel Lawrence, Esq. the Younger
Thomas Ruse, Esq.

1727
William Daniell, Gentleman
Peter Johnson, Esq.
Thomas Lawrence, Gentleman
Benjamin Dyer, *Baymaker*
Matthew Martin, Esq. of Wivenhoe
Jeremiah Daniell, Esq.
Jeremiah Daniell, Junior, Esq.
James Boys, *Baymaker*
Robert Price, Esq.
George Wegg, Esq.
Richard Winsley, *Woollen-draper*
Thomas Coe of London, *Baymaker*

1752
Jeremiah Daniell, Gentleman
Thomas Rawston, Esq. of Lexden
William Mayhew, Gentleman
Michael Hills, *Baymaker and Distiller*
Philip Havens the Younger
Charles Gray, Esq.
George Wegg Esq.
Revd James Kilner of Lexden
Hezekiah Haynes, Esq. of Copford
William Daniell, Gentleman
Philip Havens, *Baymaker*
Isaac Boggis, *Baymaker*
Samuel Todd the Younger, *Grocer*
Isaac Lemying Rebow, Esq.
Peter Daniell, Gentleman

1789
Peter Daniell, Gentleman
Sir Robert Smyth, Bart., of Beerchurch Hall
George Tierney, Esq., of Burton Street, London
John Matthew Greenwood, Esq., of Hatton Gardens, London
George Downing, Esq., of Lincoln Inn, London
John Round, Esq.
Charles Matthews, Esq.
Samuel Ennew, Esq.
Robert Tabor, *Merchant*
Thomas Smith, *Merchant*
James Hall, Gentleman
John Collins Tabor, *Merchant*
Robert Tabor, Junior, *Baymaker*
John Eglenton Wallis, *Linen draper and grocer*
Samuel Daniell, Gentleman

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ENDNOTES
1 See P. Morant, *The History and Antiquities of the most Ancient Town and Borough of Colchester* (Colchester, 1748), Vol. III, p. 9.
2 *VCH Essex*, Vol. IX (2002), pp. 353–4.
3 The precise wording of the deed setting up the school and the school's statutes can be found in Morant, *History and Antiquities of … Colchester*, Vol. III, pp. 10–14.
4 ERO, D/B 5 Gb5, p. 344.
5 Ibid., p. 347.
6 ERO, D/B 5 Gb6, p. 40.
7 Ibid., p.148.
8 ERO, Acc. C16, Box 1, Copy of Lord Chancellor's ruling.
9 Ibid., Statement by Sir Richard Holford issued on 3 August 1704.
10 Ibid.

11 Ibid., Statement of case respecting the Trusteeship of the Grammar School Estates in Colchester, 11 January 1833.
12 Ibid., Case before the Lord Chancellor, decision dated 22 October 1729.
13 Ibid., Statement of case respecting the Trusteeship of the Grammar School Estates in Colchester, 11 January 1833. Counsel's opinion was sought as to whether it would be correct to choose new trustees whilst there were still two living. Mr J. Humphrey of Lincoln's Inn thought that such action was perfectly acceptable.
14 Lambeth Palace Libr., Fulham Papers, Howley, Vol. 12, pp. 233ff.
15 ERO, Acc. C16, Box 2, Minute of meeting agreeing to renew George Baker's lease.
16 Ibid., Note of the meeting.
17 Ibid., Box 1, Note to Peter Daniell dated 3 June 1777.
18 Ibid., Box 2, Bundle of correspondence with Samuel Parr, draft of letter dated 3 November 1778.
19 Ibid., Letter dated 4 December 1778.
20 Ibid., Leaflet entitled To the Free Burgesses of Colchester concerning the Mastership.
21 This valuation included the rent from two pieces of land and £10, the annual rent for which the trustees thought the school house could be let.
22 There seems to be almost no information about Parr's action except for a brief reference to it in the pamphlet An Address to the Free Burgesses of Colchester in answer to the Address from the Trustees of the School Estate dated 9 December 1778 (ERO Acc. C16, Box 1). See also: S. D'Cruze, 'The Middling Sort in Provincial England: Politics and Social Relations in Colchester 1730–1800', unpublished Ph.D thesis, University of Essex, 1990, p. 491.
23 J. Johnstone, *The Works of Samuel Parr* (1828), Vo1. 7, pp. 461–2. The pamphlet was more than 40 pages in length.
24 Ibid., Vo1. 1, pp. 95–6. Almost certainly the lease concerned part or all of the building known as the Three Crowns Inn. Parr indicated in a letter to Lord Dartmouth that he had hopes 'of obtaining a yet larger and more elegant house [than the school house] belonging to the master's estate, should I be able to set aside a lease the terms of which are very injurious and the validity disputable' (Hist. MSS Commission, *Report on Dartmouth MSS*, Vo1. 3, p. 231).
25 Johnstone, *Works of Samuel Parr*, Vo1. 1, p. 112.
26 ERO, Acc. C16, Box 2, Receipts.
27 Lambeth Palace Libr., Fulham Papers, Howley, Vol. 12, p. 234.
28 Morant, *History and Antiquities of … Colchester*, Vol. III, p. 16, footnote N.
29 ERO, Acc. C16, Box 2, To ye Worshipfull ye Mayor and ye Commonalty of ye Town of Colchester ye Proposals of Palmer Smythies Clerk A.M. (see page 163).
30 In the schedule of fixtures in the grammar school house drawn up in 1835 on Crosse's death, the accommodation was given as follows: store room, china closet, dining room, morning room, kitchen, cook's pantry, scullery, yard, passage, laundry, front bedroom, dressing room, second bedroom, study, man servant's room, maid servant's room, harness room, schoolroom (ERO, Acc. C16, Box 2).
31 Johnstone, *Works of Samuel Parr*, Vo1, p. 95.
32 Lambeth Palace Libr., Fulham Papers, Porteus, Vol. 12, p. 178. That school was almost certainly Michae1 Boyle's, as he lived in that building and did run a school until 1785, when Thomas White (*Chelmsford Chronicle*, 24 June 1785) became its proprietor. White may have continued to use that building, but it was not long before he was housed in part of the King's Head in Head Street. Probably Hewitt had forgotten how long ago it was that Boyle ran his school. An English school was one in which all the lessons were conducted in English, whereas most grammar schools conducted some lessons in Latin and concentrated on teaching classics.
33 Lambeth Palace Libr., Fulham Papers, Porteus, Vol. 12, p. 179.
34 Ibid., Howley, Vol. 12, pp. 233ff.
35 Ibid., Howley, Vol. 12, pp. 233ff.
36 Ibid., Howley, Vol. 12, p. 240 (letter dated 27 December 1814).
37 ERO, Acc. C16, Box 1, Instruction from Charles Gray to Peter Daniell for the drawing up of a case against Palmer Smythies' executor.
38 Ibid., Box 2, Statement by trustees dated 6 March 1777.
39 Ibid., Box 2, Papers concerning the case against Palmer Smythies' executor Francis Smythies. It is probable that Palmer Smythies had held for many years the deeds of the school house.
40 Advertisement in *Ipswich Jnl*, 6 October 1759.
41 ERO, D/B 5 Gb5, p. 224.
42 ERO, Acc. C16, Box 1, Indenture for creating new trustees in 1727.
43 Morant, *History and Antiquities of … Colchester*, Vol. III, p. 12.
44 ERO, Acc. C16, Box 2, Leaflet issued by the trustees. The annual value was given as £63 10s. 0d. and included the schoolhouse stated to be worth to the master the equivalent of £10 0s. 0d. per annum.
45 Ibid., Box 1, Meeting of the trustees at the White Hart, 16 October 1759.
46 Ibid., Box 2, Draft of the lease agreed with Fisher Walford in 1773. Leaflet issued by the trustees.
47 Ibid., Box 2. The property consisted of the following: House etc. occupied by Michael Boyle; house etc. occupied by Timothy Walford; separate kitchen used by Timothy Walford; stable — Timothy Walford; yard and buildings — Timothy Walford; yard shared by Timothy Walford and Michael Boyle; garden shared by Walford and Boyle; kitchen garden and field shared by Walford and Boyle; workshop shared by Walford and Boyle; house etc. occupied by John Cooper; kitchen used by Cooper; garden occupied by Cooper; stable occupied by Cooper; gateway, passage and yards used by all three tenants. (By then the bowling green was no longer in existence as it had been dug up to make a garden.)
48 *VCH Essex*, Vol. II (1907), p. 507.
49 Reports of the Royal Commissioners, Charities and Education, 1815–1839, Vol. XI, p. 528. When, in 1836, the Commissioners were inquiring into the running of the charity, they were far from satisfied with the action of the trustees concerning the £250, as the trustees had used some of it to defray their expenses in attempting to find

out the original arrangements for appointing trustees. The commissioners suggested that the executor of the trustees' attorney should repay the sum.

50 Morant, *History and Antiquities of … Colchester*, Vol. III, p. 12.

51 D'Cruze, 'The Middling Sort in Provincial England', Appendix 5.

52 ERO, Acc. C16, Box 2, To ye Worshipfull ye Mayor and ye Commonalty of ye Town of Co1chester ye Proposals of Palmer Smythies Clerk A.M.

53 Almost certainly Smythies' facts were wrong. According to Venn (*Alumni Cantabrigenses*), Reynolds held no other benefice whilst he was master. Possibly it was Reynold's predecessor, William Slinger, of whom he was thinking. Slinger became the Rector of East Donyland in 1686 but did not resign the mastership until 1691. No details of his resignation are given in the Assembly Book (ERO, D/B 5 Gb5).

54 ERO, D/B, 5 Gb7, p. 146 (Assembly Book, 18 April 1723).

55 ERO, Acc. C16, Box 2.

56 J.B. could possibly have been John Blatch, a merchant and mayor on three occasions, or James Boys, who was also mayor on three occasions.

57 Lambeth Palace Libr., Fulham Papers, Gibson, Vol. 1, pp. 205ff.

58 ERO, D/B 5 Gb7, p. 195 (Assembly Book, 15 March 1725/26).

59 ERO, D/B 5 Gb7, p. 231 (Assembly Book, 20 December 1727).

60 D'Cruze indicates that Alderman Jeremiah Daniell was opposed to Smythies being master: D'Cruze, 'The Middling Sort in Provincial England', p. 501.

61 Johnstone, *Works of Samuel Parr*, Vol. 1, pp. 94 and 95, a letter from Nathaniel Forster to Parr dated 29 January, in which he offered Parr the curacies of two parishes in Colchester as he had learnt that Mr Causely had withdrawn from the contest.

62 W. Derry, *Dr Parr: A Portrait of the Whig Dr Johnson* (O.U.P., 1966), pp. 26 and 27.

63 Johnstone, *Works of Samuel Parr*, Vol. 1, pp. 93–4.

64 Ibid., Vol. 1, pp. 94 and 95.

65 ERO, D/B 5 Gb8, p. 83v (Assembly book, 19 February 1777).

66 B. L. Add. Mss, 11277, p. 59. The letter is dated 1 January 1779.

67 ERO, Acc. C16, Box 1.

68 Ibid.

69 Ibid., To the Free Burgesses of Colchester, dated 17 November 1778.

70 Ibid., An Address to the Free Burgesses of Colchester in Answer to the Address of the Trustees of the School Estate, dated 9 December 1778.

71 Ibid., To the Free Burgesses of Colchester, dated 16 December 1778.

72 Ibid., To the Free Burgesses of Co1chester, dated 26 December 1778.

73 Ibid., An Address to the Free Burgesses of Co1chester Occasioned by an Address dated 26 December 1778, distributed on 12 January 1779.

74 ERO, D/DRc Z17, A Fourth Address to the Free Burgesses of Colchester, dated 28 December 1778.

75 ERO, Acc. C16, Box 1, To the Worshipful the Mayor, the Recorder, Aldermen, Assistants, Common Council, and Free Burgesses of the Borough of Colchester.

76 Ibid., Address to the Free Burgesses of Colchester occasioned by an Address Dated 26 December 1778.

77 Ibid., To the Free Burgesses of Colchester: A Man may buy GOLD too dear.

78 *Ipswich Jnl*, 23 January 1779.

79 ERO, Acc. C16, Box 1.

80 Johnstone, *Works of Samuel Parr*, Vol. 8, pp. 263–4.

81 B.L. Add. Mss, 11277, p. 61. The letter is dated 22 January 1779.

82 William Lily (1468?–1522) was an English Renaissance scholar and classical grammarian. After his death, a Latin grammar based on two shorter Latin syntaxes written by him was published, and both Henry VIII and Edward VI ordered that the book should be used in all grammar schools, hence its being known as the 'King's Grammar'. Since the rules and the syntax were written in Latin, which was of no use to those learning Latin, several grammarians in the seventeenth century provided English translations. In the 1750s the book was revised, 'appropriated' by Eton College and became known as *The Eton Latin Grammar.* Ten years later the *Public School Latin Grammar* was published and used in many schools for much of the nineteenth century (see the article on William Lily in *Encyclopaedia Britannica*, Vol. 7, p. 357).

83 Morant, *History and Antiquities of … Colchester*, Vol. III, p. 12.

84 Ibid.

85 Hist. MSS Commission, *Report on Dartmouth MSS*, Vol. 3, p. 231. Parr would have certainly been referring to the Blue Coat School and may also have been thinking of the two charity schools run by Dissenters (the Green Coat School and the school supported by the West Stockwell Lane Chapel).

86 Ibid.

87 Report in *Ipswich Jnl*, 2 August 1777. Whilst Parr was at Stanmore, his school performed a play in Greek, the first school in England to do so (Derry, pp. 26–7).
Mark Akenside (1721–70) was a physician and a poet. In 1744 his didactic poem *The Pleasures of Imagination* was published and two years later his much praised *Hymn to the Naiads.* In 1760 he became physician to Queen Charlotte.

88 B.L. Add. Mss 11277, p. 70, Letter dated 26 October 1780.

89 Ibid., p. 110, Letter dated 13 January 1784. 'Edward continues with Dr Grimwood, but is now home for the holidays. He is certainly much improved in the Latin since he went to that school.'

90 Lambeth Palace Libr., Fulham Papers, Porteus, Vol. 12, p. 164.

91 Ibid., Porteus, Vol. 12, p. 163.

92 Ibid., Howley, Vol. 12, pp. 233ff.

93 *Chelmsford Chronicle*, 15 November 1806; *Ipswich Jnl*, 3 January 1807. His charges for boarders included board, lodging, washing (at most girls' schools this was an extra) and instruction in the Latin and Greek languages. He stated that bills were to be paid half yearly and that he required a quarter's notice before a boarder left, a

condition on which an increasing number of school proprietors were insisting.
94 Lambeth Palace Libr., Fulham Papers, Howley, Vol. 12, pp. 233ff.
95 *Ipswich Jnl*, 29 April 1815.
96 Ibid.
97 Carlisle, Nicholas, *A Concise Description of the Endowed Grammar Schools in England and Wales*, Vol. 1, p. 426.
98 *Ipswich Jnl*, 29 April 1815.
99 White's curriculum included English grammar and composition, writing, arithmetic, retail bookkeeping, trigonometry and mensuration (in theory and extensive practice) and there were many extras available (Latin, Greek, French, Italian, merchant's accounts and foreign exchanges etc., geography with the use of globes, land surveying with the use of instruments, dancing, fencing, drawing and music). See White's advertisement in *Chelmsford Chronicle*, 23 December 1803.
100 W. Airy (ed.), *The Autobiography of George Biddell Airy* (1896), pp. 19 and 20.
101 J.B. Harvey, Collection of Local Material. This quote is from a newspaper cutting for which, unfortunte1y, no source is given. It must have been taken from a local newspaper.
102 Derry, *Dr Parr: A Portrait of the Whig Dr Johnson*, p. 31.
103 Ibid, p. 101.
104 ERO, T/B 217/1, Microfilm of Colchester Royal Grammar School pupils.
105 *Ipswich Jnl*, 30 June 1750.
106 ERO, Acc. C16, Box 2, Leaflet 1777.
107 Hist. MSS Commission, *Report on Dartmouth MSS*, Vol. 3, p. 231.
108 ERO, D/B 5 Gb8, pp. 84v and 85r.
109 Lambeth Palace Libr., Fulham Papers, Howley, Vol.. 12, p. 234.
110 See J.A.Venn, *Alumni Cantabrigiensis*, Part 1, Vol. 3, p. 446.
111 Ibid., Vol. 4, p. 278.
112 *Ipswich Jnl*, 22–29 October 1726.
113 ERO, Acc. C16, Box 2, Smythies' letter to the mayor and commonalty, 1723.
114 *Oxford Dictionary of National Biography*, Vol. 55, p. 728. Twining is listed in the register of scholars and was the only entrant in 1754 (see ERO, T/B 217).
115 Johnstone, *Works of Samuel Parr*, Vol. l, p. 100.
116 Ibid., Vol. 1, p. 102.
117 Morant, *History and Antiquities of … Colchester*, Vol. III, p. 14.
118 Lambeth Palace Libr., Fulham Papers, Gibson, Vol. 1, pp. 210–11.
119 Ibid.
120 Johnstone, *Works of Samuel Parr*, Vol. 1, pp. 94 and 95. According to J.A. Venn (*Alumni Cantabrigiensis*, Part II, Vol. 5, p. 34) Parr held one curacy whilst in Colchester, that of Holy Trinity.
121 J. Venn, *Alumni Cantabrigienses*, Part II, Vol. 3, p. 349.
122 Lambeth Place Libr., Fulham Papers, Porteus, Vol. 12, p. 160.
123 Ibid., pp. 161 and 162.
124 Ibid., p. 163.
125 Ibid., p. 165.
126 Ibid., pp. 166 and 167.
127 Ibid., p. 170.
128 Ibid., p. 163.
129 Ibid., p. 171.
130 Ibid., p. 174.
131 Ibid., p. 175.
132 Ibid., p. 185.
133 Ibid, p. 186.
134 Lambeth Palace Libr., Fulham Papers, Howley, Vol. 12, p. 233.
135 *VCH Essex*, Vol. IX, p. 354.

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The distribution and origin of ponds in Essex with special reference to the parish of Broomfield

Ken Newman

Ponds have steadily decreased in number since the mid-19th century and although this has been high-lighted regularly since 1974 (save the Village Pond Campaign), the following article aims to draw additional attention to current professional concerns about their ongoing decline, both in total and quality,[1] and also to illustrate how the study of pond distribution, origin and characteristics can be of great value in furthering our understanding of rural landscape history. Although naturally ephemeral as a result of silting, plant succession and leaf fall, pond numbers have shrunk with the development and improvement of public water supplies, the disappearance of horses as the main source of farm power, the near collapse of rural crafts, the reduction of middle to large country estates and their family farms, road widening and re-alignment and the spread of urban centres for housing and more recently space demanding out-of-town retail and industrial parks. The traditional need for ponds has largely gone. Everywhere ponds also seem to be losing their rural 'pondy' characteristics as many of those that still exist undergo all too infrequent preservation processes, often leading to drastic cleaning out,[2] deepening, reshaping and removal of fringing trees. Ponds are being sanitised and urbanised much to the detriment of their scenic and diagnostic value and to the habitats within them and on their periphery.

NATURE AND NUMBER OF PONDS

But, what constitutes a pond? In his classic book, *The History of the Countryside*, Oliver Rackham states that, 'there can be no exact definition of what is or is not a pond, especially at the bottom end of the scale'. Therefore, he explains that he will use the word *ponds* to mean depressions, natural or artificial, with water in them for most of the year.[3] Rackham also mentions other words, which have been used for ponds (some still are), and refers to a study by O.G.S. Crawford, 'one of the few learned works that have been written about ponds'.[4] Crawford traces the legitimacy of Anglo Saxon words such as 'mere', meaning a pond, and how it has become confused with 'more' (moor, waste upland and fen). The meres of Cheshire and the Breckland are well known and Crawford adds numerous examples of 'mere' place names from south-east England, although he selects none from Essex. Nevertheless, the pond origin for Sturmer, Catmere and Bulmer in north Essex and possibly Blackmore near Brentwood, is made plain by R.H. Reaney[5] and also J. Kemble[6] in their publications on Essex place names. Other words are 'seath' (to seethe like a spring) as possibly in Orsett,[7] 'sol' (a muddy hollow), 'pol' (a pool, especially on a river or perhaps a fishpond) examples being Patty Pool in Waltham Abbey and Pooty Pool in Roxwell, 'flash' and 'plash' (shallow pieces of standing water) illustrated by Plash Wood, Arkesden.[8] Crawford states that the word 'pond' only appears in Old English in composition, the commonest form being 'pund-fald' (a pen for animals), and that 'its application to water only became common after the Norman Conquest when water was *pounded* behind dams to form mill ponds and fishponds'.[9] Crawford concludes that 'pond' developed from 'pund' as the term for a 'small body of still water of artificial formation. Ponds are water pounds'. For comparison, the *Penguin Dictionary of Geography* (1998) defines a pond as, 'an area of still water smaller than a lake, lying in a natural hollow or in a depression formed by digging or by embanking a natural hollow'.[10] *The Concise Oxford Dictionary* lives up to its name – 'a fairly small body of still water'.[11] Whether the water is to be fresh or salt is rarely stated.

There were almost one million ponds in England and Wales[12] at the turn of the 20th century according to Rackham (he gives 800,000) and he explains how, by using Ordnance Survey first edition 6-inch maps of the 1870s and 1880s, he arrived at this figure.[13] Rackham also produced a map of England and Wales (based on 2½-inch OS maps of the 1920s) showing the density of ponds per square mile (Fig. 1). The highest densities are found in Norfolk, Suffolk and Cheshire, with about thirty ponds per square mile. Essex, and therefore Broomfield, are placed firmly in a broad band SW-NE from Surrey to Norfolk with an average of twelve ponds per square mile. This area roughly coincides with the southern belt of 'wooded country' or 'ancient countryside' of Harrison (1587) and much more recently Rackham (1997),[14] as distinct from the Champion, Champagne, Open Field or 'Planned Countryside' of the Midlands (as mapped by Gray 1915, Homans 1941 and Roberts and Wrathmell 1995)[15] which has about five ponds per square mile. Much of this area is also underlain by glacial deposits associated with the Anglian Ice Sheet (475–225,000 years ago) and those of the more recent Devensian Glaciation in Cheshire. However, even within the medium ponded zone (twelve per square mile) the number of ponds per local area can vary enormously and this is well shown by the figure for Broomfield which is twenty-two per square mile. This number is similar to that for the eastern part of the Chignals (which until 1949 was included in Broomfield) and southern Little Waltham, but a large area bounded by Howe Street, the A130, Pleshey Road, Rolphy Green and the road back from Pleshey to Howe Street has very few ponds.[16] The lack of ponds in this area is almost matched by the northern part of Writtle (New Barn). The number of ponds increases again around Margaretting.

Nationally, many of these ponds have disappeared since the 1880s, and again with reference to OS 2½-inch maps Rackham estimated that something less than half a million now exist (he cites 340,000). These figures have recently been confirmed – or accepted? – by the Environment Agency. The parish of Broomfield contained 122 ponds in the middle of the 19th century (calculated from the Broomfield Tithe map, 1846, and OS 25-inch maps of the 1870s; below Fig. 4). This total had fallen to sixty-seven by 1998 (date of most recently fully revised OS 2½-inch map; below, Fig. 5), exactly in agreement with the decline predicted by Rackham in 1997 and Alastair Driver of the Environment Agency in July 2010 ('due to building work and draining').[17]

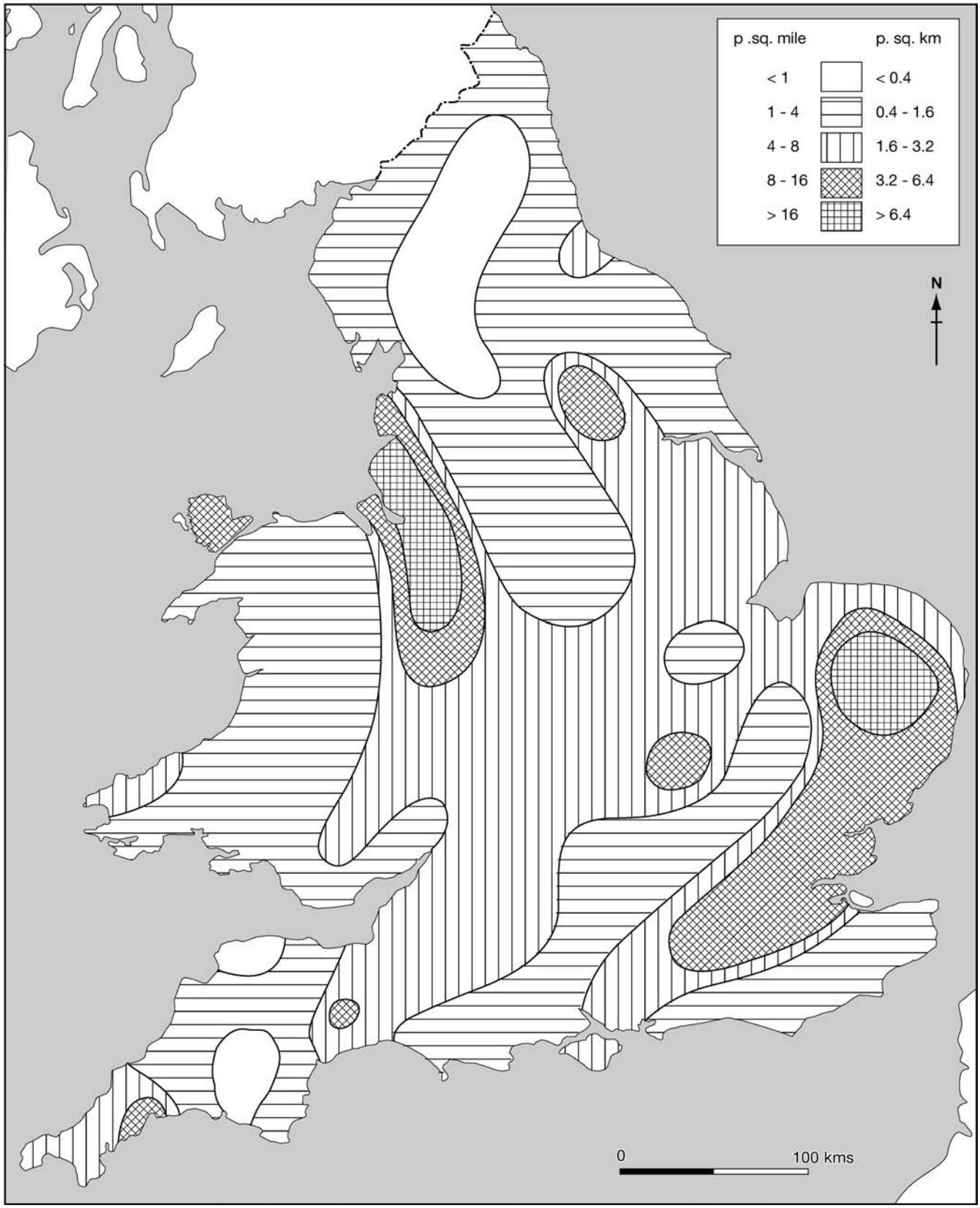


FIGURE 1: Distribution of ponds, England and Wales, 1920s. After: O. Rackham, *History of the Countryside* (1997), p.347

CLASSIFICATION OF PONDS

In his *History of the Countryside*, Rackham devotes Chapter 16 to 'Ponds, Dells and Pits' stating that his purpose there is to, 'classify the pits and ponds produced by ancient rural activities', although of necessity his 'classification cannot be exhaustive'.[18] He then goes on to present a description (with examples and several drawings) of twenty-seven categories of pond forming depressions. Eight types are classified under the heading Natural Hollows, viz. wooded dell ponds; kettle holes;[19] swallow-holes and sinkholes; landslips; pingos (peri-glacial ice upheavals);[20] Norfolk meres; Irish turloughs (limestone features) and coastal lagoons. Few Essex examples are given,

and in some cases would be improbable, but wooded dell ponds occur in all our larger wooded areas (Epping Forest),[21] sinkholes and chalk solution at Hill Farm, Gestingthorpe, Newport Pond and Bonhunt Water,[22] and small elongated ponds due to back-tilting at Maldon and in the cliffs at Walton-on-the-Naze. Essex meres, although few in number, can be seen at Wormingford and Waltham Abbey. Boreham Mere, and Ricketts and Blunts 'meres' on the lower Chelmer are angling centres. Coastal lagoons occur at Bradwell on Sea (often short lived) and at the Naze end of Walton.

The remaining nineteen categories of ponds in Rackham's classification are listed under the heading of 'Artificial or Man-made Depressions which contain water for long periods of the year' – Neolithic mine-shafts; retting (flax and hemp) and beavering hollows (production of dyes); sawpits; charcoal-pits; broads; moats; dams; fishponds; decoys; dew ponds; armed ponds; pits/quarries/mines; bell-pits and drifts; flashes (ponds in hollows resulting from collapsed underground workings); marl pits; clay pits; brick pits; coprolite-pits and craters (formed by explosions). Once again, few Essex examples are given, but with some understandable exceptions, most types occur in the county and we shall deal with them in the same order as Rackham's list. Saw pits although sometimes deep (for example, near Wood House on the Broomfield parish boundary), and charcoal pits reported in Writtle and Hatfield Forests have left little trace.[23]

Nearly 6,000 moats have been recorded in Britain.[24] Essex has almost 900 of them, the greatest number of any county.[25] Four occur in Broomfield. Moats are associated with a wide range of buildings and activities, and vary enormously in plan and complexity (Fig. 2).[26] Circular moats are thought to be the earliest, while three sided moats may indicate low status farmsteads.[27] Most moats seem to date from 1200–1350, but Houchins (Coggeshall) is a very late example.[28] Moats are often fed by ponds via a leat, a hollowed tree trunk or a covered drain – a wholve.[29] The majority, however, depend on the water table, springs or drainage ditches. The moat at Woodham Walter Hall in the 15th and 16th centuries was most intricate, linked to ponds and possibly five fishponds.[30] Abandoned moated sites and neglected moats are a major cause of ponds in Essex and partly explain the strong link between long-established farmsteads and the distribution of ponds.

Compared to the hammer ponds of the medieval Wealden iron industry, the dammed stream ponds in Essex generally have a multi-purpose history – Bourne Pond (off the Old Heath Road, Colchester) is a classic example. Possibly created to drive a corn mill of St John's Abbey in the 1200s, much later about 1591 the core of the present mill building was erected as a fishing lodge by Sir Thomas Lucas.[31] Later still, the mill was involved in cloth making and finally reverted to corn milling soon after 1833. Rags were pulped for paper at Greenstead Green and Baddow water mills,[32] and one of the county's twelve tidal pond mills, that at Thorrington, was grinding septaria into 'Roman cement' in the 1820s.[33] Ponds are associated with many industries and services, e.g. sheep dips (Littlebury Green and Peyton Hall, Berden), sugar beet washing ponds (Felsted), the Chelmer Navigation Springfield Basin created adjacent to the Springfield Road, waterworks ponds (Wixoe, Gt, Sampford, Takeley and Sandford Mill, Chelmsford), Pond Bays of uncertain age and purpose occur at Thaxted, Little Easton, Shalford and Sheering Hall.

Fish ponds, although expensive high status symbols, are a common landscape feature of the Middle Ages. At least thirteen can be found in Essex. The works of Rowley, Muir and Leach have fully described the essential working principles of fishponds.[34] Michael Leach has pointed out that what many consider to be the best examples – along the Ter above Leez Priory, are more likely to be ornamental features for Lord Rich's mansion built here in the late 1530s. However, a 2km succession of pleasure ponds (perhaps eleven in all) appear rather excessive even for Lord Rich, and other explanations may apply. Elsewhere in Essex, 'fish' ponds generally consist of a single dam and a by-pass stream (Magdalen Laver Hall; Chapel Hill near Piccotts Farm, Great Saling). Ponds, 'pieces of water', which are also part of the designed landscape as at Audley End, Wivenhoe Park and Moor Hall have been detailed by Fiona Cowell and Sally-Ann Turner.[35] Broomfield has few such ponds.

The coastal areas of Essex, Lincolnshire and Norfolk provided most of the 200 or so duck decoy ponds in early 19th-century England. Glegg lists thirty-seven Essex examples mainly along the Blackwater shores. Plans varied, the majority were 'flaming sun' shaped with curved, often net covered arms called 'pipes' into which the birds were driven and trapped – mainly for the London market.[36] The coast of Essex also provides three further pond categories for Rackham's list – old salt evaporation ponds at Heybridge (Bay Salt),[37] oyster pits, beds or laynes along the Colne, Blackwater, Crouch and Roach estuaries,[38] and dyke ponds. Today few oyster pits are used, but in the 1890s over 300 were recorded near Brightlingsea and 150 along Paglesham Reach.[39] The old reclamation dykes (borrow pits, delphs or delves)[40] of the Maplin Sand coast of Foulness have become discontinuous and now form fifteen individual, long narrow ponds. Boating, Model Sailing and Paddling Pools are 'sea side ponds' at Southend-on-Sea, Maldon, Clacton-on-Sea and Dovercourt. A tide renewed swimming pool (a true 'lido') existed at Southend-on-Sea until 1915, and Clacton-on-Sea had the first U.K. over-the-sea pier pool, 1932–85.

Rackham's dew ponds need not concern us here and the closest we have in Essex to his 'bell pits' are the deneholes of the Grays/Thurrock area – probably dug out for marl.[41] Although still being created in some areas in the late 1800s, their now collapsed daisy-shaped galleries have rarely resulted in ponds.[42] Marling is basically the practice of adding chalky clay to heavier or more acidic (sandy) soils to improve fertility – 'feeding the earth by means of itself'. Although mentioned by Chaucer, marl pits became obsolete and were not fashionable again until advocated by Viscount Townsend (1674–1738), Arthur Young (1741–1820) and Thomas Coke (1754–1842) particularly for sandy areas. Oliver Rackham felt that a genuine marl pit would be in the centre of a field to restrict cartage, but on the variable East Anglian Boulder Clay slopes, one good marl pit may have had to serve two or three fields and would of necessity lain between the fields or at their junctions (most are in fact near farm tracks). Rackham considered them 'over recorded' as pond formers. Nevertheless, they seem to be the origin of many Essex and Broomfield ponds – 'each farm in central and northern Essex appears to have had at least one such pit'.[43]

Chalk outcrops in both north and south Essex. In the north, quarrying has been on a small scale (Great and Little

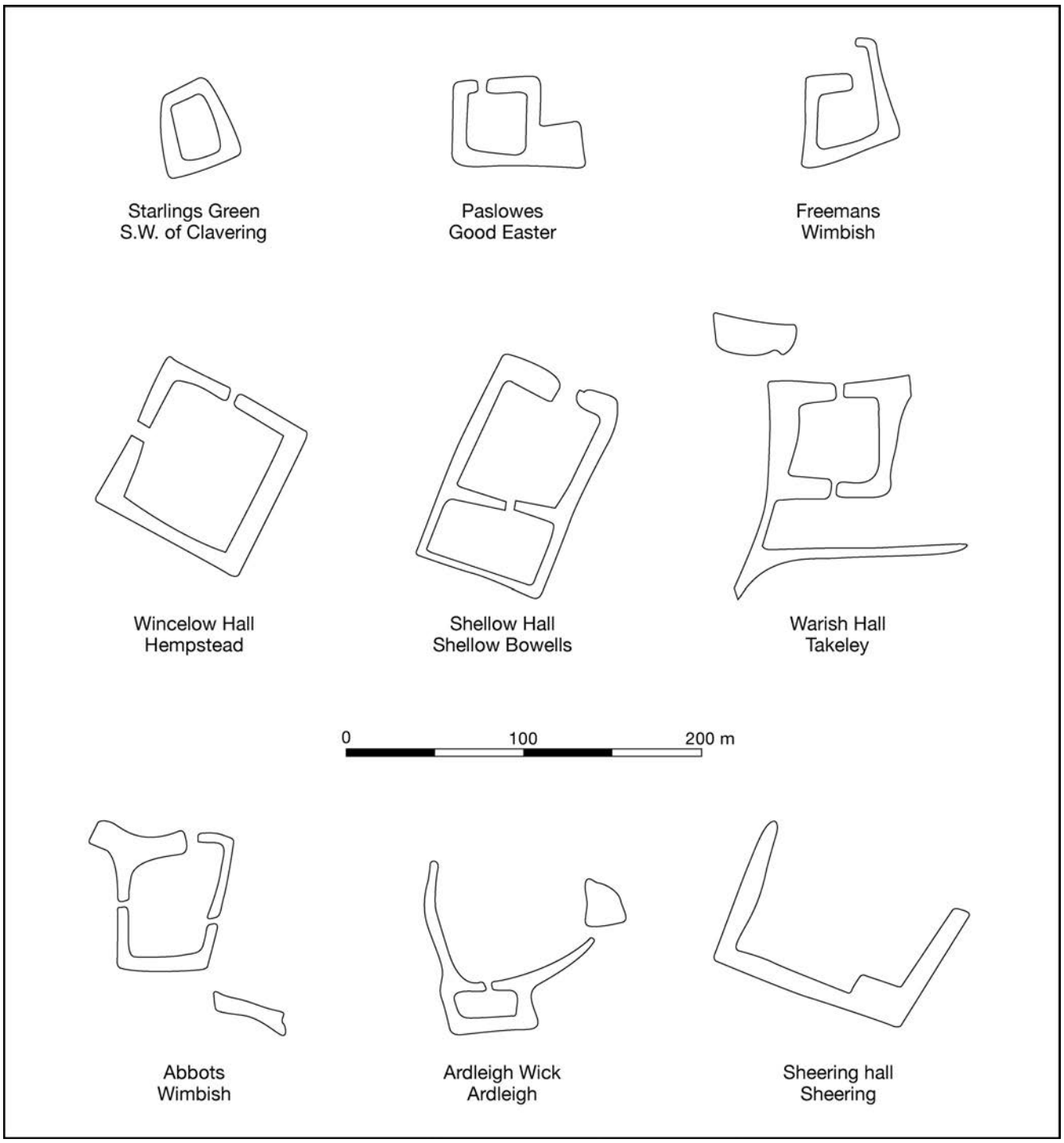


FIGURE 2: Plans of some Essex moats. Redrawn with kind permission of the Council for British Archaeology from J. Hedges, 'Essex moats', in F.A. Aberg (ed.), *Medieval Moated Sites*, CBA Research Report No. 17 (1978), p.69 Fig. 23

Chesterford, Saffron Walden, Wicken Bonhunt, Gestingthorpe, Ballingdon and Middleton) chiefly for agricultural use.[44] Generally these pits are dry, indeed the eastern part of Newport Pond, once a glacially dammed mere, is now a large producer of chalk and lime. In south Essex several large pits created to supply southern East Anglia, and the manufacture of Portland Cement between Purfleet and Grays, have become water filled. That at Grays was the basis of the South Essex Water Company (1861).[45] The Thurrock pit is now the Chafford Gorges Nature Park (2005) with a central pond.

Clay and brick pits were also once common in Essex, the former were excavated for house walls – wattle and daub, cob, shuttered earth, bats or lumps and pisé (rammed earth for building purposes). Along the Essex coast, clay was rolled or hand pressed for building material and may also have been used inland. Mudwall, as a place name, was recorded in 1497 at Good Easter and 1586 at Great Leighs. Clay bat or lump cottages can be found in the north-west of the county, for example at Great and Little Chesterford, and until recently at Tiptree.[46] Clay has been used extensively for sealing moats etc., cleaning, medicinal purposes, cosmetics, colouring (ochres), and also for coarse ware, tiles, fire-bricks and drainage pipes.[47] Many clay pits have become water filled and then overgrown (Gestingthorpe) and even more were deliberately removed

as a result of land pressure during and just after World War II. Oliver Rackham considered brick making was an 'under-researched subject' – now remedied by Pat Ryan's two volumes and Warwick Rodwell's thorough examination of the claim that post-Roman brick making was reintroduced via Essex in the late 12th century. The industry was widespread, nearly every geological formation since the Chalk has been worked for sandy clay or clayey sand. Even though 'almost every village was served by its own works', by the 19th century the two main brick producing centres were Grays in south Essex and the Hedinghams in the north – the output of the latter at one time was too much for the Colne Valley and Halstead Railway to handle.[48] Today (August 2012) only two brick works exist, at Bulmer and Marks Tey. Most of the pits and yards have been partly levelled and now support industrial sites and occasionally housing, however some are still marked by ponds as at Epping.[49]

Although quarried as separate entities since the Middle Ages, sand and gravel have become very important as a combined product parallel with the growth of London, the advent of concrete, the 1930s arterial roads, World War II airfields and the recent vast expansion in housing, industrial estates and shopping malls. Sand and gravel is the leading mineral product of Essex. Again, every post-Cretaceous rock formation has been worked at some time. Few parts of the county have escaped these excavations – virtually no river valley has been left untouched. Many of the disused pits are infill sites or where 'ponded', have been incorporated into golf courses, angling centres, leisure parks and nature reserves, for example Channels in Little Waltham, and 'it is gravel extraction that has created the vast majority of small and medium size bodies of still water (ponds) in Essex'.[50]

Oliver Rackham's last two categories of artificial depressions are coprolite or 'dung stone' pits and World War II bomb and shell craters – both historically interesting, but rarely originators of present day ponds. Coprolites or phosphatic nodules were quarried in Suffolk, Cambridge and near Walton and Wrabness in Essex where they have left little trace.[51] Copperas stones (iron sulphide) were also worked until about 1880 along the London Clay foreshore of Kent, and from Brightlingsea to Harwich. They were processed in large vats, tanks and pits for Green Vitriol used for tanning and dyeing. Again, other than place names little evidence of the industry now exists.[52] The Essex countryside may have been 'saved by the war', but damage did occur. The twenty-three airfields in Essex, sixteen bombing decoys, numerous radio/radar stations, and many villages and towns producing war materials attracted German bombs and mines. After May 1940, Harwich, Colchester, Southend, Chelmsford, and North Weald and Debden aerodromes, were targeted regularly. The rural area, however, was at the mercy of single aircraft 'hit and run' nuisance attacks – 'no country town was too remote and no village too small to be picked out for attention'. When targets were abandoned, bombs were often jettisoned, and this was probably how Broomfield church was 'hit' in May 1943. Falling aircraft were a hazard, and so too, near the end of the war, were V1 flying bombs and V2 rockets. All these weapons of war produced many cone shaped craters, but in Essex, unless tucked away in woods (Gosfield), few have survived as ponds although Walthamstow Marshes have a 'Bomb Crater Pond'.[53]

PONDS IN THE PARISH OF BROOMFIELD

Having discussed the general distribution of ponds in England and Wales, and a given classification of them with reference to Essex, we should have provided a firm basis for the study of those in the parish of Broomfield two miles north of Chelmsford.[54] The parish is ideal for a pond study in that its dense network of footpaths provide excellent access. The footpaths fall into two categories – 'official' and therefore signposted, and unofficial, permitted or 'permissive', largely marked by generations of children on their way to and from school and by dog walkers. One of these unofficial paths crosses the fields from School Lane via the Scout Hut access road more or less direct to Erick Avenue, passing as it does so the allotments to the east and two ponds a short distance away to the west. The two ponds are therefore located west of Main Road in Broomfield (B1008) towards Parsonage farm (Fig. 3).

