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(incorporating the Cambs and Hunts Archaeological Society)

Volume XCII
for 2003

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THE CONDUIT: *local history and archaeology organisations and events*

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Editorial

These Proceedings have a more strongly archaeological bias than normal, though still reflecting only a minute portion of archaeological discoveries in Cambridgeshire, as the 'Fieldwork' section makes clear. This bias does mean we can afford a very substantial volume, because the reports attract grant-aid, but rest assured that there is no intention to ignore local history and architecture in the future. 'Fieldwork in Cambridgeshire 2002' was in itself rather problematic this year, as the County Council decided they could neither grant-aid it as in previous years nor supply data in a publishable format. With help from the excavating units and a County Council list we think we have constructed a reasonable record, but are aware there could be gaps.

Including *Conduit* as part of the *Proceedings* was well received last year, and was far cheaper than separate publications, so we have continued with this format, which was only possible thanks to considerable work by Sue Oosthuizen and Vicky Faupel. This catalogue of future events, accounts of our Annual Conference plus the huge amount of work in Fieldwork in Cambridgeshire give an impressive picture of lively and productive work routinely carried out in Cambridgeshire by amateurs and professionals alike.

Alison Taylor

Joyce Pullinger

Last year saw the sudden death of Joyce Pullinger, who will be long remembered in Cambridge Antiquarian Society. She was active in its affairs for 26 years and, almost single-handedly over that period maintained its reputation for carrying out and publishing field research in and around Cambridge. In the days before full-time archaeologists were employed in local units she saved and published much evidence that would otherwise have been destroyed. She may well prove to have been the last of those who, troubled by the wholesale destruction of archaeological sites equipped themselves to locate, excavate and publish unrestricted by governmental restrictions or the need for formal qualifications.

She was born at Middleton St. George Co. Durham, the youngest of the four children. At the outbreak of war she went first to relations in Kelso and then to the Hunmanby Hall School. Allergies forced her to abandon a proposed career in nursing, and in 1948 she married John Pullinger, withdrawing from a course of study at the Froebel College, in Bedford.

It was only after 1960 that the care of a large family (she had eight children) allowed her to develop a career in archaeology. The skills she developed and the results she obtained show it to have been much more than a hobby or part-time interest. Her achievements fall into two periods, between 1961 and '87 in and around Cambridge and 1987-2002 in Gwent. When living at Orwell and in Cambridge she was an active member of the Society, attending courses on Landscape Studies and showing, in the University's Field Archaeology Training Excavations, a marked aptitude for fieldwork. This was especially noted in the 1960-65 excavations between Castle Street and Shelly Row inside the walled Roman settlement. Here she made a major contribution by organising around her other members of the Society and excavating the 2nd - 3rd century shrine. She found herself especially attracted to ceramics and under the guidance of Rex Hull, Curator of Colchester Museum and a leading authority on Roman pottery, she became adept at its interpretation and dating. Her outstanding achievement however came when development east of Castle Street, still within the Roman walls, took place. Here only limited research had been possible before the destruction of the existing buildings and the construction of the new. Voluntarily for over two years Joyce carried out the essential daily watching brief and the negotiating with building contractors which enabled her to locate and test-evaluate, with the help of the Society's field group, evidence of Roman occupation. The results were published by the Society in 2000 in our joint volume on Roman Cambridge. In the years before 1987 she became increasingly involved in the affairs of the Society, serving on its council and as a vice-president. She also undertook various local projects, most notably at Teversham with Pat White, and on sites to be destroyed by the M11 motorway. Nationally she was elected to the Council for British Archaeology and was active in the Roman Pottery Research Group.

When she and her husband moved in 1987 to Stroat near Chepstow there was no diminution in her concern for archaeological rescue work. She and John, whose surveying and photographic skills had long supported her, were founder-members of the (Forest of) Dean Archaeological Group, and located, excavated and arranged the scheduling and preservation of a previously unknown megalithic tomb and other sites.

As one with whom she worked closely for many years I had many opportunities to observe her ability and dedication. She continued the tradition of those who, like Cyril Fox forty years earlier, demonstrated when they came to be field archaeologists in their thirties and forties that they could contribute as much if not more than those with longer service but less local knowledge. Her achievements should long be an inspiration to those, who like the present Cambridge Archaeological Field Group, wish to carry out field research in ways and in areas beyond the remit of professional units.

John Alexander

A medieval and post-medieval street frontage: Investigations at Forehill, Ely

Mary Alexander
with contributions by: Anthony Baggs, Ian Carlisle, Sandra Garside-Neville, David Hall, Lorraine Higbee, Andrew K Jones, Quita Mould, Maisie Taylor and Chris Stevens

Archaeological remains of the medieval and post-medieval street frontage on the north side of Forehill, Ely contribute to the study of urban development in the medieval period. Excavations revealed a deeply stratified building sequence spanning the 12th to the 19th century, overlying earlier roadside ditches. The focus of this paper concerns the building sequence and its relationship to urban development. Aspects of the origins of earliest settlement, the nature of urban fabric and the transition from medieval to post-medieval society are reflected in structural evidence. Documentary evidence has been incorporated into the study of tenement layout, occupation and use, while structural, artefactual and environmental evidence articulates with the general development of the medieval city, in terms of economic exploitation and aspects of status.