The first of these ponds nearest the allotments is almost circular (17 m. x 13 m.) with a basin depth of 1.5 m. and sloping sides – less steep than they look. In very dry periods (June/July, summer, 2010)[55] it is reduced to a muddy floor exposing pieces of debris – stones, broken brick, cans, bottles and recently an iron-framed chair. The mud supports a fair spread of Common Persicaria or Redshank (*Polygonum persicaria*). Although this pond is not close to a hedge and can be walked round easily, it is not far from the trodden path along the next field edge to the quite extraordinary broad 'dole', farm 'drove' or chase leading into the Parsonage farmyard. The second pond, further to the west, directly south of the Broomfield Telephone Exchange, is much larger. Although somewhat kidney-shaped it measures approximately 32 m. by 36 m. at its broadest end. The sides are steep, partly terraced (probably a result of minor slumping) and the basin depth is about 2.5 m. In summer 2010 this pond did not dry up despite the lack of rain. It has an impressive botanical succession, prominent in which are Reed Mace or Bulrush (*Typha latifolia*) and Common Reed (*Phragmites communis*). The southern bank supports what appears to be the remains of a wooden cable-drum. The pond is isolated, with no obvious path to or from it. Both ponds have 'acquired their own trees' – as ponds tend to do. The larger pond supports a mature Pedunculate Oak (*Quercus robur*) and small hedge-like growths of Hawthorn (*Cretaegus monogyna*) and Elm (*Ulmus minor*). The small pond has two mature trees, a Pedunculate Oak and a White Willow (*Salix alba*) – the latter appears to have been coppiced (deliberately or by children playing) and the stump, or stool now produces at least twenty-one quite sturdy boles.[56] The ponds are in fields which are known to have been cropped for the last thirty-five years. These two ponds are of interest in that they have some unusual characteristics in the 'pondscape' of Broomfield today. Along with the permitted footpaths they will be subsumed into a development of 202 houses and a primary school if the proposal and plans exhibited in the Broomfield Community Centre on the 11th March 2011 go ahead.[57]

However, any examination of Broomfield ponds on the 25-inch or 2½-inch maps quickly reveals two patterns – one involves pond shapes and the other a relationship between pond location and the topography. In Broomfield the dominant pond shape is long, narrow and often curved (arcuate) – occasionally there are small clusters of ponds of a more rounded and/or angular nature. Second, most ponds are situated on field boundaries, roadsides or at old established

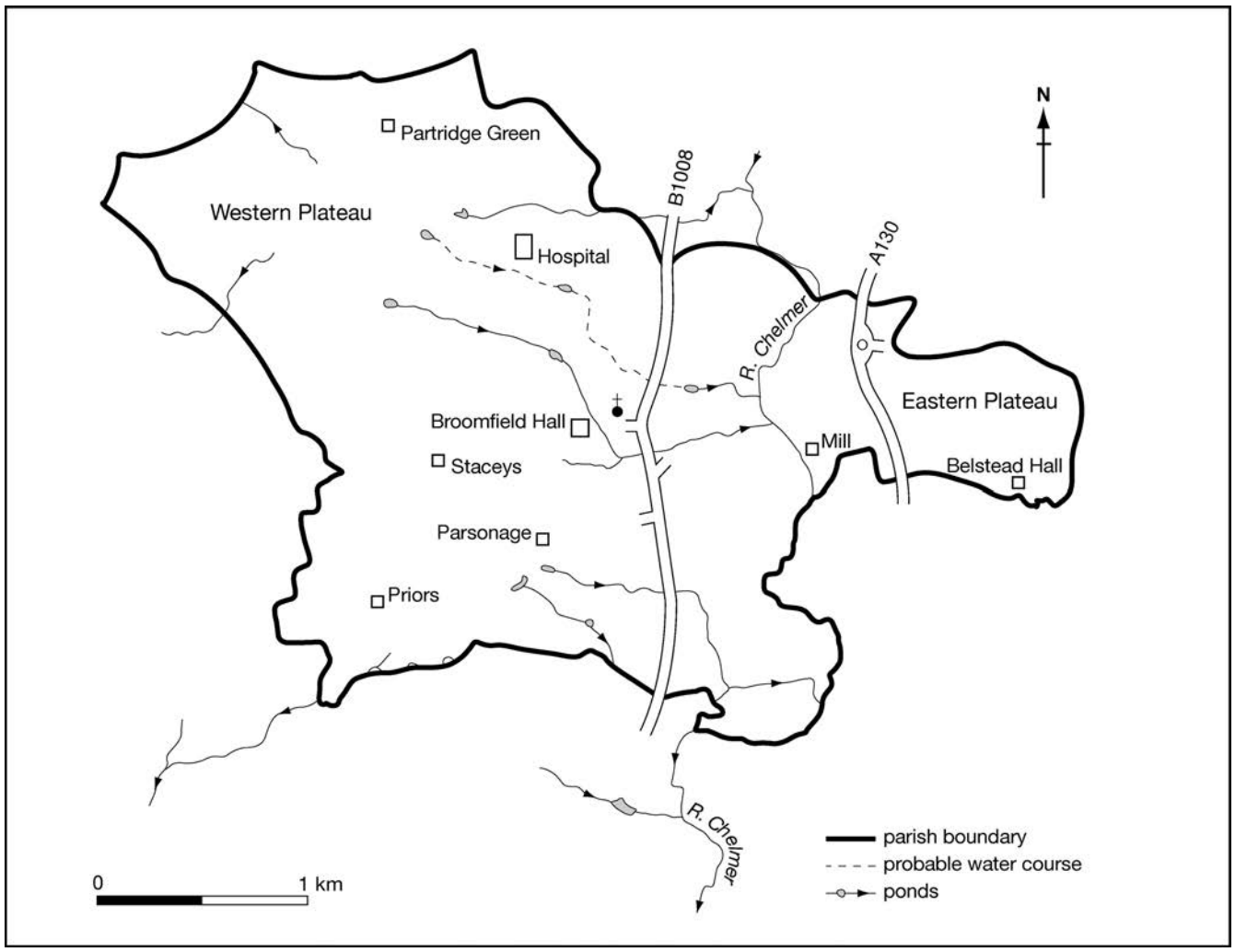


FIGURE 3: Parish of Broomfield and its intermittent water courses. Source: ERO, D/CT 54B (Tithe map) and OS Map 1:2500 Essex, sheets XLIII, XLIV (1874–5)

farmsteads. These patterns allow us to produce the following pond groups:–

1. Major medieval farmstead ponds
2a. Field boundary ponds
2b. Field drainage ditch ponds
2c. Ponds associated with intermittent streams which also function as field boundaries and drainage ditches
3a. Roadside ponds
3b. Greenside and woodside ponds
4. Ponds in old and present 'parkland' landscape or ornamental features
5. Mill, bridge and sluice ponds (special cases)
6a. Ponds in old marl pits, sand/gravel workings and clay pits
6b. Ponds in old brick-clay pits

These groupings closely reflect the geology and the settlement history of the area. Broomfield sits unequally astride the River Chelmer as it leaves the south-eastern edge of the great East Anglian Boulder Clay Plateau which extends from south-west Essex to north Norfolk.[58] Four-fifths of Broomfield lie to the west of the river, rising gently westwards in a terrace-like manner to about 60 m. around Partridge Green (TL694 119) on the Plateau (Fig. 3). To the east, the much smaller portion of the parish rises more steeply at first and then gently to a low ridge at about 50 m. near Belstead Hall Cottages (TL725 103). The Chelmer has cut its valley down through the surface Boulder Clays (the Newney Green, Great Waltham and Broomfield Tills), then the underlying glacial Chelmsford Gravels and the Kesgrave Sands & Gravels (old proto-Thames deposits), into the solid geology of the London Clay (the lowest and oldest strata) exposing it in the valley floor.[59] The north to south course of the river, combined with the nearly horizontal rock succession of plateau glacial clays, valley slope gravels and floodplain clay plus alluvium, has ensured that the physical geography and settlement pattern are arranged in a series of north/south bands roughly parallel to the Chelmer. This combination of geology and river erosion has created the 'stepped' western valley slope, and it was a bench at about 40 m. in height, well above the flood level, that the Romans chose for a section of their road from Chelmsford to Braintree. The medieval and modern roads (A130, now the B1008) also followed this line. Springs are thrown out at regular intervals, but at different levels, along the Chelmer Valley, mainly from perched water tables within the gravels.[60] These springs have had much to do with the siting of both the early

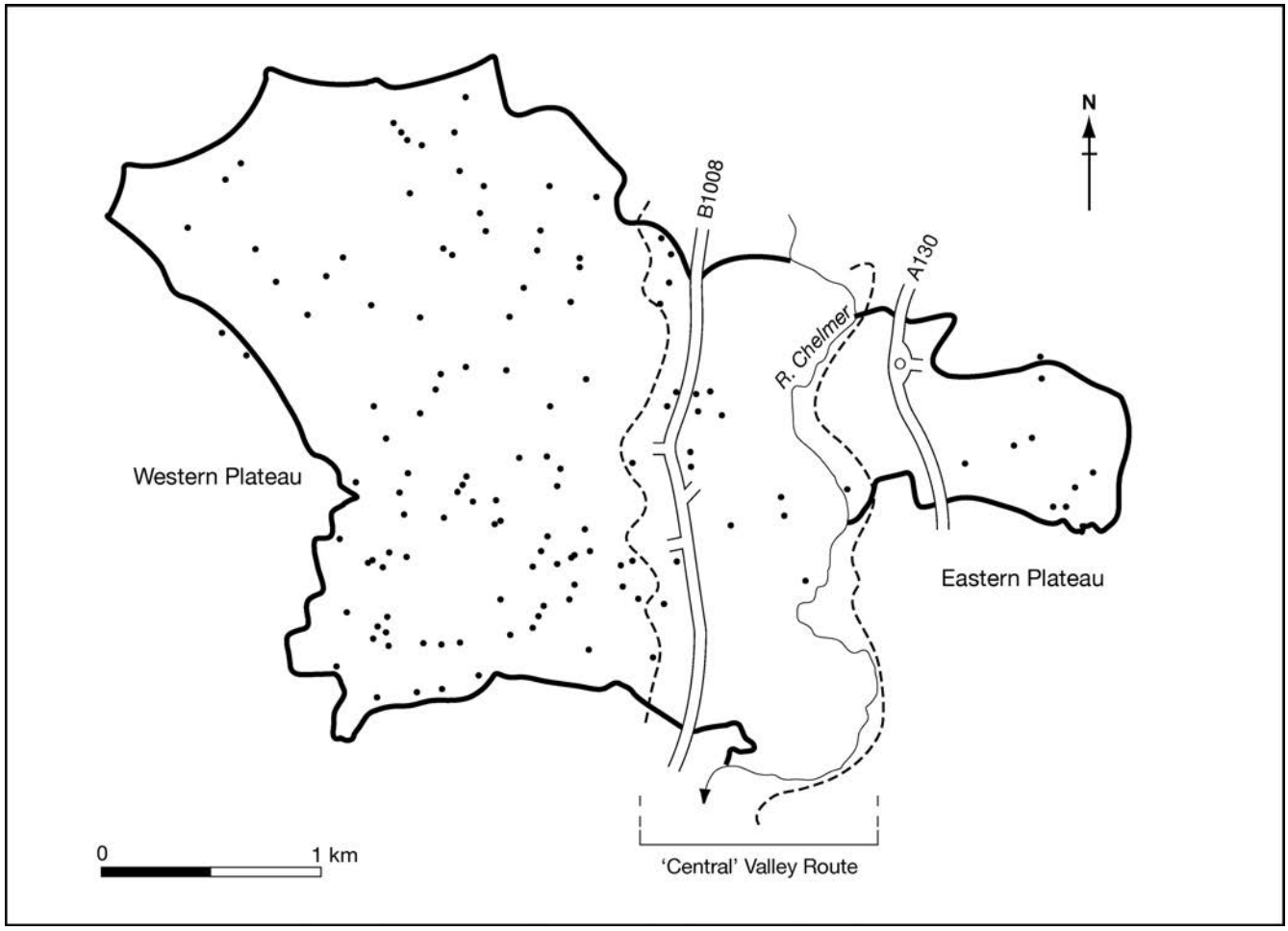


FIGURE: 4: Distribution of ponds in the parish of Broomfield, 1846 and 1874. Source: ERO, D/CT 54B (Tithe map) and OS Map 1:2500 Essex, sheet XLIII, XLIV (1874–5)

farmsteads on the plateau, at some distance back from the valley floor, and also the village of Broomfield itself, close to the ancient main route.

In our pond classification, Categories 1 and 2 are found mainly on the highly productive agricultural land of the Boulder Clay plateau west and east of the Chelmer. Categories 3, 4 and 5 occur chiefly along the 'central' valley route, especially along the old Roman road. Categories 6a and 6b are more scattered, reflecting need for and availability of 'mineral' resources, relative to the value of the land. However, the ponds in Group 6a are often associated with roads and access to the main route, and those in 6b are more likely to occur near a farmstead. With one or two exceptions as shown in the table below, this distribution pattern has altered little since the 1870s, although pond numbers have fallen markedly as already stated in our opening paragraph (compare also Fig. 4 and Fig. 5). The 19th century figures are based on the Broomfield Tithe Map of 1846 and OS maps of 1875, those for 1998 refer to ponds recorded on the 1998 2½-inch OS Explorer map Sheet 183 (the 2009 edition of this map has only been selectively revised – ponds are not affected).

Apart from the ponds in the minor groups 4–6b, origin is not immediately apparent, and none of the main headings 1–3b were mentioned as such under any of Oliver Rackham's twenty-seven pond categories. The two Broomfield ponds previously described in some detail are anomalous in the parish in that both are near-circular in shape and both are isolated – away from field edges, roads and dwellings. These discrepancies merit an explanation. Obviously there is much more to be discovered about the history of the countryside from pond study, and this we shall now attempt to illustrate by examining each of the main groups in turn.

		1846/1875 maps	1998 map
1.	Major farmstead ponds	17	11
	Minor farmstead ponds	0	1
2.	Field edge ponds	68	29
	Field centre ponds	2	2
3.	Roadside ponds	15	3
	Greenside ponds	8	4
	Woodside ponds	1	2
4.	Parkland ornamental	3	4
5.	Mill, bridge, sluice ponds	1	1
6.	Marl, sand/gravel, clay pit ponds	4	7
6b.	Brick-clay pit ponds	3	3
TOTAL		**122**	**67**

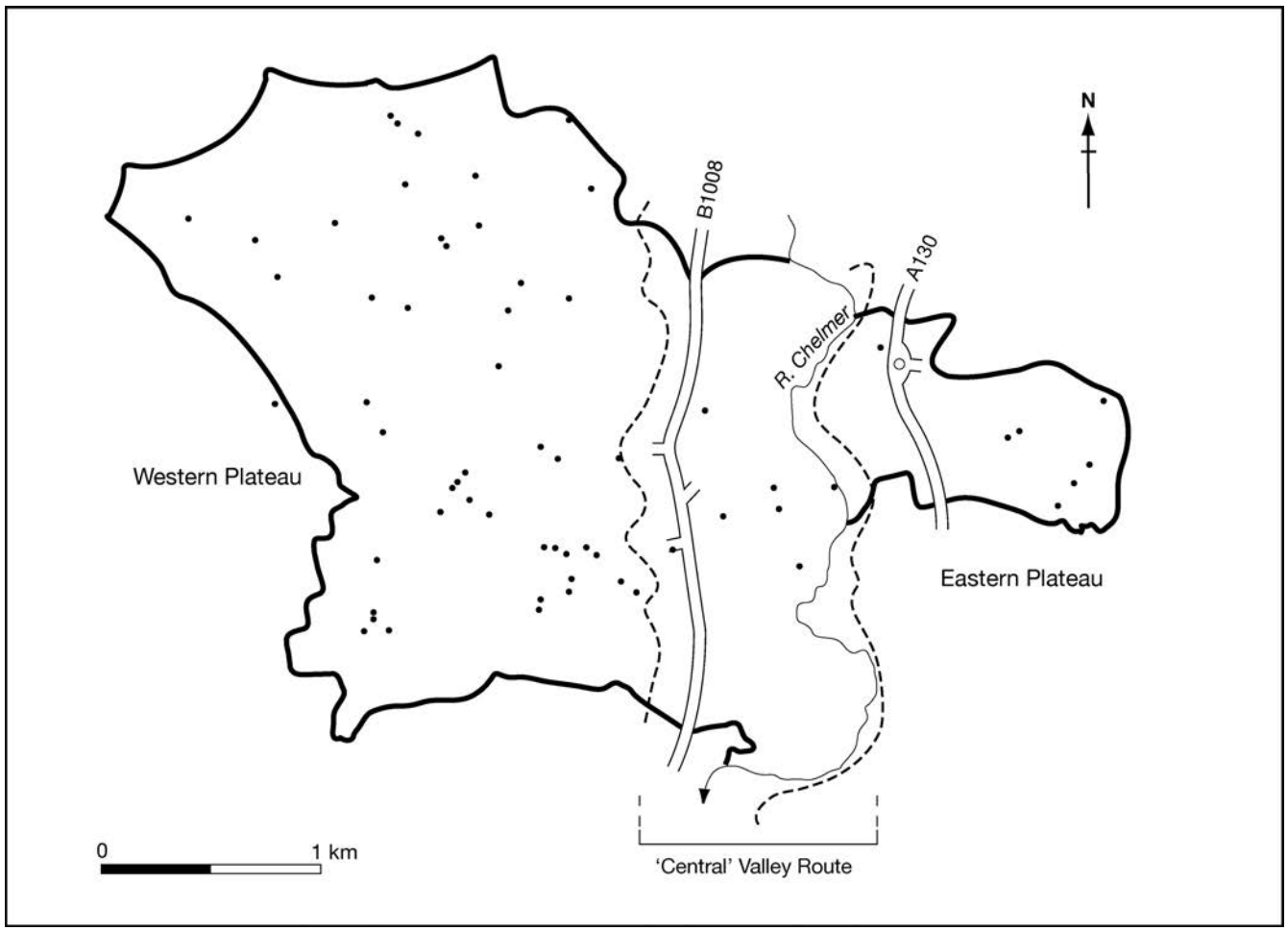
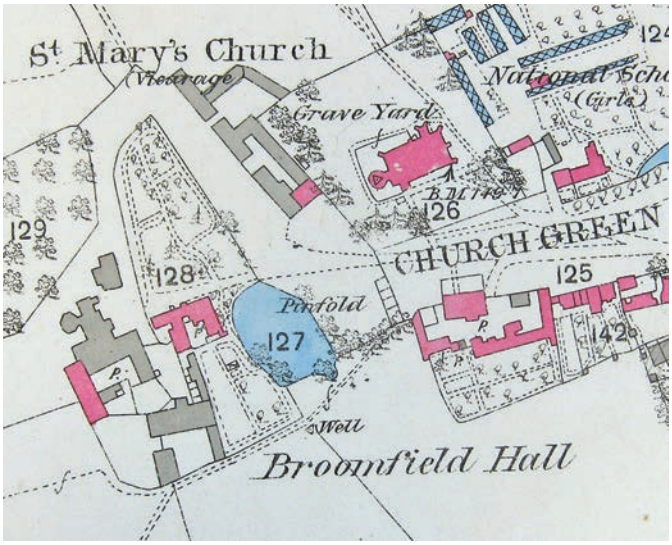


FIGURE 5: Distribution of ponds in the parish of Broomfield, 1998. Source: OS Map 2½ inch, sheet 183 (1998; revised 2009)

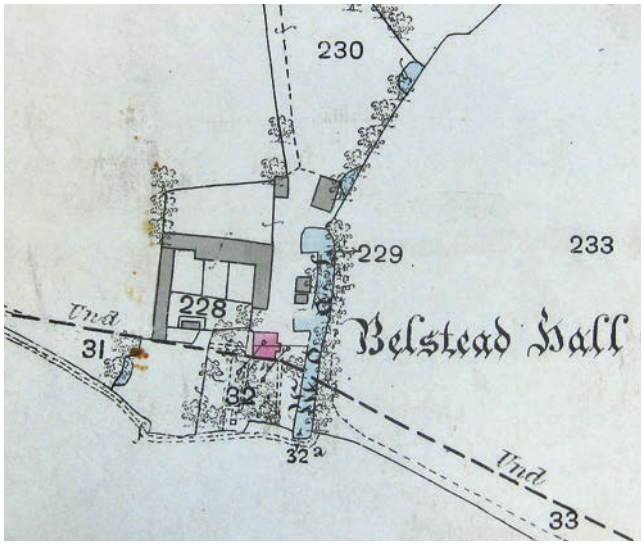
MAJOR MEDIEVAL FARMSTEAD PONDS IN BROOMFIELD

Broomfield has seven major farmsteads – Broomfield Hall and Belstead Hall, two of the three original manors, both mentioned in 1086, the former owned by Geoffrey de Mandeville, the latter by William de Warren (the third manor, Patching Hall, owned by Robert Gernon, was lost to Chelmsford Borough in 1934); the Parsonage (in 1150, given to the Priory of the Holy Trinity, London); Priors (a possession of Blackmore Priory in 1327); Partridge Green Farm, Staceys and Scravels (probably associated with John Partrich 1319, Richard Stacey 1362 and William Scrafielde 1524).[61] All are clearly located on the Chapman and André Map of Essex (1777), and the first six are shown on Fig. 3 related to probable water courses and other features of the parish. However, most of these homestead sites have been considerably modified since the 18th century. Sometimes the main building has been demolished and rebuilt, often most of the early farm buildings (and even the Victorian ones) have been removed or converted, and generally the moats and ponds have been altered in shape, filled in, or replaced by other ponds. Early maps vary in remit, scale, accuracy, colour and print clarity – Janet Smith quotes one historian as saying that they were 'a dangerous type of evidence'.[62] Written evidence is often lacking or difficult to apply, and oral information hazy or contradictory. With these given constraints it is rarely possible to be accurate in describing homestead pond numbers, locations, shape or probable origin. Nevertheless, with the exception of Broomfield Hall, all the remaining farmstead sites have, or have had, at least three discrete bodies of water in close proximity, including moats, or parts of them. These ponds then are clustered, generally one in each cluster being right-angled, or sharply angular in shape (Fig. 6a–e).

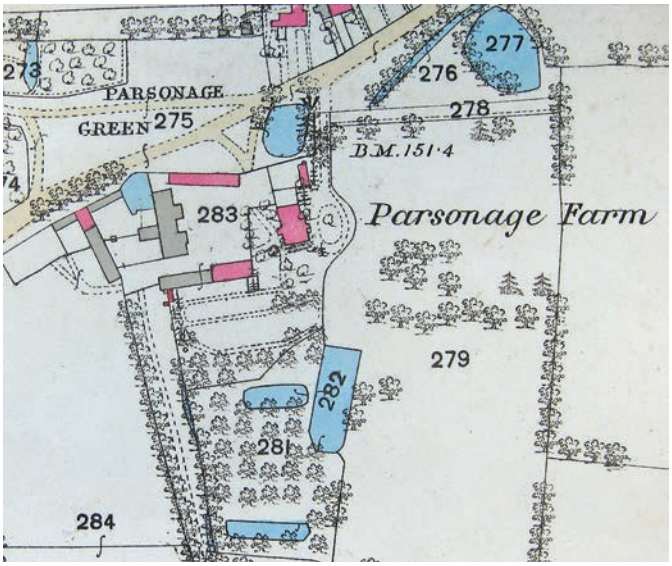
The 19th-century Tithe and OS 25-inch maps show that Broomfield Hall, located on a permanent spring, had just one large almost elliptical pond to the east of it (Fig. 6a). This pond, still there today (2012), is fed directly by the spring, and very occasionally after wet periods it becomes part of a long ditch-stream system from New Barn Lane, then via Night Pasture, under the main road, almost parallel to Mill Lane, into the Chelmer. The eastern side of the pond is part of the old, partially brick walled, pinfold (a pen for stray animals looked after by the manorial pinder, commonly with access to water). The spring is also the likely replenishment source for a well at the south-east corner of the property. Although the general shape of the site and ditches might suggest otherwise, there is no evidence that the Hall was ever moated. In 1875 it was 'well furnished with barns and other outbuildings'. The OS map of this date depicts an octagonal building attached to the north-west section of the barn complex. This could imply a dove house but often it indicates a horse-gin or engine – usually associated with 'modernised farms' and early types of model farm.[63] The demolition and clearance of these extensive buildings has made the whole site difficult to interpret.



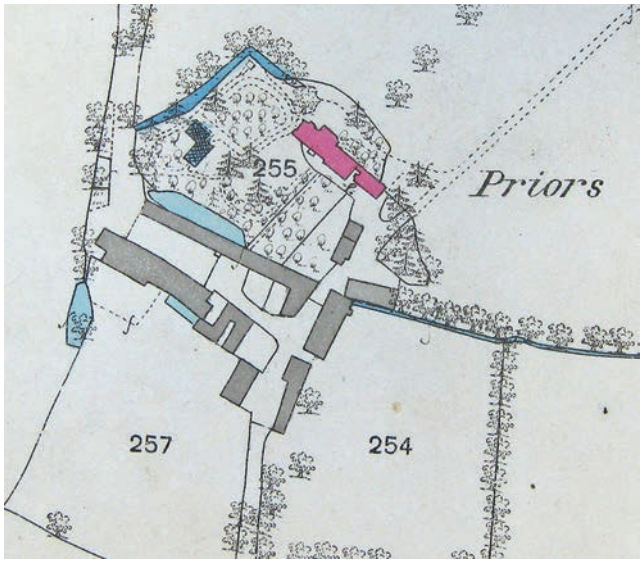
(a) Broomfield Hall



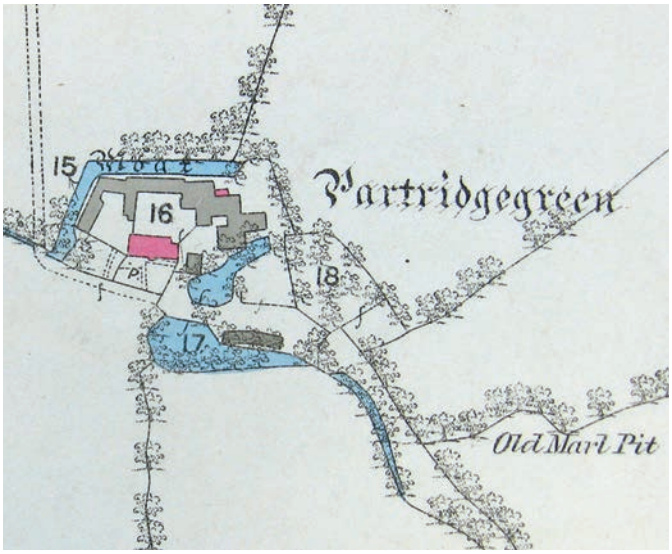
(b) Belstead Hall



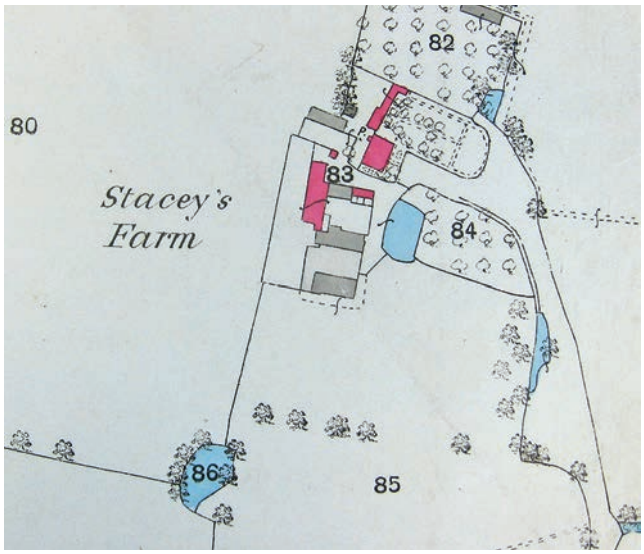
(c) Parsonage farm



(d) Priors



(e) Partridge Green farm



(f) Stacey's farm

FIGURE 6: Ponds at the major Broomfield farmsteads, as depicted on the OS Map 1:2500 Essex, sheets XLIII.7, 11, 12, 15, 16 and XLIV.9 (1874–5). Reproduced by courtesy of the Essex Record Office

Belstead Hall is a moated site: 'A moat which is shown on the Tithe Map of 1846, surrounded the property. It was deep but not very wide and joined up with a pond by the wash house, then drained into a ditch behind the house'. The 1875 OS map shows a long thin tree-lined eastern moat with two angular bays half enclosing a building to the west of them (Fig. 6b). No conclusive evidence of a western side to the moat is presented, although a pond is portrayed just outside the south-west corner of the site. In 1914 a fire destroyed the outbuildings completely, and in 1958 the house itself was virtually rebuilt. The 2½-inch OS map published in that year suggests the moat as two long thin ponds to the east of the farmhouse, the northern one being bayed. An aerial photograph of 1960 shows trees along the eastern moat line and in addition a canal-like 'moat' to the west. Belstead Hall moat is now said to be filled in (perhaps in the 1970s) and is 'barely traceable on the ground'.[64] Certainly it no longer features on the 2½-inch OS map (1998) – however the south-western pond does. Again clear analysis is not easy.

The Parsonage is situated on the southern side of Parsonage Green, and the three ponds associated with it are difficult to differentiate both topographically and historically from those of the Green (Fig. 6c). One small pond, noted in 1846, was sited at the western end of the farm buildings close to the road, another pond (the one we all see today) is located at the farmyard gate accessing School Lane. It is brick lined on one side as part of the Parsonage estate wall. Both these ponds are on the verge of the Green. From the latter pond, almost immediately, an overgrown, and steadily widening and deepening ditch runs eastward along the southern edge of Parsonage Green to a very large pond shown clearly on an 18th-century estate map. Today, this pond, much hidden by small ash trees, plus alder, sycamore, oak, elm stumps and many brambles, has been divided into three smaller ponds by the vegetation. The two at the corner of Parsonage Close are separated mainly by a fallen tree and are currently at different levels. The largest, at the southern end of Parsonage Close, has a fine display of Reed Mace. From this pond a 'v' shaped, wide and deep ditch runs southward to form the eastern boundary of the Parsonage house site. It is often water filled, especially during the autumn and winter months and is thought by some to be the remains of a ha-ha.[65]

Priors,[66] in the south-west corner of the present parish, had four ponds in 1875 (Fig. 6d). The northern pond, narrow, with a right angle, was obviously once part of a moat. The central pond, broader, elongated east–west, closely related to the farm buildings, was probably the remains of the southern side of the moat. Two smaller, rectangular ponds to the south of the main yard and barns were more likely to be concerned with the everyday function of the farm. The latter were no longer there in 1998, but the main cluster is still very apparent.

In 1875 Partridge Green Farm[67] had four ponds (Fig. 6e). That to the north was narrow, straight-sided, with a bend of 110 degrees so as to 'round' the west side of the farm. This was clearly the remains of a moat and is labelled as such on the map. The central pond to the south of the farm building, was keyhole-shaped and that further south was the largest, wedge-shaped, with a long thin detached ditch-like tail to the south-east. Although the moat still remains, the farmhouse and most of the old farm buildings have been pulled down and the other ponds filled in. A 'modern' farmhouse with gardens at the front is now flanked to the east by recent 'barns' which partly function as an industrial site.

Staceys, on the site of a former medieval homestead, has retained its ponds recorded in the mid-19th century – a large rectangular pond – 'the horse pond', to the south in front of what were once extensive barns (converted), yards and stalls etc., and one to the north in front of the main house, and yet another further north, which has been narrowed in recent times, almost to a ditch, to improve field access (Fig. 6f).[68] In the period 1846–74, Scravels also seems to have two or possibly three ponds associated with it. One on its eastern border, long and narrow widening southwards into a recognisable pond at the roadside and another a long narrow water filled 'ditch' along the lane on its western border. An employee in the 1930s, remembers another pond with goldfish in it near the house.[69] A little further west from Scravels were buildings or a cottage on the edge of a triangular moat-like feature enclosing what could have been an orchard. This is not shown on the OS 2½-inch map (1998) and today (2012) only hedgerow and boundary ditch evidence exists. A pond opposite Scravels cottages is still there as a roadside pond, but the house (Booseys) next to it has gone.

These seven major homesteads accounted for 13% of the Broomfield ponds in the 19th century and about the same today (16%), although it is noticeable that most of the sites are now much smaller, both in building area and size of ponds, than they were in 1875. The cluster of overgrown angular ponds seen 300 m. north of Partridge Farm, just outside the Broomfield parish boundary in Great Waltham, is all that remains of Hedge Hall – an excellent example illustrating how the study of pond distribution can aid in revealing early rural settlement patterns. Apart from the moats, which were perhaps multi-purpose as previously noted, the origin of these homestead ponds is by no means clear. They probably provided drinking water for animals (hence horse ponds), but some contained fish or supported duck 'houses', and other uses were water for brewing, pickling, food and fodder processing, steam machinery, cleaning (churns and wagons), for washing clothes and quenching farm fires.

The provision of ice for preserving food during the summer months was an important role for ponds adjacent to the larger wealthier houses. In the 17th & 18th centuries ice houses became fashionable, and then common, over 3,000 being recorded in the United Kingdom – twenty-four in Essex.[70] It is almost inconceivable that the major homesteads of Broomfield did not utilise their ponds at some time for this important function. Throughout its long history the Parsonage seems to have been in the forefront of Broomfield's social scene with a succession of prestigious owners and tenants – in 1768 it was described by Morant as, 'fit for a gentleman' and sixty-six years later Wright's verdict was, 'a very elegant and commodious gentleman's seat'.[71] Unfortunately the 'grand' early house, shown on an estate map of 1756,[72] was destroyed by fire in about 1840, and replaced by the present building (although the tithe barn and outbuildings, dating back to the late 17th century escaped burning, they were in 2010/11 converted into dwellings). The old house was fronted by a Pleasure Ground,[73] and at some time an avenue of elm trees led across to a large earthen mound at the southern end of the 'ha-ha'. However, recent research has interpreted this as a fashionable late 18th-century 'canal' feature.[74] Could the latter, now normally filled

with water from October onwards, have been used for ice-ting (ice harvesting)? If so, it would be nice to imagine (even better to discover) that the mound, variously suggested to be a spoil heap and/or buried rubble from the original house, a later folly or a 'display' mound, might be the remains of an ice-house – certainly the site geography is right,[75] but no written evidence or even local folk memory exists to support any such speculation.

BROOMFIELD'S FIELD EDGE PONDS

Ponds associated with the field boundaries tend to be long, narrow, slightly curved and often partly hidden by tree and bush growth on both banks. They are mainly found in the north and west of Broomfield on the Boulder Clay plateau and form the largest category of ponds in the parish. Ponds were occasionally used as markers for parish, estate, farm and field boundaries. The Shire publication devoted to boundaries, does not mention ponds, and Aston felt that they were more a feature of dry upland areas, but Rackham, in examining early charters, found that 'about one in fifty of the points by which boundaries were designated was a pond'.[76] Although three ponds are found on the old 'straight' Broomfield/Chignal parish boundary as shown in 1846 and 1875, and five located along the present south-west boundary with Chelmsford, this correlation with ancient boundaries does not seem to be a strong one, especially as the southern boundary dates only from 1939 and there are other possibilities. Field boundaries are almost invariably marked by ditches which are part of the field drainage system. Emmison reports some comments made by G. Eland on medieval drainage practices at Roxwell – 'the difficulty of getting rid of surface water where the subsoil is a boulder clay must always be very great; and today ... it is common to see some of the ditches mentioned in our rolls which are six feet deep or more'. Ditches occasionally become blocked by fallen trees, root growth and general vegetation matter. Banks also collapse, especially where weakened by rabbits, foxes and badgers, and after heavy rains form natural ponds. Problems of agricultural ditch clearance in the 16th century, although rarer than those along roads, are also mentioned by Emmison.[77] At other locations ditches have been widened, or dammed deliberately, for watering cattle, and certainly from Victorian times up to the late 1940s, field ditch ponds were very useful for filling up steam, threshing and ploughing engines. Two of the latter working together, 'needed a lake of water in front and a colliery behind'.[78] One or two ponds, right angled in shape, have originated where downslope drainage has met cross-field ditches.[79]

In several cases field boundaries coincide with natural water courses which fill and 'flow' as streams after prolonged wet weather. These have in the past been called 'fleams' or 'fleme ditches'.[80] There are five such ditches draining the western Boulder Clay plateau of Broomfield, eastwards to the Chelmer resulting in marked dips in the Chelmsford to Braintree road (see water courses on Fig. 3). They occur at the lower end of Hospital Approach – flowing from west of the Linden Centre, south of Woodhouse down to Croxton's Mill; just north of the Mill Lane junction (previously described in connection with Broomfield Hall); at Rose Lawn, rising in a ditch south of the Parsonage (and joined by the remains of the Gooseriddle Brook?);[81] at Gutters Lane – beginning near the old clay pit close to Scot's Green, then south-east between Berwick Avenue and Cumberland Avenue, across Coombe Rise to Gutters Lane and obliquely to the Chelmer; and at the Patching Hall lead-in, from the old Hall site, then between Fifth and Sixth Avenues to the Chelmer. This last stream, and another 'possible' one at Petersfield, are just outside the present Broomfield parish boundary. A 'seventh' fleame' may also have existed starting south of the Linden Centre, following the wooded ditch south of the Hospital, then east of Chelmer Valley High School (close to the late Bronze-Age enclosure in the Nash Drive area), via Church and Jubilee Avenues to Butlers and the pond behind it, which drains down to the Chelmer.

Extensive 'estate' building, piping and culverting, west of the main road, make the lower tract of these water courses very difficult to trace, and much is 'best guess' work. All have feeder springs at some point along their courses. Generally these intermittent streams only cause problems after heavy rain on already soaked ground. In recent times the culvert at Rose Lawn has blocked and flooded quite regularly (especially in October, 1987, 1991, twice in October 2000, February and October 2001 – the last event temporarily closed the main road and involved the Fire and Rescue Service).[82] Each of these short lived streams support or have supported ponds, and three would appear to originate in them. That which reaches Gutters Lane is clearly marked on the OS 1-inch and 2½-inch maps from 1940 to 1998. The two sickle shaped ponds,[83] south-west of the Parsonage, are now all that visibly remain of its course, apart from a curved field boundary ditch. The ponds noted earlier along the Broomfield/Chelmsford boundary are related to an occasional water course falling west from the north end of Weller Grove, south of Newland Springs School, via Wickfield Ash and the south end of Pickwick Avenue to join a ditch-like tributary of the Can just south of the Bethel Baptist Chapel (at the pronounced dip in the Chignal Road). A field boundary ditch, sinuous in the north, and more angular in the south, runs approximately from Partridge Green, across the general landslope, to Longshots. This ditch connects a series of small narrow ponds, often well hidden by hedges. The ditch line has banks of unequal height (not easily explained by soil creep) for most of its length and this, plus the difference in ditch curvature, could be taken to indicate an ancient woodbank in the north, and field drainage round arable strips or meadow doles in the south.[84]

Collectively field boundary ponds made up 55% of Broomfield ponds in 1874 and 44% in 1998. Although many act as sumps for field drainage, especially in autumn and winter, they may be the main means by which sudden heavy rains recharge underground supplies. Some ponds are deep, and tap the local water table (water is never far below the surface in Broomfield, particularly on the gravelly valley slopes) and so remain wet for most, if not all the year. These ponds are often the source of springs which emerge lower down, and this is probably the case with the pond on the northern side of Dragon's Foot field which is very rarely dry.

BROOMFIELD'S ROADSIDE AND GREENSIDE PONDS

Roadside and greenside ponds are another overlapping group. Greens are often the remnants of wayside clearance (especially after the Statute of Westminster 1285 to minimise 'highway robbery'), and they also tend to occur within the angle of

converging roads. In addition, individual roadside ponds are generally related to field boundary ditches which act as both field and road drainage. In one very early instance, investigated by Toms,[85] roadside drainage was apparently diverted to feed a pond well inside the wayside verge. During the Middle Ages and Tudor periods there were many court attempts to keep such ditches clear – 'In the surviving Elizabethan court rolls for Essex there are several thousands of presentments of uncleansed ditches and drains, mostly those by the roadside'.[86] Some were outfall ditches from ponds. Roadside ponds were used widely by cattle on their way to local markets and were a boon (with roadside pasture) on regional drove roads which reached their height in the early 19th century.[87] Wagons were driven through a roadside pond at Reed (Hertfordshire) to enable cleaning out and removal of clogging mud from the wheels. There may also have been some legal requirement in late Victorian times to provide ponds or roadside water hydrants at regular intervals along roads leading into urban areas for replenishing travelling steam engines.[88] Mrs Dolly Jordan recalls the 1930s when 'many traction engines etc. would stop to refill their tanks' at a railed-off stream, where it crossed the Chelmsford/Braintree Road on its course from Patching Hall to the Chelmer.[89]

In the 19th century the main road through Broomfield was flanked in several places by small elongated ponds. Two were to be found nearly opposite Butlers, either side of Jubilee Avenue, where the road widens and a small 'green' occurs, and one more near the entrance to White Mead. These ponds, when flooded with water, either from the Boulder Clay plateau by a ditch system as previously suggested, or by a build-up of water locally during a wet period, probably created a 'splash' or 'ford' on the main Chelmsford/Braintree road which needed 'bridging' – hence the 'Butlers Bridge' location as proposed in the publication *Broomfield 81*.[90] Facing the Angel Inn was a largish curved pond (later fenced off) on the roadside, yet also part of the southern edge of the Green (Fig. 7). This pond, a favourite skating venue for children in the winters of the 1920s was also used to top-up the Chelmsford/Gt.Waltham Steam Omnibus, is now the grassed-over Madelayne Court perimeter.[91] Roadside ponds have a long history and pond names such as wear, waier, wayour, wayer and waver or weaver, generally reflect their wayside location and value.[92] In the 19th century most of Broomfield's lane edges supported ponds and they provided some 12% of all ponds. By 1998 only three remained and today two of these are badly overgrown. This decline has been due to the great improvement in road drainage methods, road widening, infill for gardens and housing development – safety has been another reason – but primarily, the need for them has gone – especially in the last eighty years.

England has about 4,500 village greens. Over 70 registered Greens are to be found in Essex, five in Broomfield – Church Green, Angel Green (School or Camomile Green), Parsonage Green (all registered 1965 as 'open spaces'), Partridge and Scot's Greens. How greens originated is not often clear – some examples suggest they are the remains of waste or woodland clearance. They may have been places to corral stock for protection or drifting (to ascertain ownership); or a necessary source of pasture/hay – an alternative to meadow;[93] meeting places especially for Hundred Moots (Crouch Green, Hinkford); fairgrounds or market places and also areas for celebration or

FIGURE 7: A roadside pond formerly on the southern edge of the Green in Broomfield. Photographic postcard by Fred Spalding (ERO, T2603, Box 22, album 2), Reproduced by courtesy of the Essex Record Office

recreation (archery or 'camping').[94] Some were planned as village 'centres', others gradually became hamlet or village focal points, especially after settlements moved towards them in the early 1100s.[95] In addition to pasture, hay or space, greens have provided wood, furze, marl, clay for pottery, sand and gravel, also places for punishment – ducking stool, stocks and gallows. Greens were probably multi-purpose and certainly multi-use, or one use leading rapidly to another. Nearly all the larger greens in Essex have a pond, sometimes two or three. They are generally located on the sides or at one end of the green, and nearly always close to a road, round or across the green. These 'green' ponds must surely be related to one, or several of the uses of greens outlined above, plus perhaps 18th- and 19th-century aesthetic and picturesque ideas, individual paternalistic attitudes or status-enhancing estate acquisitions.[96]

All five Broomfield Greens have a pond or associated ponds. One has already been noted on Angel Green, but there was another on the northern edge of the Green, its site now underlying the gardens of numbers 6–8 School Lane and possibly the shop and cottage to the east – the shop floor and cottage foundations are well below the road level, even allowing for build-up. A pond occurred in a similar position on Church Green, occupying Broomfield Wyke front garden, but again it could have extended a little further east in front of the cottages and old Village Hall. Parsonage Green has four green-side ponds, three described earlier, related to the Parsonage itself, and one is now a long, broad deep ditch, recently cleared out (2012)[97] on the northern side. A further pond occurs in the grounds of Staceys drive cottage, which probably encroached on the original Green. Two large ponds which were in Longshots, parallel to the road, may also reflect the early extent of the Green. Partridge Green had a pond at its southern end, and Scot's Green had one pond to the north-east of it, and one to the south. The former has now been reduced by infill and road widening to a hollow which floods across the road after very wet weather (for example, in January 2011) and the latter, now reclaimed, was originally a large clay pit. Greenside ponds accounted for 6% of Broomfield's ponds in 1875 and about the same in 1998.

BROOMFIELD'S PARKLAND AND ORNAMENTAL PONDS

This small group has already been covered briefly in our review of the typology of Essex ponds. Of Broomfield's ponds, three in 1846, four in 1875 and 1998, the only one of any consequence is that at Brooklands. Butler's pond is probably next in size. Could the two ponds with which we started our Broomfield pond survey be related to this group? Is there an explanation for their apparent anomalous round shape, and isolation, in an area dominated, as has been described, by long narrow field and boundary ponds, with the occasional angular farmstead cluster? Early enquiries, based on their shape and character, produced suggestions pointing to bomb craters. Both ponds are slightly elongated, roughly in the same direction, and the larger has a slightly higher disturbed 'rim' or 'apron' revealing sub-soil on the south-east side. Certainly, Broomfield has been bombed several times, in addition to the occasion when the church was damaged, a jettisoned stick of bombs hit a small field at the sharp bend in Hollow Lane west of Priors, a land mine fell behind Scravels, and there was 'a bomb in the field next but one facing the Parsonage'. Unfortunately there is no proper record or local memory of the exact position of this Parsonage field bomb. Moreover, Mr. Marriage, whose family farmed the Parsonage land at the time, recalled that the crater, 'had to be filled in. Bulldozers and J.C.B.s were not available, so father bought a sort of horse-drawn coal scuttle', and thus the ejected earth was gradually returned to the hole.[98]

The bomb crater explanation, though feasible, was clearly not supportable. Evidence from the 1846 Tithe map (which showed only the small pond) and that from OS maps of varied scale, based on 1932 and 1961–2 surveys (showing only the large pond), was also not really helpful. Nonetheless, further research revealed that Joseph Dawson's estate survey of 1756 depicted both ponds, and perhaps more importantly, the name of the fields in which they are – The Park. The two ponds should therefore be grouped in Category 4, with the ponds behind Brooklands and Butlers. This is also compatible with the suggestion that the eastern boundary of the Parsonage was a ha-ha or a canal feature – both designed to allow pleasant views over status-enhancing parkland. It would seem that the anomalies of these two ponds may be rather more apparent than real.

BROOMFIELD'S MILL POND

Mill ponds are usually associated with watermill dams on rivers. They are a specialised group with varied and complex locational characteristics, especially if bridges or fords are involved.[99] Mill ponds can occur above the mill as at Stebbing and Bran End (both true mill ponds), or beside it as at Croxton's Mill, Little Waltham (really an overflow pond or basin), and below the mill as at Broomfield.[100] Here the water falling over the sluice ('shut') is constricted by the housing for the undershot wheel (very common on the Chelmer and other slow-moving East Anglian rivers) and the cill ('foundations') of the immediately following road bridge, both of which further quicken the flow before it is released below the bridge to scour out a central channel and spread out to form a 'pond'. The water movement is well shown by Pooh-sticks as they come from under the bridge, curve round and back in two circles to re-join the main flow time and again. This is not a true pond, but a tail-race expansion pool in a river. Good examples of the relation between ponds and bridges occur on the River Colne, upstream of Castle Hedingham at Nunnery Street, and downstream of it at Station Road. Both bridge sites are also fords. That at Nunnery Street is an expansion pool of modest depth below the bridge and was used daily until the 1960s to water cattle, collect water and clean out carts and wagons. The ford at Station Road was above the bridge which caused the river to be held back, deposit its gravelly load and form a shallow easily crossed 'pond'.

BROOMFIELD'S MARL, SAND/GRAVEL AND CLAY-PIT PONDS

Ponds occupying old marl, sand and gravel, clay and brick pits in Broomfield are the third largest group – classified by origin, rather than location or association. Marl pits are given on the 1875 OS maps as the origin of present ponds south of Partridge Green, also north-east of Belstead Hall, two more along the southern border of the Hospital site and one at the southern end of New Barn Lane (Hither Clay Pit). Old sand and gravel workings shown prior to 1875, which were water filled

until fairly recent times, occurred near the centre of the Jubilee Avenue – Court Road estate, also east and north of Butlers (just behind White Mead) and west of the present site of the Co-op. Workings also existed in 1875 around Walnut Tree farm, Belsteads (Channels) and Belstead Hall. Today large lakes to the west and south of Border Wood, and those in the southern part of Channels golf course (and also opposite, across Essex Regiment Way), all within Broomfield, are the remains of much more recent sand and gravel extraction. On the south side of Patching Hall Lane, just west of Paglesham House was a long, deep spoon-shaped clay pit pond – many local people recall playing there. It was filled in not long ago, apparently for safety reasons. Almost opposite are Clay Pit Cottages.

Field names suggesting brick making occurred east of Scravels (Brick Kiln Field) and south of the Parsonage (Great and Little Brick Clamps), and one would expect to see evidence of brick-clay pits. There is indeed a large, nearly rectangular pond with steep sides and a 'run-in' slope, at the north-eastern corner of Brick Kiln Field, but this is also the junction point of three fields, and the pond receives a straight drainage ditch from the west – so it may have served several purposes. Great Brick Clamps has two ponds associated with it. They appear on Dawson's 1756 survey of the Parsonage estate, bordering the Great Kitchen Garden and may have been part functional to the garden, and part ornamental. These two ponds can be clearly seen in the much altered Parsonage landscape today, and appear too deep to have been solely garden or ornamental features. They may have originated as clay pits for the production of bricks used in the house or outbuildings. All three pits, perhaps erroneously, have been included in Group 6b. Although several sand and gravel pits have been built over, this mineral yielding group of pond sites has been remarkably persistent over the years, mainly because, as remarked before, several of the larger ones have become community assets – as nature reserves, the homes of angling clubs and golf courses. Collectively they made up 6% of Broomfield ponds in the mid-19th century and 14% in 1998. Today (2012) the latter figure is much the same.

DISCUSSION

The classification of ponds, based largely on their origin and characteristics, tend to obscure the traditional value of ponds as a source of drinking water for both humans and animals, and although Rackham emphasizes this, it is a point overlooked in many works referring to countryside features.[101] During World War II, a survey (published 1946) revealed that only 54% of farms in Essex had piped water, 40% relied on nearby wells or springs and 6% had no water supply.[102] In Broomfield, Scravels and Croxton's Mill House (on the Chelmer just outside the parish boundary) relied on spring water until the late 1930s.[103] Belstead Hall even in 1958 had, 'no mains and no water laid on', and drinking water was apparently still brought from a spring or pond 'lower down the field'.[104] Staceys farm depended on the well in front of the house until 1973.[105] Further afield in Essex, the upper Colne Valley (Ridgewell-Earls Colne) was not supplied with mains water until 1954, although Halstead, Earls Colne, Castle and Sible Hedingham had small piped networks from the local urban authority, industries and landowners. Most homes (53.9%) depended on shallow wells (44% of which were known to be polluted) and 4% of the farms depended on ponds.[106] Mrs Polly's well at Maiden Ley (Castle Hedingham) was virtually a small floodplain pond, covered by several waterlogged planks – which often masked the presence of frogs and a dead rat or two. It was absolutely essential to boil the water before use. Needless to say, widow Polly lived to a great age.

When one considers how the expansion of housing and industrial sites has put pressure on the rural landscape in the past fifty years, it is surprising how many ponds have survived. So what is the future for ponds? The number of traditional ponds is likely to decline further – their need, as already stated, has largely gone, but new 'ponds' are being created. Essex has one of the lowest annual rainfall figures for counties in the United Kingdom. Writtle Agricultural College recorded 569mm (22.4 inches) for the standard period 1941–70, and 547mm (21.5 inches) for the ten years 1967–76. This latter period included one of the hottest, driest and sunniest summers ever experienced – many places in Essex having no rain for more than six weeks.[107] In 1967 Lord Rayleigh Farms completed a fifteen acre reservoir holding 100 million gallons of water in the valley of the Ter just below Leez Priory. It is one of the largest schemes in Europe involving more than nine miles of pipework. That example, and the effects of the 1975/76 drought caused the building of farm reservoirs to accelerate. D. Corke states that farm reservoirs are 'beginning to make up for the loss of the old-fashioned farm ponds'.[108] In effect, they are the new rural ponds, and Essex has over 200 of them – the largest number for any British county. The proper development and control of recent sand and gravel extraction has also contributed to new pond numbers. Small garden ponds are not considered part of a designed landscape, and nor were they included in the Pond Survey of 2007. They became very fashionable during the 1930s, and again for a long period after World War II, and many feel that they have helped to offset the loss of traditional farm pond habitats ('Garden ponds are now a major habitat for aquatic life')[109] and will continue to be important. However, population pressure has resulted in smaller gardens making ponds more impracticable. At the same time, the percentage of older people has increased and garden ponds have proved both costly and a source of now unwanted hard work. Nevertheless, ponds of another type may make a come-back. The need to feed an increasing population has led to the development of fish farming on a large scale. In the 1990s, 25% of the world's fish consumption came from fish farms, today (2012) it is 40% and increasing. Farmed salmon is the leading food export of Scotland. Mark Pattinson forecasts that within a short time fish hatchery, feeding and stocking ponds will be found outside every major urban centre.[110]

Traditional ponds are ancient features of our countryside. They are part of our rural heritage and can tell us much about it. Therefore we should carefully conserve and protect those that remain. A start was made in 1974, and various Natural Environment projects using volunteers have taken place since, but more recently, the Countryside Survey 2007, financed by a partnership of government funded bodies, led by the National Environment Research Council (NERC) and the Department for Environment, Food and Rural Affairs (Defra), has reported (4 February 2010), via the Centre for Ecology and Hydrology and also Pond Conservation, that 80% of the ponds in England and Wales are in a 'poor' or 'very poor' condition. From this has sprung the Million Ponds Project to create a widespread

network of new ponds across the UK. Phase 1 of the project (2008–12) intended to create 5000 new clean water ponds. Dr Jeremy Biggs of Pond Conservation has issued a wake-up call, 'for everyone concerned with protecting freshwater wild life'.[111] The Million Ponds Project literature emphasizes 'endangered plants and animals' and aims, 'to help not only great crested newts but also other pond dwellers such as dragonflies, water bugs and our rarest water plants'.[112] Undoubtedly the traditional pond has contributed enormously to the diversity of habitats in our agricultural landscape, and been instrumental in introducing a great variety of plants, insects and birds. Most published work (much of it of the popular kind) on these small bodies of freshwater has been carried out by botanists and zoologists. Very properly their interests are still at the forefront of pond conservation and creation today, but very rarely have these specialists related ponds to that landscape and its development.

There is no specific pond 'science'. Pond study falls under Limnology, the definition of which is quite clear – 'the scientific study of physical, chemical and biological conditions of freshwater lakes, ponds and streams',[113] but today, in many circumstances the physical conditions collectively, and the importance of the physical, non-biological environment seem to be somewhat downplayed. In part, this is the background to Dr Murray Gray's letter to *The Guardian* (16 June 2011) quoted here: 'no sensible management of the natural environment can occur without an understanding of both biological and physical processes. We need to move away from nature management focused largely on species and habitats to one involving an integrated approach to managing physical and ecological processes and systems'. This was put more bluntly recently by David Bridgland, President of the Geologists' Association: 'On a gloomier note, I felt obliged to write to the Secretary of State for Environment, Food and Rural Affairs, Ms Caroline Spelman, concerning the very serious omission from the recent white paper on the natural environment, in terms of the total lack of mention of non-biological nature and, in particular, of geology or geomorphology. This is an extraordinary oversight, not least because I, and I know many others (including GA members), completed the online consultation procedure in response to the consultation white paper "An Invitation to shape the Nature of England", in which geology and geomorphology received not a single mention (although soil was mentioned once)'.[114]

Other facets can be overlooked too – in the study of ponds it should be recognised that they have origins within the geological time-scale, and a physical setting in the landscape, in addition to size, shape, depth, differing floor and bank peculiarities, water content and transparency, water movement and a climatic regime (i.e. physical characteristics). Ponds also have origins within the human time-scale (many are no older than Victorian), and a purpose, which has often changed over historical time – therefore they have a history. In all, ponds have a relative location on the earth's surface (space) and in time, which should not be ignored.[115] It would appear, from Pond Conservation press release, 23 September 2011, that not until recently (since the 2007 Pond Survey report of 4 April 2010) has the full importance of these interconnections been recognized, accepted and taken into consideration, 'new ponds are created annually', – more than 7000 per year – 'unfortunately most new ponds are located in areas of intensive agricultural land use where they will accumulate polluted sediments' – 'the results also point to an important way we can protect Britain's freshwater biodiversity in the future' – 'if new ponds are located where they are protected from pollutants and are not fed by streams or ditches, they rapidly become wildlife oases'.[116]

This survey of ponds in Broomfield is far from complete. Although we have excluded from our remit their botanical and zoological characteristics,[117] which are very important and causing so much concern today, there is still much to learn about the relationship of ponds to the geology, relief, drainage, settlement history, social organisation, farming practices, technology and management, both within the parish and in general. It is hoped that this article will encourage more and wider studies of ponds (particularly comparative studies), and also illustrate how the revealing of their geographical and historical implications can contribute to a fuller understanding of our rural landscape and heritage.

ACKNOWLEDGEMENTS

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ENDNOTES

1 Centre for Ecology and Hydrology and Pond Conservation Report, 04/02/10, and Press Release 23/09/11; Natural England Report in *Daily Telegraph*, 17/09/11.
2 O. Rackham, *The History of the Countryside* (London, 1997), pp.373, 413. Also Martin Horsfall, Letters, *Daily Telegraph*, 23/09/11, and *Essex Chronicle*, 22/03/12, p.16, plus photographs.
3 Rackham, *History of the Countryside*, p.345, which we will also use. This will however, of necessity, include some very small ditch-like ponds and also some which are badly overgrown by vegetation. Pond Conservation, Press Release, 23/09/11, p.2, defines ponds as: 'water bodies between 25 sq. m. and 2 ha. in area which may be permanent or seasonally dry'.
4 O.G.S. Crawford, *Archaeology in the Field* (London, 1953), pp.123–9.
5 P.H. Reaney, *The Place Names of Essex* (Cambridge, 1935).
6 J. Kemble, *Essex Place Names* (London, 2007).
7 Reaney, *Place Names of Essex*, p.165.
8 Ibid., p.517.
9 Crawford, *Archaeology in the Field*, p.130.
10 A.N. Clark, *Penguin Dictionary of Geography* (London, 1998), p.315.
11 *The Concise Oxford Dictionary* (Oxford, 2001), p.1111.
12 Worldwide it is estimated that there are 300 million standing water bodies (lakes and ponds), Pond Conservation, Press Release, 23/09/11.
13 Rackham, *History of the Countryside*, p.346.

14 W. Harrison, *The Description of England*, ed. G. Edelen (Cornell U.P., 1968); Rackham, *History of the Countryside*, p.3.

15 H.L. Gray, *English Field Systems* (Harvard, 1915); G.C. Homans, *English Villagers of the 13th Century* (Harvard, 1941), pp.12–21; B.K. Roberts & S. Wrathmell, *An Atlas of Rural Settlement in England* (London, 2000).

16 There are good historical reasons for this (and some modern ones) involving landownership, organisation, management, stage of farming technology and status. See R. Phillips and R. Bazett, *Ages in the Making* (Poole, 1974).

17 Richard Gray, 'Rare Freshwater Species Re-emerge After Ponds Spring up across Britain', *Sunday Telegraph*, 25/07/10.

18 Rackham, *History of the Countryside*, p.345.

19 Circular hollows caused by melting of large detached masses of ice in glacial moraine. See: J. Whittow, *Penguin Dictionary of Physical Geography* (London, 1984), p.293.

20 Seen in East Walton Common, Narborough, Norfolk.

21 E.N. Buxton, *Epping Forest* (London, 1898), pp.34–6.

22 A. Cooper, *The Long Furrow* (Ipswich, 1989), pp.15–16. See also C.A. Baker, 'Late Devensian periglacial phenomena in the upper Cam Valley, north Essex', *Proceedings of the Geologists Association*, 87 (1976), pp.299–305. Newport Pond had been reclaimed and was dry ground by 1600, Bonhunt Water remained a marsh until recently.

23 F.G. Emmison, *Elizabethan Life, Home, Work and Land* (Chelmsford, 1976), pp.287, 296, 56; O. Rackham, *The Last Forest* (London, 1998), pp.25, 76, 91, 134.

24 F.A. Aberg (ed.), *Medieval Moated Sites* (CBA Research Rep. 17, 1978).

25 J. Hunter, *The Essex Landscape* (Chelmsford, 1999), p.128.

26 J. Hedges, 'Essex Moats', in Aberg (ed.), *Medieval Moated Sites*, pp.63–70.

27 C. Taylor, *The Cambridgeshire Landscape* (London, 1973), pp.124–9.

28 1764–1841. See: S. Chapman and V. Scott, 'Excavations at Houchins Farm, Coggeshall, 1996', *Essex Archaeol. Hist.*, 3rd ser., 28 (1997), p.292.

29 Emmison, *Home, Work and Land*, p.289; Kemble, *Essex Place Names*, p.141.

30 M. Burchell (ed.), 'Recent Work in Essex by the RCHM', *Essex Archaeology* (*Essex Chronicle* supplement), 15, 1998, p. xvi. See also P. Ryan, 'Woodham Walter Hall – its site and setting', *Essex Archaeol. Hist.*, 3rd ser., 30 (1999), pp.178–95 for an alternative explanation of moat, ponds and earthworks.

31 H. Benham, *Some Essex Water Mills* (Essex County Newspapers, 1976), p.96–8. See also: C.C. Thornton, *Bourne Mill* (National Trust, unpublished report, 2007); T. Rowley, *The Shropshire Landscape* (London, 1972), p.93: 'ponds are one of the most versatile features of the landscape'; J. Bettley and N. Pevsner, *The Buildings of Essex* (New Haven & London, 2007), p.299.

32 Benham, *Some Essex Water Mills* pp.46–7, 77: Baddow Mill had an eel 'keep' pool (p.45). See also Emmison, *Home, Work and Land*, p.279 – 'the right to take fish in the sluice'.

33 Tide mills are found at Battlesbridge, Brightlingsea, Fingringhoe, Heybridge, Kirby, Mersea, Ramsey, Stambridge, St Osyth, Thorrington, Wakering and Walton-on-the-Naze. Other tide mills may have been located at Beaumont, Goldhanger, Leigh, Little Oakley, Tollesbury and Tolleshunt D'Arcy: Benham, *Some Essex Water Mills*, p.111.

34 T. Rowley, *Villages in the Landscape* (London, 1978), pp.191–2; R. Muir, *The Villages of England* (London, 1992), p.82; M. Leach, 'Many a Luce in Stewe, Medieval Fishponds in Essex', in T. Way (ed.), *Living Landscapes, Animals in Parks and Gardens of Essex* (Colchester, 2010), pp.5–11. Dammed cress bed 'ponds' occur in Hampshire (Alresford) and also Stansted Mountfitchet.

35 F. Cowell, 'The Designed Landscape', in L.G. Green (ed.), *The Essex Landscape. In Search of its History* (Chelmsford, 1999), pp.51–6; S. Turner, 'Moor or Less? An assessment of the implementation and survival of Humphrey Repton's recommendations concerning Moor Hall in Harlow, Essex', in T. Way (ed.), *Paper Landscapes* (Essex Gardens Trust, 2005), pp.25–34. Many Public Gardens have ornamental ponds (Braintree, Halstead and Chelmsford – a result of earth extraction for the railway embankment of 1842). Water Maze ponds also exist, see: A. Fisher & D. Kingham, *Mazes* (Princes Risborough, 1991), p.27.

36 A. Heaton, *Duck Decoys* (Princes Risborough, 2001), p.4.; W.E. Glegg, 'The Duck Decoys of Essex', *Essex Naturalist*, No. 27, part VII (1943), pp.191–207; W.E.Glegg, 'The Duck Decoys of Essex', *Essex Naturalist*, No. 28, part VIII (1944), pp.211–25; D. Strachan and C. Ingle, 'Essex Mapping Project, 1996', *Essex Archaeol. Hist.*, 3rd ser., 28 (1997), pp.190–5; In Shropshire pipes are called 'flues': Heaton, *Duck Decoys*, p.10; In Holland, calling ducks were used: E. Clack, *Spy in the Sky* (Airborne Art, 1992), p.77. In Norfolk decoy dogs or 'pipers', coloured like a fox, enticed and frightened the ducks; Heaton, *Duck Decoys*, pp.16–20.

37 C.R. Bristow, *The Geology of the Country Around Chelmsford*, Sheet Memoir 241 (H.M.S.O., 1985), p.93.

38 H. Benham, *Essex Gold* (Chelmsford, 1999).

39 D. Strachan and C. Ingle, 'Essex Mapping Project, 1995', *Essex Archaeol. Hist.*, 3rd ser., 27 (1996), pp. 253–5.

40 H. Grieve, *The Great Tide* (Chelmsford, 1959), p.6. See also OS 1:25,000 Explorer Map, Sheet 176 (1998), grid refs. TR023914, TR038936.

41 Dew ponds are circular, saucer-like, shallow artificial ponds found on chalk lands and some limestones from East Yorkshire to Wiltshire in the south-west and Sussex in the south-east. Although thought by some to be Neolithic in age, most were made in the 1800s by lining natural depressions in the Downland hill tops with puddled clay and small stone blocks to form a watertight and firm animal foot-proof base. They are fed by rain, run-off, fog and dew, and are used by sheep and cattle. Dew ponds are still occasionally built today (perhaps more accurately repaired or restored): Rackham, *History of the Countryside*, p.368; In the early 20th century a clay lowland farmer near Horsham (Sussex) built a stone-floored

pond for washing horses legs to prevent farcy, see: T. Quinn, *Life on the Old Farm* (London, 2011), p.179.

42 M.R. Connop-Price, *Pembrokeshire: The Forgotten Coalfield* (Ashbourne, 2004). A.K. Astbury, *Estuary: Land and Water in the Lower Thames Basin* (London, 1980); Crawford, *Archaeology in the Field*, p.234; T.V. Holmes and W.Cole, 'Report on the Denehole Exploration at Hangman's Wood, Grays', *Trans. Essex Field Club*, Nov. 1887, pp. 225–30. These pits were also visited by the Kent Underground Research Group in 1978 (Kent deneholes occur separately). They have caused house subsidence in Grays (BBC Radio Essex, broadcast 07/12/12).

43 Astbury, *Estuary*, p.256; G.E. Fussell, *Farming Techniques from Prehistoric to Modern Times* (Oxford, 1966), pp.73–4, 89–91. See also: Geoffrey Chaucer, *The Miller's Tale, Canterbury Tales* (London, 1996), p.115, 'He walked in the feeldes for to prye. Upon the sterres, what there shold bifalle, Till he was in a marl-pit y-falle – He saw not that!'; Lord Ernle, *English Farming, Past Present and Future* (London, 1912, 1961), p.174 (Ernle, p. 94 cites J. Fitzherbert (1523) deploring the disappearance of marling, and G. Markham's *Inrichment of the Weald of Kent* (1625) – 'trees of 200–300 years old may be seen in innumerable spent marl pits'); Rackham, *History of the Countryside*, p.371, however see Quinn *Life on the Old Farm*, p.197; C.R. Bristow, *Geology of the Country Around Chelmsford*, p.92; R.H. Allen & R.G. Sturdy, Soils in Essex 111, Sheet TL71 Little Waltham (Harpenden, 1980), p.27; Emmison, *Home, Work and Land*, p.35.

44 Some chalk blocks have been extracted from quarries in the harder Chalk Rock which outcrops on the valley sides from Littlebury to Great Chesterford. It has been used mainly for interior walls and barns. The better 'clunch' from the Totternhoe Stone (Burwell Rock), outcrops further north in Cambridgeshire. Flint was a by-product. Chalk was also used for lime-wash and whiting – again chiefly for interiors and barn walls.

45 Astbury, *Estuary*, p.236 cites Arthur Young (1767), on the road from West Tilbury to Billericay, 'the eternally meeting with chalk-waggons'. He also cites P. Muilman (1771), 'chalk from Stifford was carried by farmers some thirty miles inland'; J. Booker, *Essex and the Industrial Revolution* (Chelmsford, 1974), pp.176–7. See also Chafford Gorges Nature Park booklet.

46 Emmison, *Home, Work and Land*, pp.254, 287. David Andrews believes wattle and daub pits may have been a major cause of ponds in this area (personal communication 07/07/13); J. McCann, *Clay and Cob Buildings* (Princes Risborough, 1995); A. Clifton-Taylor, *The Pattern of English Building* (London, 1972), p.209. There may be some confusion here with Septaria (David Andrews, pers. comm., 07/07/13); Astbury, *Estuary*, p.221; Reaney, *Place Names of Essex*, pp.481, 612. The name was also recorded in London in 1395: McCann, *Clay and Cob Buildings*, p.13; Astbury, *Estuary*, p.221. See also Clifton-Taylor, *The Pattern of English Building*, p.293: 'between the wars two council housing schemes in southern Norfolk were carried out in it (clay lump)'.

47 Emmison, *Home, Work and Land*, pp.87, 287; Lord Ernle, *English Farming*, p.367; Stephen Switzer, 1727, advocated potter's clay drainage pipes made by machine. In 1843 John Reade produced a cylindrical clay drainage pipe. Thomas Scragg patented a clay drainage pipe-making machine in 1845.

48 P. Ryan, *Brick in Essex: From the Roman Conquest to the Reformation* (Pat Ryan, 1996); P. Ryan, *Brick in Essex: The Clayworking Craftsmen and Gazetteer of Sites* (Pat Ryan, 1999); A. Corder-Birch, *Our Ancestors were Brickmakers and Potters* (A.Corder-Birch, 2010); W. Rodwell, 'Holy Trinity Church, Bradwell-juxta-Coggeshall: a survey of the fabric and appraisal of the Norman Brickwork', *Essex Archaeol. Hist.*, 3rd ser., 29 (1998), pp. 100–05; T. Gurling, 'Luminescence Dating of Medieval Brick', E.H.B.G., Newsletter, No. 8 (Nov. 2009), pp.3–6; P.G.H. Boswell, *The Geology of the Country around Ipswich*, Memoir Sheet 207 (H.M.S.O., 1927), p.95; G. Lucy, *Essex Rock* (Essex Rock and Mineral Soc., 1999), p.94; Emmison, *Home, Work and Land*, pp.86; 82. A. Corder-Birch, *A Pictorial History of Sible Hedingham* (Halstead, 1996), p.3.

49 OS, 1:25,000, Explorer Map Sheet 174 (2000), grid ref. TL469034.

50 Emmison, *Home, Work and Land* (1976), p.287 ('digged sand in the highway'); Rackham, *The Last Forest*, p.128; Buxton, *Epping Forest*, p.166 (a protest against the Highway Authorities honey-combing gravel, 'The ultimate result of this process was a noxious black swamp with unpleasant exhalations'); Booker, *Essex and the Industrial Revolution*, p.216 ('early concrete walls which E.H. Bentall built round Heybridge' (1860s?)); D. Osborne, *Halstead and Colne Valley at War 1939–45* (Halstead and District Local History Soc., 1992), p.19 (reference to Ridgewell Airfield, 'over 1 million cubic yards of concrete used'); R.D. Lake and D. Wilson, *Geology of the Country around Dunmow*, Memoir Sheet 222 (H.M.S.O., 1990), pp.15, 42.; D. Corke, *The Nature of Essex* (Buckingham, 1986), p.122.

51 D.G.A. Whitten with J.R.V. Brooks, *Dictionary of Geology* (London, 1972), p.103, 'Fossilised faecal pellets of fish, reptiles, birds or mammals. They are generally phosphatic in character' (Greek, Copros – dung); Taylor, *The Cambridgeshire Landscape*, p.242.

52 J. Smith, *Essex and the Sea* (Chelmsford, 1970), figure 33. Also Dorset and the Yorkshire coast; M. Leach, report in *E.A.H. News* (Spring, 1999), pp.7–8, taken from *Industrial Archaeology News* (Spring, 1999). One works at Whitstable had seven tanks over 100 feet long; Lucy, *Essex Rock*, p.96.

53 P. Wormell, *Essex Farming 1900–2000* (Colchester, 1999), p.65; P. Rusiecki, 'Under Fire (Air Raids in Essex)', Hist. Assn. Lecture handout, 05/12/09. Some 2,700 buildings were demolished in extra-Metropolitan Essex between April 1940 and April 1945, and nearly 15,000 badly damaged, overall 139,000 were affected; G. Smith, *Essex Airfields in the Second World War* (Newbury, 1996). See also K. Boddie, 'World War Two Airfields in Essex', *EA*, 13 (1996), p.vi, and R.D. Brown, *East Anglia 1941* (Lavenham, 1986), p.85, 'It represented one of the biggest civil engineering tasks ever undertaken in the United Kingdom'; M. Burchell (ed.), Secrets of the Bombing Decoys', *Essex Past and Present*, 1 (1999),

pp. iv–v. See also F. Nash, 'World War Two Defences in Essex Project', *Essex Archaeol. Hist.*, 3rd ser., 34 (2003), pp. 261–2, and R.D. Brown *East Anglia 1941*, pp.35–7; R.D. Brown, *East Anglia 1940* (Lavenham, 1981), pp.82, 98–100, 135, 139, 116; Osborne, *Halstead and Colne Valley at War 1939–45*, p.49. See also M. Learner (ed.), *Broomfield 94* (Broomfield Parish Council, 1994), p.49; R.D. Brown, *East Anglia 1945* (Lavenham, 1994), pp.5–7. Raids over the Eastern Counties did not stop until the late spring of 1945 (March 20th for bombing and March 27th for V-2s). See R. Mills, *Daily Mail* 26 July 2013, p.76.

54 The study is based on the modern parish boundary of Broomfield.

55 Rain was recorded at Broomfield on only five days in the two month period.

56 Some species grow like this e.g. Hazel (*Corylus avellana*).

57 Applicant Charles Church (Essex) Ltd – Mr A. Dutton, 20/09/11.

58 C.P. Chatwin, *East Anglia and Adjoining Areas*, British Regional Geology (H.M.S.O., 1961), p.67.

59 Bristow, *Geology of the Country Around Chelmsford*, pp.1–2, 93–4, summaries.

60 These are local water tables closer to the surface than the normal area water table caused by an impervious lens or bed in an essentially pervious rock sequence, e.g. clay lenses in sandstones.

61 For a detailed history of these sites and families see, K. Searles, *Broomfield – The Churchyard Fence List – The People and the Buildings*, Volumes I–III, copy in ERO, T/P 774.

62 J. Smith, 'Essex Record Office sources for medieval archaeology', in O. Bedwin (ed.), *The Archaeology of Essex, Proc. of the Writtle Conference* (Chelmsford, 1996), p.148. Ponds often marked sites of older buildings – especially where cellars or crypts were involved – Stanstead Hall (Greenstead Green): J. Hawkins, book review, Beeleigh Abbey, *Essex Journal*, 48, II (2013), p.33. However there may be some relation between pond size and age of building (David Andrews, pers. comm. 07/07/13).

63 K. Searles, 'The Manor of Broomfield Hall', *Broomfield 79* (BPC, 1979), pp.13–14. The once oval pond has become overgrown, complex in shape and dominated by a large many boled willow island: K. Searles, 'Broomfield 1894 – The Place', *Broomfield 1994* (BPC, 1994), p.5. See also J. Weller, *History of the Farmstead* (London, 1982), pp.133–9, for horse engines; Booker, *Essex and the Industrial Revolution*, pp.33–5; S. Wade-Martins, *The English Model Farm* (London, 2002), pp.76–7, 222.

64 D. Daniel, 'The Manor of Belstead Hall', *Broomfield 85* (BPC, 1985), pp.42, 37; K. Searles, 'Early Days at Belstead Hall', *Broomfield 81* (BPC, 1981), p.57.

65 B. Watkin, 'Parsonage Farm, School Lane, Broomfield', in E.A.H. News (Summer 2011), pp.12–14. See also D. Daniel, 'The People at the Parsonage', *Broomfield 85* (BPC, 1985), pp.50–7. Henry Marriage in K. Searles, *Broomfield – The Churchyard*, Vol. III, No. 26, pp. 111–13, copy in ERO, T/P 774. A ha-ha is 'a ditch with a wall on its inner side below ground level, forming a boundary to a park or garden without interrupting the view', *The Concise Oxford Dictionary* (Oxford, 2001), p. 640.

66 K. Searles, 'Priors', *Broomfield 74* (BPC, 1974), p.40.

67 See photograph of the Old Farmhouse, Partridge Green in *Broomfield 83* (BPC, 1983), p.59.

68 K. Searles and J. Knowles, 'Some Notes on Staceys Farm Broomfield', *Broomfield 76* (BPC, 1976), pp.46–7; Information from Mr and Mrs D. Pinkerton, present owners.

69 K. Searles, 'Scravels', *Broomfield 81* (BPC, 1981), pp.38–43; K. Searles, *Broomfield – The Churchyard*, Vol. III, Part I, p. 69, copy in ERO, T/P 774.

70 S.P. Beamon & S. Roaf, *Ice Houses of Britain* (London, 1990).

71 P. Morant, *The History and Antiquities of the County of Essex* (1768); T. Wright, *The History and Topography of the County of Essex* (1836), both quoted by Daniel, 'The People at the Parsonage', pp.54–6.

72 ERO, D/Q 11/114, Map of the Parsonage by Joseph Dawson, 1756.

73 K. Searles, *Broomfield – The Churchyard*, Vol. III, No. 26, p.112, copy in ERO, T/P 774, based on information from Henry Marriage. See also: ERO, D/Q 11/114.

74 Watkin, 'Parsonage Farm, School Lane, Broomfield', p.14.

75 Beamon and Roaf, *Ice Houses of Britain*, pp.117–124, 85–93.

76 A. Winchester, *Discovering Parish Boundaries* (Princes Risborough, 1990); M. Aston, *Interpreting the Landscape* (London, 1985), p.42; Rackham, *History of the Countryside*, p.352. See also Crawford, *Archaeology in the Field*, p.123.

77 Emmison, *Home, Work and Land*, p.286 (from G. Eland, *At the Courts of Great Canfield* (Oxford, 1949)), p.285.

78 Henry Marriage, 'Some Early Farm Machinery in Broomfield', *Broomfield 81* (BPC, 1981), p.61 – a well-known saying. Also pers. comm. M. and R. Pumphray, East Anglian Traction Engine Society, 'water was needed every two hours'; Cooper, *Long Furrow*, p.110.

79 OS, 1:25, 000, Explorer Map Sheet 183, grid refs. TL702104; TL713098.

80 Emmison, *Home, Work and Land*, p.285.

81 K. Searles, *Broomfield Times*, 26 (Summer 2011), p.3.

82 Broomfield Parish Office records.

83 OS, 1:25,000, Explorer Map Sheet 183, ref. TL701097.

84 Aston, *Interpreting the Landscape*, p.43 – a parallel with parish boundaries. See also D. Shipman, 'Broomfield 1086', *Broomfield 86* (BPC, 1986), pp.21–4 and map p.25.

85 H.S. Toms, 'Ancient Ponds near Cissbury', *Sussex County Mag.*, Vol. 1, part I (1927), p.406.

86 Emmison, *Home, Work and Land*, pp.283, 285.

87 P. Hindle, *Roads and Tracks for Historians* (Chichester, 2001), pp.56–70.

88 W. Hibbitt, *Writtle Local History Trail* (Writtle P.C., 1995), item 2.

89 D. Jordan, 'Broomfield – As I Remember It', *Broomfield 1994* (BPC, 1994), p.51.

90 K. Searles, 'Broomfield Bridges', *Broomfield 81* (BPC, 1981), p.63.

91 Mrs Burrell, 'Reminiscences', *Broomfield 1986* (BPC, 1986), p.41. See also E. Emberson, *Broomfield Times*,

8 (Winter 2006), p.2; pers. comm., J. Latham, N. Wiffen. This pond and one or two others seem to have had single or double plank 'jetties' providing access to clearer, deeper and cleaner water for a variety of uses or as a focus of interest.

92 For a discussion of the origin of these terms: Emmison, *Home, Work and Land*, p.185; Rackham, *The Last Forest*, p.17; Reaney, *Place Names of Essex*, pp.79, 155; *Towns of Essex* (Chelmsford, 1971), Item 13. Old German weg (way) may be an alternative and in some cases 'weir' (a barrier or sill) may be appropriate. Examples occur in Writtle, Maldon, Epping and Hatfield Forest.

93 T. Williamson, *Shaping Medieval Landscapes* (Macclesfield, 2003), p.175. The Marriage family cropped Parsonage Green for hay in the 1890s: K. Searles, *Broomfield 1994* (BPC, 1994), p.6.

94 C. Thornton & J. Crellin, 'The Camping Close and the Decline of Traditional Football in Essex before 1860', Essex Local History Day lecture, ERO, 23/04/05; *Daily Telegraph* 18/05/13, Weekend, Balls Pond Road, NC London. *Daily Mail* 09:07:13, p.60, Moonraking ponds.

95 Rackham, *History of the Countryside*, p.344. See also Williamson, *Shaping Medieval Landscapes*, p.118; R. Liddiard, 'Castles and Settlement Patterns in East Anglia', E.H.B.G. Newsletter, No. 6 (August 2008), p.3.

96 Askham Richard, North Yorkshire for sale at present, Edward Malnik, *Daily Telegraph* 06/11/11, p.9. Mistley Pond is an 18th-century example and the present Writtle Pond owes much to the local brewery in late Victorian times. See also D. Daniel, 'Broomfield Cottage Gardeners' Society', *Broomfield 1984*, p.45. Their show held at the Parsonage had a Showman's engine supply and Greasy Pole both of which used the ponds.