In 1995, following evaluations in 1993 and 1994, Cambridge Archaeological Unit excavated a large part of a medieval and post-medieval street frontage along Forehill in Ely, part of a scheme of re-development. The site is located on the southeast side of the city to the east of the cathedral on the northern side of Forehill, which runs from the Market Place to the river Great Ouse. The topography of the site sloped downwards from northwest to southeast. Although a number of small excavations had been undertaken in Ely prior to 1995 the Forehill site represented the first major excavation. Since then several excavations have taken place, the most notable being of 9th century, medieval and post-medieval activity at Jewson's Yard on Broad Street (Alexander 2002) and of Middle and Late Saxon activity at West Fen Road on the western edge of the city (Mortimer 2000; Regan 2001).

The name Ely (*elige*) is first recorded by Bede in the 8th century when it is used as a regional name. St Etheldreda refounded a religious community previously based elsewhere, presumably close to the site of Ely Cathedral, in *c.*673. It was subsequently destroyed by the Danes in 870, and refounded in *c.*970 as a Benedictine institution. The *Domesday* survey of 1086 records that the abbey's manor of Ely was a rural community with 19 ploughs, as well as land for meadow, pasture, a vineyard and fisheries. Henry I created a new bishopric in Ely in 1108 and the abbey church became a cathedral, resulting in an expansion of the town at this time. The post-conquest cathedral appears to have instigated diversion of the Ouse to its present position, and subsequent development of the riverfront. Forehill evolved as the main thoroughfare between hilltop and river, with dense settlement from the 12th century reflecting the importance of both Forehill and its associated wharves. Ely Priory was dissolved in the 1530s, and the economic structure of the town inevitably changed.

An arbitration and survey of 1416–17 describes the properties in this part of Ely and it is also covered by various maps (John Speed 1610, Sir Jonas Moore 1685, tithe map 1843, Charles Bidwell 1851, OS 1885 onwards). Photographs of this frontage survive from the early 20th century although by the end of the century most it had been demolished save one building: no. 47 (Fig. 1). Excavation focused on the area immediately behind this public façade, on the private, inside spaces of structures and parts of their backyards which, in the earliest cases, date back to the 13th century (Fig. 2). This project marked the first major archaeological investigation in Ely, although many smaller excavations had taken place (eg Robinson 1994), and for the first time enables an authoritative discussion of such issues.

The area under investigation (TL 545802) lay at the angle formed by Forehill and Lisle Lane, due east of the cathedral (Fig. 3). The site slopes from northwest to southeast, on a solid geology of Lower Greensand overlying Kimmeridge Clay (in this area a pale very calcareous and impermeable mudstone). The medieval fen edge of the Isle of Ely runs immediately to the south of the area, broadly marked by the river Great Ouse. Preservation of archaeological remains of the street frontage is partly due to the corporate aspirations of Watney Mann who bought up the brewery of Cutlack, Harlock and Hall at Forehill in 1967, and closed it down. Thus the process of rebuilding that threatened the integrity of underlying archaeological remains was halted. Interest in the archaeological potential of the site was initially generated by survival of timber structural elements within the standing building at no. 47, Forehill, provisionally dated to the 14th century.

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Figure 1. *Forehill c. 1912 (no. 47 is on the extreme right of the photo)*