97 S. Browning, *Broomfield Times*, 21 (Spring 2010), p.2; 32 (Winter 2012), p.2.

98 J. Marriage, 'Broomfield and the Bombs', *Broomfield 84* (BPC, 1984), pp.40–1. A circular crop mark (Google) may indicate its position: K. Newman, 'The ponds of Broomfield', Broomfield *Times*, 31 (Autumn 2012), p.4.

99 Benham, *Some Essex Water Mills*, pp.13, 30. See also J. Vince, *Discovering Watermills* (Princes Risborough, 1987), pp.8–11.

100 C.P. Freeman, 'Mill House Memories – Croxtons', *Broomfield 85* (BPC, 1985), p.71; K. Searles, 'Broomfield Mills', *Broomfield 78* (BPC, 1978), pp.38–9.

101 Rackham, *History of the Countryside*, pp.348, 373. See K. Allison, *The East Riding of Yorkshire Landscape* (London, 1976), p.56, 'Some Wold villages had, and still have, two ponds, one for domestic water and one for the use of animals'.

102 Wormell, *Essex Farming*, p.78.

103 Freeman, *Mill House Memories – Croxtons*, p.71.

104 Daniel, 'The Manor of Belstead Hall', p.42. See also E. Hope Wiseman, 'Memories', *Broomfield 84* (BPC, 1984), p.33.

105 K. Searles, *Broomfield – The Churchyard*, Vol. III, No. 22 p.20, copy in ERO, T/P 774.

106 K.J. Newman, 'The Glacial Drift of Eastern England: Its Bearing on Water Supply', *Survey*, Vol. 5, No 2 (Nottingham University, 1955), pp.45–52.

107 Allen and Sturdy 1980, Soils in Essex 111, pp. 5, 144. See also Wormell, *Essex Farming*, p. 287; P. Eden, 'Weather Watch', *Sunday Telegraph*, 11/08/11; Evelyn Cox, *The Great Drought of 1976* (London, 1978).

108 Corke, *The Nature of Essex*, p.122. Flexible piping and field tanks have superseded ponds and the decline in mixed and dairy farming has also reduced their importance.

109 Ibid., pp. 30, 22.

110 M. Pattinson, Letters, *Daily Telegraph*, 07/08/11. See also: BBC Radio 4, *Farming Today This Week* programme broadcast 01/12/12 concerning pond breaks (brakes?), and a personal communication 21/12/12 that current research at Cranfield and Nottingham Universities has also touched upon a role for field-edge ponds in reducing land surface run-off flooding. The Somerset Levels floods (Jan. – Feb. 2014) have also focused attention on these sustainable drainage systems (SUDS). Conversely, parts of flood control basins have become permanent ponds at Haverhill (Suff.).

111 Pond Conservation, Press Release, www.pondconservation.org.uk/about us/news (23/09/11).

112 Pond Conservation, Million Ponds Project, www.pondconservation.org.uk/million ponds (23/09/11).

113 Clark, *Penguin Dictionary of* Geography, p.229.

114 D. Bridgland, *Geologist's Association Mag*., Vol. 10, No 3 (2011).

115 R. Hartshorne, *The Nature of Geography* (Lancaster, Pennsylvania, 1939), pp.38–44, 64–6, 134–6, 460–9. See also R. Hartshorne, *Perspective and Nature of Geography* (London, 1960), pp.29–30, 173–82; K.J. Newman, 'Geography: An Introduction to its Philosophy', Fitzwilliam College, Cambridge 1956 (unpublished P.G.C.E. dissertation), pp.5–28.

116 Pond Conservation, Press Release, 23/09/11, p.1.

117 A basic general introduction to pond life can be obtained from J. Clegg, *The Observers Book of Pond Life* (London, 1956). More advanced are: T.J.C. Beebee, *Pond Life*, British Natural History Series (Linton, 1992); G.K. Reid, *Pond Life* (New York, 2001). For an older, and more specific pond study see M.C. Cooke, 'Pond Life of Epping Forest', in Buxton, *Epping Forest*, pp.98–103.

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Archaeology in Essex 2011

Edited by A. Bennett

This annual report, prepared at the request of the Advisory Committee for Archaeology in Essex, comprises summaries of archaeological fieldwork carried out during the year. The longevity of many projects often results in a lengthy post-excavation and publication process. The publication of these summaries therefore provides a useful guide to current archaeological research, and the opportunity to take an overview of significant advances. This year 98 projects are reported here (Fig. 1).

Sites are listed alphabetically by parish; the directors of excavations, organisations involved and information regarding the location of archives, including finds, are listed where known. Projects continuing from previous years are indicated by reference to previous summaries in the relevant 'Archaeology in Essex .... '.

Contributors are once more warmly thanked for providing information. The illustration is by A. Bennett.

The original summaries, and any associated limited circulation reports, have been added to the Essex Historic Environment Record (EHER) held by the Historic Environment Branch, at Essex County Council, Environment, Sustainability and Highways, County Hall, Chelmsford CM1 1QH. Regarding sites in the London Boroughs of Barking and Dagenham, Havering, Newham, Redbridge, and Waltham Forest enquirers should contact the Greater London SMR, English Heritage London Region, 1 Waterhouse Square, 138–142 Holborn, London, EC1N 2ST.

PROGRESS IN ESSEX ARCHAEOLOGY

Introduction

The total number of summaries submitted to the HER was 133 this year, 98 of which are reported here. This includes 43 evaluations and 26 excavations. This year four projects have been carried out by local societies. Only the most significant summaries are mentioned in the following period paragraphs.

Prehistoric

Environmental evidence of the Middle Holocene came from East Ham (37, 38). Palaeochannels were found at Belhus Cutting (70) and at Southend (83). Pits containing pottery and worked flint of the late Neolithic and Early Bronze Age were found at South Ockendon (70). Further parts of the Neolithic enclosure were recorded at Springfield Lyons, consisting of a curving alignment of large pits (86). A single cremation dating to the Bronze Age was recorded at South Ockendon (70). Bronze Age occupation evidence came from Southend Airport (79, 84). At Springfield Lyons, post-holes and stake-holes may constitute the remains of a small, slightly squat, roundhouse of probable Late Bronze Age date (86). Two Middle Iron Age enclosures were found on the Colchester Garrison site, together with a new stretch of Colchester Dyke (20). Evidence of various phases of late Iron Age field systems and settlement were revealed at Romford (80). At Little Easton Quarry (67) a sequence of four Late Iron Age/early Roman ditches containing a range of local and imported Gallo-Belgic pottery was found. Nearly 500 sherds of Late Iron Age and Roman pottery, many derived from disturbed burials, have been recovered at Wivenhoe (95).

Roman

Part of a Roman red hill was excavated at the RSPB Bowers Marsh Nature Reserve (5). A large hoard of Roman coins was found in a pot at the Colchester Garrison site (20). Part of the Roman temple precinct wall was discovered in Colchester (23). The Northern Growth Area of Colchester (25) revealed a Roman cremation burial, and two cremations came from part of the Lexden cemetery (29). Various Roman building remains came from other sites in Colchester (26, 33–36). Roman remains were also found in Great Chesterford (44) and Great Dunmow (46, 49).

Saxon

A residual sherd of possible Saxon pottery came from Chadwell St Mary (12). Work at Hatfield Broad Oak (54) revealed a late Anglo Saxon phase of activity on the site. Early medieval remains were identified at Kirby-le-Soken (60). A quantity of sherds of Late Saxon St Neots-type pottery came from Wicken Bonhunt (94). Environmental evidence came from Wixoe (96).

Medieval

Part of the garden/yard of a 13th-/14th-century roadside settlement was excavated at Coggeshall (17). The site of the Abbey church of St John's has been discovered in an evaluation on the site of the Colchester Garrison Officers Club (22). The remains of an earlier, possibly medieval, cobbled surface along with sherds of medieval pottery, below the existing cobbled surface were uncovered in Finchingfield (40). Monitoring work was carried out around the former 12th-century church at Little Oakley (69). Parts of the mid-14th-century inner bailey curtain wall were recorded in Saffron Walden (81, 82). The remains of late medieval buildings were found in Tollesbury (89).

Post-medieval

A section of the post-medieval sea wall was recorded at Bowers Gifford (6). The remains of post-medieval brick and tile kilns were recorded in Braintree (8) Chigwell (15), Mount Bures (72), and Wormingford (98). Building foundations of earlier post-medieval houses were found at Fryerning (41). Post-medieval burials were encountered during work at St Peter's Church, Goldhanger (42) and St John's Church, Little Leighs (68). Late post-medieval features were recorded at Hatfield Peverel (55). A 16th/17th-century possible cesspit and other features were discovered at Ramsden Heath (77). Evidence 17th-century pottery manufacture came from Stock (87). Brick-built structures and occupation surfaces of 18th-century date were recorded in Walthamstow (92). Further work has taken place on recording the suspected Tudor hunting lodge site at Wormingford (97).

1 Basildon, Elmbrook Campus Site, Church Road (TQ 7147 8962)

T. Ennis and P. Sparrow, E.C.C. F.A.U.

An archaeological investigation was carried at the former Pioneer School site, in advance of residential development.

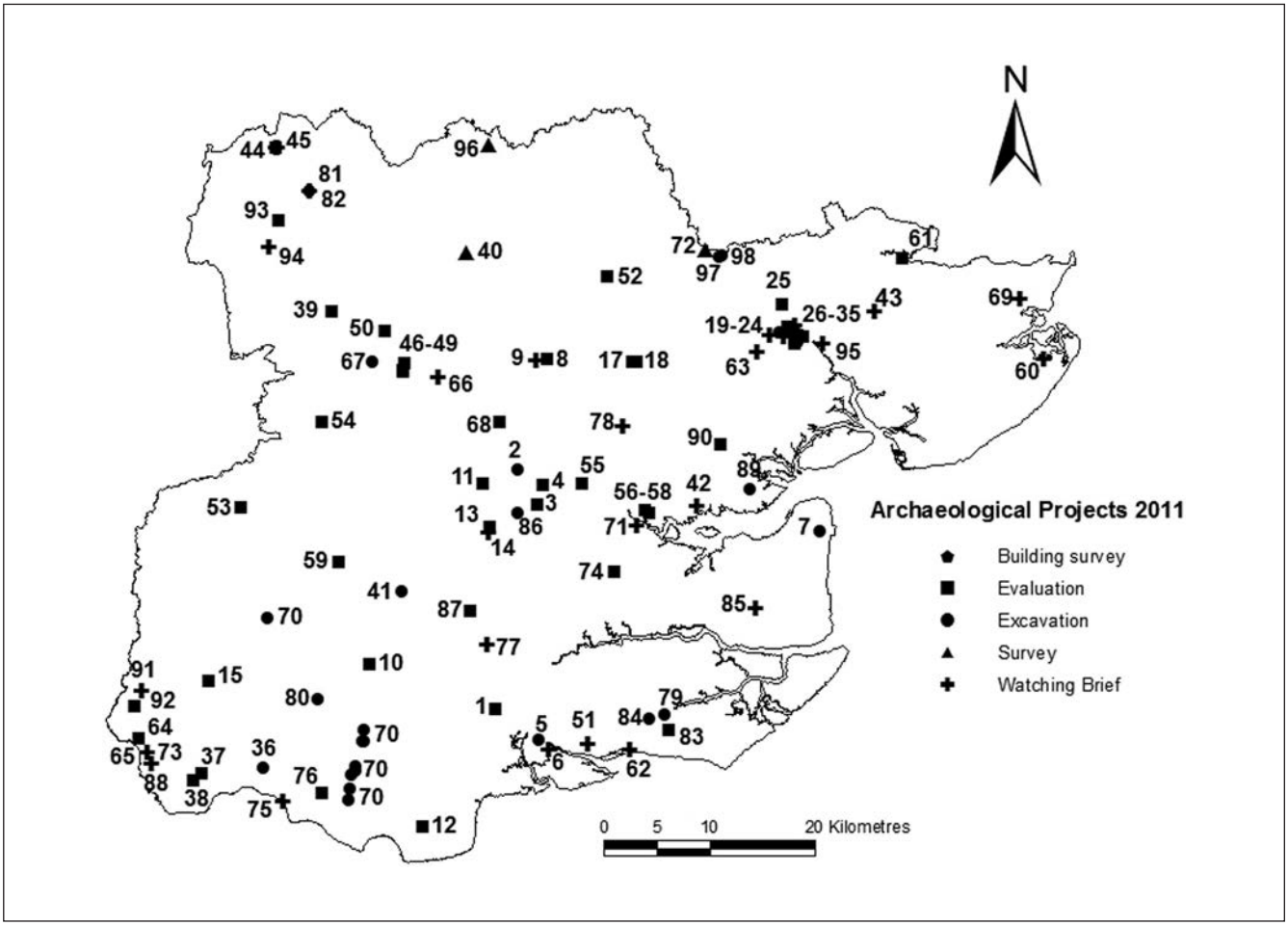

FIGURE 1: 2011 Archaeological projects

The 0.7ha development area was located immediately to the west of the site of a medieval manor house and moat known as Botelers (SAM Essex 76, EHER 7070). Nine evaluation trenches were excavated covering a total of 306 square metres. Archaeological remains of prehistoric and post-medieval date were identified in the evaluation trenches along with two clay-filled geological features and numerous areas of modern disturbance. No remains were observed during the subsequent monitoring of the demolition of the school buildings and site clearance works. A large irregular feature, either a single, large pit or perhaps two merging features, contained small sherds of Iron Age pottery. Further unstratified Iron Age pottery was also recovered from the same trench. The partial remains of two brick wall footings were recorded in another trench. Both were constructed from bricks of late 18th- to mid 19th-century date bonded with lime mortar and are likely to be the remains of former farm buildings shown on 19th- and 20th-century Ordnance Survey maps of the site. An east/west aligned ditch and gravel surfacing were probably the remains of a former trackway also depicted on historic mapping. No remains or finds of medieval date were identified despite close proximity to the moated enclosure.

Archive: S.M.
Report: F.A.U. Report 2356

2 Boreham, Bulls Lodge Quarry (TL 7358 1222 and TL 7382 1220)

T. Ennis, E.C.C. F.A.U.

Archaeological monitoring was carried out on a 1.85ha area of topsoil stripping prior to gravel extraction at the former WW2 airfield. A large oval medieval pit, more than 5m long and 1.4m deep was found to contain later 12th-century pottery, baked clay/daub, oyster shell and animal bone. The continuation of a north-south aligned post-medieval ditch, previously recorded to the south and depicted on historic OS mapping, was also investigated. To its east, a large in-filled pond containing occasional fragments of modern brick and a second ditch, aligned east/west, appeared to have been in-filled as part of the airfield construction.

Archive: Ch.E.M.
Report: F.A.U. Report 2435

3 Boreham, Boreham Hall, The Chase (TL 7534 0895)

T. Ennis, E.C.C. F.A.U.

An archaeological evaluation was undertaken at Boreham Hall in advance of the construction of two new extensions to the existing house. The current house, which is believed to date from the 16th century with 17th-century and later extensions, is constructed on a medieval manorial site that is suggested to have pre-Conquest origins, while a linear body of water to the north of the house suggests that the manor house may have been situated within a moated enclosure.

Trench 1 produced no archaeological finds or features, having been heavily disturbed by services. In trench 2, on the north side of the house, were the remains of an L-shaped brick wall of late 18th- or early 19th-century date bonded by lime mortar. To the north was a sequence of modern deposits overlying pebbly clay silt which sealed two potential feature fills. Finds were recovered from the latter fill including fragments of animal bone, oyster shell and three sherds of medieval pottery dating to the *c*.13th century.

Archive: Ch.E.M.
Report: F.A.U. Report 2286

4 Boreham, Land at rear of Owls, Waltham Road (NGR TL 7600 1083)

T. Schofield, and P. Thompson, A.S.

An evaluation was conducted in support of a planning application for a residential care development of up to 184 care suites. Cropmarks have been identified on the site (EHER 8956). The tithe map records that the site was originally two fields, the northern one named Hoppit, and that there has been extensive quarrying north of the site. The latter field was used as a rifle range in the early 20th century. Two trenches were excavated in an 'L' shaped configuration positioned over four linear cropmarks. A prehistoric pit (early Iron Age) and an undated ditch were recorded, neither corresponded with the cropmark plot. The cropmarks orientated north-east/south-west may relate to the rifle range recorded on the 3rd edition 1:2500 ordnance survey map (date). It is possible that some of the remaining cropmarks were caused by naturally-occurring geological features, or variations in the natural drift geology.

Archive: Ch.E.M.
Report: A.S. Report 3834

5 Bowers Gifford, RSPB Wetland Nature Reserve Car Park Site, Bowers Marsh (TQ 7553 8670)

M. Germany, E.C.C. F.A.U.

Part of a Roman salt-production site, or saltern, was investigated in advance of the construction of a new visitor car park. Excavation was minimal and largely confined to the drainage trenches which were the only elements of the scheme works to intrude upon the archaeological deposits. Recorded features comprised a complex sequence of ditches, pits, post-holes, red earth layers and soil dumps. Numerous pieces of briquetage and baked clay, including fire bars, pillars and the remains of evaporation tanks or brine storage vessels, clearly indicate the use of the site for salt-winning by means of evaporating brine obtained from seawater. The presence of carbonised cereal waste indicates the use of chaff and straw as kindling or fuel in the evaporation process.

The recorded remains define five phases of activity, broadly spanning the 1st century AD to the late 4th century, and perhaps later. The site was used for salt extraction during the 1st to mid-2nd century and again in the mid-2nd to mid-3rd century, having seemingly been deliberately raised in height during the intervening period. The site then appears to have been under cultivation during the late 3rd and 4th century, salt production having presumably ceased, before tidal deposits accumulated around the northern edge of the saltern sometime during the late 4th century or possibly later.

The saltern lay at the tail end of a former creek and is one of three or more such sites in the vicinity located on the dryland/wetland edge at the *c*.2m contour line. The site is moderately-to-well preserved and appears to continue eastwards, beyond the edge of the investigation. It is very likely that further features, including hearths and perhaps buildings, survive within the un-investigated areas.

Archive: S.M.
Report: F.A.U. Report 2284

6 Bowers Gifford, RSPB Wetland Nature Reserve Tidal Exchange Structure, Bowers Marsh (TQ 7642 8579)

E. Heppell, E.C.C. F.A.U.

Archaeological monitoring was carried out during the construction of a tidal exchange structure, located on the eastern side of the reserve, to allow the regulated exchange of seawater between a saline lagoon within the reserve and Easthaven Creek. Monitoring focussed on the extant sea wall and the saltmarsh between it and the creek. No archaeological remains were identified other than the existing seawall (EHER 45783), the construction of which predates 1777. Removal of part of the wall allowed a section through it to be recorded, showing that it comprised a simple clay embankment which had been heightened in the past, presumably in response to the threat of overtopping.

Archive: S.M.
Report: F.A.U. Report 2340

7 Bradwell-on-Sea, Bradwell Wind Farm, Hockley Lane (TM 0221 0647)

M. Germany, E.C.C. F.A.U.

The footprint of the base for a wind turbine was excavated in advance of the construction of a wind farm at Bradwell-on-Sea. The turbine site was 50m north-east of a known saltern or red hill, a salt production site of presumed Roman date which had previously been subject to geophysical survey (Johnson 2005) and trial trenching (Foundations Archaeology 2006). The site was known to have been salt marsh until the medieval period, when it was reclaimed from the sea and converted to farmland.

No remains associated with the saltern were found, but a sequence of alluvial / tidal deposits over 2m thick, was recorded. Traces of a buried creek were also identified.

Archive: C.M.
Report: F.A.U. Report 2353

8 Braintree, Land off Station Approach (TL 7629 2276)

T. Ennis, E.C.C. F.A.U.

A former builder's yard, approximately 0.7ha in extent and located between Station Approach and Rose Hill, was evaluated in advance of residential development. Historically, the site was part of 19th-century brickworks. The site was widely and deeply disturbed by modern use and probable in-filled clay pits

for the brickworks. Only a single trial-trench, in the north-west of the site, contained significant archaeological remains. These comprised the fragmentary remains of a 19th-century brick kiln and a possible contemporary timber out-building, perhaps a brick-making or drying shed.

Geo-archaeological assessment determined that the natural gravels underlying the site are likely to be Kesgrave Sands and Gravels, possibly reworked downslope, but with little potential to produce Palaeolithic artefacts or Pleistocene sediments and faunal remains of the kind found nearby to the south, at the base of Skitts Hill.

Archive: Bt.M.
Report: F.A.U. Report 2404

9 Braintree, William Julian Courtauld Hospital (TL 7527 2267)

R. Clarke, O.A.E.

A watching brief on the machine-excavation of two infiltaration pits revealed a moderate quantity of pottery, some slag, tile, and a piece of burnt flint. All the pottery was dated to the Roman period, though the tile was medieval. The slag consisted of both bloomery and tap slag, suggesting some ironworking in the vicinity. The absence of animal bone, shell and other cooking or food preparation debris in these deposits perhaps indicates that these deposits do not derive from domestic activities.

Archive: O.A.E.
Report: O.A.E. Report 1234

10 Brentwood, 63–65 High Street (TQ 5946 9381)

A. Wightman, C.A.T.

The site is on the north side of the High Street. A trial-trench was excavated within the footprint of a proposed extension to a depth of 500mm below modern ground-level. Post-medieval and modern strata sealed a dark green silty clay layer containing peg-tile fragments, late medieval or post-medieval sherds, and residual Roman greyware sherds.

Archive: Ch.E.M.
Report: C.A.T. Report 593

11 Broomfield, Chelmer Valley High School (TL 7028 1095)

M. Germany, E.C.C. F.A.U.

Archaeological trial-trenching and monitoring was carried out in advance of and during the construction of three new school buildings and a netball/tennis court. The school lies 250m to the south-west of a cluster of Late Neolithic/Early Bronze Age pits and a Late Bronze Age enclosed farmstead investigated in 1992 (Atkinson 1995). A small amount of Neolithic and Bronze Age worked flint was recovered from topsoil and subsoil within the netball/tennis court site and includes a piercer, several scrapers and debitage. No archaeological remains were identified within the footprint of the new school buildings.

Archive: Ch.E.M.
Report: F.A.U. Reports 2287 and 2367

12 Chadwell St Mary, Sleepers Farm, River View (TQ 6458 7847)

P. Sparrow, E.C.C. F.A.U.

A trench-based evaluation was undertaken in advance of the residential redevelopment of former yards and depots. Part of the site was formerly occupied by a post-medieval farmstead, but no remains of this were identified in the trenches. Other than modern post-holes, areas of made-ground and various post-medieval ditches and gullies, the only significant archaeological remains were those of a single north-east to south-west aligned ditch that contained two sherds of very late medieval/early post-medieval pottery and a presumably residual sherd of possible Saxon pottery.

Archive: T.M.
Report: F.A.U. Report 2329

13 Chelmsford, 12 High Street (TL 7090 0681)

B. Holloway, H. Brooks, C.A.T.

The site is located in the historic core of Chelmsford, on the eastern side of modern High Street. Two evaluation trenches within the footprint of a proposed new extension identified a fragment of possible clay floor, a post-medieval pit, two post-medieval brick foundations, a compacted gravel surface, and a brick culvert whose function was probably to run water away from the property across the meadows towards the River Chelmer. A Roman sherd indicates some Roman-period activity in the area.

Archive: Ch.E.M.
Report: C.A.T. Report 594

14 Chelmsford, Rear of 36 Orchard Street (TL 7082 0629)

P. Sparrow, E.C.C. F.A.U.

Archaeological monitoring and recording was undertaken during groundworks for the construction of three studio apartments. The site is located within the Roman town behind medieval properties on the east side of Moulsham Street. No Roman or medieval features were present within the site area. This was largely due to disturbance by post-medieval pits and modern foundations. Two 16th-century pits were recorded, along with twelve of 18th- and 19th-century date. Small amounts of Roman pottery, Roman brick/tile and medieval pottery were recovered as residual finds in the later features.

Archive: Ch.E.M.
Report: F.A.U. Report 1736

15 Chigwell, The Bald Hind Public House, Hainault Road (TQ 4419 9228)

G. Dawkes, A.S.E.

An archaeological evaluation of three trial trenches, commissioned by CgMs, was undertaken. The earliest activity identified on the site was a 17th-century pit containing possible pottery sherd wasters and suggesting that a kiln site was in the vicinity or that wasters were buried here. A late 18th to 19th-century brick plinth was the only structural feature identified from an earlier building although worked masonry blocks recovered from the car park levelling layer may also have originated from a former 18th-century building on the site.

Archive: L.A.A.R.C.

16 Coggeshall, Marks Hall (TL 841 254)

W. J. Mallinson, C.A.G.

At the request of the Trustees of Marks Hall, a geophysical survey was carried out on the site of the Jacobean Mansion, demolished in 1950. Subsequently three trial trenches were dug on the site to evaluate the extent of the archaeology. These revealed substantial foundations and other features, including a large brick built cistern, dating to *c*.1770. Subject to funding, a full scale excavation is planned for 2012 to locate the footprint of the Mansion, and identify any earlier structures.

Archive: C.A.G.

17 Coggeshall, The Vineyard, West Street (TL 8443 2244)

M. Germany, E.C.C. F.A.U.

Archaeological trial-trenching and excavation preceded the construction of a house, visitor centre and access road. Part of the garden/yard of a 13th to14th-century roadside settlement, a medieval or post-medieval fence line, and a 17th-century brick culvert were recorded. Small amounts of residual Mesolithic worked flint and Roman tile and pottery were present in later contexts.

The medieval garden/yard was demarcated by two boundary ditches and included numerous pits that contained 13th to 14th-century pottery, small amounts of medieval brick and roof tile, and a copper-alloy brooch. The site of the accompanying house was not discovered, but is postulated to have been located closer to the West Street frontage.

Archive: Bt.M.
Report: F.A.U. Report 2304

18 Coggeshall, Paycocke's House, West Street (TL 8477 2251)

A. Letch, E.C.C. F.A.U.

Three archaeological test-pits were excavated at the grade I-listed 16th century cloth merchant's house to assess the nature of the ground prior to maintenance work on the building; two dug within the brick-paved courtyard behind the central part of the house and the third within the covered passageway leading from West Street.

Beneath the modern surface was a 0.5m-thick layer of clay, brick and gravel of 20th-century date, which also contained residual sherds of late medieval pottery, a fragment of medieval chimney brick and an interesting piece of carved bone, possibly a smoothing tool used in cloth manufacture. Much of this deposit is understood to derive from the demolition of former outbuildings. It variously overlay buried topsoil and possibly alluvial silty clay deposits that appeared to continue beneath the building and contained occasional fragments of roof tile and Tudor brick datable to the construction of the main part of the house. The wall foundations of Paycocke's were revealed to consist of two brick courses below the sill, suggesting the rear of the house was underpinned when the stair tower was constructed.

Archive: Bt.M.
Report: F.A.U. Report 2417

19 Colchester, Brook St (TM 0066 2483)

B. Holloway, C.A.T.

Previous evaluations on and around this site have generally been negative, but there was a possibility that part of Colchester's Civil War siege-works might cross the site. Two trenches (80m and 70m long) at right angles to Brook Street revealed post-medieval and modern features, but no sign of the Civil War defences.

Archive: C.M.
Report: C.A.T. TBA

20 Colchester, Colchester Garrison GAL Area A1 (TM 0011 2439)

B. Holloway, P. Crummy, C.A.T., R. Masefield, R.P.S. (project consultants)

The development of the Colchester Garrison Alienated Land (GAL) is now nearing its completion. It involved the redevelopment, primarily for residential use, of areas of the former Colchester Garrison and adjacent farmland owned by the MoD. The construction of the new garrison allowed a phased decanting of the existing Garrison personnel into the new garrison (now named the Merville Barracks), thus facilitating phased release of the former Garrison areas.

Extensive archaeological work in advance of redevelopment at Hyderabad Barracks (on the east side of the Mersea Road about a mile south of Colchester town centre) is complete, and post-excavation is in progress. In advance of final reports, the following summary is given. Two Middle Iron Age enclosures contain structures, one of which was a roundhouse, and the second possibly so. Among the more significant discoveries of recent years is a new stretch of the Colchester Dykes, first mapped and partially excavated in the 1930s by Hawkes and Hull (1947). The new dyke would appear to be an east-west extension off the northern end of the Berechurch Dyke, which may have extended farther to the north than previously realised. Cut into the fill of the dyke's ditch was a hoard of 1247 Roman *antoniniani* coins in a grey ceramic pot. Judging by the date of the coins (of emperors from Severus Alexander (AD222–35) to Tetricus I (AD271–4)), the hoard was probably buried in the AD270s or shortly after (a time when other Colchester coin hoards were buried). Other significant remains at Hyderabad were two ring-ditches surrounding late Roman burials. C.A.T. excavated a number of similar ring-ditches close to the Arena Leisure Centre in 2004 (500m to the west). They contained late Roman cremation burials, but the ring-ditches excavated in 2011 surrounded late Roman inhumation burials with spears and shields. Ring-ditches are thought to be Germanic in their affinities. It is possible that these are the burials of some of the German mercenary soldiers known to have been drafted in by the Romano-British authorities to defend Roman Britain against Saxon marauders.

Archive: C.M.
Report: C.A.T. Report 628
Previous summaries: Bennett and Roy 2004, Bennett 2005, Havis 2006, Bennett and Havis 2007, Bennett 2008, Bennett 2009

21 Colchester, Colchester Garrison, GAL Area E (TL 9986 2427)

H. Brooks, B. Holloway, C.A.T., R. Masefield, R.P.S. (project consultants)

There have now been two stages of archaeological evaluation at GAL Area E. The first was a 2004 evaluation by four trial-trenches which revealed twenty-five Roman features, and a post-medieval ditch which was possibly part of the remains of the 1648 siege-works. The second, reported here, involved the excavation of a further two trial-trenches in the central part of the site, which was unavailable in 2004. The 2011 discoveries consist of Roman ditches, post-holes, a quarry pit, substantial quantities of brick and tile, and a buried pot (possibly a ritual deposit). These reinforce the picture that there was a Roman-period ditched enclosure here containing what was probably a small Romanised domestic structure, maybe similar to those found at the Kirkee & McMunn Barracks, 1500m to the south-west, and at Goojerat Barracks (GAL Area L/N), 900m to the south-west. The Roman inhumation cemetery excavated at the Hyderabad barracks (GAL Area A1, site H, 125m to the north-east) may contain the burials of the farmers who lived and worked on the current site. The only significant post-Roman find was a continuation of the 1648 siege-works ditch, which may have been part of the defences connected with Fort Needham.

Archive: C.M.
Report: C.A.T. Report 607
Previous summaries: Bennett and Roy 2004, Bennett 2005, Havis 2006, Bennett and Havis 2007, Bennett 2008, Bennett 2009

22 Colchester, Colchester Garrison Officers' Club, St John's Abbey Green (TL 9981 2477)

A. Wightman, H. Brooks, C.A.T.

The site of the Abbey church of St John's has been discovered in an evaluation on the site of the Garrison Officers' Club. Three evaluation trenches were cut in the first instance, and two more were added when structural remains were discovered. The parts of the church exposed in the evaluation were the west wall, the north and south nave walls, and internal walls which are probably the south wall of the north aisle and the north wall of the south aisle. No superstructure survived. The only below-ground structure was a length of footings for the west church wall. The church had been completely demolished (probably in the 17th century), and all walls and floors removed. Notable finds included painted glass and decorated floor tiles, presumably from the church structure. Non-church finds included Roman pits, two medieval inhumations (40m to the north of the church), pits and robbing activity probably connected with the conversion of part of the church into the Lucas House which occupied the site until it too was demolished after suffering severe damage in the Civil War.

Archive: C.M.
Report: C.A.T. Report 601

23 Colchester, 97 High Street (TL 9985 2524)

D. Shimmin, C.A.T.

The site is in Colchester town centre, at the rear of properties on the north side of High Street, south of the castle bailey and on the western side of a narrow lane known as Crowther's Entry. The site coincides with *Insula* 22 of the Roman town. A watching brief was held on the machine-excavation of a series of test pits. The remains of the south precinct wall of the Roman Temple of Claudius were uncovered close to modern ground-level in the southern part of the site. Little of archaeological significance was reached in the northern part of the site, where the ground-level had been considerably made-up in modern times.

Archive: C.M.
Report: C.A.T. Report 587

24 Colchester, former CBC depot, Jarmin Road (TL 9978 2594)

D. Shimmin, C.A.T.

A watching brief took place in advance of a proposed residential redevelopment at the former Jarmin Road depot during the machine excavation of a series of test pits. Roman features, including a kiln, have been found within the depot and at previous excavations nearby. There was a spread of fragments of burnt daub and Roman brick and tile across the site, probably derived from a nearby Roman tile kiln. The natural subsoil was contaminated in places by leakages from underground fuel tanks.

Archive: C.M.
Report: C.A.T. Report 604

25 Colchester, Northern Growth Area Urban Extension (TL 986 279)

B. Holloway, H. Brooks, C.A.T.

In advance of proposed housing and local amenities including a new school, an evaluation by geophysical survey, fieldwalking and trial-trenching was carried out on the 110-hectare Northern Growth Area Urban Extension (NGAUE) site. The northern edge of the NGAUE site (near the A12 bypass) contains sites connected with the Mile End medieval pottery industry, one of which was excavated in 1973 by Paul Drury and Martin Petchey (Drury and Petchey 1975: the DP site). The Roman cemetery excavated at the Asda superstore is close to the southern end of NGAUE, and there are some place names with possible connections to post-medieval kilns and mineral extraction.

The geophysical survey (carried out by Dr Tim Dennis) covered two areas, each approximately 4 *ha*, and was targeted on the two kiln sites. Anomalies were detected around the DP site, but the other reported kiln site (close to the A12) was negative. Fieldwalking was carried out on all ploughed areas, principally in the northern half on NGAUE. Finds were generally quite thinly spread, and the only significant finds groups were medieval pottery on the fields south and east of the DP site. A trial-trenching evaluation found tile-built structures (probably not kilns) close to the DP site, a possible ring-ditch, a Roman cremation burial, and a post-medieval kiln site. Further excavation work is proposed on all the 'hot-spots' detected at evaluation stage.

Archive: C.M.
Report: C.A.T. Report 627

26 Colchester, North Primary School, John Harper Street (TL 9919 2584)

B. Holloway, H. Brooks, C.A.T.

The North Primary School is within a high-status Roman suburb which has produced tessellated and mosaic floors from the HSBC bank and from other sites in the area. In advance of proposed expansion of facilities on the sports pitch (150m west-north-west of the HSBC bank), five test pits were excavated to the rear (west) of the school. Substantial deposits of made-ground were observed to a depth of 600mm. Further excavation identified a stratified Roman deposit at between 1 and 1.2m below modern ground level. This contained 2nd-century Roman pottery, tile, and oyster shell. One test pit revealed a Roman mortar wall foundation or a floor 1m below modern ground level.

Archive: C.M.
Report: C.A.T. Report 624

27 Colchester, 1 Rawstorn Road (TL 9986 2427)

B. Holloway, C.A.T.

The site lies just outside the west wall of the Roman town, where Roman buildings and burials have been found. Prior to redevelopment works, an archaeological trench revealed a large post-medieval pit. The site was severely truncated by modern services.

Archive: C.M.
Report: C.A.T. Report 613

28 Colchester, Colchester Royal Grammar School, 6 Lexden Road (TL 9868 2483)

A. Wightman, C.A.T.

CRGS is located within an extensive Roman cemetery, within which tombstones, a walled cemetery and a temple-tomb have been discovered. The excavation of footings for an extension to the Sixth Form Block and for a new building on the location of the former 'boarders hut' was monitored. A deep deposit of post-Roman topsoil (between 1m and 1.4m deep) overlay the archaeological horizons and natural sand/gravel. Three Roman layers were seen beneath the topsoil on the extension site, and a Roman stone wall footing was discovered on the boarders hut site. This was evidently at right angles to the Roman street to the north, and may have been part of a structure such as a tomb or small building fronting on to it. A large quantity of Roman-period finds and debris was recovered, including fragments of vitrified kiln or furnace lining, light slag and burnt tile, which indicate some industrial activity in the Roman period on or near the site. There were also two pieces of architectural stone of probable medieval date which may derive from an unknown ecclesiastical building.

Archive: C.M.
Report: C.A.T. Report 590

29 Colchester, 12 St Clare Road (TL 9745 2496)

D. Shimmin, C.A.T.

The site lies within the Late Iron Age/Roman Lexden cemetery on the western side of the *oppidum* of *Camulodunum*, which was defined by a system of defensive dykes, one of which, the Lexden Dyke, is immediately west of the properties on the western side of St Clare Road. Two Roman urned cremation burials from within the Lexden cemetery were uncovered during a watching brief on groundworks for an extension and an outdoor swimming pool. One burial had an accompanying flagon within the urn. Among the other finds was a quantity of prehistoric and Roman pottery.

Archive: C.M.
Report: C.A.T. Report 582

30 Colchester, Kingswode Hoe School, Sussex Road (TL 9835 2528)

A. Wightman, D. Shimmin, C.A.T.

The school is on the western edge of the nationally important and scheduled Late Iron Age settlement of Sheepen. A later addition to the Sheepen Dyke was projected to run across the south-eastern corner of Kingswode Hoe School. The south-eastern edge of a large Late Iron Age ditch, identified as the Sheepen Dyke extension, was uncovered to the east of the school by the Essex County Council Field Archaeology Unit in 2009.

There were two projects on this site in 2011. First, monitoring during the installation of three relocatable classrooms, and of a sewage pumping station and associated pipes on the western side of the school, revealed five post-medieval or modern features, all probably associated with the Victorian Kingswode Hoe house. Sparse finds of residual prehistoric, Roman, and medieval finds indicate low levels of activity in the immediate vicinity. The projected line of the dyke as shown by the F.A.U. evaluation should have impinged slightly on the pipe trench, but was not seen. Second, an archaeological excavation and watching brief took place in advance of the construction of an extension to the north-east corner of the existing main school building. The Sheepen Dyke crossed the south-east corner of the site. To the west of this were two parallel early Roman ditches, which probably formed a trackway. Both had been recut. Other features were sparse, but included two pits. One contained a quantity of Sheepen-type pottery, probably dating to the first half of the 1st century AD, while the other contained one possible Bronze Age sherd.

Archive: C.M.
Reports: C.A.T. Reports 578, 623

31 Colchester, St Martin's Church, West Stockwell Street (TL 9960 2532)

S. Benfield, C.A.T.

A trench 0.4m deep was hand-excavated almost entirely within dark topsoil by contractors for remedial work on the south boundary wall of the churchyard. There were loose finds of post-medieval pottery, clay pipe, and peg-tile, but nothing of archaeological significance. Small quantities of human bone were reburied on site.

Archive: C.M.
Report: C.A.T. Report 616

32 Colchester, Sixth Form College, North Hill (TL 9925 2545)

M. Baister, D. Shimmin, C.A.T.

The site, formerly the Gilberd School, is in *Insula* 1a, in the north-west corner of the Roman town. An evaluation by two

trenches identified demolition layers of Roman brick, roof tile, mortar, *opus signinum*, and pottery, probably related to the demolition of a Roman building in the early-mid 3rd to 4th century. Nothing was revealed during the subsequent watching brief on three boreholes.

Archive: C.M.
Report: C.A.T. Report 596

33 Colchester, Upper Castle Park (TL 9992 2543)

A. Wightman, C.A.T.

Colchester Castle Park is a scheduled ancient monument due to its important Roman and medieval remains, including most of *Insula*s 6, 7, 14, 15, 22 and 23 of the Roman town. The laying out of the new play area and the park service yard, the installation of a new access road, hard standing and services (mainly coinciding with *Insula* 7) were monitored. A probable clay-block wall and a Roman tessellated pavement were uncovered on the line of the new access road, both on the former putting green. The pavement had been partly uncovered in 1927–9 but, now lying 0.3m below modern ground-level, it was significantly shallower than in 1927–9 when the floor was at a depth of '18 inches' (0.45m). This change shows that ground-level was reduced when the putting green was laid out. Elsewhere, ground disturbance was confined to the modern topsoil which overlies the archaeological horizons.

Archive: C.M.
Report: C.A.T. Report 603

34 Colchester, Visual Arts Facility, East Hill (TM 0013 2520)

A. Wightman, C.A.T.

A watching brief was carried out during landscaping and the installation of services for the Visual Arts Facility (VAF), lying south of East Hill and within *Insula*s 31 and 32 of the Roman town. This recorded Roman remains at 0.45–1.1m below modern ground level, and two medieval/post-medieval wells just below the surface. A gravel surface was identified in a position coinciding with the expected line of the east-west Roman street on the southern edge of *Insula*s 31 and 32. A wall foundation was also recorded in an area where a Roman building had been previously identified (Colchester Building 215). A red tessellated floor was identified in section in the northern entranceway to the VAF. The floor is believed to be previously undiscovered and is from a Roman building (Colchester Building 220), perhaps a town-house. Two medieval/post-medieval wells were also uncovered. A stone-lined well was uncovered in the back garden of 15 Queen Street, and a brick-lined well (which would have been located in the backyard of a property that once fronted the High Street) was uncovered in the northern entranceway to the VAF.

Archive: C.M.
Report: C.A.T. Report 599

35 Colchester, Williams & Griffin stores, 147–155 High Street (TL 9950 2525)

A. Wightman, C.A.T.

In advance of the proposed redevelopment of the eastern side of the Williams & Griffin department store, seven test-pits were excavated to ascertain the depth and level of survival of archaeological deposits, and four geotechnical boreholes were monitored. Basements along the High Street frontage were found to have destroyed archaeological deposits in the southern part of the site. However, deposits associated with the 1792 iron foundry were found within the store. In the adjacent CBC car park, floor surfaces and wall foundations from the outbuildings of the former Cups Hotel were found. A layer of dark soil indicates that land behind buildings fronting onto High Street was probably backyard or garden space in the medieval and post-medieval periods. The store coincides with *Insula* 19 of the Roman town. Roman remains, including a mosaic pavement, were overlain by an average of 2m of post-Roman deposits, and appear to have remained largely undisturbed. It is probable that other Roman buildings will survive beneath the existing store, including tribunes' houses in the 1st-century fortress.

Archive: C.M.
Report: C.A.T. 622

36 Dagenham, Dagenham Park Community School (TQ 4948 8400)

M. Williams, W.A.

A programme of archaeological investigation was carried out in advance of redevelopment of the Dagenham Park Community School. The features identified included a probable double ditch and bank enclosure, a series of pits, post-holes, boundary or drainage ditches, and a buried land surface. The pottery assemblage suggests that the majority of activity relates to the middle to late Bronze Age period, with possibly some activity dating to the early Neolithic. There was a general pattern across the site whereby the east-west aligned ditches were truncated by the north-south ditches, possibly suggesting a change in activity. This suggests that the settlement activity recorded to the east of the site by Wessex Archaeology in 2005 extends further west and points to an earlier phase of use in the middle to Late Bronze Age.

Archive: M.o.L.

37 East Ham, Langdon School, Sussex Road (TQ 4358 8350)

S. Barrowman, P.C.A.

An evaluation consisting of three trial trenches revealed natural terrace gravel overlain by alluvium, recorded directly beneath deposits of 19th- to 20th-century made-ground or landfill. The environmental assessment of the natural deposits suggested that the former environs of the site comprised a wetland associated with the River Roding, dominated by alder, birch, bramble and grasses, with a likely dryland region supporting hazel, oak, lime and heath, forming a mixed deciduous woodland. A peat horizon observed within the alluvial sequence to the south of the site likely represents a single formation of fen or fen carr peat in a floodplain depression and most probably dates to the Middle Holocene. The site remained unexploited into the post-medieval period, when it is shown cartographically to be within the East Ham Levels. After a period of land-raising in the 19th to 20th century the site remained

undeveloped until the construction of the Langdon School in the 1950s.

Archive: L.A.A.R.C.

38 East Ham, Vicarage Primary School, Vicarage Lane (TQ 4280 8280)

R. Haslam, P.C.A.

Three evaluation trenches were excavated in advance of the construction of a proposed extension to the school. Natural Pleistocene terrace gravel, probably forming part of Taplow Terrace bed, sealed by a layer of brickearth suggested that the site was located on dry land during the early Holocene period. A layer of subsoil sealed the natural sequence and was interpreted as possible 17th- to 19th-century agricultural soil. This was truncated by a post-hole and a ditch, which could have formed a boundary between the vicarage complex and agricultural land to the north. A mid to late post-medieval layer was identified which may represent a ground leveling deposit dumped before building work began. Masonry walls and an arched culvert, perhaps associated with the 1831 vicarage rebuild, were also recorded, along with a late 19th-century addition.

Archive: L.A.A.R.C.

39 Elsenham Quarry (TL 5590 2720)

J. Brown and C. Jones, N.A.

Trial trenching revealed limited evidence for prehistoric, Iron Age and Roman activity. This comprised isolated ditches and occasional pits. The archaeology was concentrated to the east and west of the area, with other parts of the proposed development area containing no archaeological features.

Archive: N.A.

40 Finchingfield, The Guildhall, Church Hill (TL 6857 3281)

A. Letch, E.C.C. F.A.U.

An archaeological test-pit evaluation was carried out to examine the foundations of the 15th-century Guildhall and to assess the archaeological potential of the immediate vicinity of the standing building. Thirteen test-pits were excavated by hand to the base of the foundations. The external north-east and south-east walls were found to have been underpinned in the modern period and disturbed by drainage runs, probably dating to the 1950s. However, test-pits dug in the cobbled passage leading from the road to the churchyard revealed the remains of an earlier, possibly medieval, cobbled surface along with sherds of medieval pottery, below the existing one.

Archive: Bt.M.
Report: F.A.U. Report 2366

41 Fryerning, St Leonard's, Blackmore Road (TL 6259 0070)

T. Ennis, E.C.C. F.A.U.

Archaeological fieldwork was carried out in advance of, and during, a series of proposed building and landscaping works. St Leonard's House was built in 1804, close to the site of one or possibly two earlier properties, which are depicted on the 1777 Chapman and André map of Essex under the title of Brick House, and is also the possible site of a Dominican priory recorded in 1611 by Speed as being at Ginge-atte-Stone (Ingatestone).

A flint scraper of Late Neolithic or Early Bronze Age date and a small quantity of 13th-14th century pottery were retrieved as residual finds in a later contexts. However, no evidence for the medieval priory was encountered. A wall foundation exposed on the north side of the house contained bricks dated as Tudor or early 17th century. Many of the bricks were clearly reused and were probably salvaged during the demolition of Brick House for the construction of the present house, in 1804. This foundation is almost certainly a part of the north side of the 1804 house that was demolished in 1935 and contemporary with an exterior yard surface constructed from buff and cream-coloured malm bricks and a brick-lined well found under the lawn. A clay extraction pit in a trench to the north of the house, and the remains of a possible T-shaped boundary ditch junction to the east, are both likely to be 18th-century contemporaries of the earlier Brick House. Most of the remaining features dated to the 19th or 20th century and were associated with the house and its garden landscaping.

Archive: Ch.E.M.
Report: F.A.U. 1976

42 Goldhanger, North Extension Groundworks, St Peter's Church (TL 9051 0885)

A. Letch, E.C.C. F.A.U.

Archaeological monitoring was carried out on groundworks for the construction of a new meeting room on the north side of the medieval church. Approximately 88 burials were found, most of which were encountered within the wall foundation, service trenches and soakaways cut into a *c*.1.1–1.6m thickness of graveyard soil. These were arranged in neat rows and included interments of all ages, though mostly adults. Pottery and coffin fittings found in association would suggest a predominantly post-medieval date. The shallow stepped footings of the north wall of the church were also exposed and a single unstratified sherd of Early Medieval Ware pottery, datable to the 12th to earlier 13th century, was retrieved.

Archive: Bt.M.
Report: F.A.U. 1939

43 Great Bromley, Land East of Hall Road (TM 0734 2722)

M. Germany, E.C.C. F.A.U.

The excavation of sixty-four foundation pads for a new hay store and a free-range poultry unit located to the north and north-east of Bush Farm was monitored. There are numerous cropmark sites known in the vicinity and remains of Middle Iron Age or Early Saxon date were previously found during monitoring of construction works nearby, in 2009 and 2010 (Letch and Sparrow, 2010). Two ditches and another indeterminate cut-feature were recorded. One ditch was evidently backfilled in the modern period and possibly once delineated one side of a post-medieval trackway depicted on historic mapping. The other contained baked clay fragments and a sherd of probable Iron Age pottery and shared a similar alignment with a nearby linear cropmark.

Archive: C.M.
Report: F.A.U. Report 2101

44 Great Chesterford, All Saints' Churchyard, Church Street (TL 5058 4274)

M. Germany, L. Miciak, E.C.C. F.A.U.

The creation of a cremation burial area within the churchyard was preceded by test-pit evaluation. The church lies within a walled enclosure or annex of the Roman town. Located to the south of the church, the test-pits revealed deposits of grave soil in excess of 1.16m to 1.58m deep. Contained within the grave soil were inhumation burials and numerous finds, including pieces of Roman pottery of 3rd and 4th century date. Other finds included lumps of mortar and flint nodules that probably relate to the construction and demolition of Roman buildings and/or the construction and modification of All Saints' Church itself. No further parts of the building foundation previously seen only 12m to the east (Gadd, 2000) were encountered.

The contractor's excavation of two narrow service trenches across the churchyard and internal groundworks in the floor of the Lady Chapel were monitored. Two substantial masonry wall foundations, revealed in the water supply trench to the west and south-west of the church, were presumably part of the 13th century church tower and the south aisle, which collapsed or were demolished in the 15th century. A north-south aligned undated wall foundation discovered to the south of the Lady Chapel may be a continuation of a Roman wall which was found further south during previous investigation. Two graves, that contained no dating evidence but are thought to be medieval or post medieval, were disturbed by the service trenches at the south-west corner of the tower and to the south of the church. Part of the floor was removed and two trenches dug in the Lady Chapel, as part of the works to relocate the screen and bring the water-pipe run into the church. Although no *in situ* medieval deposits were observed, disarticulated human bones, concentrated close to the chapel's south wall, were found.

All the retrieved artefacts were unstratified and comprised fragments of Roman, medieval and later pottery, brick and tile. Items of coffin furniture, consisting of iron nails and two fragments of iron plate, were also retrieved. The majority of the Roman pottery dates to the 3rd and 4th centuries, which is consistent with previous excavations within the churchyard and reflects the main period of Roman town development.

Archive: S.W.M.
Report: F.A.U. Reports 2400 and 2444

45 Great Chesterford, Mallards, South Street (TL 5078 4274)

Z. Pozorski, A.S.

Monitoring was carried out in advance of the construction of a new house to replace an existing bungalow. The site lies within the southern part of the area of the medieval and post-medieval town of Great Chesterford and possibly within the suburban area of the Roman town. In the event the monitoring revealed two undated pits or ditches and a residual Roman pottery sherd.

Archive: S.W.M.
Report: A.S. Report 3758

46 Great Dunmow, 46 High Street (TL 6263 2167)

A. Wightman, C.A.T.

Evaluation revealed Roman rubbish pits and post-holes cut into natural. Little evidence of post-Roman activity was found apart from a deep topsoil (0.7m) overlying the Roman features.

Archive: S.W.M.
Report: C.A.T. Report 632

47 Great Dunmow, 52 High Street (TL 6268 2167)

A. Wightman, C.A.T.

Evaluation revealed evidence of late post-medieval and modern landscaping, waste disposal and short stretches of wall possibly related to landscaping of the back garden.

Archive: S.W.M.
Report: C.A.T. Report 631

48 Great Dunmow, 60 North Street (TL 6256 2235)

A. Wightman, C.A.T.

Evaluation revealed deep imported topsoil overlying an older clay deposit containing post-medieval building materials and finds.

Archive: S.W.M.
Report: C.A.T. Report 626

49 Great Dunmow, Land South of Springfields (TL 6270 2152)

P. Sparrow, E.C.C. F.A.U.

An archaeological trial trench evaluation was undertaken of the 0.58ha site prior to its residential development. The site was located immediately below a pronounced break of slope that until the early 20th century marked the southern limit of the historic town.

The remains of an east-west aligned ditch, running just below a natural break of slope in the local topography, was found close to the northern edge of the site. Backfilled during the early 2nd century AD, this ditch probably marked the southern limit of the Roman settlement. A later re-cut, backfilled by the end of the 2nd century, contained a human cremation burial within its upper fill. A small quantity of residual Middle Iron Age pottery was found within the fill of the earlier ditch.

No evidence of further Roman activity was found across the steeply sloping site to the south of the ditched boundary, though a range of Victorian and modern features, mostly relating to its use as a small-holding, were recorded.

Archive: S.W.M.
Report: F.A.U. Report 2294

50 Great Easton, Brown's Garage site, Dunmow Road (TL 6101 2542)

A. Wightman, C.A.T.

Archaeological recording and excavation were carried out ahead of the construction of a new workshop and showroom.

Prehistoric activity is indicated by a series of pits and a significant quantity of residual prehistoric potsherds and worked Neolithic/early Bronze Age flints. A large Roman double ditch is most likely to be an enclosure ditch surrounding an area of habitation. There was a possible palisade on the outside of the enclosure. To the west, a v-shaped Roman ditch may define the eastern edge of a trackway. Refuse pits and a series of possible square latrine pits were located within the enclosure.

Archive: S.W.M
Report: C.A.T. Report 608

51 Hadleigh, Olympic Games Mountain Biking Venue, Hadleigh Country Park (TQ 8016 8627)

T. Ennis, M. Germany, A. Scruby and P. Sparrow, E.C.C. F.A.U.

Groundworks associated with the construction of a new mountain bike track and associated infrastructure for the London 2012 Olympic Games were the subject of a programme of archaeological monitoring. Part of the event site was initially developed by the Salvation Army as a Home Farm Colony in the 19th century, which included a brickworks, poultry unit and residential accommodation. The Colony fell into disuse prior to the outbreak of World War I, following which it was used as a training camp during WWI and again in the Second World War as the site for a heavy anti-aircraft gun battery, searchlight position and troop camp, surviving elements of which have been designated as a Scheduled Monument. Archaeological remains recorded by the monitoring works included part of a track or holloway, a possible former pond or in-filled clay pit, a lynchet and a series of 19th century field boundary ditches, as well as areas of made-ground to depths in excess of 2m that are likely to be further evidence for clay extraction to supply the brickworks. No remains predating the 19th century were encountered.

Archive: S.M.
Report: F.A.U. Report 2238

52 Halstead, Priory Hall, Colchester Road (TL 8206 3055)

P. Sparrow, E.C.C. F.A.U.

Trial-trenching evaluation was undertaken across the grounds of Priory Hall, formerly the Halstead Grammar School, prior to its redevelopment. The site sloped steeply down from the north-east to the south-west and displayed evidence of previous landscaping. The trenches to the east and north-east of the school building contained a curvilinear ditch and a small pit, both undated. A trench to the south included a ditch which ran parallel to the Colchester Road, while a gully in a trench in the south-east part of the site ran perpendicular to the road. These linear features are likely to represent historic land divisions prior to the use of the site for a school, but a lack of artefacts leaves them undated. A residual sherd of 17th- to 19th-century pottery was retrieved from a modern cesspit. It is judged that the site lay outside the historic settlement core of Halstead and was therefore probably in agricultural use prior to the construction of the school in 1909.

Archive: Bt.M.
Report: F.A.U. Report 2382

53 Harlow, Land at Carters Mead (TL 4723 0873)

M. Collings, W.A.

An archaeological trial trench evaluation was carried out in advance of a proposed housing development. Nine trenches varying between six and ten metres in length by 1.80m wide were excavated to a cumulative area of 126 metres squared.

The evaluation revealed one linear feature producing late post-medieval and modern dating evidence, recorded in Trench 1 in the north-east of the site. No finds or features of archaeological significance were identified during the fieldwork evaluation.

Archive: W.A.

54 Hatfield Broad Oak, Proposed New Cricket Pitch, Land North of High Street and Dunmow Road (TL 5492 1673)

C. Leonard, A.S.

During August and September 2011 Archaeological Solutions (AS) conducted an archaeological monitoring evaluation on a targeted area of the proposed cricket pitch. Extant earthworks on the site attested to the presence of a post-medieval strip field system and later avenue leading to Barrington Hall to the north of the site. A trial trench evaluation by A.S. in December 2010 also revealed a late Anglo-Saxon phase of activity on the site. This phase of excavation was targeted on an area incorporating a 10th–12th century pit excavated during the trial trenching. Three additional 10th–12th century pits were excavated, and two prehistoric pits. Ditches of post-medieval date were excavated and correspond with known earthworks and ditch system associated with the Barrington Estate. Two undated ditches were also excavated, belonging to a field system that predated that of the post-medieval period.

Archive: S.W.M.
Report: A.S. Report 3921

55 Hatfield Peverel, The Priory (TL 7970 1090)

C. Leonard and P. Thompson, A.S.

An archaeological trial trench evaluation was carried out at The Priory, Church Road, Hatfield Peverel. Hatfield Priory, a Scheduled Monument (SAM 165), was founded in the late 11th century and was dissolved in 1536 (EHER 6053). Much of the medieval priory was destroyed at this time or in the 18th century when the current Hatfield Priory House was built. Archaeological features were recorded in each trench, and the features comprise pits, ditches, post-holes and a wall foundation. The dated features comprising a wall foundation, extraction pit, pit and ditch, were recorded in Trenches 1 and 2 and are late post-medieval. Only the ditch contained pottery. The remaining late post-medieval features contained ceramic building material, glass and an iron fragment. Undated features were recorded in all three trenches. The features are likely to relate to 19th-century gardening activity.

Archive: Bt.M.
Report: A.S. Report 3831

56 Heybridge, Basin Road Bridge, Basin Road (TL 8713 0768)

T. Ennis, E.C.C. F.A.U.

Archaeological monitoring was carried out on groundworks for the reconstruction of the existing bridge. The only dated archaeological feature was a small, shallow, oval pit containing a single sherd of Middle Iron Age pottery, which was recorded in a roadside ditch diversion to the south of Spicketts Brook. Three undated ditches of varying size were investigated to the north of the brook, two of which probably delineated part of a trackway previously identified from cropmarks immediately to the east (EHER 7992).

Archive: C.M.
Report: F.A.U. Report 2328

57 Heybridge, Land off Everest Way (TL 8559 0847)

T. Ennis, E.C.C. F.A.U.

Archaeological trial trench evaluation carried out in advance of a 0.6ha housing development found only scattered remains of possible prehistoric, Roman and post-medieval/modern date, despite the presence of extensive cropmark sites to the north and west. The prehistoric features comprised a pit and gully with an adjacent post-hole. A single ditch was probably Roman. Two further post-holes were of likely post-medieval or later date, while the remains of a north-east/south-west aligned late 19th-century field boundary ditch contained a variety of post-medieval and modern finds.

Archive: C.M.
Report: F.A.U. Report 2228

58 Heybridge, Fir Tree Walk (TL 8604 0814)

T. Janes, A.S.

An archaeological trial trench evaluation was carried out in advance of the construction of two houses with associated garages and driveways. Within the site a large mound is present under mature trees. The mound was thought to have been a 19th-century landscape feature associated with a nearby house, The Towers. Alternatively the mound may have had earlier origins, perhaps Roman or prehistoric. The site had moderate potential for archaeological remains. In the event no archaeological features were present, and the mound was shown to be a natural feature.

Archive: C.M.
Report: A.S. Report 3928

59 High Ongar, Land adjacent to 46 Mill Lane (TL 5658 0352)

G. Jones, H.N.

Archaeological evaluation was carried out in advance of construction of two new dwellings. One trench was opened across the development footprint. This demonstrated the presence of a linear boundary, which contained redeposited medieval pottery, and two parallel cultivation furrows, which also contained medieval pottery.

Archive: E.F.D.M.
Report: H.N. Report 656

60 Kirby-le-Soken, Devereux Farm Habitat Creation Scheme (TM 2346 2273)

T. Ennis, E.C.C. F.A.U.

Archaeological monitoring was carried out on construction and landscaping works associated with a programme of managed coastal realignment and habitat creation works. Although archaeological remains of prehistoric and Roman date are known from immediately outside the area of the habitat creation scheme, no remains of this date were identified within the monitored areas. Early medieval remains were identified beneath the northern part of a new embanked road footprint, replacing the existing causeway to Horsey Island. Features included two parallel gullies, a series of post-holes possibly forming a small rectangular structure, a large pond or water channel and a Y-shaped ditch junction. Three phases of activity spanning the 10th to 12th centuries were identified. The recovery of ceramic mould or crucible fragments and hammerscale suggest that both iron production and smithing were taking place in the vicinity, whilst the presence of burnt grain may indicate crop processing.

Three roughly parallel field boundary ditches of 12th-13th century date were identified in the southern part of the new road footprint. At Rigdons Breach, in the east of the habitat scheme area, the lowering of the 1950s sea wall embankment revealed the buried remains of an earlier bank dating to the late 18th or 19th century.

Archive: C.M.
Report: F.A.U. Report 2267

61 Lawford, Former Railex Site (TM 100 323)

I. Hogg, A.O.C.

Archaeological evaluation revealed natural gravels across the site. These deposits were overlain by a second sandy natural deposit. Both of these deposits may be fluvial or colluvial in origin. Alluvial clays were present in most of the test pits, these were overlain by made-ground. The test pits show that the land was marshy until it was reclaimed from the Stour estuary in the 20th century, with much of the topsoil from site being stripped before the land was raised by the dumping of modern made-ground.

Archive: A.O.C.

62 Leigh-on-Sea, Church of St Clement's Churchyard (TQ 8415 8581)

M. Germany, E.C.C. F.A.U.

Monitoring of groundworks for an extension on the south side of the church recorded the exposure of two brick-built vaults, which were probably constructed during the late 18th/19th century. The larger of the two contained the remains of three inhumations and a pile of other human bones and coffin wood. The other vault included the remains of two individuals, but had been intruded upon by a large slab of poured concrete which had been used to underpin one of the buttresses on the south side of the church. The vaults are conjectured to be the family tombs of wealthy individuals, although no coffin plates were retrieved from which to ascertain their identities.

Archive: S.M.
Report: F.A.U. Report 2373

63 Lexden/Stanway, Gryme's Dyke Middle (TL 9608 2456, TL 9628 2340)

A. Wightman, M. Baister, D. Shimmin, C.A.T.

A replacement gas main (TL 96086 24561) was laid north-south along the west side of the scheduled Gryme's Dyke (Stanway), and then eastwards towards the west end of Clairmont Road (Lexden). Archaeological monitoring on small contractors' test pits (cut to enable a new pipe to be inserted inside an existing mains pipe) revealed nothing. A new main (TL 96286 23409), also crossing the Stanway/Lexden parish boundary was laid in land between (but not directly connected to) Pilborough Way and Stanfield Close. The bank and ditch of the dyke was cut in one place where it had been disturbed by a previous service trench. Finds were limited to one residual prehistoric sherd, otherwise little of archaeological significance was seen.

Archive: C.M.
Report: C.A.T. Report 612

64 Leyton, 41-59 Church Road (TQ 3756 8684)

N. Hawkins, P.C.A.

An evaluation consisting of five trial trenches recorded natural terrace gravel cut by an undated plough mark and two undated circular features. Basements dating to the 19th century were also recorded cutting the natural gravel. Extensive truncation relating to the demolition of 1970s buildings during the 21st century was observed throughout the trial trenches.

Archive: L.A.A.R.C.

65 Leyton, Olympic Development: VOSA 16, Drapers Field (TQ 3837 8553)

P. Frickers, P.C.A.

A watching brief on the excavation of five drainage trenches and eight new manholes revealed extensive truncation by levelling and terracing, presumably associated with the construction of the sports ground which occupied the site from the end of the 19th century. Natural fluvial sands and gravels sealed in places by alluvial sandy clay were recorded below a layer of made-ground overlain by the works for the playing field. Part of one large cut was revealed which possibly represent a 19th-century quarry pit associated with the previous use of the site as a brickfield.

Archive: L.A.A.R.C.

66 Little Dunmow, Bayleys, Brook Street (TL 6605 2105)

P. Sparrow, E.C.C. F.A.U.

Archaeological monitoring and excavation was undertaken during groundworks for the construction of an extension to an outbuilding located to the north-east of Bayleys, a 16th-century grade II listed building located to the south of the village. Although the outbuilding is modern, historic mapping depicts this part of the property as being formerly occupied by a range of earlier buildings associated with the house. A ditch and gully aligned north-east to south-west, on the same axis as the house and probably of 16th century date, were found to be overlain by a flint and clay layer, a sand and gravel layer and a fragment of the south wall foundation of a building associated with the property known as 'Tile End' depicted on the 1st edition Ordnance Survey map (1875). The south-western wall of the 'Tile End' building still stands to a height of 0.5m to the south-west of the excavated area.

Archive: S.W.M.
Report: F.A.U. Report 2347

67 Little Easton, Little Easton Quarry (TL 5970 2250 and TL 5944 2248)

L. Miciak, E.C.C. F.A.U.

Following evaluation in 2001 and 2007, the excavation of two of a total of five areas of potential was carried out prior to gravel extraction within the south-western part of the former WW2 airfield on the Easton Estate. One 30sq m site (area 2) contained two shallow perpendicular ditches and four small pits, all of them located in the western part of the site. The ditches and one of the pits included pottery sherds of mid-11th to early 13th-century date. The other pits are undated. The other 1200sq m site (area 3) included a sequence of four ditches of Late Iron Age/early Roman transition date, their fills containing a range of local and imported Gallo-Belgic pottery. A further four undated, but later, gullies and several natural features including tree throws were also recorded. A large modern intrusion is presumed to be associated with the WW2 airfield.

Archive: S.W.M.
Report: F.A.U. 1987

68 Little Leighs, Church of St John (TL 7189 1673)

T. Ennis, E.C.C. F.A.U.

A trial-trenching evaluation was carried out in advance of the construction of new Parish Rooms in the churchyard, just to the west of the medieval church. A single T-shaped trench excavated within the proposed footprint revealed the presence of numerous inter-cut graves all on the same north-east/south-west alignment as the church. The earliest were two brick lined graves of probable 17th century date. Retrieved coffin furniture suggests that some graves were of 19th century and later date. Some undated burials may have been of medieval date. A small quantity of unstratified medieval artefacts was also collected.

Archive: Ch.E.M.
Report: F.A.U. Report 2466

69 Little Oakley, St Mary's House, Clacton Road (TM 2120 2846)

M. Adams, and P. Thompson, A.S.

Archaeological monitoring and recording was conducted in advance of improvements to the building. The property is the Grade II* listed former Church of St Mary, which dates from the early 12th century with later phases of medieval building and has Roman tile incorporated within its fabric. It is now a residential dwelling. The monitoring was carried out during the excavation of a French drain around the building perimeter. It recorded the construction cuts for the east and west walls of the now demolished vestry which once abutted the north wall of the chancel. No artefacts were recovered.

Archive: C.M.
Report: A.S. Report 3851

70 M25 DBFO Widening Section 4

P. Leader, O.A.

Oxford Archaeology was commissioned by Skanska Balfour Beatty to undertake an evaluation and subsequent programme of archaeological strip, map and sample recording (SMS) on land to the west of the M25 carriageway and south-west of Junction 29 of the M25 as part of the M25 Widening Scheme (Section 4). Ten sites were investigated in 2011.

Clay Tye Hill, Pond 1787 (TQ 589 866)

Pond 1787 was excavated in a total of three phases, covering areas to both the east and west of the M25 and overlying natural deposits of Head clay, sand and gravel. The first site, 0.94ha in area, contained four ditches which shared an east-north-east to west-south-west alignment with an extant hedgerow and ditch. Two post-holes were also excavated. No dating evidence was recovered from the features but given their close proximity to the ditches, it seems most likely that they are medieval or post-medieval in date. In a second phase of work, a strip was excavated along the eastern side of the motorway, but no archaeological deposits were recorded. The third area was situated on the western side of the motorway. The area showed a high level of truncation, and no archaeological remains were seen.

Archive: M.o.L.

Great Warley, Pond 1776 (TQ 589 876)

Pond 1776 covered 0.72ha and was located on the eastern side of the M25. The underlying natural geology was recorded as London Clay with a superficial deposit of Head clay, silt, sand and gravel. The topsoil and subsoil were removed to reveal a ditch extending north-west to south-east across the site. This contained small fragments of ceramic building material and was interpreted as a post-medieval boundary ditch. A modern post-hole and evidence of bioturbation were also recorded.

Archive: Ch.E.M.

Dennis Road turnaround and strip widening (TQ 581 838)

Areas covering a total of 0.41ha were investigated. The underlying natural was recorded as a superficial deposit of Head clay, silt, sand and gravel. No archaeological features were found after the removal of the topsoil and subsoil. However, there was evidence of disturbance relating to the construction of the motorway.

Archive: T.M.

Clay Tye Hill, Pond 1791 (TQ 588 865)

The site was located on the east side of the M25. The area excavated measured 0.73ha. The removal of topsoil and subsoil revealed the natural Head clay, silt, sand and gravel. A ditch or hedgerow was visible cutting the natural. The feature was orientated west-north-west to east-south-east and probably dates to the medieval or post-medieval period, although no dating evidence was retrieved. A cremation burial was also recorded. The grave measured *c*.0.9m in diameter and contained charcoal and cremated bone, but unfortunately no dating evidence. A strip was excavated in a second phase of works on the western side of the carriageway. No archaeology was encountered.

Archive: M.o.L.

South Ockenden, Pond 1812 (TQ 582 841)

The pond was situated on the west side of the M25, north of Dennis Road. It covered an area of 0.44ha. Strip widening on the east and west sides of the motorway was also investigated. For both areas the topsoil and subsoil was removed to reveal natural deposits of Lynch Hill Gravel and Head clay, silt, sand and gravel. The strip widening revealed no archaeology, but the pond site contained a number of features.

A single cremation dating to the Bronze Age was recorded. The cremated bone was contained by a flint-tempered jar which had been significantly truncated to both the top and side by ploughing and a field drain. The fieldwork also uncovered a series of medieval ditches aligned north-east to south-west. Pottery recovered from them dated to AD 1075–1225. The ditches form small enclosures and possibly a trackway. In addition, four post-medieval ditches were excavated. All were either visible on the 1866 OS map or followed the same north-east to south-west alignment. To the far south of the site an area of bioturbation was seen. This proved to be the remains of a post-medieval woodland or coppice.

Archive: M.o.L.

South Ockendon, Pond 1824 (TQ 578 833)

Pond 1824, covering an area of 0.6ha, was situated on the west side of the M25, north-west of South Ockendon. An additional area of strip widening was also excavated. On both sites the topsoil and subsoil was removed to reveal Lynch Hill Gravel. Pond 1824 contained four pits, five ditches, and evidence of bioturbation. The pits measured up to 1.1m in diameter and 0.25m deep and formed a north-east to south-west alignment some 100m long. They contained pottery and worked flint dating to the late Neolithic and Bronze Age. The ditches were orientated north-north-east to south-south-west and an east-north-east to west-south-west and formed enclosures in the northern part of the site. They were dated to the post-medieval period, though only one ditch was visible on the 1862 OS map. The strip widening area contained no archaeology.

Archive: T.M.

South Ockendon, Pond 1835 (TQ 5765 8200)

Pond 1835 covered an area of 0.24ha and was located on the east side of the M25, north-west of South Ockendon. The underlying geology was recorded as London clay. Three features were uncovered: a ditch or hedge line, a pit and a tree hole. The ditch or hedge line had an irregular base and extended on a north-east to south-west alignment across the site. No finds were recovered, but the feature was thought to be post-medieval. The tree hole measured 1.9 by 0.9m. The pit contained a quantity of burnt flint and charcoal waste. In addition to Pond 1835, an adjacent strip widening was

excavated along the western side of the M25. No archaeological features were encountered.

Archive: T.M.

Belhus Cutting (TQ 575 810)
C. Champness, O.A.
A geoarchaeological watching brief identified a sequence of fine-grained organic deposits within the Lynch Hill/Corbets Tey Gravels. These deposits potentially represent a warm stage (interglacial period) palaeochannel sequence with excellent potential for palaeoenvironmental reconstruction, archaeology and dating. Previously, worked flints were recovered from the original M25 cutting and similar deposits of this nature have been identified and dated to the Purfleet Interglacial (oxygen isotope stage 9). The current widening works presented a new opportunity to further investigate these regionally important sequences using modern scientific and dating techniques.

Archive: T.M.

Tank 1632 (TQ 4983 9819)
The site, covering an area of 0.22ha, was located on the south side of the M25, east of Skinners Bridge. Ploughsoil was excavated across the site to reveal a natural deposit of glacio-fluvial, Mid Pleistocene sand and gravel. No archaeological features were encountered.

Archive: E.F.D.M.

71 Maldon, 1-3 Friars Lane (TL 8485 0698)
A. Wightman, C.A.T.
This site is within the historic medieval core of Maldon, and 80m to the east of the site traditionally identified as the 9th-century *burh*. Following an evaluation in 2010, excavation of footing trenches and a service trench further defined the post-medieval yard surface, clay floors and areas of pits.

Archive: C.M.
Report: C.A.T. to be advised

72 Mount Bures, Cowlins Field (TL 913 331)
A. Moore C.A.G.
A possible Neolithic long barrow was identified by aerial photography in 1996 (Strachan 1998). In 2011, a trench was dug to establish the width and depth of the northern ditch and one of the post-holes/pits, and to search for dating evidence. Two sherds of prehistoric pottery and a small piece of cremated, probably human, bone were recovered. A quantity of charcoal was removed from the ditch and has been sent for analysis.

Report: being prepared by CAG.

73 Newham, Abbey Mills Pumping Station, Abbey Lane (TQ 3876 8307)
V. Yendell, M.o.L.A.
Phase I of archaeological fieldwork, which was a geoarchaeological borehole evaluation, showed that the highest potential for environmental and archaeological preservation lies to the north of the site in the deep channel areas. However, truncation is likely in this location from subsurface tanks. Over much of the site historic alluvial deposits survive and provide low potential for archaeology. To the south a channel has been located with radiocarbon dates from the 17th–20th century.

Archive: Currently with M.o.L.A.

74 Purleigh, Scotts Farm, Lodge Lane (TL 8271 0257)
A. Wightman, C.A.T.
Scotts Farm, typical of many medieval green-side farms, was first recorded in 1235. The site of the original farmhouse is unknown. An evaluation by three trial-trenches identified features associated with the modern farmhouse and post-medieval farm. No evidence was found for the medieval farmhouse, but two possible medieval features and a small quantity of residual medieval pottery sherds suggest that it may have stood nearby, perhaps in the same location as its post-medieval successor.

Archive: C.M.
Report: C.A.T. Report 618

75 Rainham, Merchant Waste Treatment Plant, Ferry Lane, Frog Island (TQ 5125 8091)
A. Pullen, P.C.A.
A watching brief on the excavation of twelve geotechnical boreholes recorded natural terrace gravel overlaid by alluvial deposits, the lower levels of which contained various accumulations of organic peaty material. A thick layer of made-ground sealed the natural deposits.

Archive: L.A.A.R.C.

76 Rainham, Moor Hall Farm (TQ 5500 8160)
Z. Pozorski, A.S.
An archaeological evaluation was carried out in advance of the construction of a golf course and re-profile of the site. During rescue excavations undertaken in 1979, features dating to the Palaeolithic, Mesolithic and Neolithic periods as well as a Bronze Age cemetery were uncovered. In the event the only archaeological features were modern drainage ditches. In addition, two unstratified flint cores were found.

Archive: L.A.A.R.C.
Report: A.S. Reports 3879, 3932

77 Ramsden Heath, Chithams, 87 Heath Road (TQ 7063 9569)
A. Scruby, E.C.C. F.A.U.
Monitoring was undertaken during groundworks associated with the construction of new extensions to the existing house and the clearance of the moat at Chithams, Ramsden Heath, Essex, a probable hall and crosswing of late 14th-century date, with 16th, 17th and 19th century additions and extensions, situated within a Scheduled moated enclosure (SM 33250).

Inside the house, in the original Hall,(the earliest part of the building dating to *c*.AD1390), removal of a 19th- or 20th-century brick floor laid on a thin bed of concrete revealed surviving patches of what may have been the original earth floor. This comprised a compact, stiff clay-silt with mortar

flecks, charcoal fragments and small pieces of degraded animal bone and was at least 20cm thick.

Excavation of foundation trenches for an extension on the north-east corner of the house exposed a brick-built structure immediately beneath the existing yard/ patio surface constructed from Tudor place bricks, with a typical date range of the 15th to the 17th century. A single brick was removed, revealing a dark brown clay-silt soil and, based upon the date of the bricks and the size and shape of the exposed part of the structure, it is conjectured that it may have been a brick-lined cesspit or similar, standing to the rear of the 16th/17th-century house.

Monitoring of clearance works on the moat demonstrated that it had previously been de-silted, perhaps as recently as 20–30 years ago, and only modern material was recovered.

Archive: Ch.E.M.
Report: F.A.U. Report 2171

78 Rivenhall, Coleman's Farm, Little Braxted Lane (TQ 8352 1642)

E. Heppell, E.C.C. F.A.U.

Monitoring was carried out on the construction of a horse mènage *c.*100m to the north-east of Coleman's Farmhouse, within an area of known cropmarks (EHER 8297) that include a trackway which was plotted as crossing the site. General ground reduction and levelling was not deep enough to expose archaeological remains, though drainage channels penetrated deeper, into the undisturbed natural deposit. Although very narrow, parts of a possible pit and two ditches that broadly correlate with the position of the cropmark trackway were recorded. None contained datable artefacts.

Archive: Bt.M.
Report: F.A.U. Report 2430

79 Rochford, New Terminal and Aircraft Apron Site, Southend Airport (TQ 8750 8900)

P. Sparrow, E.C.C. F.A.U.

A total area of 0.74ha was investigated in advance of the construction of a new terminal building and associated aircraft apron within the eastern part of Southend Airport. The archaeological potential of the site was originally evaluated in 1998 and the presence/survival of prehistoric below-ground remains established.

The recovery of residual or unstratified Mesolithic and Neolithic worked flints hints at an early presence in the landscape. Remains of several ditches denoted the imposition of a rectilinear field system on the landscape during the Bronze Age. Within these enclosures the presence of pits and post-holes, some of which contained charcoal and small quantities of pottery, burnt and worked flint, and burnt bone, suggest occupation activity. Two distinctive paired pits, possibly deliberately located close to a ditch terminal, contained assemblages of flint-working tools and waste pieces that indicate on-site production and may be the product of structured deposition. These prehistoric features display similar character, alignment and artefactual content to others found during previous investigations in the wider vicinity. All are evidently surviving fragments of a widespread later Bronze Age landscape.

No remains of Iron Age, Roman or medieval date were encountered, though a small quantity of pottery and brick/ tile of these periods occurred residually in later features or as unstratified material. A single ditch of post-medieval date was identified, probably deliberately backfilled in preparation for the construction of the WW1/WW2 airfield. A range of 20th century features were uncovered that presumably relate to the airfield and airport use of the site, most seemingly relating to drainage.

Archive: S.M.
Report: F.A.U. Report 2273

80 Romford, Harold Wood Hospital, Gubbins Lane (TQ 546 905)

N. Hawkins, P.C.A.

Following previous evaluations an archaeological strip, map and sample exercise was undertaken involving the opening of three areas encompassing some of the trenches evaluated in 2002 (site code LTE02) and 2008 (site code HWP07). Further evidence of various phases of late prehistoric field systems and settlement were revealed consisting of extensive linear and curvilinear ditches, a small number of pits and some possible post-holes. Pottery recovered from these features has been provisionally dated from the late Bronze Age to the Late Iron Age, although some of the pottery may even represent early Romano-British forms. Also recovered from some of the features were fragments of burnt clay and daub, some of which had wattle impressions within them. A small number of later post-medieval features were also recorded consisting of two pits and a series of broken shallow linear features. Pottery and clay pipe recovered from the features dated to the 18th and 19th centuries and most likely represent agricultural activity during this period, when the site would have lain as open arable fields and pasture land.

Archive: L.A.A.R.C.

81 Saffron Walden, Retaining Wall at Rear of 30 Castle Street (TL 5380 3871)

T. Ennis, E.C.C. F.A.U.

Archaeological excavation and monitoring was carried out during rebuilding of the late 19th/20th century retaining wall separating the rear of 30 Castle Street from the north side of the inner bailey of Saffron Walden Castle. A 4m-long trench was excavated across the line of an earth bank and underlying deposits to the south of the retaining wall, with the aim of recording and dating the castle's inner bailey defences.

A build-up of deposits *c.*2m thick was recorded. Above the natural chalk, a buried medieval topsoil was overlain by a series of compacted sand, flint and chalk deposits interpreted as the foundations of the mid 14th-century inner bailey curtain wall. A rammed chalk and flint foundation for the curtain wall was recorded at the southern end of the trench, with a rubble base to its north, presumably for a bank against the foot of its outer face. No evidence was found of the original mid 12th-century inner bailey rampart, possibly because this was located closer to the inner bailey ditch which has previously been recorded to the north beneath Castle Street. After demolition and robbing in the late medieval or early post-medieval period, the castle grounds were landscaped in the 19th century, probably when

the museum was constructed in the 1830s. The medieval castle wall foundations are sealed by a sequence, *c.*1.5m thick, of layers of levelled topsoil, so that the material forming the bank to the rear of the retaining wall is entirely modern.

Archive: S.W.M.
Report: F.A.U. Report 1966

82 Saffron Walden, Castle Hill Tennis Club, Museum Street (TL 5380 3866)

T. Ennis, E.C.C. F.A.U.

Archaeological monitoring was carried out during groundworks for the construction of a new toilet, septic tank and drainage system, within the inner bailey of the medieval castle. An undated post-hole and a linear foundation with a squared end, a probable wall pier base, were found cut into natural chalk in the base of the septic tank trench. The foundation would appear to be part of a truncated and robbed building that continues beyond the confines of the trench. No direct dating evidence was recovered, but the retrieval of unabraded late medieval roof tile and fragments of architectural stone from the backfill suggests that the building might be of medieval date.

An undated pit was recorded in the drainage trench in the north of the area and a sequence of undated demolition or make-up deposits, including crushed limestone and plaster-like material, was noted in the soakaway to the west. A buried soil layer was recorded at a depth of 1.5m in the base of the soakaway was overlain in the south-west corner by small flints embedded in chalk. These were similar to those recorded in the excavation to the rear of the retaining wall (see summary above) and, as both investigations were located in similar positions relative to the modern-day castle boundary, it is possible that the embedded flints in the soakaway were a further part of the foundations of the 14th-century curtain wall circuit.

Archive: S.W.M.
Report: F.A.U. Report 1967

83 Southend-on-Sea, 160 Priory Crescent (TQ 8781 8759)

C. J Ellis: W.A.

Wessex Archaeology was commissioned by Lok'nStore to carry out an archaeological field evaluation in advance of development. A total of three machine-dug trial trenches (numbered 1–3) were excavated during the course of the evaluation. Within Trenches 2 and 3, a sequence of deposits derived in a wet, anaerobic environment were recorded and indicate that the lower lying area of the Site was previously situated within marshland. The presence of medieval pottery and tile suggests that the marshland was occasionally used for the disposal of domestic rubbish. Due to the vicinity of the medieval St Mary's Priory and the date of the deposited material, it is possible that the waste derived from activities associated with the Priory.

Residual Roman tile and charred remains of spelt wheat, probably of Romano-British date, were recovered from Trench 3 and are likely to have been associated with a settlement nearby. However, no features of Romano-British date other than burials have been recorded in the vicinity of the Site to date.