Figure 2. *View of no. 47, with evaluation trench*

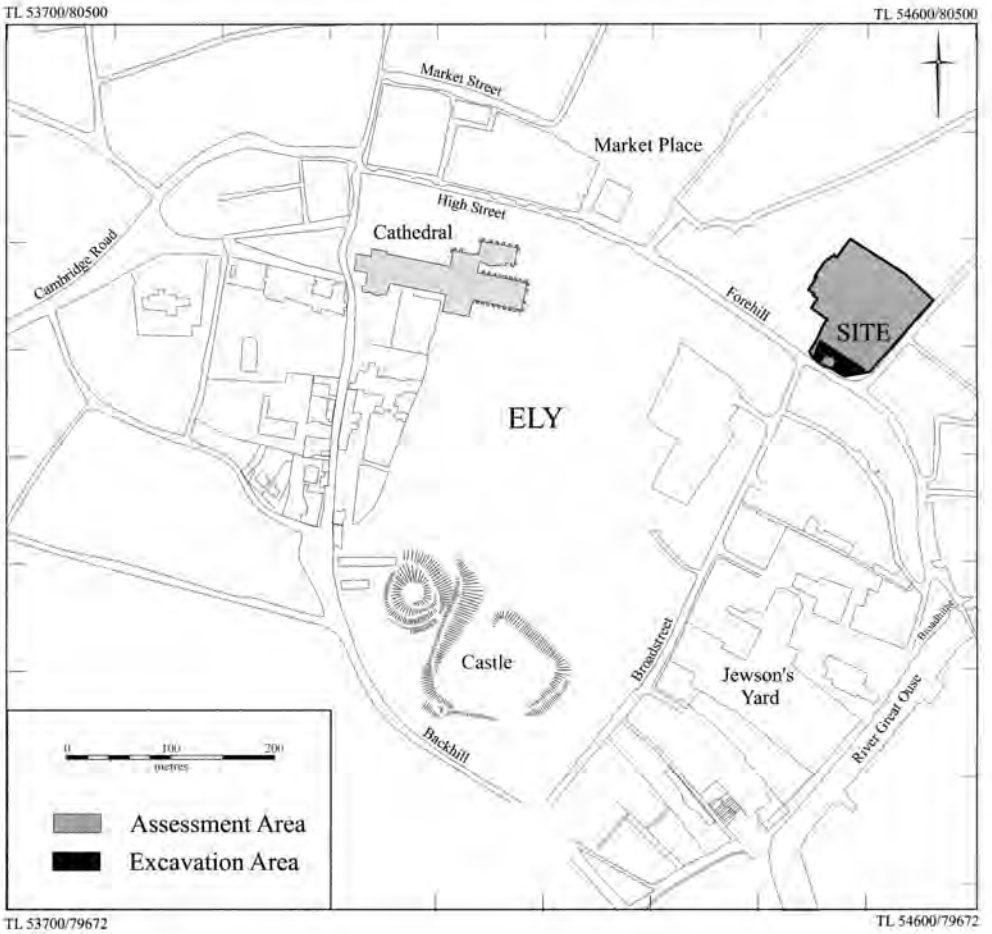


Figure 3. *Site Location*

A two stage archaeological evaluation of the vacant land behind no. 47 was undertaken in 1993 and 1994 (Wait, 1993, Butler, 1994). The first stage indicated that where the major brewery buildings had been constructed, the deep-cut basements had destroyed archaeological levels, but in the brewery entrance and courtyard area surrounding the building at no. 47, there was good survival of stratified deposits to a minimum depth of 1.20m. A sequence of pre-19th century structural evidence was identified, fronting Forehill. The earliest pottery retrieved dated to the 14th century, and local pottery production was indicated by the recovery of a waster and a sagger, dated to the 14th/15th century. The second stage of evaluation investigated a small area of surviving archaeology between the brewery basements. The results indicated that occupation diminished away from the street frontage and that the northern part of the site was in agricultural use in the medieval period, superseded by enclosure of the area as a back plot or garden as depicted on John Speed's map of 1610. Based on the results of both evaluations, the County Archaeology office recommended excavation of the street frontage area, if development was to proceed.

The 1995 excavations at the street frontage revealed over 3m of stratigraphy between the natural clays and the 20th century demolition levels (eg see Fig. 5). The impermeable qualities of the natural clays ensured that damp living conditions prevailed throughout the period of occupation. Various strategies were employed by those who lived there, including adaptation of construction techniques to counteract the ground conditions, but the wet environment was not without its benefits for the excavation, providing ideal conditions for preservation of organic material. Environmental samples from the early roadside drainage ditches, and from the floor levels within the early structures provided a wealth of information on local habitat, diet and the exploitation of resources. Damp conditions also preserved a series of unusual deposits, which were subjected to micromorphological analysis and interpreted as an indication of raised boarded floors. The interpretation is innovative but appears to fit with other structural evidence, and is fully discussed within this report. The excavated sequence was rich in artefactual material, particularly metalwork. Although this provided considerable information on industry and domestic activity, the degree of residuality and a lack of focus in distribution meant specific attribution of activities to properties was only achieved in a few cases. However, the substantial pottery assemblage from Forehill has made a unique contribution to the establishment of a regional pottery sequence, and this will be published

separately (Hall forthcoming a).

Ely is rich in documented material (eg Taylor 1973, Owen 1993, Robinson 1994), but additional research was however undertaken by Christine Went with the aim of establishing a documented sequence of tenement occupation to augment archaeological evidence. This research concentrated in particular on the period of the 1416 survey from which it was possible to obtain a snapshot of tenement ownership and layout. The full report on the documentary evidence can be found in the archive. It will be summarised and referenced here in relevant sections.