In Trench 1, three south-east to north-west aligned palaeo-channels were recorded and dated to the medieval period. These former water channels would have drained water from the higher ground to the south, where the Romano-British and Saxon cemeteries were located, towards the marshland to the east of the Prittle Brook.

Archive: S.M.

84 Southend-on-Sea, Southend Airport Runway Extension Site, South of Eastwoodbury Lane (TQ 8607 8865)

T. Ennis, A. Letch, A. Scruby and P. Sparrow, E.C.C. F.A.U.

Archaeological investigation was carried out in advance of the construction of a *c.*240m extension to the south-west end of the runway at London Southend Airport. The associated diversion route of Eastwoodbury Lane and alterations to the churchyard wall of St Laurence and All Saints Church were also monitored. Despite Iron Age and Roman remains having been previously found immediately adjacent, within the RBS Cards Operation Centre site, no such features were found within the road diversion route or runway footprint. Instead, virtually all identified archaeological remains were either of prehistoric or post-medieval/modern date.

The prehistoric remains comprised a scatter of late Bronze Age pits, ditches, gullies and a possible hearth base found in the road diversion and runway extension areas. These were of a similar type and density to prehistoric remains found elsewhere in and around the airport and suggest a widespread occupation and exploitation of the landscape by this time. No evidence for the Saxon and medieval Eastwood Manor, or any other medieval activity, was identified. Nor were remains of former post-medieval farmsteads and settlements along Eastwoodbury Lane located, other than the foundation of a modern agricultural building. However, the shallow depth of the strip at the north-east end of the runway extension probably did not allow the exposure of such remains. No significant remains were found during monitoring of the removal of the eastern part of the churchyard wall, (closest to the possible site of the Eastwood Manor), or within the foundation trench cut for a new wall along its west side.

Archive: S.M.
Report: F.A.U. Report 2259

85 Southminster, Goldsands Pit (TQ 961 991)

J. Russell, W.A.

An archaeological watching brief is being undertaken on quarry workings at Goldsands Pit, south-east of Southminster. The results of initial work indicate that Pleistocene sediments similar to those described as the Asheldham gravels by Bridgland (1994) are being extracted at Goldsands Pit. The extent of the quarry has been recorded and a search made for artefactual and environmental remains. No aretefactual or environmental remains were recorded during this visit, although Palaeolithic flint tools have previously been recorded in the area. Where practicable,

a detailed sedimentary record supported by GPS surveying, photography and sampling has been undertaken upon the exposed sediment sequence.

Archive: W.A.

86 Springfield, Plot K, Chelmsford Business Park (TL 7357 0822)

T. Ennis, E.C.C. F.A.U.

Archaeological excavation of a *c*.0.75ha rectangular area was undertaken in advance of the ongoing development of the Business Park. Plot K lies directly north of the Bronze Age causewayed enclosure, Early Saxon cemetery and Late Saxon settlement site excavated at Springfield Lyons between 1981 and 1991. Also recorded during these excavations, and in additional trenching to the north and south, was the western edge of a probable Neolithic causewayed enclosure defined by a curving alignment of large pits.

The western half of the Plot K site was heavily rutted and had already been previously used as a construction compound. Very few remains were found here.

Further parts of the Neolithic causewayed enclosure were recorded, its pits decreasing in depth northward. A small amount of early Neolithic pottery was recovered from these features and from a small pit located within the enclosure.

A group of nine post-holes and three stake-holes may constitute the remains of a small, slightly squat, roundhouse of probable Late Bronze Age date. Although the western side of this structure had been completely removed by a later ditch, it appears to have had a radius of *c*.5m and a possible porch on its south-east side. Located *c*.70m north-east of the enclosed settlement, this is the first building to be found outside. Further parts of a Late Saxon and two post-medieval boundary ditches were investigated, some of which are clearly continuations of ditches recorded during earlier excavations.

A further north-south aligned ditch is conjectured to be a further part of one excavated *c*.120m to the north during the investigation of development Plots G and H in 2006. This ditch had previously been tentatively identified as Late Bronze Age, but its alignment suggests it is as likely to be of Late Saxon or more recent date.

Archive: Ch.E.M.
Report: F.A.U. Report 2365

87 Stock, 16–20 Mill Road (TQ 6902 9888)

A. Wightman, H. Brooks, C.A.T.

Stock is well known for its post-medieval pottery industry. The potential for the present site to be part of that industry was highlighted by the name of the adjacent house to the east (Pottery House). Two evaluation trenches were dug in advance of the construction of a new shop building partially within the footprint of a previous structure fronting onto Mill Road (but extending further back) and of a new bungalow at the rear (south) of the plot. Of some significance is the discovery of a large group of post-medieval red earthenware pottery, a large part of which is Metropolitan slipware. The presence in the group of some misfired pots and a large group of peg-tile fragments covered in green glaze (run-off from the firing of glazed pots) shows that pottery making was taking place on or close to this plot (and to Pottery House), although the kiln site itself was not discovered. A full report is in preparation.

Archive: Ch.E.M.
Report: C.A.T. Report 598

88 Stratford, Town Centre Public Realm Project, Great Eastern Road; The Grove (TQ 3884 8443)

A. Pooley, P.C.A.

A watching brief undertaken on two phases of ground preparation works revealed, in the area of the Island Edge, natural brickearth below reworked brickearth, possibly representing late medieval subsoil, and in The Grove area a sequence of medieval and post-medieval metalled surfaces.

Archive: L.A.A.R.C.

89 Tollesbury, 'The Hope Inn', 16 High Street (TL 9552 1046)

A. Wightman, H. Brooks, C.A.T.

The Hope Inn is in the centre of historic Tollesbury. An evaluation by three trial-trenches revealed compact clay floors on the High Street frontage. These may be the remains of a late medieval or early post-medieval building (or buildings) cleared from this site when the original Hope Inn was built in the 19th century. A later excavation stage revealed more of the clay floor, brick walls from the post-medieval house, and a contemporary yard surface. Earlier (medieval?) features include pits, ditches and a possible boundary ditch.

Archive: C.M.
Report: C.A.T. Report 614

90 Tolleshunt Knights, 'Highbanks', Barnhall Road (TL 9283 1471)

A. Wightman, C.A.T.

An evaluation by two trial-trenches on a proposed development site south-west of a possible Roman villa has revealed an absence of archaeologically significant features or remains. Frequent peg-tile fragments indicate that a post-medieval building was demolished in the vicinity. The only evidence for the Roman villa site was a single unstratified sherd of Roman greyware pottery.

Archive: C.M.
Report: C.A.T. Report 605

91 Walthamstow, Ching Brook Flood Alleviation Scheme, Wadham Road (TQ 3784 9130)

T. S. Maher, P.C.A.

A watching brief monitored the excavation of twelve geotechnical test pits. The site straddles the River Ching and is located within sports and playing fields. London Clay deposits were observed in five of the test pits, whilst Fluvial gravels were recorded in a test pit to the north of the Ching, possibly indicating a former course of the brook. To the south of the

Ching a sand silt deposit was observed in two of the test pits, one of which yielded two fragments of residual Roman pot, possibly washed in from a previous flood event. The other deposits observed on site are consistent with the landscaping of the area for playing fields.

Archive: L.A.A.R.C.

92 Walthamstow, William Morris Gallery, Forest Road (TQ 3722 8992)

R. Humphrey and T. S. Maher, P.C.A.

An evaluation and a strip, map and sample exercise in advance of redevelopment revealed the presence of post-medieval brick-built structures and occupation surfaces across the redevelopment area dating from the 18th century onwards. These features represented parts of the demolished eastern wing of Water House, constructed between 1744 and 1758, as well as separate outbuildings, all of which were demolished at the start of the 20th century. The latest structure revealed was an escape tunnel from a basement room within the main house that was used as an air raid shelter during the Second World War.

Archive: L.A.A.R.C.

93 Wendens Ambo, Cranford Cottage, Duck Street (TL 509 359)

A. Dyson, M. Adams, S. Quinn, and P. Thompson, A.S.

An archaeological evaluation was carried out in advance of the construction of a new house and garage. The evaluation revealed Roman, medieval and post-medieval features, and the occurrence of sparse struck flint is also suggestive of prehistoric activity. The Roman features were dispersed and recorded in Trench 1 (Ditch F1010 and Pit F1013) and Trench 3 (Pit F1006 and Ditch F1021). Ditches F1010 (Tr.1) and F1021 (Tr.3) contained large assemblages of Roman pottery, and Ditch F1010 contained a thatch or loomweight. Medieval (12th–14th century) features were found in Trenches 2 (Pit 1027) and 3 (Ditch F1018, Layer 1020 and Pit F1023), towards the front of the site. The post-medieval feature was Flint Surface S1035 (Trench 2), but it may be earlier. A trackway metalled with flint cobbles dating from the medieval period was recorded on the adjacent site. The archaeological evidence is comparable to that recorded on the adjacent site where Roman and medieval features were revealed (Wightman 2009). It is suggested that the Roman features may indicate agricultural activity peripheral to the Roman villa complex at Chinnel Barn. The adjacent site also recorded medieval features dating from the 12th century or earlier. It is suggested that the medieval activity may relate to a farmstead on the edge of the medieval village of Wendens Ambo.

A subsequent programme of archaeological monitoring and recording was carried out on foundation trenches associated with the proposed new house and garage. A flint surface, L2005, of probable early post-medieval date, was identified, and also an undated ditch, F2006. Both features had been previously identified in the trial trench evaluation (Dyson *et al.* 2011).

Archive: S.W.M.
Report: A.S. Report 3779, 3945

94 Wicken Bonhunt, St Margaret's Church (TL 4988 3335)

L. Miciak, E.C.C. F.A.U.

The contractor's excavation of the footprint of a kitchen/toilet extension to the north-west corner of the church and an associated drainage trench running across the churchyard were monitored. The chancel was built in the 13th century and is all that survives of the medieval church, the nave and tower being rebuilt in the mid-19th century.

Eleven inhumations were found within in the kitchen/toilet extension footprint and two more in the drainage trench. Apart from a single possible coffin nail, no artefacts were found in association, but the orientation and position of the graves suggest they were of medieval and/or post-medieval date. Unstratified artefacts collected from the drainage trench included a quantity of sherds of Late Saxon St Neots-type pottery, also found at the remains of a Late Saxon manorial and chapel complex excavated at Bonhunt Farm *c.*1.25km to the east. It is speculated that a contemporary manorial focus for Wicken, perhaps with its own chapel, was located in the vicinity of what became the site of the medieval church and centre of the village.

Archive: S.W.M.
Report: F.A.U. Report 2451

95 Wivenhoe, University of Essex (TM 0242 2424)

A. Wightman, H. Brooks, C.A.T.

A new, 40-acre 'Knowledge Gateway' development at the University of Essex coincides with the location of a group of five Bronze Age barrows. The stripping of topsoil off the construction site gave an opportunity to survey the barrow site. Dr Tim Dennis of the University of Essex carried out geophysical survey and has superimposed the barrow sites against air photographs and a LiDAR plot, which showed detail of surviving mounds and ditches which are not visible at ground level. A continuing watching brief has recovered nearly 500 sherds of Late Iron Age and Roman pottery, many derived from disturbed burials.

Archive: C.M.
Report: C.A.T. to be advised

96 Wixoe, Wixoe Pumping Station (TL 708 430)

A. Scruby, E.C.C. F.A.U.

A geoarchaeological assessment was carried out on land within the pumping station site situated on the floodplain of River Stour, as part of a programme of archaeological works in connection with the Wormingford to Abberton pipeline and associated infrastructure. The river had been diverted in the 1960s–70s at this point and now runs in an artificial channel. The earlier meandering course of the river crosses the pumping station site. Preliminary investigations (Hopla and Krawiec 2010) had previously identified a sequence of alluvial and organic sediments, including peat deposits. The 2011 geoarchaeological investigations comprised the drilling of ten boreholes, which were logged in the field, following which two sleeved cores were then subject to detailed environmental assessment. The results of the recent work identified a similar

pattern to that in the 2010 studies, with sand, silt and clayey deposits overlying an undulating gravel surface. The latter were probably laid down in the late Pleistocene or early Holocene during a period of high-energy deposition. The overlying sequence of sands, silts and clays is typical of a meandering river channel where there are a multitude of micro-environments such as point bars, mid-channel bars, pools and backwaters.

Archaeobotanical analysis of pollen, waterlogged wood, macrofossils and seeds indicates a damp, open and disturbed environment typical of a floodplain dominated by herbaceous vegetation during the accumulation of the peat. In the organic sand underlying the peat a similarly wet, open and disturbed environment is indicated, dominated by herbaceous and aquatic vegetation. The Mollusca remains are too small to draw any firm conclusions but the indications are of well-oxygenated, hard water in a slow-moving river or a lake, with dry grassland indicated in the uppermost sample. The presence of anthropogenic material (e.g. charred cereals grains, charcoal, charred chaff and ceramic building material) from both the peat and the organic sand underlying it are indicative of human activity in the surrounding landscape during the accumulation of both sedimentary units. Radiocarbon dating of terrestrial seed found in the peat indicated that it accumulated between the 8th and 13th centuries. This is therefore a well preserved organic floodplain sequence of historic period age, evidence for which has not previously been recorded in this part of the Stour valley and is not particularly common elsewhere in lowland Britain.

Archive Bt.M.
Report: F.A.U. Report 2344

97 Wormingford, Lodge Hills (TL 929 325)

W. J. Mallinson, C.A.G.

Excavation has concluded on the site of a suspected Tudor hunting lodge, identified by geophysical survey in 2006 (Black and Black 2007). In addition to the remains of a substantial high status cellared building, now interpreted as the possible lodge or viewing tower, and of a 9m deep brick lined well, both reported earlier, a complex of culverts and cisterns has been further excavated.

Report: In preparation (by Howard Brooks, C.A.T.)

98 Wormingford, Tile Kiln (TL 926 324)

W. J. Mallinson, C.A.G.

The site of a tile kiln is being examined for its possible connection with the hunting lodge above. It has proved to be a Suffolk-type kiln, with two flues and a rectangular firing chamber. From building materials used it is tentatively dated as being constructed about 1550, and had probably gone out of use by 1720. Work continues.

ABBREVIATIONS

A.O.C.	AOC Archaeology Group
A.S.	Archaeological Solutions
A.S.E.	Archaeology South-East
Bt.M.	Braintree Museum
C.A.G.	Colchester Archaeological Group
C.A.T.	Colchester Archaeological Trust
CgMs	CgMs Consulting
C.M.	Colchester and Ipswich Museums
Ch.E.M.	Chelmsford and Essex Museum
E.C.C. F.A.U.	Essex County Council Field Archaeology Unit
E.F.D.M.	Epping Forest District Museum
H.N.	Heritage Network
L.A.A.R.C.	London Archaeological Archives and Resource Centre
M.o.L.	Museum of London
M.o.L.A.	Museum of London Archaeology
N.A.	Northamptonshire Archaeology
O.A.	Oxford Archaeology
O.A.E.	Oxford Archaeology East
P.C.A.	Pre-Construct Archaeology Ltd
R.P.S.	R.P.S. Clouston
S.M.	Southend Museum
S.W.M.	Saffron Walden Museum
T.M.	Thurrock Museum
W.A.	Wessex Archaeology

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Shorter notes

THREE PREHISTORIC WORKED FLINTS OF SPECIAL INTEREST by Hazel Martingell

During the last six years, three unusual and interesting prehistoric stone tools were lent to the author for comment. They range in date from: possibly, the Middle Palaeolithic *c*.127,000 BC (Fig. 1); Latest Upper Palaeolithic 16,000–10,000 BC (Fig. 2); and the Mesolithic 10,000–3,000 BC (Fig. 3).

Fig. 1: Although this artefact looks like a hand axe, it is really a heavy duty cutting tool, with a sharp left edge and a natural cortex-covered flat surface on the right side. The most striking feature is the large hollow in the centre of the dorsal surface, probably caused by a fossil inclusion that either fell out or was deliberately removed. This hollow might have been a place for the thumb to grip, if cutting something hard, or it could have been used as a cup for a lamp. Natural flint cobbles with fossil holes were usually discarded by the flint knappers, but this one was carefully flaked and shaped for a special purpose. The patination on some of the flaked surfaces suggests a Middle Palaeolithic date (pers com. R. Jacobi 2009) or an alternative interpretation is that it is a natural flint, flaked during the Later Prehistoric period (pers. com. L. Copeland, 2010).

It was found in a garden in Francis Way, Silver End, in 2004 by Susan Morris and given to Halstead Museum by her daughter Claire Stone. Later in 2008, it was agreed to transfer the artefact to Braintree Museum. (It has been known as the 'Halstead Hand-Axe').

Fig 2: A straight parallel sided blade with opposing continuous retouch at the bulbar end to form the tang. Although the end of the blade is missing, this is still a very fine example of a Late Upper Palaeolithic 'tanged knife' (pers. com. N. Barton and A. Saville 2010).

Identifiable Late Upper Palaeolithic artefacts are rarely found, possibly for two main reasons; first because tanged pieces have not been recognised and were called piercers or points instead, and second, this is a period of reoccupation after the Devensian Glaciation when Britain had been abandoned, and it would not be expected to find many artefacts. It is especially important therefore, to identify the sites where Late Upper Palaeolithic artefacts are found in order to locate areas that were re-occupied by Modern Humans between 16,000

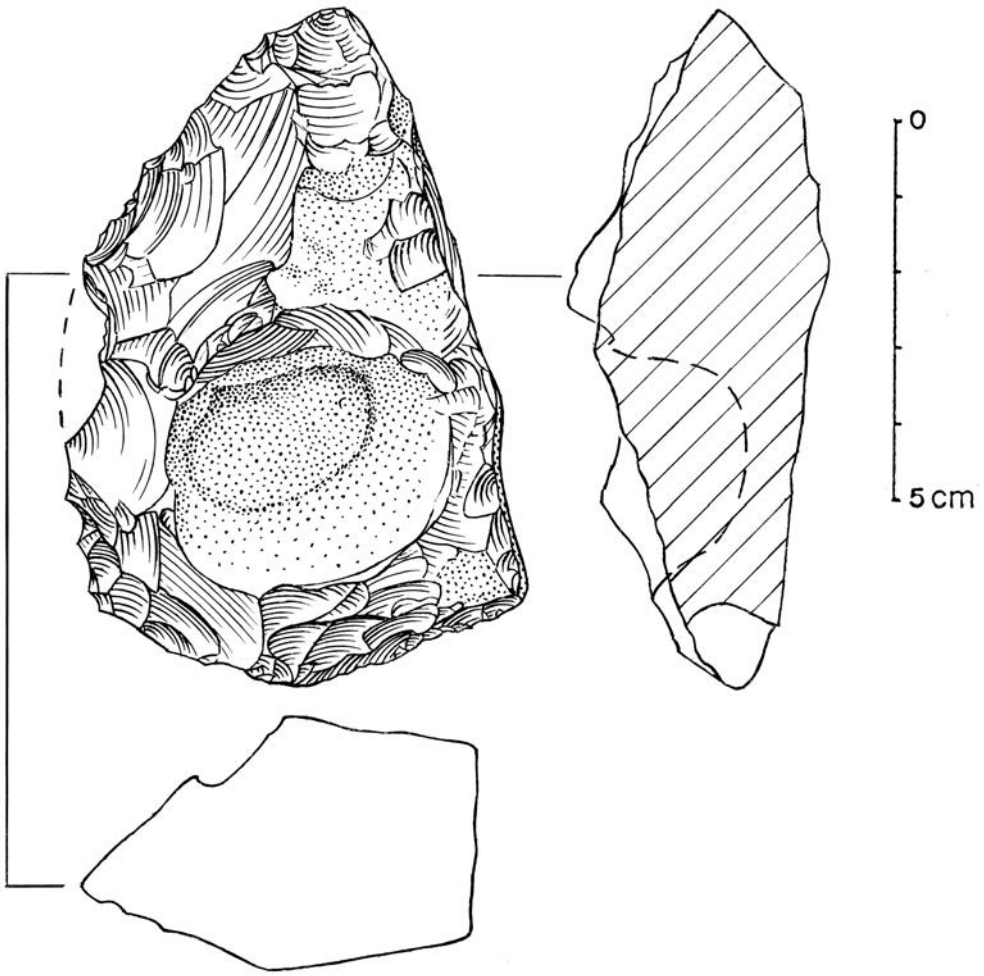

FIGURE 1: A bi-facially flaked flint from Silver End, Rivenhall

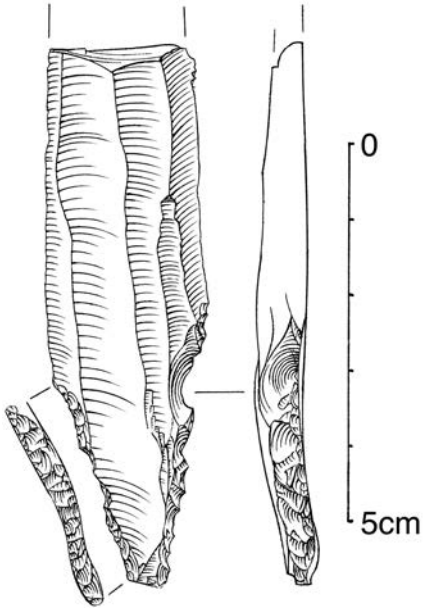

FIGURE 2: A tanged blade from Bonhunt Farm, Wicken Bonhunt

and 10,000 BC. The stone tool types found on East Anglian sites suggest the arrival of people from Western Europe, in particular from Northern Germany, the Netherlands and Belgium.

The site of Bonhunt Farm, Wicken Bonhunt was field walked and excavated on several occasions over a period, roughly from 1967 to 1992. Approximately 9,000 worked flints were recovered. Bari Hooper discovered the site and was responsible for the original field walking finds, including this piece and he also excavated. His collection and the more recent recoveries are stored in Saffron Walden Museum, along with a type written report (Hooper, B. 1986).

Fig. 3: This fabricator is made on dark grey flint with inclusions. It is bi-facially flaked and worn at both ends. A variety of uses have been attributed to fabricators; some may have been tools used for knapping to strike flakes from cores. Subsequently these 'blanks' were modified and became artefacts. Fabricators have been found with Bronze Age burials and then it was presumed they had been used as strike-a-lights, as often a piece of iron pyrites was found with them. This class of implement has also been found in Mesolithic and Neolithic collections. The fabricators from Dawes Heath, Thundersley, may well be Mesolithic or Neolithic rather than Bronze Age. The chronology and typology of this class of implement needs more research by lithic specialists.

This fabricator was found during the excavations on the floor of the medieval, Swan Hall, Prittlewell. It is possible that someone, during the medieval period, found this piece and either kept it for use or saved it as a curiosity; most likely it was used as a strike-a-light.

No other prehistoric artefacts were found at this site during the excavations. The fabricator is now stored at Southend Museum. Southend Museum has several examples of so-called 'fabricators' in their collections, mainly from the Dawes Heath/Thundersley area.

The author is always happy to look at and comment on all stone tools. Hazel Martingell, hazel@stonetoolpress.com

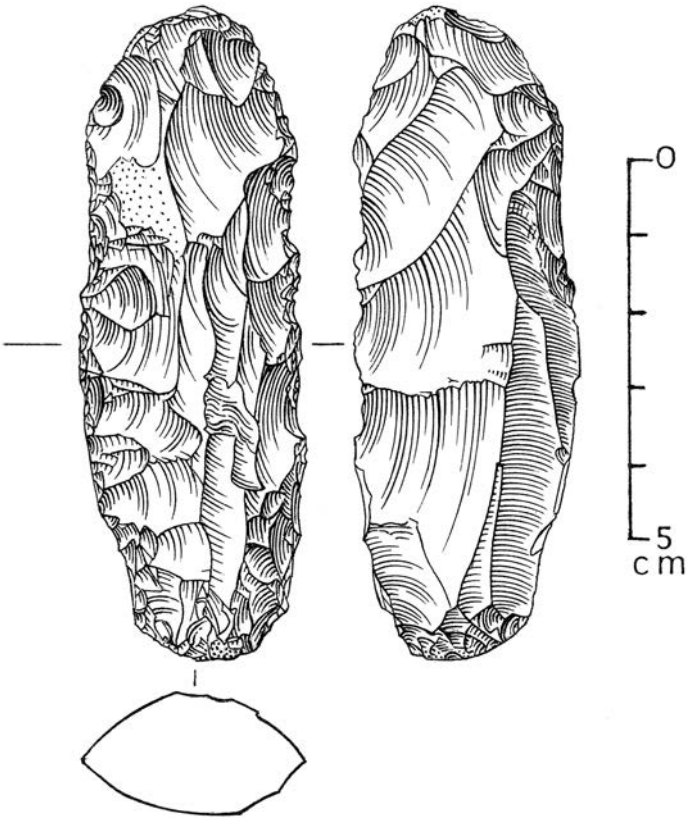

FIGURE 3: A fabricator, punch or rod from Swan Hall, Prittlewell

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PREHISTORIC AND ROMAN REMAINS AT SOUTH GATE HOTEL, THREMHALL AVENUE, STANSTED AIRPORT

AIRPORT by Jonathan House
Illustrations by Gillian Greer and Stuart Ladd

A small excavation within the greater Stansted Airport development at South Gate supplements previous investigations in the area. Two palaeochannels were found, one of which contained artefacts ranging in date from the prehistoric to post-medieval periods. Set between the channels was a series of inter-cutting Bronze Age pits, while numerous adjacent tree throws and other pits yielded worked flints dating from the Mesolithic to the Early Bronze Age. Later, an Early Romano-British field system formed part of a wider network of fields recorded during previous excavations.

In April 2011 an archaeological excavation was undertaken by Oxford Archaeology East (OAE) at the South Gate Hotel Site, Thremhall Avenue, Stansted Airport. The site lies immediately to the north of the A120 carriageway, 1.5km to the north-west

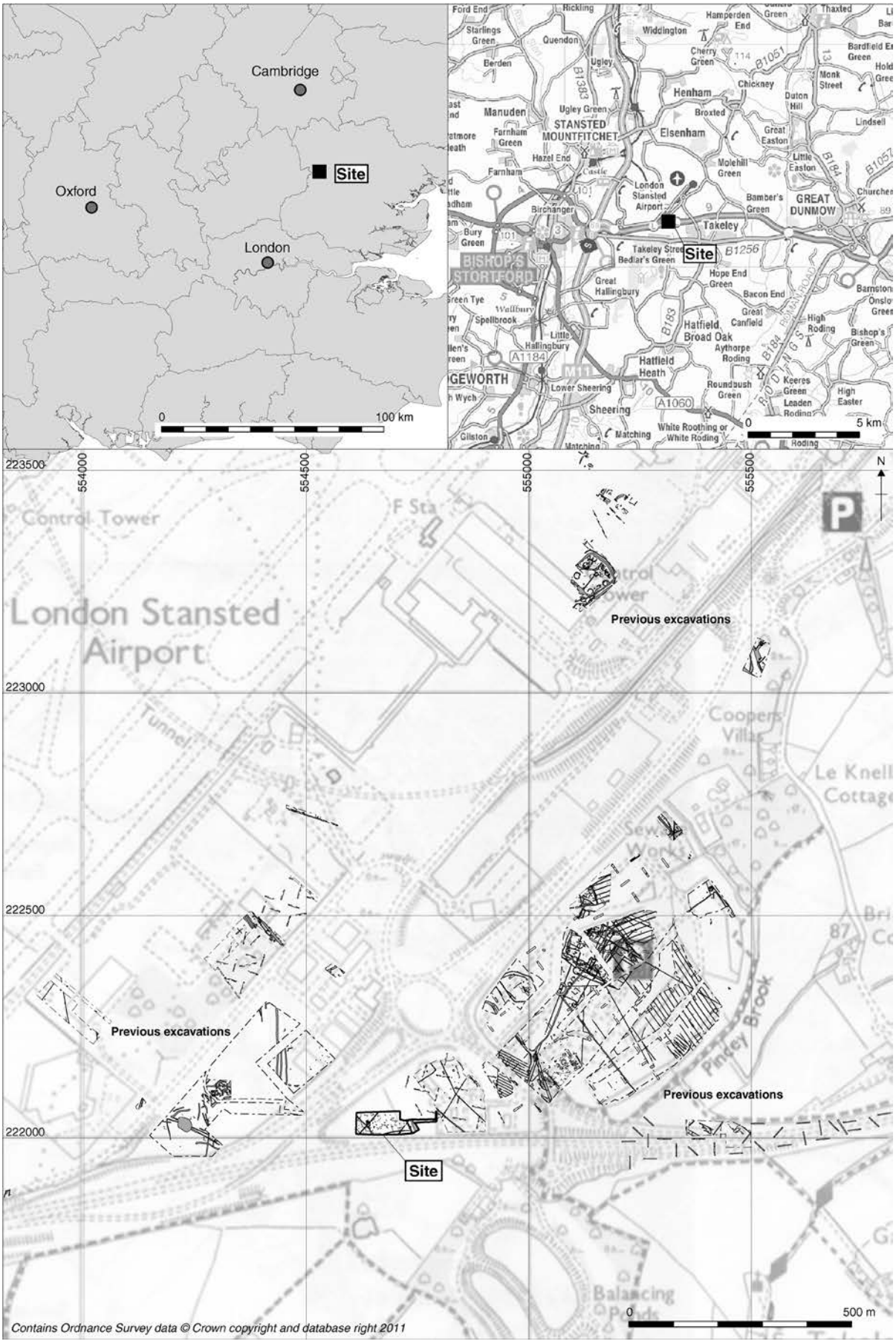

FIGURE 1: Site locations

of the village of Takeley and 2.5km south-east of the village of Stansted Mountfitchet. The course of Roman Stane Street lies further to the south. The underlying geology was Boulder Clay overlying London Clay (B.G.S. 1948). Colluvial deposits were recorded within the south-west corner of an adjacent site immediately to the east (Fig. 1).

The site lies within a landscape that has been extensively investigated over a number of years, most notably as part of the Stansted Project between 1985 and 1991 (Havis and Brooks 2004) and more recently between 1999 and 2004 by Framework Archaeology (Cooke *et al.* 2008). The scale of this work has enabled a detailed narrative of the changing nature of human activity to be produced. Archaeological features spanning the Neolithic to post-medieval periods have been recorded in the locality, ranging from settlements, fields and enclosures to cemeteries and ritual/ceremonial monuments. This evidence has contributed significantly to current understanding of a number of broad chronological themes and events including: the first major Neolithic incursions into the wooded claylands, expansion of settlement and forest clearance in the Bronze and Iron Ages; the establishment of large-scale agricultural landscapes in the Roman period; and the development of more recognizable forms in the medieval period (Framework Archaeology 2003). The remains encountered at the subject site fit neatly into the overall picture of the landscape which has been illuminated by previous work.

The westernmost of the palaeochannels (Fig. 2) contained finds representing each of the significant periods of the site's occupation. A series of test pits were excavated through this channel. Its infilling is likely to have occurred over a long period of time, since the basal layers contained predominantly prehistoric finds, such as flint working waste. These in turn were overlain by deposits containing Roman pottery sherds, and in the far south-western corner of the site the natural feature deepened and further deposits survived containing various finds of post-medieval date.

The earliest evidence for human activity on the site took the form of a few worked flints of Mesolithic or earlier Neolithic date. The assemblage suggests infrequent activity over an extended period of time and accords with the pattern of occupation identified in the wider landscape by previous excavations: 'the impact of Mesolithic inhabitation on the Stansted landscape is likely to have been minimal. The small quantity of diagnostic flints suggests that each episode of activity was not particularly prolonged or intensive' (Cooke *et al.* 2008, 18). This continues to be true throughout the Neolithic period, certainly within the South Gate excavation, with artefacts of the period occurring residually within pits or deriving from tree throws.

Occasional pits and tree throws occurred throughout the excavation area: morphology proved the best means of distinguishing between the two types since there was very little difference between the character of fills and finds. The latest items from these features consist of three refitting flint flakes consistent with Early Bronze Age material. Once again this appears to be a consistent trend throughout the Stansted landscape: 'at Stansted evidence for Neolithic and Early Bronze Age (*c.*4000–*c.*1700 cal BC) activity is characterised by scattered pits and tree-throws into which a range of artefactual material was deposited' (Cooke *et al.* 2008, 20).

One part of the site was dominated by intensive pitting, in two adjacent groups (Figs 2 and 3). The sequence comprised 34 intercutting pits of varying shape and size, two of which contained Late Bronze Age to Early Iron Age pottery. The general scarcity of finds and lack of diagnostic sherds prevents close dating of the sequence. Worked flint was recovered from eight deposits, the majority of which is attributed to later prehistoric activity making it consistent with the pottery. Flakes of probable earlier date, including a Mesolithic/Early Neolithic blade-based removal flake, are likely to represent residual finds within the pits, perhaps derived from a surface scatter prior to the pitting activity.

The pits varied in depth from 0.4m to 1.1m and were between 1m to 3m wide. The stratigraphic relationships between them were not always clear and it is possible that some of the cuts were made while earlier pits were still open, or partially open. The fills were generally homogeneous, comprising a mid yellowish brown silt clay, although occasional darker fills were encountered. A similar sequence of pitting occurred within the SCS site to the west, although these pits contained an abundance of finds dating to the Late Bronze Age and Early Iron Age. A more closely comparable cluster of pits was recorded at the M11 site 2.5km to the west (pit group 3; Cooke *et al.* 2008, 76); these intercutting pits showed the same characteristics as those from the subject site, although again a greater frequency of finds was present. Given the similarities of the features from both sites with the South Gate pits, it can perhaps be suggested that the latter were of similar Late Bronze Age or Early Iron Age date. The marked differences in quantities of finds may simply be attributed to distances from settlement activity.

The function of the South Gate pits remains unclear. They have characteristics similar to those of quarries, although the chalky clay raw material available for extraction would have been of limited use and it would appear that many of the pits were re-cut through earlier features and therefore not cutting into clean ground. The paucity of material culture and the apparent absence of nearby settlement rules out domestic waste disposal. It appears most likely that the pits represent watering holes, perhaps for livestock, which may have been sited away from the main settlement area. The intensity of the recutting perhaps suggests a long period of use or intermittent seasonal visits.

The excavation provides further evidence for the known Early Romano-British field systems recorded across the local landscape. Pottery recovered from the excavated ditches ranges in date from the 1st to 2nd century, broadly reflecting the findings of previous works: it has been noted that close dating of these boundaries is problematic, resulting in their attribution to the Early Romano-British period (Cooke *et al.* 2008, 126). An interesting aspect of the Romano-British boundaries found at South Gate is their possible relationship to the area of intercutting pits. The ditches crossed beside the pits (Figs 2 and 3), and one of the ditches visibly kinked towards this area. An explanation for this may simply imply a depression was still visible in the ground, or that the immediate vicinity existed as marshy ground above the adjacent palaeochannel. The layout may have marked the corner of a field(s).

Acknowledgements

The author would like to thank Urban Innovations who funded the project and commissioned the archaeological

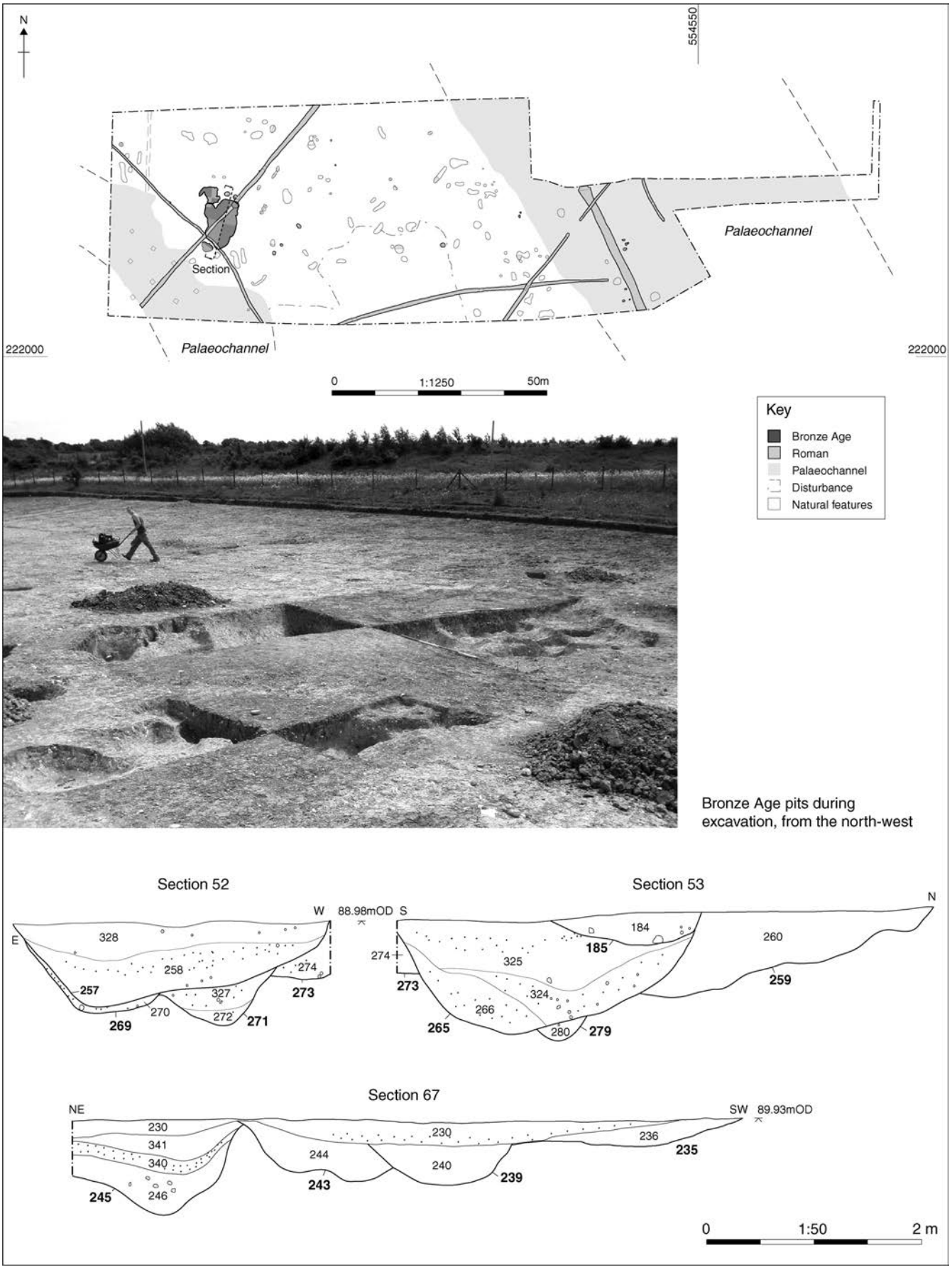

FIGURE 2: Site plan, photograph of Bronze Age pits during excavation and section across the pits (see Fig. 3)

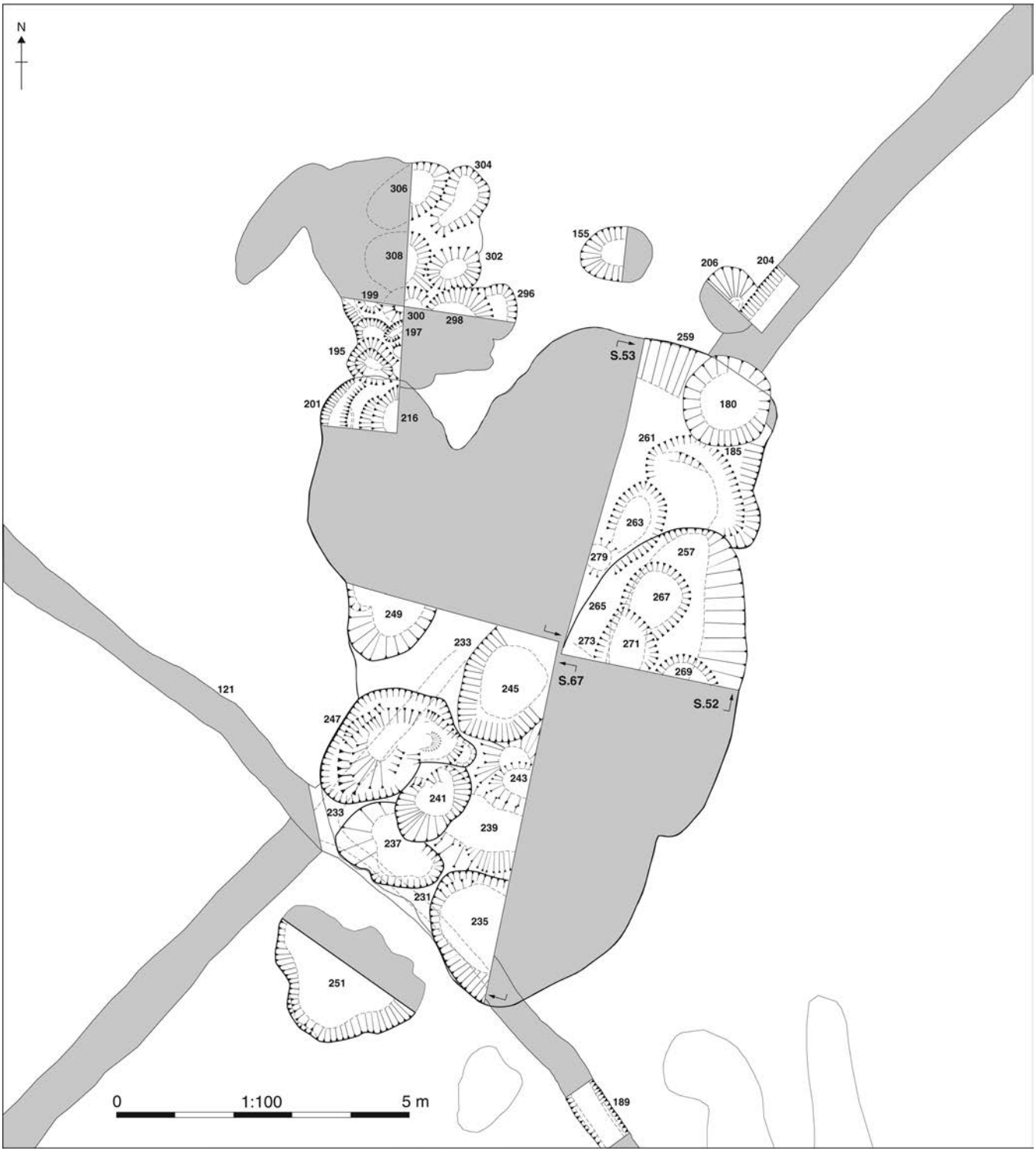

FIGURE 3: Plan of Bronze Age pits

work. The project was managed by Aileen Connor. The site survey and pre-excavation plan were completed by Rachel Clarke. Thanks also to the site staff: Brenton Culshaw, Kate Clover, Michael Webster, Yvonne Heath, Lindsey Kemp, Dennis Morgan, Lian Waring, Stephen Colison, and Elizabeth Colison. The project was monitored by Richard Havis of ECC. This article was edited and prepared for publication by Elizabeth Popescu.

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A RE-USED ANGLO-SAXON CROSS SHAFT FRAGMENT FROM ST MARY'S CHURCH, NEWPORT

by Daniel Secker

The fragment was noted during a visit to St Mary's church at Newport on the 9th May 2013. It has been re-used as the left cheek of a putlog hole in the north aisle of the church (Fig. 1). The putlog hole is situated 0.22m west of the re-entrant between the aisle and the north transept.

Description

The shaft fragment has been re-set on its side, with the top end facing east (Fig. 1). It measures 285mm X 80mm at the top end and 123mm at the bottom (Fig. 2). The small size of the stone indicates this was the top end of the shaft, which is of Jurassic oolitic Barnack-type limestone. The stone contains fossil inclusions up to 8mm across. It is fairly weathered, but the details are discernible apart from the top end. The fragment is from an angular cross, its narrowness suggesting it may have been rectangular, though re-setting makes this uncertain. The stone has been worked using a modelled technique, with rounded relief and flat intervening ground (Cramp 1984, xxii). The left edge has a roll-moulding, but the right-hand roll-moulding has been destroyed. The face of the cross is carved with simple pattern interlace of two threads. The asymmetrical nature of the interlace indicates freehand working rather than use of a template.

Provenance

The fragment was clearly re-used in the later medieval period. The north aisle of the church has been ascribed to the 14th century (RCHM Essex I 1916, 188–90). The date of re-use means it is almost certain the original cross was situated in the church or churchyard. Long distance transport of sculptural fragments and their re-use in other churches only occurred with antiquarian interest in the subject in the 19th century (Sidebottom 1994, 146).

Dating

Anglo-Saxon sculpture is difficult to date on stylistic grounds alone (Cramp 1984, xlvii). This is especially the case with the Newport fragment given the simple, generic form of the sculpture. Free-standing crosses do, however appear to have become redundant by the 11th century, as evidenced in their break-up and re-use in churches of this date (Sidebottom 1994, 8). At Avebury, Wiltshire, a cross or grave-marker fragment was re-used in the late Saxon church (Pollard and Reynolds 2002, 235–6). That the Newport cross fragment is unlikely to be earlier than the third decade of the 10th century is suggested by its broader context, discussed hereafter.

The Newport cross fragment in context of church and settlement

The settlement at Newport is believed to be the direct successor to the neighbouring 7th- to 9th-century high-status site at Bonhunt (Wade 1980; Rippon 1996). It was once suggested by Jeremy Haslam that Newport was the unidentified *burh* of *Wigingamere* founded by Edward the Elder in AD 917 (Haslam 1988). Though Haslam later found the identification with *Wigingamere* untenable, he maintained that Newport was an undocumented *burh* founded by the same king at the same time (Haslam 1997). If this was the case, the purpose of the *burh* at Newport was perhaps as a base to mount an assault on Viking-held Cambridge, which submitted to Edward in AD 918 (Stenton 1971, 329). More significant in the present context is Edward's capture of Stamford in the same year (ibid.). The Barnack quarries are immediately adjacent to that town. The events of AD 918 would thus appear to provide a terminus post quem for the quarrying of the stone for the cross.

It has been suggested the church at Newport originated as a minster on account of the cruciform plan of the later building (Rodwell and Rodwell 1977, 114). There is further evidence of minster status in the early 12th century judgement that the chapel at Bonhunt had formerly been a dependency of Newport (Rippon 1996). Toponymical evidence of a broader minster *parochia* exists in the form of the place-name Norton End, the north *tun* of Newport (TL 5115 3585) now in the parish of Wendens Ambo. Settlements with directional names such as Norton have been suggested as outliers of minsters (Blair 2005, 251). A minster at Newport might have been established at the same time as the suggested *burh*.

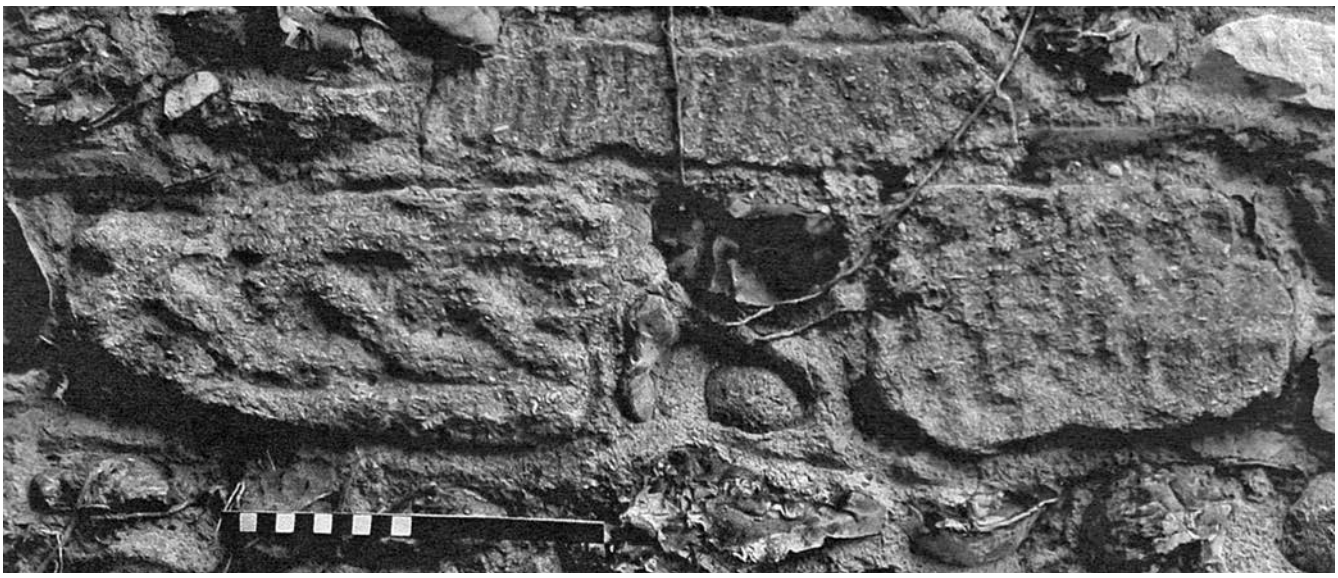

FIGURE 1: St Mary's church, Newport: putlog hole showing cross shaft fragment re-used as left cheek of putlog hole (scale: 0.2m)

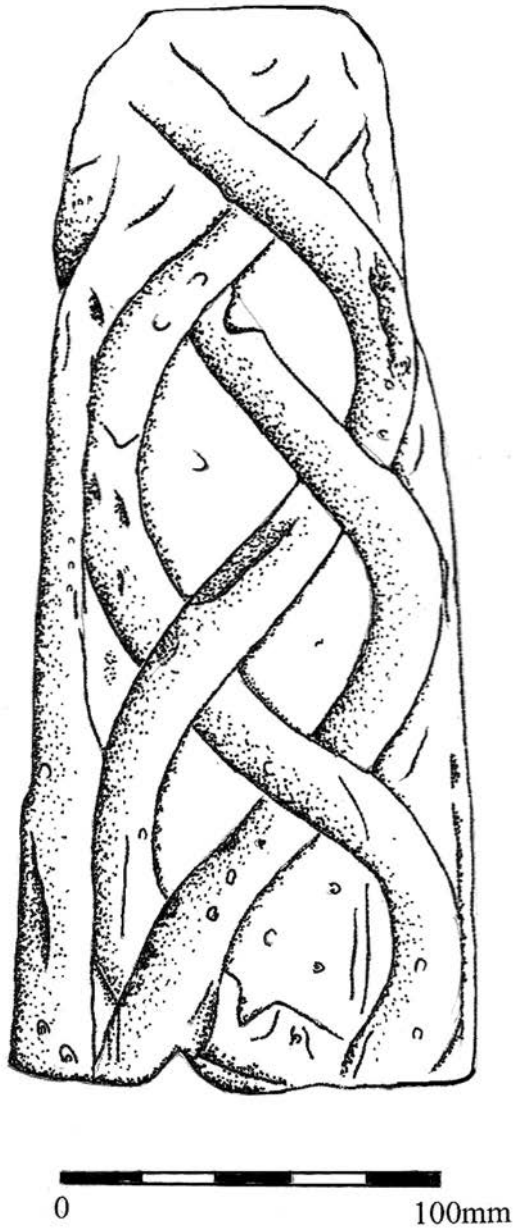

FIGURE 2: St Mary's church, Newport: the cross shaft fragment rotated 90 degrees right to show probable original orientation

The function of the cross

As well as having funerary or memorial purposes, crosses may have had territorial and political functions. Studies on those in the Midlands have suggested many were erected in the earlier 10th century by Viking converts to Christianity and that they '(drew) attention to inheritance claims' (Sidebottom 1994, 184). This clearly was not the case at Newport, where the patron was the king himself. Nevertheless, it is possible the Newport cross was a symbol of the reclamation of previously Viking occupied land by the creation of the suggested *burh*. If, however, the fragment is of a later date, it would have no such connotations.

The Shelford connection

The cross fragment at Newport should also be considered in the historical and sculptural context of Shelford in south Cambridgeshire. Before the Conquest, both were held by Harold Godwineson, Shelford being a berewick of Newport (Williams and Martin 2002, 521). There is indirect documentary evidence that the church of All Saints, Little Shelford originated as a minster (Hart 1995). Several late Saxon grave slabs and a headstone have been built into the later fabric of the church (Hart 1995, Figs 4, 6–8). Like the Newport fragment, these are of Barnack-type oolite and the interlace patterns are simple in design. It is possible both the Newport and Shelford sculpture is the product of the same school of sculptors.

Conclusion

The cross at Newport represented by the re-used fragment may date from any time between *c*.AD 920 and *c*.AD 1050. Not only is this an important addition to the somewhat sparse corpus of Anglo-Saxon stone sculpture in Essex, but it is further evidence that the superficially 13th-century church at Newport originated as a later Saxon minster.

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SURVEY OF AN EARTHWORK MOUND – MAGDALEN LAVER by Peter D.R. Sharp and David McOmish

Introduction

Field reconnaissance of a rural area of west Essex by one of the authors (Peter Sharp) has revealed a hitherto unsuspected wealth of surviving archaeological features, as well as a number of other sites that have either been levelled by cultivation or are in the process of being destroyed. Amongst the most significant of discoveries has been the detail added to an already known site at Leaden Roding, where there is evidence for Late Iron Age, Romano-British and Anglo-Saxon activity. Here, field collection allied to geophysical survey has unearthed a remarkable palimpsest landscape that is dominated by the extensive remains of a substantial rural settlement, its fields and communication networks (Sharp 2008, 124–35). During the course of this programme of field reconnaissance, a range of other sites were visited and assessed against current listed

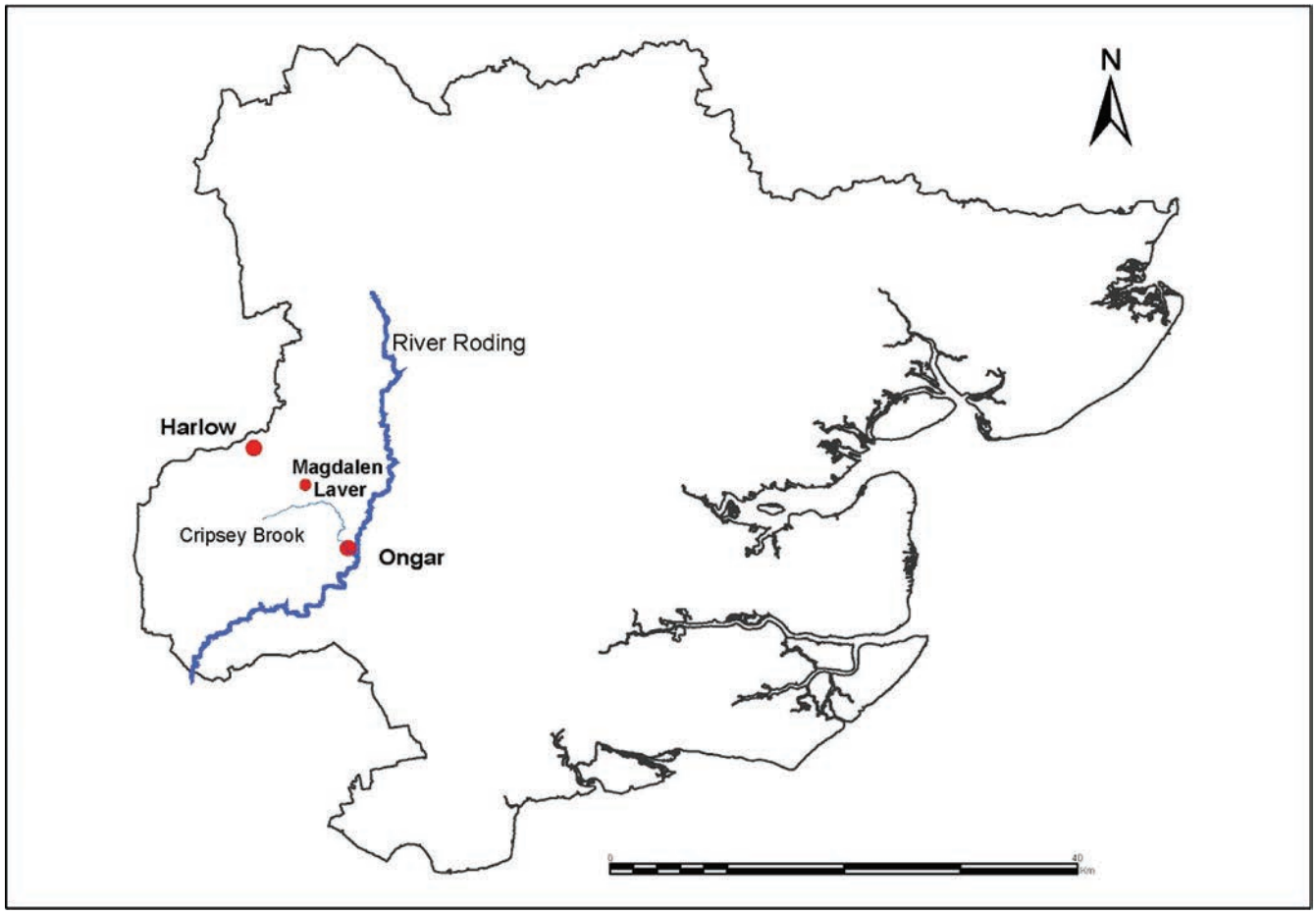

FIGURE 1: Site location

designations and it is one of these that forms the basis of this report: the earthwork mound at Magdalen Laver. It is located 600m east of the dispersed hamlet of Magdalen Laver, in the parish of the same name, a rural area of west Essex at NGR TL 5156 0844. The nearest large conurbations are Harlow, 5km to the west and Chipping Ongar 6 km to the south-east (Fig.1). The mound is not a Scheduled Ancient Monument, but it is recorded in the National Monuments Record as monument number TL 50 NW 25, where it is described as 'a moated medieval motte or post-medieval mill mound'.

The mound sits on level ground at an altitude of *c*.83m above Ordnance Datum (OD) with commanding views in all directions. On all sides but the south-west, the mound is approached across fairly level terrain, though with a slightly south-facing tilt. On the south-west, however, the land drops relatively sharply, firstly to a narrow terrace 60m distant, probably a fossil palaeo-channel and beyond this, to a winterbourne valley that separates this ridge from that to the west which hosts the parish church of Magdalen Laver: the southern section of the winterbourne was realigned in the 1940s. The mound thus occupies a prominent location close to albeit ancient water sources and, certainly when viewed from the south and west, a location that is evidently a false-crested site. Apart from the winterbourne no other existing water sources can be observed in the immediate vicinity. The stream itself flows to the south-east, away from Magdalen Laver, and is a tributary for the Cripsey Brook that flows east then southward to the River Roding, a major feeder for the Thames.

Geology, soils and current land use

The local drift geology is dominated by tertiary deposits laid down at the end of the Devensian glaciation. These are essentially boulder clays dominated by the typical calcareous pelosols of the Hanslope series, and are characterised by heavy clay-like brown soils, with occasional spreads of sandy loam, containing an admixture of pebbles and rocks, much of it flint or flint-related material. There is a significant loessic component to these soils: local farmers estimate that it is 1.5–2.0m deep in places. Loess is a loosely compacted aeolian deposit and it may well be that, as in other areas, it formed a significant coating of the tertiary deposits. Loess is a very fertile and easily worked soil and as such proved productive for early cultivators. Indeed, its presence may well have determined the location and extent of early arable cultivation. The solid geology is Boulder Clay and this expands in a wide arc to the south and east and is effectively the same underlying deposit that stretches to the northern fringes of the Thames valley to the south.

Current land use is dominated by arable cultivation mainly for cereal and potato production. The deep ploughing involved in production of potatoes has a deleterious impact on the fabric and condition of the soil and has taken a toll on upstanding archaeology not seen since the 1950s. Relict field boundaries can be seen in the field to the west of the mound. Cultivation is erasing these as surface features but it is still possible to identify a low spread bank 3.0–5.0m in width and 0.1m high which follows a sinuous course along the contour

at 85m above OD, roughly parallel to the winterbourne. This feature is very typical of a headland or, perhaps, a field boundary separating furlongs of ridge-and-furrow cultivation. Indeed, very slight surface indications of ridged cultivation can be seen in this area and it is likely that this dates to a post-Roman period. The date of ridge-and-furrow cultivation is much debated but it would appear that, in a number of areas, it is pre-Conquest (Norman) in date and was current for much of the medieval and later periods. On the Tithe apportionment and map for Magdalen Laver (ERO, D/CT 211A & B, 1847), fields immediately south of the mound are named *10 acre Mill Hill* and *7 acre Mill Hill*, clearly indicating the nearby presence of a mill site.

The wider landscape

The wider context for historic land use in the immediate environs of the mound at Magdalen Laver is less certain. An examination of sources including oblique and vertical aerial photographs and early Ordnance Survey maps indicates a landscape composed of irregularly-shaped field enclosures of varying sizes, possibly former woodland, threaded with narrow tracks and lanes – the lane immediately adjacent to the mound, Pole Lane, is very much a surviving component of this former wooded landscape. Today, much deciduous woodland survives. This was not a typical 'open field' landscape, instead the nature of the field boundaries shown on the 1st edition OS 6" (1:10560) scale map of 1874, for example, suggests piecemeal clearance of wooded areas and conversion to pasture and arable (Fig. 2).

Earlier, pre-medieval, activity in the immediate environs of the site certainly existed, but its form and layout is, at present, unclear. The walls of the church of St Mary Magdalen close to the mound (TL 513083), for example, incorporate substantial quantities of Roman building material including *tegulae* and *opus signum* and the suspicion is that this tile and brick was robbed from a nearby Roman site of some architectural standing. This may well be the villa referred to in the National Monuments Record (TL 50 NW 9) that is located in the field known as Redmill Shot *c*.400m to the south-east of the church (Fig. 2). Recent field walking here recovered quantities of Late Iron Age and Roman ceramics, 3rd and 4th century coins, as well as fragments of contemporary copper alloy objects including likely Roman bracelets, pins and brooches (Sharp unpublished ms).

The nature of earlier, prehistoric, activity is, again, unclear. There are occasional finds of lithics in the surrounding area including flint projectiles and axes but, more commonly, scrapers and other edge tools as well as flaking debris. Collyer's

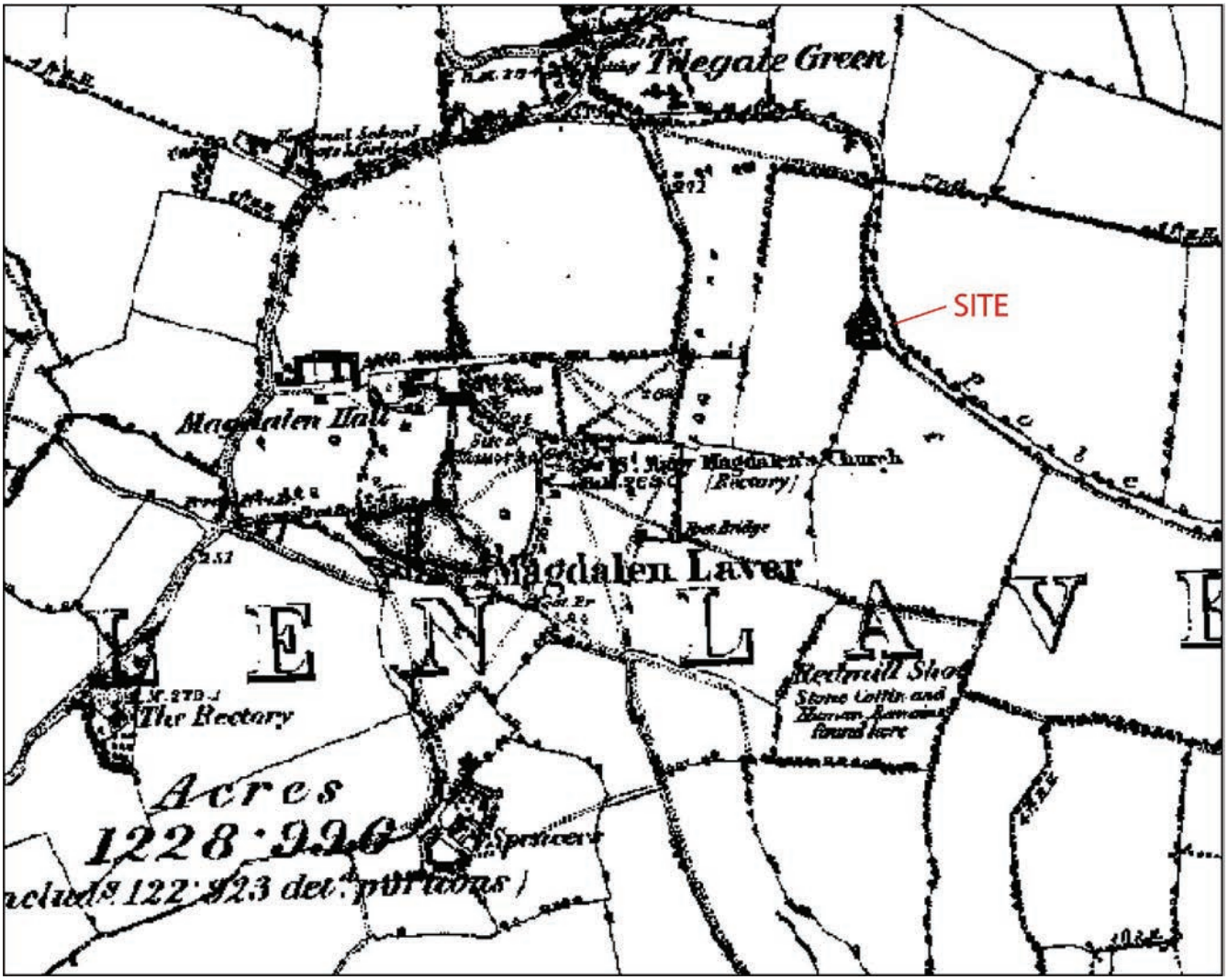

FIGURE 2: Extract from the OS 6" (1:10560) scale map of 1874

distribution maps (Sharp unpublished ms) derived from field walking between 1950 and 1990 covering large areas of west Essex and east Hertfordshire recording finds with six figure grid references, indicates a relatively sparse scatter of worked flint in the immediate area around the site.

These find spots may well relate to episodes of long-since destroyed settlement of Neolithic and Bronze Age date but earlier material of Mesolithic date is present too. Set against this background of sporadic evidence, it is anticipated that further, more detailed fieldwork, would reveal healthy amounts of prehistoric activity as evidenced further north in the area of Stansted airport. Here, extensive tracts of prehistoric activity were uncovered during excavation in advance of proposed development and have helped redress the long-held, and incorrect view that the clay lands remained devoid of substantial populations and intense bouts of settlement until more recent times (Cooke 2008).

The earthwork mound

The mound is now cloaked by a mixture of hawthorn scrub and elder: a large coppiced lime tree stands at the central point on its summit. To enable a detailed view of the mound a digital earthwork survey was made on 29 March 2010. On first appearances the mound looks to be circular but it is, in fact, slightly oval in outline (Fig. 3). It reaches a maximum basal width of 32m on its apparently longest, north-east to south-west, axis and narrows to a crest *c*.15m at its widest. In profile the mound is low and flat-topped and appears to have two constituent parts, namely, a lower, wider core, with a narrower addition on its summit. Their elision is marked by a pronounced break of slope some 1m below the summit and this can be seen fringing the entire mound; in one or two places it appears as a very shallow ledge. This gives the strong impression that a larger and lower primary mound has been altered at some stage, and that deposit above the break of slope is a later addition. This 'secondary' addition adds approximately 0.5–1.0m to the overall height of the mound which attains a maximum height of *c*.4.0m above the surrounding land surface. The summit of the mound appears relatively undisturbed and fairly level, with no evidence for a post socket or other superstructures associated with the presence of a mill here.

The mound is surrounded on all but the north-eastern arc by a wide and deep ditch with a distinctly U-shaped profile. This is frequently water filled, but dry in the summer months, and is 1.6m deep at best with a maximum width of 2.2m (or 5.0–6.0m when water-filled). The sharp profile of the ditch contrasts markedly with the rounded nature of the enclosed mound and suggests that either less weathering has affected it or that it has been scoured or cleaned out on a more regular basis – it may well be that the repeated action of periodic filling with water, then drying out, ensured that the ditch maintained a 'fresher' appearance. The ditch is widest around the southern arc of the mound and along this sector ground observation suggests that its construction or re-definition has truncated the convex curve of the mound. As is often the case with sites of this nature, the volume of the mound is considerably more than the volume of the surrounding ditch.

The line of the ditch is sharply broken by a single causeway on the north-east. This takes the form of a narrow ramp 9m wide that leads across the ditch to the crest of the mound: it is apparent that soil from the mound was used to form the ramp.

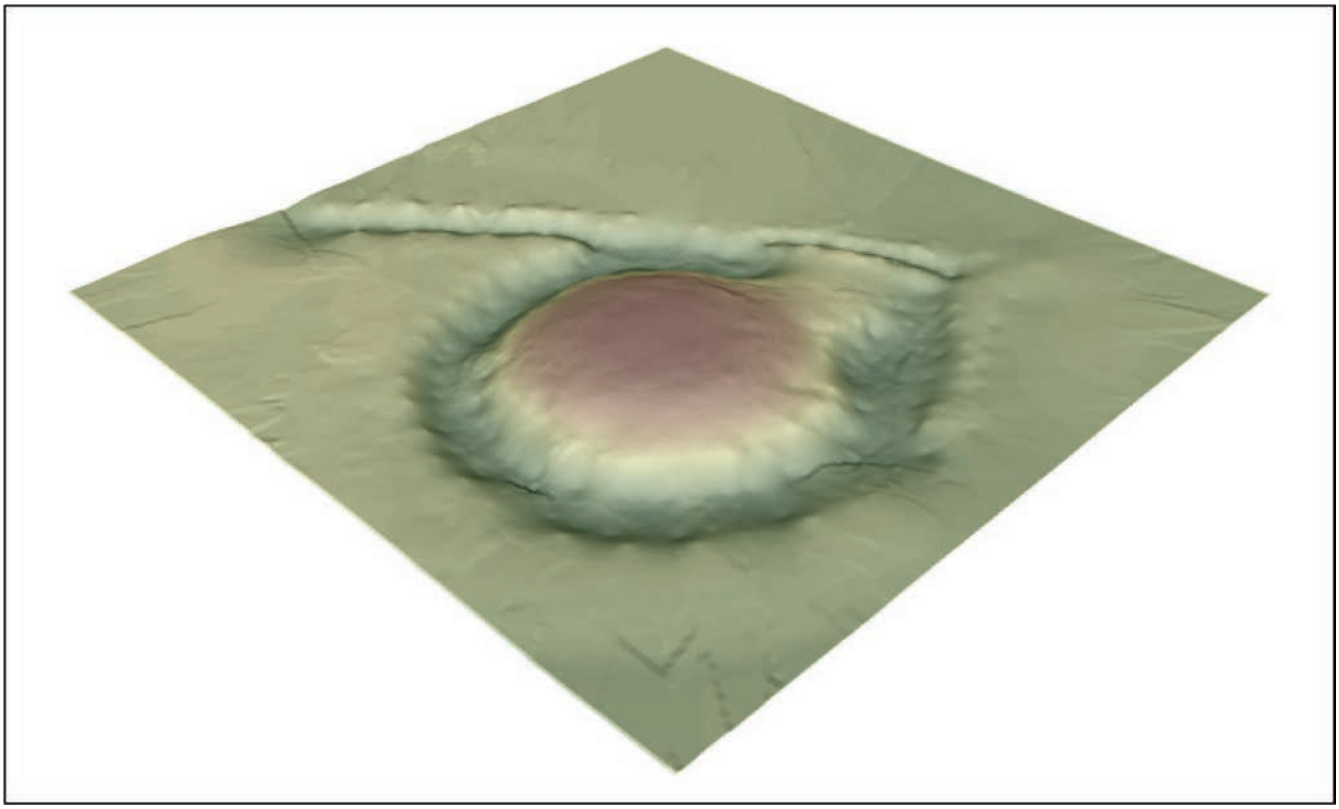

FIGURE 3: Digital terrain model of the mound at Magdalen Laver, viewed from the south-east, showing a variable perspective on a 65 x 65m plot. See text for dimensions

Significantly, on the north side of the ramp, the line of the ditch has diverted from a course that parallels the curve of the mound and, indeed, now appears to extend southwards away from it. Access to the mound via the ramp is effectively blocked off by the construction of a coppice boundary bank 2.4m wide at the base to a crest 1.1m wide and 0.6m high. The mound and its ditch are flanked on the east by the double embanked trackway known as Pole Lane (Fig. 2). (VCH Essex IV, 104.)

Discussion

Field observation confirms that the mound at Magdalen Laver is composed of at least two early episodes of construction. This appears to include a lower basal mound, upon which a secondary deposit has been added. Of course, the date of construction of the earliest mound and the chronology of its subsequent alteration remain unknown but it is worth speculating that the site has an earlier origin than has previously been considered. The third episode was that of a mill mound, when soil was clawed back from the mound to form a causeway across the surrounding ditch.

Previous commentators have referred to it as being either a moated medieval motte with wet moat and an earthwork of 'average strength' (Cathcart King 1983, 145) or a post-medieval mill mound (RCHM 1921, 169) and the Ordnance Survey describes it as a '...typical moated mill mound...' (OS 495 and NMR Record Sheet TL 50 NW 25). It would seem almost certain that in its most recent guise the Magdalen Laver mound did host a mill. Field names adjacent to the mound, including *10 acre Mill Hill* and *7 acre Mill Hill*, suggest as much. Its location is one often selected for mill mounds, being prominently sited and inter-connected with contemporary field systems. Indeed, the mound lies at the junction of a number of field divisions shown on the OS 1st edition map of 1874 (Fig. 2) and is close to a substantial local trackway network. There are a number of surviving mill mounds in the surrounding area and most replicate the form of the Magdalen Laver example, i.e. a round mound enclosed by a ditch, sometimes moat-like in its appearance, and approached along a sloping access ramp. Interestingly, there are no surface indications on the summit of the Magdalen Laver mound of any former structures associated with a mill. This may be due to later landscaping of the mound and the tree planted centrally at the mid-point of the summit may well belong to this phase of ornamental landscape design – the mound perhaps formed an 'eyecatcher' within a more recent landscape garden layout associated with Hall Farm, near the church.

The nature of the primary core to the mound is much less clear. Cathcart King's unequivocal assertion that it is a medieval motte with wet moat is highly plausible and it is evident that a number of other similar sites are located in the surrounding area. Moated enclosures of medieval and post-medieval date abound in the landscape around Magdalen Laver and these are largely of the 'domestic' variety lacking any mounded aspect, nonetheless, a medieval motte is a strong possibility for the mound.

Alternatively, it may well be worthwhile considering a far greater antiquity to the mound here, in that its location and form recall those of prehistoric round barrows which have a currency of construction and usage that extends from the middle of the 3rd millennium BC through to the middle of the 2nd millennium BC. The mound, therefore, may well have been a round barrow but it is not clear if the encircling ditch was a primary component. Ditchless round barrows are commonly seen and ground observation would seem to suggest that the line of the ditch deviates from the base of the mound close to the entrance ramp, perhaps implying a level of chronological separation in their respective constructions – it could be, for example, that the mound is earlier and was subsequently enclosed by the ditch when it was converted to a mill mound.

It may well be noteworthy that in this regard Vincent Pargeter, former Essex County Council millwright when visiting the mound on 10 Febuary 1998, commented that a tremendous effort had been put into the construction of the mound for limited returns of extra wind power.

There are few other known round barrows in the immediate environs of Magdalen Laver and this may well be a result of a number of factors. Earthwork survival is poor in this area of west Essex due to the intensity and extent of arable cultivation in historic times. Subsequently, archaeological investigation and discovery, particularly from aerial survey has been limited by a combination of factors including woodland cover, extensive areas of pasture, hence unresponsive to aerial investigation, and the cultivation of crops that give a poor response in terms of germination and crop marks.

The low scatter of potentially prehistoric lithics in the surrounding area do make it clear that early communities inhabited this landscape but other, better preserved, indications of this such as settlement boundaries, linear earthworks and field systems are entirely absent. This absence of evidence is largely circumstantial and it is worth bearing in mind that at least one other barrow in the county has been incorrectly classified as a mill mound (Essex HER No. 11390). This lies to the south west of Beckingham Hall, Tolleshunt D'Arcy at TL 907109 and consists of a low round mound 1.5m high, with a diameter of 10.0m originally enclosed by a shallow ditch which has now been removed by cultivation. This site, like Magdalen Laver, was used as a mill mound and is depicted as such on a map of 1637.

The nearest confirmed round barrow to Magdalen Laver is at Mulberry Green, Harlow (TL 478112), about 4.5km to the north-west. This sits on low-lying land and is described as bowl-shaped circular mound, 25.0m in diameter, 1.5m in height but without a ditch. Three undated, bowl-shaped, barrows survive in the grounds of Harlow Hospital (TL 443103), 7km to the west of Magdalen Laver and three further examples are located 5km to the south-east along the course of the Cripsey Brook near Shelley (TL 547 050 – NMR No. TL 50 NW 14). These are bowl barrows and range from 5.0m to 9.0m in diameter but are very low indeed at a maximum height of 0.45m (Priddy 1982, 117–18).

A number of ploughed-out round barrows are found in the area, including the formerly bell-shaped example at Latton (TL 468068) 4km to the west of Magdalen Laver (Winstone 1895, 1; Miller Christy 1926, 184; VCH Essex VIII, 187). This false-crested mound was described as 18' (5.75m) high and 80' (25.6m) in diameter, flat-topped with steeply sloping sides and surrounded by a moat before its destruction by the landowner in 1985.

To the south, the Epping Tithe map of 1839 (ERO, D/CT 131B, plot 4) depicts a moated, bell-shaped, mound, 36m in diameter located at 110m above OD (TL 468029). This may

well have been used, subsequently, as a mill mound as there was a narrow but clear, north-facing causeway across the ditch. The requirement of the Union Workhouse at Epping to create employment led to the mound being levelled in 1841 (Winstone 1891, 15).

Two barrows were reported at Bury Farm, Epping (VCH Essex I, 305) in a valley location at 75m above OD (TL 449029). No description is given, but the landowner, who destroyed the mounds in *c.*1968, described them as about 3m high and about 13m in diameter, bowl shaped with steep sides, one slightly larger than the other.

Additionally, aerial photography has revealed the cropmarks of a ring-ditch, in all likelihood a false-crest sighted, ploughed-out, round barrow, at Moreton (TL547069; EHER 4272). This is positioned at 80m above OD, some 3.5km to the south-east of Magdalen Laver. It is 30.0m in diameter and has a 2.5–3.0m wide north-facing causeway. Extensive 360 degree views, including the Magdalen Laver barrow, are visible from this point. Another ring-ditch of similar dimensions was noted at Matching (TL 51021215; EHER 4521), 3km to the north of Magdalen Laver.

Conclusion

The location of the putative round barrow at Magdalen Laver, close to a water source, mirrors a favoured location for round barrows, and it is a pattern repeated throughout much of the British Isles. Round barrows are rarely located on the highest and most visible points in the landscape. Indeed, locational preference is biased towards the slopes that provided good drainage and an association with watercourses; this reflects the location of the Magdalen Laver barrow. These watercourses provided significant route ways through the landscape, particularly for early communities, and the barrow at Magdalen Laver would have been highly visible from the lower-lying ground, creating a 'false-crest' perspective for viewers, and perhaps acting as a marker or reference point for local groups.

In conclusion, it is clear that the mound at Magdalen Laver has had a long and complex history of use and re-use. It almost certainly included a substantial phase as a mill mound, made clear by local place names, but there is a strong suspicion that this entailed the remodelling of a pre-existing mound. Cathcart King regards this primary mound as being that of a motte; our fieldwork suggests that there is a strong possibility that the primary mound at Magdalen Laver is a prehistoric round barrow. The mound, 32m in diameter, has certainly seen episodes of re-use, but there is an earlier, barrow-like core, to the current earthwork. The topographical setting, too, is significant. Its location, on the slopes above a stream, prominent on a false-crest, are common traits shared with the majority of round barrows in the British Isles.

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THOMAS MARSHALL OR JOHN BECHE? WHO WAS THE LAST ABBOT OF COLCHESTER?

by John Ashdown-Hill

Like many histories, published accounts of that 37th abbot of Colchester, who finally and reluctantly surrendered his house to Henry VIII in 1539 and was subsequently put to death for his opposition to the king, tend to be repetitive. Frequently, writers on this subject merely recycle the words of their predecessors. Few seem to seek out original source material, or to make any attempt to check the veracity of previously published statements. Nevertheless, standard modern accounts of this martyred churchman contain some strange and contradictory material, which invites inquiry and investigation. If we consider merely the heading of this abbot's entry in the popular online *Wikipedia*, for example, this immediately highlights two problems. The headline reads:

> 'Thomas Marshall (the Blessed John Beche) (died 1 December 1539) was the last Abbot of Colchester Abbey'.[1]

The two problems which this highlights are the abbot's name and his title.

The last abbot of Colchester?

Thomas Marshall (let us, for the time being, use this name for him – marked with italics to indicate that it is a working hypothesis, which we will hope to justify with evidence in due course) presided over St John's Abbey from June 1533 until December 1539. He is commonly referred to as 'the last abbot of Colchester', but this phrase contains the first demonstrable error, for church history did not end at the Reformation. Although the Benedictine Abbey of St John in Colchester has not, as yet, been recreated, the Benedictine order of monks has certainly re–established itself in England, and as things stand at present the 'last abbot of Colchester' was not *Thomas Marshall*, but Abbot Leo Smith. The latter was a Benedictine monk at Buckfast Abbey in Somerset from 1957–68, and subsequently became abbot of Buckfast (1976–92). Upon his

retirement, in 1992, Abbot Leo Smith was created titular abbot of Colchester, and he held this title for six years, until his death in 1998.[2] Of course, it may be unwise to call even Abbot Smith 'the last abbot of Colchester', since there remains the possibility that further holders of this title will yet be created! But at all events, *Thomas Marshall* was definitely not 'the last abbot of Colchester' – though the phrase 'last Abbot of Colchester Abbey', used in the Wikipedia heading is slightly more precise – and more accurate.

Thomas or John? Marshall or Beche?

The next obvious question that arises about the abbot concerns his name(s). Traditional accounts assign to this abbot various combinations of four different names: John and Thomas as alternative first names, with Beche and Marshall as alternative surnames.[3] It is interesting to note that until the 18th-century, antiquarians believed that these names must have referred to two different individuals (see below). However, they are now considered to belong to the same individual. What, then, are the sources for these names? And why was it that in the 19th century the Catholic Church, in beatifying this martyred abbot, chose to do so under the name of Blessed John Beche?[4]

In fact, some medieval ecclesiastics did use two 'surnames'. In such cases, one of the 'surnames' was usually a family name, while the other was generally a toponym.[5] For example, two of *Thomas Marshall*'s predecessors as abbot of Colchester were Abbot Geoffrey Story *alias* de Sancta Ositha (abbot 1380–1405) and Abbot William Lyndesey *alias* Sprowton (abbot 1497/8–1517). St Osyth lies about 15 km south-east of Colchester, and the use of the French or medieval Latin preposition *de* makes it absolutely clear that Abbot Geoffrey's second 'surname' was a toponym. Sproughton (now a western suburb of Ipswich) was then a village about 20 km north-east of Colchester. Similarly, the guardian of Colchester's Franciscan Priory in the 1490s was John Tynemouth or Maynelyn. Probably he came from the north of England.