The building sequence

In order to provide a more readable narrative within the limits of a paper, it has been necessary to omit a detailed justification of the dating arguments or in-depth discussion of the complex stratigraphic sequence, but this detail is available in the site archive. However a more detailed discussion of the building materials and methods follows the presentation of this basic sequence. Based on stratigraphic evidence, the site sequence has been divided into five main periods (I–V), which will form the framework of this discussion, although within each period are smaller subdivisions (phases 1–24). Uniquely, Period I has two larger subdivisions, Ia and Ib marking the transition to the first buildings on the site. The full sequence is shown in the matrix (Fig. 4) and plans (Fig. 6–11).

In each period the building sequence is described by property, within archaeologically defined property boundaries. Each property is denoted by a letter (A–K, P). Buildings and rebuilds of structures within properties are given consecutive numbers (eg A1 is replaced by A2 etc.) and rooms within buildings, where they can be defined, are identified by small Roman numerals (eg C1 ii). Rooms are defined only when two or more edges to the room can be identified in plan. Some of the properties are divided by alley ways, which are referred to by letters L, M and N. Alley way N was numbered N1 and N2 to denote a substantial re-positioning. No tenement building was excavated in its entirety, thus the configuration of the rooms, and their dimensions were not always available, but an attempt has been made to identify basic building forms in each period and Figure 11 shows the interpreted extent of structures for all periods. Context numbers are included in the text thus [1234], whilst features are denoted by the letter F. Specific artefacts are referred to by their catalogue number thus <123> and by numbers assigned on site using the prefix sf.

The earliest excavated evidence post-dating ditches I and II shows the establishment of boundaries and buildings at right angles to the present street frontage, and these alignments are maintained throughout the excavation sequence. Excavated evidence shows that the boundaries between Properties B and E, between F and G, and between J and K are maintained with only minor shifts in position from the 12th century to the 19th century. Correspondingly, the documentary evidence suggests that many of the property divisions detailed in the 1416–17 survey were maintained from the original apportionment of lands when the bishopric was established in the 12th century. As a general statement then, where the full sequence was excavated, major boundaries apparent in the archaeological record appear to be maintained from their inception. They share an alignment, which overlies and ignores the position of the early ditches, and appear to set the pattern of land boundaries until corporate intervention by the brewery in the 19th century. The rigidity and endurance of this pattern moreover suggests legal endorsement and the word 'property' seemed the most convenient term of identification, and has been applied from Period Ib onwards. Evidence from early phases is insufficient to be certain that all areas of the site were within legally defined boundaries at this stage.

Dating evidence for each period is discussed at the end of the relevant section, and while relying primarily on the ceramics, occasional other finds are also referenced.

Due to the unexpected depth and complexity of the sequence, combined with the fact that the earliest deposits lay beneath the depth of disturbance associated with the development, Periods 1a and 1b were not excavated as fully as might be wished. It was possible to characterise early roadside activity and structural evidence but a comprehensive picture of the process of land reclamation could not be achieved.

Period Ia (Phases 1–3): 12th century (Fig. 6)

The earliest evidence of activity recorded was a ditch running parallel to the present road and cutting a buried soil.[1] A later ditch on the same alignment cut the early ditch after it had silted up. These roadside ditches contain early forms of Saxo-Norman wares, and are dated typologically to the early 12th century from the small vessel sizes. The lowest level [1837] has no Ely fabrics (dating from the 12th century), but they occur higher in the ditch fill (Phase 2, 71 sherds, 62 being Saxo-Norman, 6 Ely fabric). Phase 3 (15 sherds) has Saxo-Norman and Ely fabrics, and sherd of an early Lyveden type, dated to the 12th century at Fletton.

Period Ib (Phases 4–6): 13th–14th century (Fig. 7)

Evidence for the earliest building phases was considerably fragmented due to later truncation and was recorded almost exclusively in section. Nevertheless, these sections indicate the division of the area early in the occupation sequence into separate property strips running north from the street frontage, divisions which were to be maintained almost throughout the sequence. Initially it appears as if there were only two properties in this area: A to the west of no. 47, and B to the west of A. Building activity in properties E, F and G followed at a slightly later date. Features and