It is perhaps also worth noting at this point that the surname Beche was well known in 15th- and 16th-century Colchester.[6] So was the 37th abbot of Colchester connected in some way with the Colchester family of this name? We shall return to this point later. As for Marshall, could this have been a toponym – referring, perhaps, to some location such as Sturminster Marshall (Dorset), Charlton Marshall (Dorset), or Hamstead Marshall (near Newbury, Berks)? Hamstead Marshall is about 5 km south-west of Newbury, while Wallingford Priory, where the future abbot of Colchester held his first recorded ecclesiastical appointment (see below), is about 25 km north-east of Newbury. Perhaps the abbot came from Berkshire.

The abbot's date of birth is not recorded, but from the fact that he appears to have embarked on university study in 1500,[7] we may suggest that he is likely to have been born in or about 1485, because the usual age of university entrance at this period was fifteen. For example, the future Bishop John Fisher was 15 years old when he entered the University of Cambridge. On that assumption, Table 1 shows the suggested dates for some key events of *Thomas Marshall*'s life.

Name evidence from Oxford University

Thomas Marshall was educated at Oxford, where, as we have seen, he appears to have begun his university career in 1500.

Event	Date	Age
Born	1485?	
Entered a Benedictine School	1490?	aged 5?
Entered University	1500	aged 15?
First Degree Oxford	1511	aged 26?
Doctorate Oxford	1515	aged 30?
Prior of Wallingford	1518?	aged 33?
Abbot of Chester	1527	aged 42?
Abbot of Colchester	1533	aged 48?
Executed	1539	aged 54?

TABLE 1: Suggested dates in the life of *Thomas Marshall*

The future Bishop John Fisher completed his first degree at Cambridge in only three years, and his master's degree four years after that. *Thomas Marshal*, however, made slower progress initially, since he requested his BTh in 1509, and was granted it in 1511. Nevertheless, we may note that his election as prior of Wallingford, at the suggested age of about (?)thirty-three, would approximately correspond with John Fisher's age upon his elevation to the rank of bishop (which occurred when Fisher was thirty-five years of age).

Foster's *Alumni Oxoniensis, the Members of the University of Oxford, 1500–1714* records no 16th-century

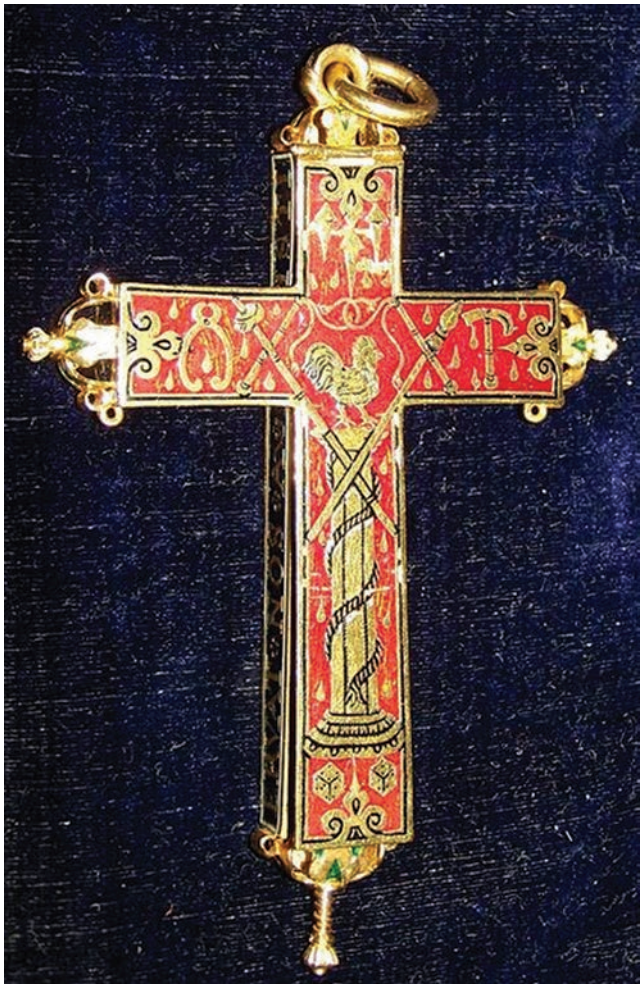

PLATE 1: Gold enamelled pectoral cross reputedly found on the body of Abbott Thomas Marshall (Beche) after his execution (by kind permission of Buckfast Abbey)

graduates of Oxford University who bore the surname Beche.[8] However, Foster lists a number of Marshalls, including three 16th-century John Marshalls – all of whom, however, graduated after the abbot of Colchester had been executed. Foster also lists a number of Thomas Marshalls, one of whom was a member of the Benedictine order. This was the man who obtained his bachelor's degree in 1511, and his doctorate in 1515.[9] This one is clearly the future abbot of Colchester. We should stress that, though Foster does list alternative surnames where these are known, the entry which concerns us is given only under the surname Marshall. The surname Beche is not mentioned. Moreover, the only Christian name given is Thomas. There is no reference to the name John. The more recent list of Oxford alumni, by Emden, does list two men under the surname Beche, both with the first name Thomas, but one died in 1513 and the other in 1531. Interestingly, Emden cross references the surname Beche to Marshall, clearly with the future abbot in mind. Later he lists 'Marshall *alias* Beche, Thomas or John (Becus, Beech, Marciall)'.[10] At first sight, this might appear to imply that all four names are attested in the Oxford University records. However, Emden's entry is probably based simply on the general belief current at the time when he wrote, for, as we have seen, he does not actually list the future abbot of Colchester under the surname Beche, while the earlier published reference which he cites also lists only the name 'Thomas Marshall'.[11]

There is absolutely no doubt that the future abbot did study at Oxford.[12] This is confirmed by Sir John Seynclere, who had an interview with the abbot on 20 November 1538, on behalf of Thomas Cromwell. During this interview, as he later wrote to Cromwell, Seynclere remarked to the abbot, 'if ye holde suche lernynge as ye lerned in Oxenforde when ye were yonge ye wilbe hanged'.[13] This information, coupled with the published lists of Oxford students, comprises our first clear evidence in favour of the name *Thomas Marshall*, and from this point onwards we shall therefore cease to cite that name in italics. We now know that the abbot must have called himself Thomas Marshall because this is the only version of his alleged names which is found amongst the lists of Oxford University students for the appropriate period. In itself, of course, this does not rule out the possibility that he also used the names John and Beche. To assess those names we need to search for more evidence.

Name evidence from Wallingford Priory

At what point Thomas Marshall entered the Benedictine order is unknown, but it was before he obtained his first degree at Oxford (in 1511), and almost certainly before he began his university studies (i.e. before 1500). He must therefore have entered a Benedictine monastery as a boy, been educated there, and then become a choir monk.[14] For comparison, St Thomas Aquinas is known to have entered the school of the Benedictine Abbey of Monte Cassino at the age of five. Presumably Thomas Marshall proved to be an intelligent lad, and it was doubtless the order which then arranged for his further education at Oxford.

His first recorded preferment in the order was his election as prior of Wallingford, a post which he held by 28 September 1518, and which he retained until at least 12 December 1523.[15] Curiously he is not included in the published list of priors of Wallingford,[16] but his tenure of the office fell between Prior John Clare (*c.*1515) and Priory Geoffrey ... (1525). His tenure of the post of prior was recorded in the royal records under the name of Thomas Marshall.[17]

Wallingford was a Benedictine priory dedicated to the Holy Trinity, and in the early 16th century it was in the county of Berkshire (the site is now in Oxfordshire). It was a cell of St Alban's Abbey, and was clearly a small establishment, for in 1524 Cardinal Wolsey obtained papal consent to its dissolution, its endowments being destined as part of the funding for Cardinal (now Christ Church) College, Oxford. On 19 April 1525 the reigning prior of Wallingford, whose name was Geoffrey (surname unrecorded), surrendered the house, though it was not until 1528 that its dissolution was finally completed.[18]

Name evidence from Chester Abbey

Precisely what became of Thomas Marshall while Wolsey was planning the dissolution of Wallingford Priory is not recorded but, as we have seen, when the priory was surrendered Marshall was no longer prior,[19] and by the time Wallingford finally closed its doors he had found a new post in another Benedictine house. For the dissolutions of 1524 – 5 only affected small religious houses – though they also paved the way for the subsequent wholesale dissolutions of the 1530s.

On 16 December 1527, Marshall received the royal assent to his election as a Benedictine abbot, a post which he seems to have acquired with Cardinal Wolsey's support. The *Victoria County History* for Chester lists him as the 26th abbot of St Werburgh (Chester). In the *VCH* his names are given as Thomas Marshall or Beche.[20] This is our first hint that the abbot may also have used the surname Beche. However, in itself the *VCH* listing is a modern record. The fact is that, as during his studentship at Oxford, and his tenure as prior of Wallingford, the royal assent to his election as abbot of Chester records his name simply as Thomas Marshall.[21]

It is probable that during his period as abbot of Chester, Marshall learned of the political and religious tensions in the north of England. Thus he will have been very much aware of the 1536 'Pilgrimage of Grace', a public protest against the course of the king's religious policies, which may already have been causing concern to the abbot himself.

Name evidence from Colchester Abbey

The introduction to the published edition of the Colchester Abbey cartulary, listing the abbots of Colchester, states:

> XXXVII. THOMAS BECHE, alias MARSHALL, the Abbot of St Werburgh's in Chester, was elected on 10th June 1534'.[22]

However, as with the Chester *VCH*, the introduction to the Colchester cartulary is modern scholarship, so again we must be careful. In point of fact the date it gives for the election of the 37th abbot of Colchester is incorrect. He was actually elected on 20 May 1533 – though he and his community had to wait until the following January for royal recognition.[23]

Nevertheless, there is clear contemporary evidence that, while he was in Colchester, the abbot did call himself either 'Thomas Bech alias Marciall', or 'Thomas Marshall alias Beche'. The latter is how he signed the acknowledgement of the king's supremacy on 7 June 1534, while the former is his signature as it appears on his answers to the 'interrogatories' administered to him in November 1539.[24] Interestingly, as at

Chester and at Wallingford, the royal records referring to the abbot still consistently use only the name Thomas Marshall. Thus, for example, the abbot was imprisoned in the Tower of London under the name of 'Thomas Marshalle, abbot of St John's in Colchester'.[25] However, in a surviving record of an interrogation of a witness regarding what the abbot had said and done, his name was recorded in one instance as 'Thomas — [blank], abbot of Colchester'.[26] This suggests that there may have been some uncertainty as to which surname should be used.

It was at the end of November 1539 that Abbot Marshall was put on trial. He was found guilty of opposition to the king's policies. On Monday 1 December the abbot was executed by being hung, drawn and quartered at Greenstead (Colchester). His execution was as much for political as for religious offences. Indeed, since the king now claimed headship of the church, the distinction between the two areas had largely vanished. What was done with the abbot's body is not recorded.

Summary of the name evidence

Surname

During his lifetime the abbot was consistently known as Thomas Marshall. However, possibly at Chester, and certainly at Colchester, he also used the alternative surname Beche. There appears to be no surviving evidence that he used this second surname earlier, at Wallingford or at Oxford. However, lack of surviving evidence does not constitute proof of anything, so we cannot rule out the possibility that the abbot used both surnames throughout his life. On the other hand, since the only certain evidence for his use of the surname Beche seems to date from his time in Colchester, this could possibly indicate that he had some kind of connection with the Beche family of Colchester and that he therefore chose to adopt this second surname after he obtained the abbacy in Colchester.

First name

All the surviving contemporary documentary evidence attests that the abbot consistently used the first name Thomas. Not one single piece of evidence has emerged that, during his lifetime, he ever, anywhere, used the first name John. So where does this name come from, and who first attributed it to the abbot? There are two possible answers to this:

1. John might be an error inspired by the dedication of Colchester Abbey.[27]
2. John could be a mistake influenced by the first names of other martyred churchmen — most notably Cardinal Bishop (St) John Fisher.

Interestingly, the first attribution to the abbot of the first name John occurs in the 16th-century *Treatise conteyning the life and maner of deathe of that most holy prelate and constant martyr of Christ, Johne Fyssher, Bisshop of Rochester and Cardinall of the holy churche of Rome* (BL Arundel MS 152). There, we find the following passage:

> 'Those who can call to mind the cruel deeds of Henry VIII ... will have no difficulty in recollecting the case of John Beche, Abbat of Colchester. Excelling many of the abbats of his day in devotion, piety and learning, the sad fate of the cardinal (Fisher) and the execution of Sir Thomas More oppressed him with grief and bitterness. For he had greatly loved them;[28] and ... he was in the habit of extolling the piety, meekness, and innocence of the late martyrs to those guests whom he invited to his table'.[29]

It is surely significant that this passage occurs in a text focussed on a martyr who did indeed bear the name John — namely Bishop (Cardinal; St) John Fisher. What has probably happened, therefore, is that the writer, whose attention was chiefly focussed on the martyred Fisher, in making a passing reference to the abbot of Colchester, mistakenly assigned to him the bishop's first name in place of his *real* name — Thomas.

Ironically, in consequence of this error, it was under the false name of 'John Beche' — a name which the abbot never bore during his lifetime — that he became known as a martyr of the Catholic Church. Therefore it was under this false name that he was eventually beatified in the 19th century. As a result, today his liturgical feast is celebrated in the diocese of Brentwood on 1 December, under the incorrect name of 'Blessed John Beche'. It is curious, and rather sad, that the Church, seeking to remember and commemorate the abbot, actually does so under a name which the man himself never used, and it is to be hoped that something will now be done to rectify this.

Endnotes

1 http://en.wikipedia.org/wiki/Thomas_Marshall_(Abbot_of_Colchester) (accessed Nov. 2012).

2 http://www.independent.co.uk/arts–entertainment/obituary–abbot–leo–smith–1173199.html (accessed Nov. 2012).

3 See, for example, the online Catholic Encyclopedia: http://www.newadvent.org/cathen/02381a.htm (accessed November 2012); *The Catholic Herald*, 27 November 1959: (http://archive.catholicherald.co.uk/article/27th-november-1959/4/blessed-john-beche-a-martyr-of-the-brentwood-dioce (accessed Nov. 2012), and Wikipedia: (http://en.wikipedia.org/wiki/Thomas_Marshall_(Abbot_of_Colchester) (accessed Nov. 2012). One online source even gives a *fifth* variation of his name, calling him Abbot *Adam* Beche: http://www.surnamedb.com/Surname/Beche (accessed Nov. 2012), but this seems to be simply an error.

4 'The decree of Pope Leo XIII by which Abbot John Beche received beatification bears date 13 May, 1895': http://www.newadvent.org/cathen/02381a.htm (accessed Nov. 2012).

5 The Colchester Abbey acknowledgement of the king's supremacy was signed by the prior and fourteen monks in addition to the abbot. Of these Thomas Clare, George Dedham and William Westminster have 'surnames' which are probably toponyms.

6 J. Ashdown-Hill, 'The client network, connections and patronage of Sir John Howard (Lord Howard, first Duke of Norfolk) in north-east Essex and south Suffolk' (unpubl. PhD thesis, Univ. of Essex, 2008), p. 260.

7 J.C. Ward, *ODNB*, Marshall (Beche) Thomas (accessed online Nov. 2012).

8 Eight graduates bore the surname BACHE, and for one of these, BECHE is given as an alternative spelling. However he graduated in 1686! The earliest BACHE graduated in 1576.

9 'Marshall Thomas – Benedictine, B.D. 10 Dec., 1511, D.D. supld. 28 April, 1515; one of these names rector of Litton, Somerset, 1500, and vicar of St. Gabriel, Fenchurch Street, London, 1527–9. See Foster's *Index Eccl*' J. Foster (ed.), *Alumni Oxoniensis*, vol. 1, 1891 – http://www.british–history.ac.uk/report.aspx?compid=119370&strquery=Marshall (accessed Nov. 2012).

10 A.B. Emden, *A Biographical Register of the University of Oxford A.D. 1501 to 1540* (Oxford, 1974), pp. 35–6, 380.

11 C.W. Boase (ed.), *Register of the University of Oxford*, vol. 1 (1449–63; 1505–71) (Oxford Historical Society, 1885), p. 63.

12 Perhaps at Gloucester Hall (the present Worcester College) – see *The Catholic Encyclopedia*: http://www.newadvent.org/cathen/02381a.htm (accessed Nov. 2012).

13 S.A. Moore (ed.), *Cartularium Monasterii Sancti Iohannis Baptiste de Colecestria*, 2 vols (London, 1897), vol. 1, p. xxvi.

14 A 'choir monk' is also a priest – as opposed to a 'lay brother' – a monk who is not a priest.

15 J.S. Brewer (ed.), *Letters and Papers, Foreign and Domestic, Henry VIII*, vol. 4 (1524–1530) (London, 1875), p. 24.

16 P.H. Ditchfield and W. Page (eds), *VCH* Berkshire, vol. 2 (London, 1907), p. 79.

17 Brewer, ed., *Letters and Papers*, vol. 4, p. 24.

18 *VCH* Berkshire, vol. 2, pp. 77–9.

19 The statement that 'the last prior was Thomas De la Beche Marshal who went on to become Abbot of Colchester' made in http://www.berkshirehistory.com/churches/wallingford_priory.html (accessed Nov. 2012) is therefore incorrect.

20 C.R. Elrington and B.E. Harris (eds), *VCH* Chester, vol. 3 (OUP, 1980).

21 Brewer, ed., *Letters and Papers*, vol. 4, item 3669.

22 Moore, *Cartularium*, p. xxii and fn. 4. A footnote adds that 'Morant is in error in making Beche and Marshall different persons'.

23 W. Page & J.H. Round (eds), *VCH* Essex, vol. 2 (London, 1907), p. 102, fn. 15.

24 Moore, *Cartularium*, vol. 1, pp. xxii, xxxi; J. Gairdner and R.H. Brodie (eds), *Letters and Papers, Foreign and Domestic, Henry VIII*, vol. 14, part 2 (August–December 1539) (London, 1895), p. 167, no. 459.

25 'The prisoners' names that be in the Tower the 20th day of November in the 31st year of the reign of our Sovereign lord king Henry VIII [1539] – The lady Salisbury, the lady Marquis, Mr. Edw. Cowrtney, Mr. Henry Poolle, Marg. Terelle, Wm. Rogers, John Knyght, which was Hollond's servant, John Dawlkes, Chr. Jhoye, Giles Heryne, Roger London, monk of Reading, Peter Lorance, which was warden of the Grey Friars in Reading, Giles Coventre, which was a friar of the same house, Geo. Constantyene, Ric. Manchester, Wm. Moore, the blind harper, John Le, priest, came from Windsor, Thos. Marshalle, abbot of Colchester, Ric. Yeower, priest, which was executor to the bp. of London, Charles Caroohe': *Letters and Papers*, vol. 14, part 2, p. 554.

26 *Letters and Papers*, vol. 14, part 2, p. 165, no. 454.

27 While both St John the Baptist and St John the Divine are depicted on the obverse and reverse respectively of the abbey seal, the initial dedication of Colchester Abbey was solely to St John the Baptist. This is clear from the 1096 foundation charter of Eudo Dapifer, published in Moore, *Cartularium*, vol. 1, p. 2.

28 This is true. The surviving account of Colchester physician and mercer Thomas Nuthake records that the abbot said that John Fisher and Thomas More 'died martyrs and saints': *Letters and Papers*, vol. 14, part 2, p. 166, no. 454.

29 BL Arundel MS 152, f. 235d., quoted in F.A. Gasquet, *The Last Abbot of Glastonbury and his Companions* (London, 1895), pp. 164–6.

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Boase, C.W. (ed.), *Register of the University of Oxford*, vol. 1 (1449–63; 1505–71) (Oxford Historical Society, 1885)

Brewer, J.S. (ed.), *Letters and Papers, Foreign and Domestic, Henry VIII*, vol. 4 (1524–1530) (London, 1875)

Ditchfield, P.H. and Page, W. (eds), *VCH* Berkshire, vol. 2 (London, 1907)

Elrington, C.R. and Harris, B.E. (eds), *VCH* Chester, vol. 3 (OUP, 1980)

Emden, A.B., *A Biographical Register of the University of Oxford A.D. 1501 to 1540* (Oxford, 1974)

Foster, J. (ed.), *Alumni Oxoniensis*, vol. 1 (Oxford, 1891)

Gairdner, J. and Brodie, R.H. (eds), *Letters and Papers, Foreign and Domestic, Henry VIII*, vol. 14 Part 2 (August–December 1539) (London, 1895)

Gasquet, F.A., *The Last Abbot of Glastonbury and his Companions* (London, 1895)

Moore, S.A. (ed.), *Cartularium Monasterii Sancti Iohannis Baptiste de Colecestria*, 2 vols, (London, 1897)

Page, W. and Round, J.H., *VCH* Essex, vol. 2 (London, 1907)

Ward, J.C., *ODNB*, 'Marshall (Beche) Thomas'

Book Reviews

ARCHAEOLOGY OF THE ESSEX COAST, VOLUME II: EXCAVATIONS AT THE PREHISTORIC SITE OF THE STUMBLE by T.J. Wilkinson, P.L. Murphy, N. Brown and E.M. Heppell, East Anglian Archaeology 144, Chelmsford, 2012, 160pp, 15 plates, 94 illustrations, 45 tables. ISBN 978-1-841-074-8, £17.00.

This volume provides the full account of the excavation and analysis of material from the intertidal site in the Blackwater Estuary, Essex, known as the Stumble. The site was discovered and excavated as part of the Hullbridge Survey in the 1980's, and it must be said, this publication has been a long time in coming. It has been eagerly anticipated by those of a prehistoric or intertidal persuasion, so has the wait been rewarded?

The volume is structured broadly as a traditional archaeological report: there are chapters on the stratigraphic narrative, presented by period: earlier Neolithic, later Neolithic and Bronze Age. Supporting the Neolithic and Bronze Age stratigraphy are chapters on the finds and environmental remains. This is followed by a section on the later periods, Iron Age to post-medieval, with a final section discussing the site in context. Two appendices on soil micromorphology are also included. The volume is extremely well illustrated, with a great many plans, sections, drawings of the pottery and flint, and many useful tables. It is excellent to see these in the body of the book without having recourse to CD's, the Archaeological Data Service (ADS), or the internet, as is proving increasingly common with archaeological reports. It is perhaps unreasonable to suggest that more colour plates of the fieldwork would have been useful and informative, although Plate 1.4, showing rather unusual working conditions does go some way to make up for this!

The site's significance lies not just in its status as a well-preserved multi-period intertidal site, but the fact that it contains *in situ* Neolithic waterlogged occupation. Neolithic sites are rare as hen's teeth anyway, but to find one with waterlogged organic remains is an order of magnitude rarer. The preservation was achieved by the location on dry land adjacent to the channel in the earlier Neolithic, and its submersion as a consequence of relative sea level rise from the later Neolithic. Changes in the estuary combined with an increasing tidal range today exposed the site, making it available to the Hullbridge Survey, albeit as a rather tricky project, the logistics of which are outlined in the introduction.

The bulk of the volume, rightly so, is devoted to reporting on the Neolithic occupation. The dating evidence makes it clear that the occupation does not include the earliest Neolithic, i.e. from *c*.4000 cal BC, but starts a few hundred years later, and the mid-fourth millennium BC cereal is rightly noted for its significance in showing the longevity of arable farming in the east of England. A series of plans attempts to identify the form of structures represented by the various post-holes and other cuts, but this is not terribly successful; unsurprising given the location of the site and the difficulty of working in this environment. In addition to the occupation areas, a series of burnt mounds survive and are considered to represent both midden deposits, and perhaps the more esoteric versions, sometimes thought to be associated with ritual practices.

The finds reports details an astonishing 50kg of Neolithic pottery: unfortunately the report was written in 1989 and not been updated and so has not benefited from comparison with more recent examples, nor in fact shed light on more recent sites. Nevertheless, it is an important, well-illustrated report. The flint report brings a small later Mesolithic element to the site which again underlines the importance of this site as an exemplar of longevity and preservation. A series of tool production methods are described, activity areas identified and again, the finds (the tools) are well illustrated.

The palaeoecology section reports on extensive sampling across the site areas, and as noted above, gives clear evidence for cereal cultivation in the earlier Neolithic, with several varieties of wheat and also barley recovered; both grain and chaff. Non-domestic remains suggest that wild fruit and nuts were collected and consumed as well as the domestic species. Whilst the bulk of the report was written a little after the fieldwork, a contemporary commentary has been provided, indicating that whilst the foraged species show a use for wild species, the nature of the cereal assemblage shows its centrality in the diet of the Neolithic inhabitants here and underlines the importance of the Stumble amongst Neolithic sites.

The final section, the discussion, has been brought up to date and places the site in the broader context of the Essex coast and Thames estuary. A series of excellent landscape reconstructions clearly indicate the evolution of the site from Early Neolithic woodland through to modern mudflats, and reveal how much more the area still has to give.

Our understanding of Neolithic culture in southern Britain is undergoing profound rethinking at present through the work of Alisdair Whittle, Alex Bayliss and Frances Healy, and others. It is sites like the Stumble that provide focal points for regional understanding, which are necessary for attempting to see patterns across the country and Europe. Timely reporting of top grade sites is crucial though, so the delay in publication is regrettable; however, the book will be valuable to all prehistorians, and intertidal archaeologists.

Jane Sidell

SIR THOMAS SMITH: SCHOLAR, STATESMEN AND SON OF SAFFRON WALDEN by Jeremy Collingwood, Saffron Walden Historical Society Publications, 2012, 56pp, ISBN 978-1-873669-08-2, £7.50.

Sir Thomas Smith (*c*.1514–77) was a native of Essex who had influenced Tudor England in a remarkable diversity of fields. There have been two major biographies, the first by Strype published in the late seventeenth century and the second by Mary Dewar from 1969. Collingwood draws upon these sources to weave a brief history of Smith firmly set within his birthplace of Saffron Walden and his native county of Essex.

Smith was born in Saffron Walden, and Collingwood deftly sets this in the context of the town's history, in which he is clearly well versed. Many of the details in this first chapter will be of particular interest to the town's current inhabitants. From a young age Smith was a precocious scholar, leaving Saffron Walden for Cambridge where he engaged with some of the finest minds of his age.

The political life of the Tudor court beckoned, and Collingwood leads the reader through Smith's role in the complexities of Edward VI's government and the rivalry between Somerset and Warwick for control of the regime. Smith was fortunate to escape the downfall of Somerset with his life, probably because he had already been somewhat excluded for speaking too bluntly, a fault that he acknowledged himself on a number of occasions. This tendency perhaps accounts for his failure to rise to the very top of the political ladder, in contrast to his friend Burghley.

Smith's political exile from court at Eton seems to have had two results. First it allowed Smith to reflect on the political and economic state of England, and led to the publication of *The Discourse of the Commonweal*, an analysis of the economic problems under Protector Somerset, and later *De Republica Anglorum*, a description of the English political and legal system. Whilst acknowledging the importance of these works, Collingwood wisely leaves his reader to look elsewhere for a detailed discussion of their contents.

The second result of Smith's fall from grace seems to have been an increasing interest in architecture, in particular Renaissance classical architecture. His colleagues in Somerset's protectorate briefly engaged with neo-classicism, with Somerset House, Longleat and Laycock Abbey being prominent examples of Tudor neo-classicism from this period. Under Elizabeth, Smith was sent to France as ambassador on a number of occasions, and although these were not particularly successful endeavours, he was exposed to the architecture of the French Renaissance. As a result Smith spent the last years of his life designing and building his own classical mansion, Hill Hall, which stands high above the junction of the M11 and M25, and is one of Essex's most important houses.

Collingwood has provided an accessible account of Sir Thomas Smith, which is well grounded in the local histories of Saffron Walden and Essex. I hope that the book will serve to keep Smith's reputation alive within the county, and encourage its readership to explore both his written and architectural legacy a little further.

Nicholas J. Easton

A Bibliography of journal literature on Essex archaeology and history for 2012 and 2013

Andrew Phillips and Paul Sealey

Both monographs and periodic literature are included; articles published in festschrifts or in journals which are devoted exclusively to Essex history (e.g. Essex Journal) are not included. Items overlooked in previous bibliographies are included for comprehensive coverage.

Andrews, D.D. (ed.), 2013. *Discovering Coggeshall 2: The 1575 Rental Survey and the Dated Buildings* (Coggeshall)

Amrhein, C. and Löhnig, E., 2013. 'Die Jupitersäule auf der Saalburg – kunsthistorische Einordnung und Restaurierung', *Saalburg Jahrbuch* 57, 139–52 [The Jupiter column built in Saalburg in 1911–12 took as the model for its depiction of the god a bronze figurine of Jupiter from Roman Colchester]

Besly, E.M. and Briggs, C.S., 2013. 'Coin hoards of Charles I and the Commonwealth of England, 1625–60, from England and Wales', *British Numismatic Journal*. 83, 166–206 [includes eight Essex hoards]

Biddulph, E., Foreman, S., Stafford, E., Stansbie, D. and Nicholson, R., 2012. *London Gateway: Iron Age and Roman Salt Making in the Thames Estuary. Excavation at Stanford Wharf Nature Reserve, Essex* (Oxford Archaeology Monograph 18) (Oxford)

Brown, I.W., 2013. *The Red Hills of Essex: Studying Salt in England* (Tuscaloosa)

Brown, N.R. and Medlycott, M.F., 2013. *The Neolithic and Bronze Age Enclosures at Springfield Lyons, Essex: Excavations 1981–1991* (East Anglian Archaeology Report 149) (Chelmsford)

Crummy, N., 2010. 'Bears and Coins: the iconography of protection in late Roman infant burials', *Britannia* 41, 37–93 [covers Colchester material]

Hipkin, S., 2012. 'The coastal metropolitan corn trade in the later 17th century', *Economic History Review* 65 No.1, 220–55. [highlights importance of Essex]

Howell, I., Swift, D., Watson, B., Cotton, J.F. and Greenwood, P.A., 2011. *Archaeological Landscapes of East London* (Museum of London Archaeology Monograph 54) (London) [despite the title they are actually Essex sites]

Howlett, S., 2012. *The Secrets of the Mound: Mersea Barrow 1912–2012* (West Mersea)

Morris, F. M., 2013. 'Cunobelinus' bronze coinage', *Britannia* 44, 27–83 [Cunobelinus was the Essex king who reigned at Colchester *c*. AD 10–39/40]

Gascoyne, A.M., Radford, D., *et al.* [ed. P.J. Wise], 2013. *Colchester: Fortress of the War God. An Archaeological Assessment* (Oxford)

Russell, M. and Manley, H., 2013. 'A case of mistaken identity? Laser-scanning the bronze ''Claudius'' from near Saxmundham', *Journal of Roman Archaeol*ogy 26, 393–408 [The statue head of Claudius thought to have been looted from Colchester in AD 60 in the Boudican revolt might instead be the emperor Nero]

Schulting, R.J., 2013. '''Tilbury Man'': a Mesolithic skeleton from the lower Thames', *Proceedings of Prehistoric Society* 79, 19–37

Smith, A., 2013 'Roman Britain as you've never seen it before', *British Archaeology* 132 Sept 2013, 48–51 [East of England Rural Settlement in Roman Britain Project – includes Essex]

Stafford, E.C., Goodburn, D. and Bates, M.R., 2012. *Landscape and Prehistory of the East London Wetlands: Investigations along the A13 DBFO Roadscheme, Tower Hamlets, Newham and Barking and Dagenham, 2000–2003* (Oxford Archaeology Monograph 17) (Oxford)

Stenning, D.F. and Shackle, R.W.S., 2013. *Discovering Coggeshall 1: Timber-framed Buildings in the Town Centre* (Coggeshall)

Walker, H., 2012. *Hedingham Ware: A Medieval Pottery Industry in North Essex; Its Production and Distribution* (East Anglian Archaeology Report 148) (Chelmsford)

Woods, D., 2012. 'A Roman Republican prototype for the animal-under-a-tree types of Epaticcus', *British Numismatic Journal* 82, 1–7 [includes a discussion of two bronze issues of Cunobelinus]

Woods, D., 2013. 'Some unidentified Roman prototypes of British Celtic coins', *British Numismatic Journal* 83, 1–14 [half the paper is devoted to three silver issues of Cunobelinus]

REVISED NOTES FOR CONTRIBUTORS

Submission of articles

1. Article may be submitted at any time and will be considered for the first available edition of *Essex Archaeology and History* (hereafter *EAH*).
2. All contributions should be sent to the Hon. Editor, and should comprise two hard copies of the text and illustrations, and a digital version of the same on DVD or CD, arranged as described below.
3. All material submitted on DVD or CD should be clearly labelled with titles readily identifiable with their contents.
4. Articles should be prepared under the general conventions set out in the Guidelines (2009) for the *East Anglian Archaeology* (hereafter *EAA*) series. They can be accessed and downloaded from the *EAA* website (www.eaareports.org.uk).
5. It is essential that these Guidelines and style conventions are followed, and in particularly that the use of the system of referencing is consistent.

Submitted text

1. To assist the editorial process, please:
2. Prepare the digital copy in Word or RTF.
3. Limit the amount of formatting as much as possible (such as the use of tabs) on both text and tables. Do not attempt to emulate the layout of *EAH* by adding formatting other than the advice given here, as the correct formatting for the articles will be applied during the typesetting process.
4. Use a standard font, ample margins, 1.5 or 2.0 spacing, and number each page sequentially.
5. Print all A4 pages on one side only.

Submitted Figures and Tables

1. All Figures and Plates should be submitted as separate files. Do not embed them in the text.
2. Simple Tables may be embedded in the text, but make the formatting as simple as possible. Larger and more complex Tables should be provided in separate files, carefully labelled.
3. All Figures, Plates and Tables that are provided as files separate to the text should be provided with a list of Captions in a separate Word or RTF file, i.e.

   FIGURE 1: Site location
   FIGURE 2: Plan of excavated area

4. It will be helpful on the final submission (after refereeing and corrections) for the suggested placement of Figures and Tables to be marked in pencil in the margins of a hard copy.

Organisation of articles and headings

1. All main articles and shorter notes should begin with a title on one line, followed by the author(s) names, initial(s) and surname(s), on a following line.
2. Main articles should then have a summary paragraph (in italics) setting out the main objectives, content and findings of the article.
3. The article proper should then start with a main heading, such as INTRODUCTION.
4. Most archaeological articles are sub-divided by headings; historical ones frequently have the text in continuous form but may also be sub-divided by headings if desired. If in doubt, please consult the Hon. Editor.
5. For most articles up to 4 levels of Headings should prove sufficient. The typesetter will apply the *EAH* house style, but please identify the different levels of heading by using the following:

Type	Description	Example
Main Heading	14pt, bold, caps	**INTRODUCTION**
Sub-heading	12pt, bold	**Excavation**
Sub-sub-heading	12pt, italic	*Pottery*
Sub-sub-sub-heading	12pt	Iron-Age

6. To aid clarity for the referees and editor, each of the above headings or sub-headings should be followed by a blank line.
7. Acknowledgements should be a separate main heading at the end of an article, but before the Bibliography.

Punctuation, spelling and grammar

1. Please follow the *EAA* Guidelines, section 5.

Numbers, measurements and dates

1. Numbers below 100 should be written out, unless measurements, e.g. 'twenty-one potters made 207 pots in 226 days. Of these only ten pots had a diameter of less than 2.45cm.'
2. En rules (–) rather than hyphens (-) should be used for number and dates ranges, i.e. Figs 3–4 not Figs 3-4.
3. For more information on numbers, see the *EAA* Guidelines, section 6.
4. Measurements should be in metric units, except where these were measured historically in imperial or other units.
5. Use AD and BC only where necessary and in the following format: 323 BC; AD 63.
6. Other calendar dates should use the following format:
   7 March 1654
   7 March
   March 1654
7. For radiocarbon dates, see *EAA* Guidelines 6.3.

Compass points and grid references

1. Abbreviated compass points may be used but these are perhaps best left to non-narrative parts of the text. Do not use N, NW, SSE, *etc*., at the beginning of sentences. Do not use 'northern', 'northerly' where 'north' will do. 'North-to-south' is preferable to 'north-south'.
2. Heights above Datum should be expressed in the form *e.g.* 2.4m OD (no full stops).
3. Grid references should normally be eight figures: TL 3456 7890.

Illustrations (Figures and Plates)

1. It is the responsibility of authors to ensure that all illustrations are of publishable quality. The Society cannot normally pay for material to be re-drawn to professional standards.
2. Illustrations can be provided as hard-copy originals suitable for scanning or as digital files, in the latter case as uncompressed .jpegs or .tiff files or similar. See *EAA* Guidelines, section 9.5.

3. The maximum page size for illustration is 176mm × 256mm. Please allow 7mm for a one-line caption and 11mm for a two-line caption where used with a full-page illustration.
4. Colour illustrations can be accommodated, but please enquire of the Hon. Editor first as there may be an additional cost implication.
5. Captions for illustrations should be provided in a separate Word file and not on the illustration itself. The digital files should be labelled so that the illustrations and captions can be easily matched.
6. Drawings should appear at a recognised scale wherever possible and they should show the appropriate grid points, north, and bar scales. Do not forget to provide a key to drawing conventions.
7. The *EAA* Guidelines, section 9 contain more details. Please enquire of the Hon. Editor if you have any questions.

References

1. *Essex Archaeology and History* generally uses Harvard-style bibliographical references in parentheses in the text, with a full Bibliography at the end of each article. For example:
   (Jones 1962, 223–5)
   (Pryor et. al. 1980, 140–7)
   (Green, H.S., 1980; Green F. 1982)
2. References to an author who has more than one publication in a year should be distinguished as follows:
   (Bloggs 1984a, 21)
   (Bloggs 1984b, 76–7)
3. References to on-line sources should give the URL in angled brackets, for example:
   <www.ads.ahds.ac.uk>
4. If the on-line source is thought likely to be the subject of change then the date of access may also be given in the form:
   <www.essex.ac.uk/history/esah/essexplacenames/index.asp> (accessed 1 July 2013)
5. Footnotes are never used. Endnotes may be used for historical articles, especially those with manuscript references, but only by arrangement with the Hon. Editor.
6. Avoid using Latin terms such as ibid., op. cit., passim.

Bibliography

1. The Bibliography should normally be the last heading in the article, with the items arranged in the following format.
2. Only sources referenced in the article should be included in the Bibliography.
3. All Bibliography items should be arranged by first author surname. Author's initials should be standardised.
4. The place of publication (or series) should be given.
5. Please give the full page ranges of articles, not just the pages referred to.
6. Titles of books should normally be capitalised as published but those of papers, *etc*., can be reduced throughout (with the exception of proper nouns) to lower case.
7. The titles of books and periodicals should be italicised and the titles of articles should be placed in single inverted commas.
8. Volume numbers should be cited in Arabic numerals.
9. The use of *et al*. should be confined to references in the text, with all authors cited in the bibliography.
10. Please note the following examples of punctuation, italicisation and formatting carefully, as this always causes the heaviest copy-editing.

Books/Mongraphs:
Kemble, J. 2001, *Prehistoric and Roman Essex* (Stroud)
Cunliffe, B.W. 1991, *Iron Age Communities in Britain* (3rd edn, London)

Edited Books/Mongraphs:
Gibbs, M. 1939 (ed.), *Early Charters of the Cathedral Church of St. Paul, London*, Camden Third Series, 58 (London)
Mays, M.R. (ed.) 1992, *Celtic Coinage: Britain and Beyond. Eleventh Oxford Symposium on Coinage and Monetary History*, Brit. Archaeol. Rep. British Ser. 222 (Oxford)

Articles:
Holland, M. 2004, 'Captain Swing', *Essex J*. 39, 20–3
Carew, T, Clarke, C. and Eddisford D., 2011, 'Medieval occupation in Maldon, Essex: excavations at 127–129 High Street, 2007', *Essex Archaeol. Hist*., 4th ser., 2, 107–16

Articles in edited books:
Hedges, J. 1978, 'Essex Moats', in Aberg, F.A. (ed.), *Medieval Moated Sites*, Counc. Brit. Archaeol. Res. Rep. 17, 63–70
Wade-Martins, P. 1989, 'The Archaeology of Medieval Rural Settlement in East Anglia', in Aston, M., Austin, D. and Dyer, C. (eds), *The Rural Settlements of Medieval England* (Oxford)

Specialist reports in articles:
Margeson, S. 1982, 'The artefacts', in Atkin, M.W., '29–31 St Benedict's street', in Carter, A. (ed.), *Excavations in Norwich 1971–78, Part I*, E. Anglian Archaeol. 15, 8–9

Theses and dissertations:
Senter, A.M. 2014, 'The development of Essex seaside resorts, 1815–1914' (unpubl. PhD thesis, Univ. of Essex)

Electronic sources:
Peacey, A. 1996, 'The Introduction of Tobacco and Tobacco Pipes to the British Isles', *Internet Archaeol*., 1: Available: <http://intarch.ac.uk/journal/issue1/peacey/intro.html> (accessed 18 July 2014)

Abbreviations

1. A full-stop should be used for an abbreviation, other than where it is a contraction, e.g. ed. (for editor) but eds (for editors).
2. Some common abbreviations that may be used in the text:

Fig.	Figure(s)
Pl.	Plate(s)
No.	Number
St or SS	saint(s)
c.	circa
%	per cent

OD	Ordnance Datum
AD	Anno Domini
BC	Before Christ

3. Some common abbreviations that may be used in the Bibliography:

General (*these should be* italicised *if part of a title of a periodical or published report*)

Archaeol.	Archaeology/archaeological
Brit.	British
Colln.	Collections
Counc.	Council
edn	edition
Hist.	History/Historical
J.	Journal
Monogr.	Monograph
Proc.	Proceedings
Res.	Research
Rep.	Report(s)
Ser.	Series
Trans.	Transactions
Univ.	University
unpubl.	unpublished

Specific periodicals and series

Counc. Brit. Archaeol.	*Council for British Archaeology*
Colch. Archaeol. Rep.	*Colchester Archaeological Reports*
E. Anglian Archaeol.	*East Anglian Archaeology*
Essex Archaeol. Hist.	*Essex Archaeology and History*
Essex Archaeol. Trans.	*Transactions of the Essex Archaeological Society*
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