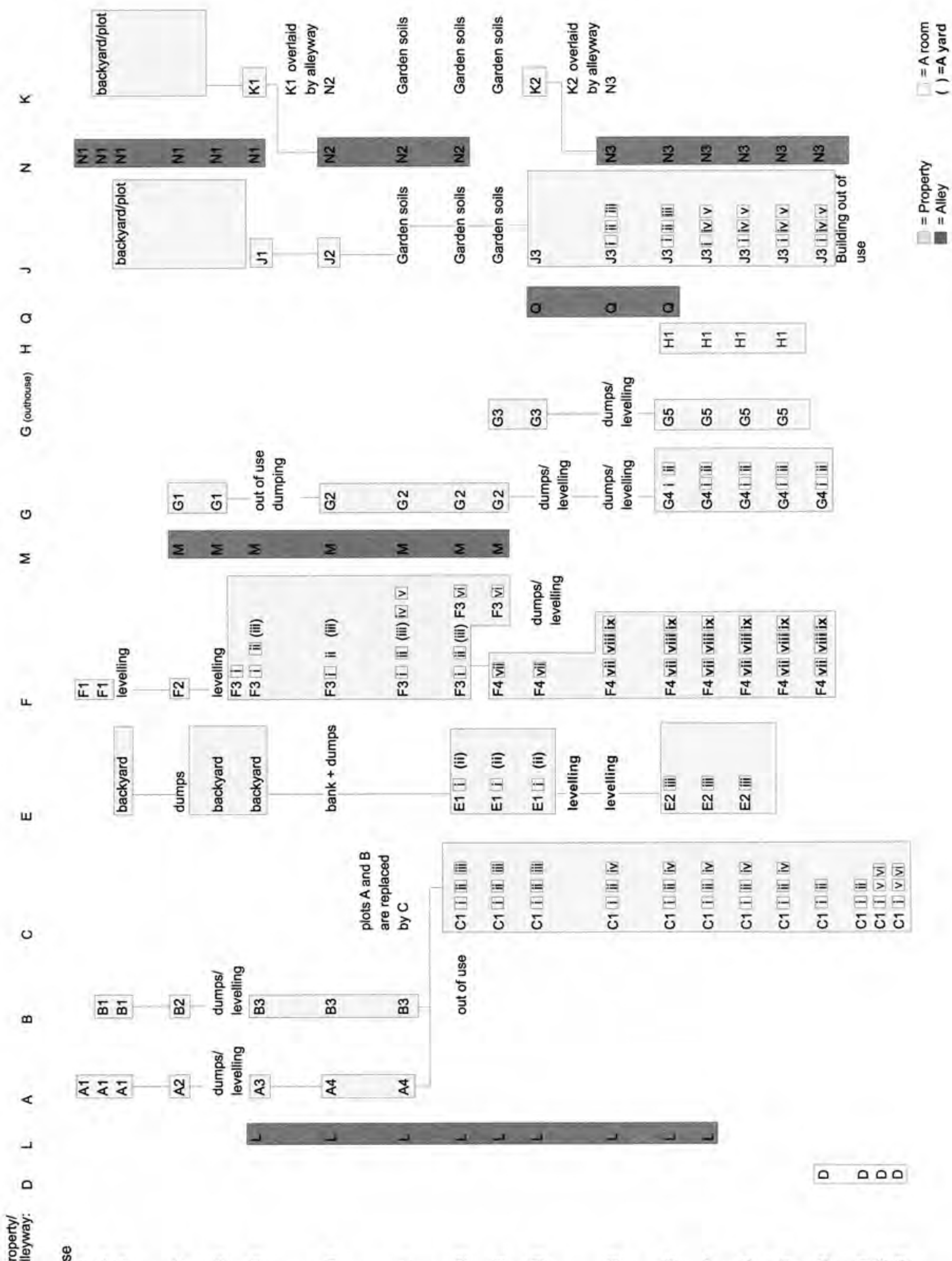


Figure 4. *Building Matrix*

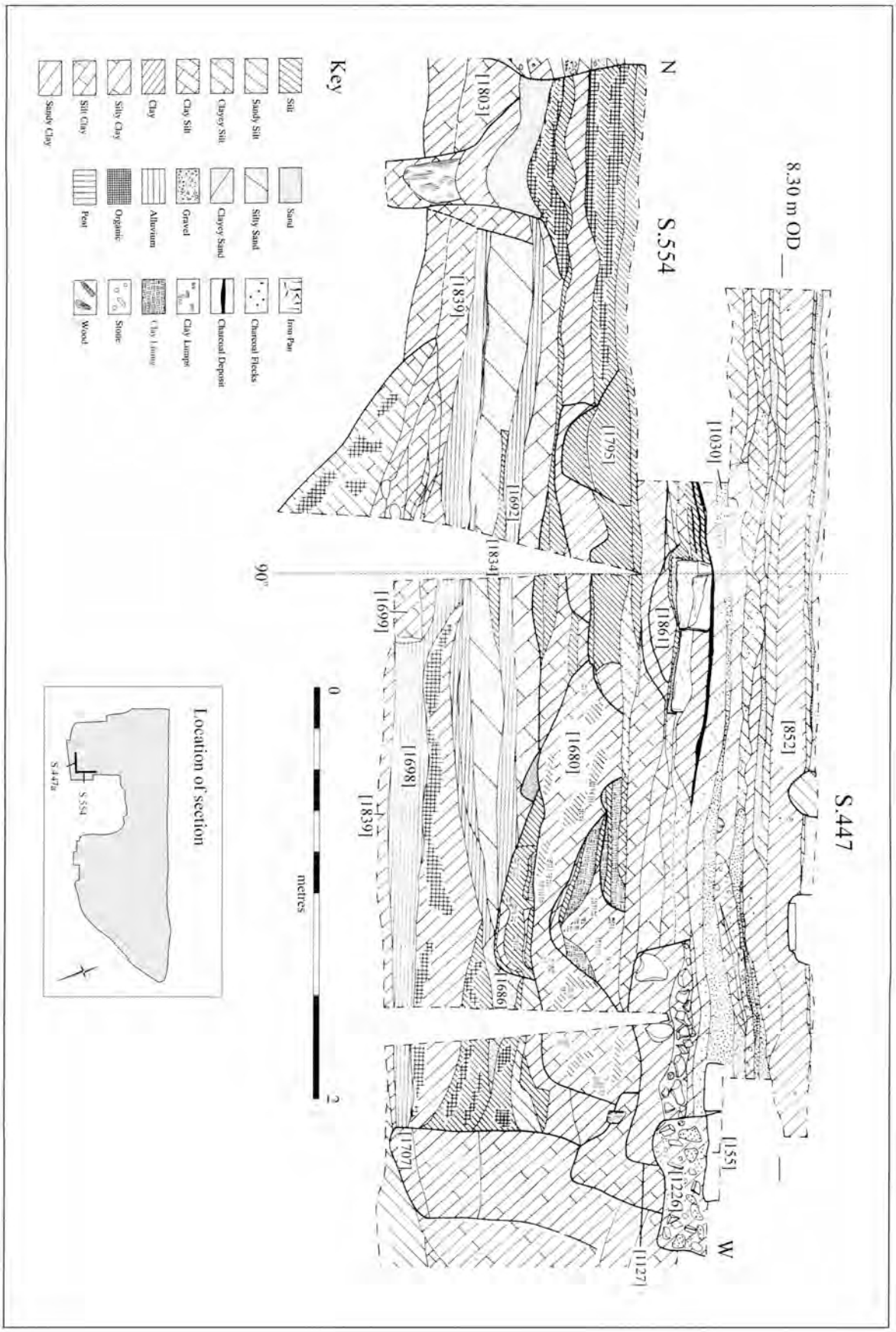


Figure 5. Section

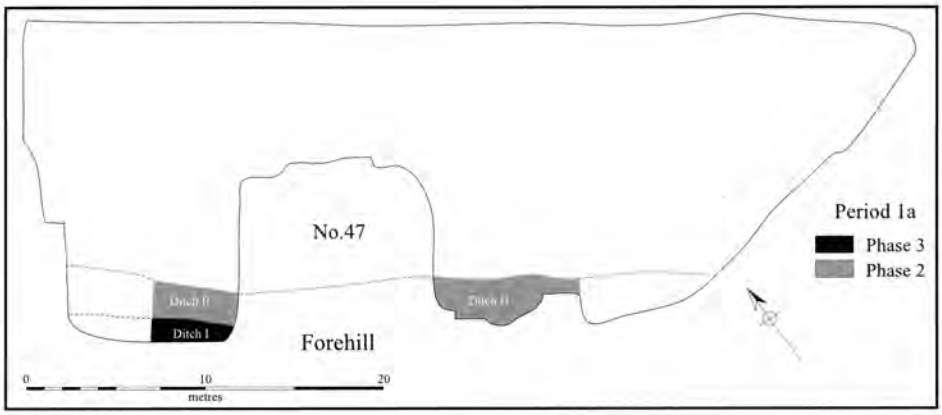


Figure 6. Period 1a Plan

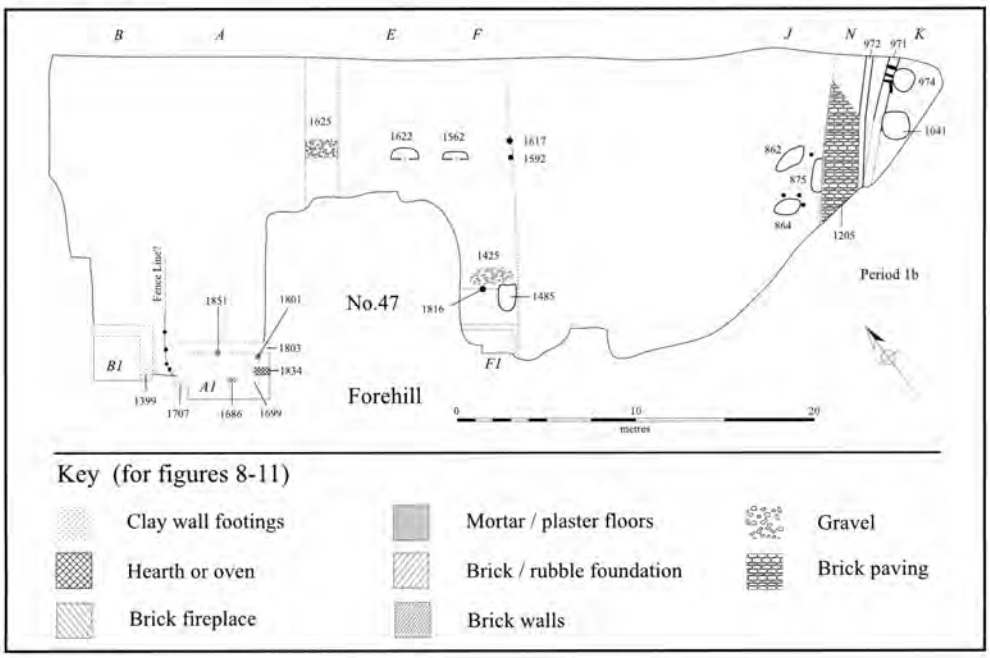


Figure 7. Period Ib Plan

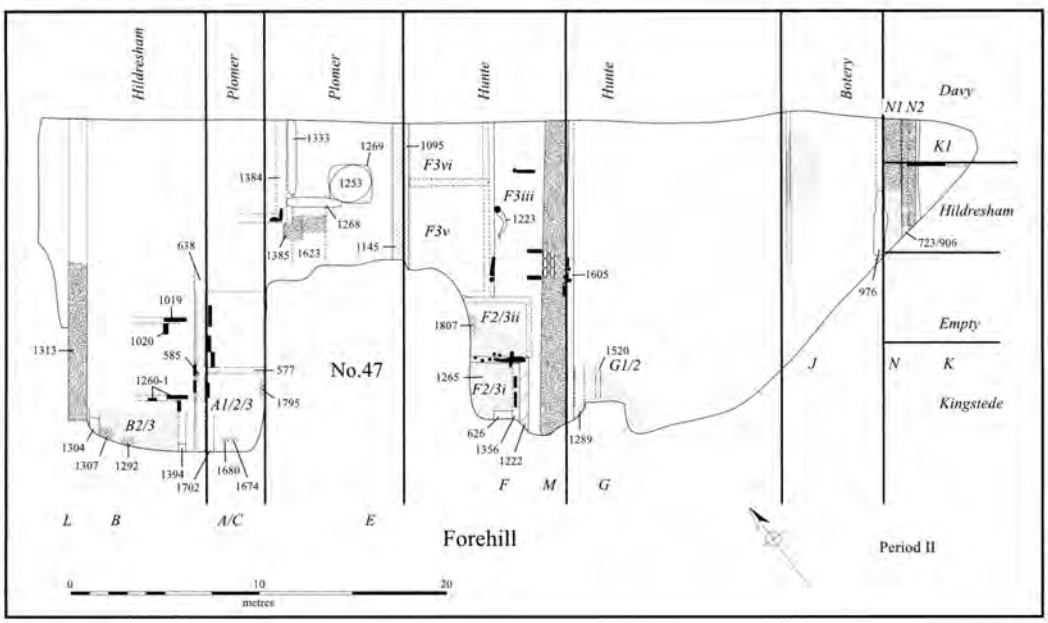


Figure 8. Period II Plan

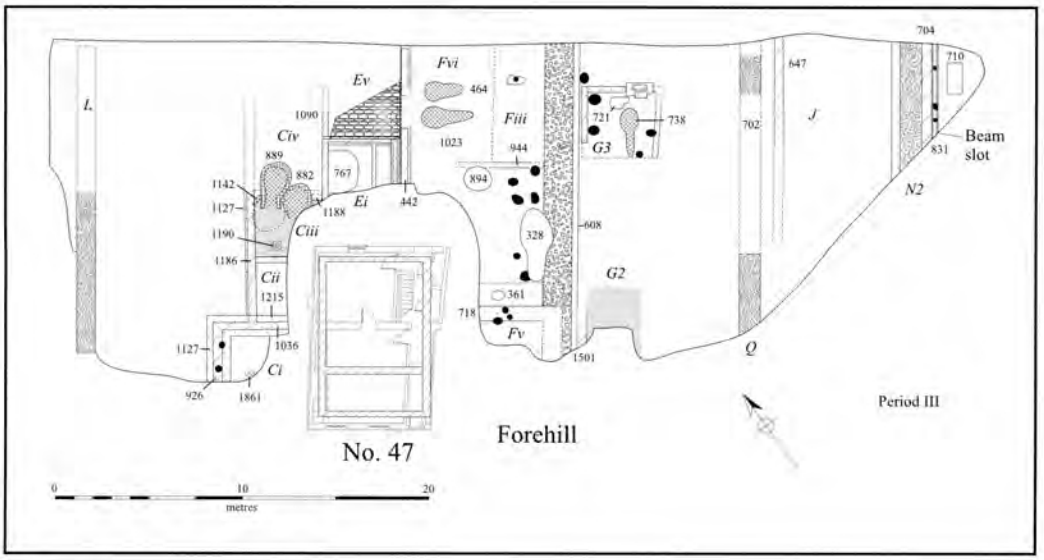


Figure 9. *Period III Plan*

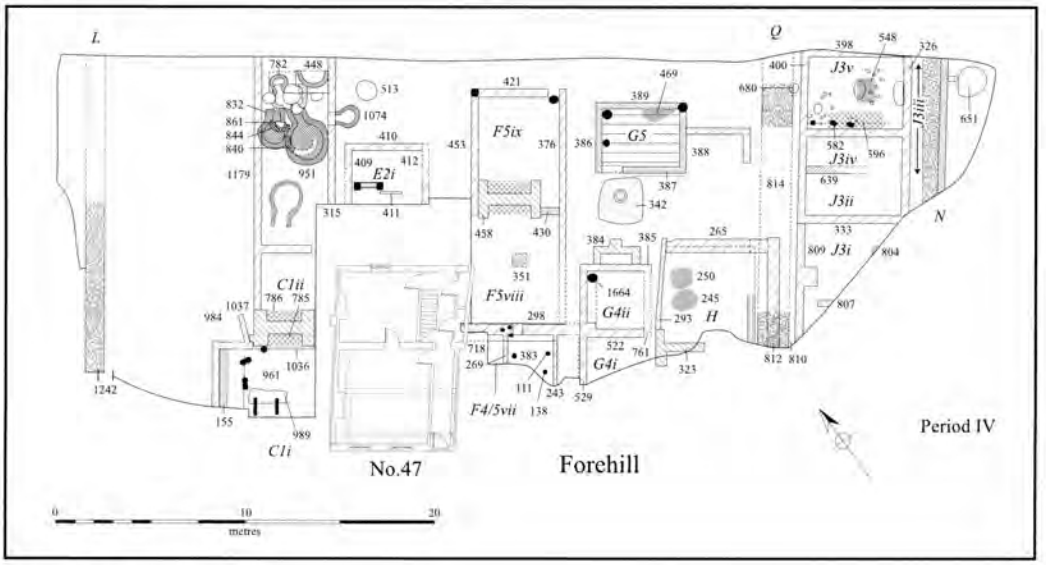


Figure 10. *Period IV Plan*

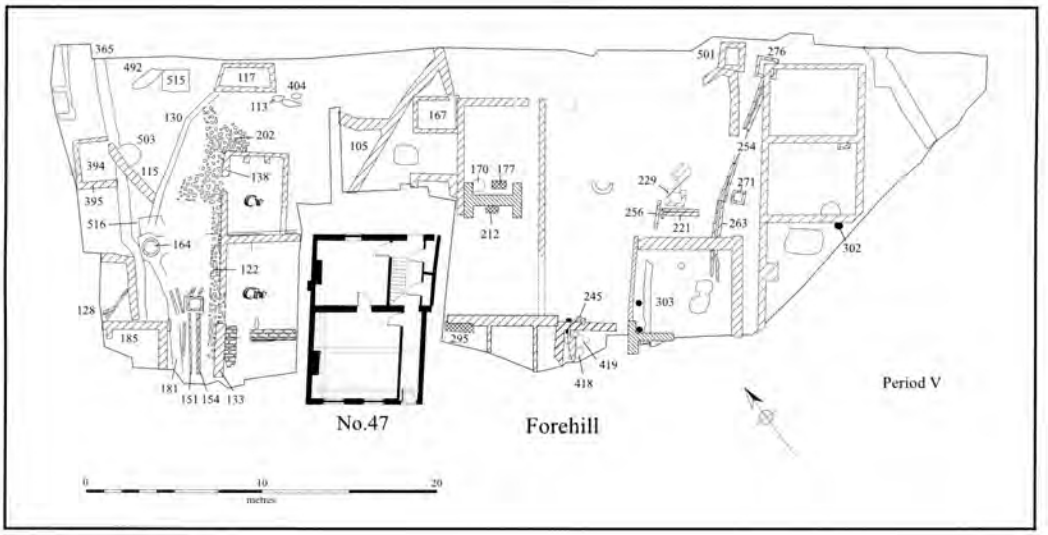


Figure 11. *Period V Plan*

deposits consistent with back-plot activity were found in properties J and K, those in the latter possibly lying within a structure. A cambered walkway (N) divided J from K. The most complete building was A1 (Phase 4), which had evidence for a west, east and north wall, suggesting a single roomed dwelling with a width of 2.70m. This is a narrow width for a medieval building, but falls within the range of comparable examples elsewhere (Clarke and Carter 1977, Schofield 1997). It was probably a timber building constructed on clay wall footings with floorboards over a clay base. It is likely that structures in properties B and F were of a similar character.

These earliest buildings have predominantly Ely fabrics (12th/13th century). Saxo-Norman fabrics are residual. There are small quantities of Lyveden fabric (12th/13th century) and glazed Grimston sherds make their first appearance. Grimston appears at Castle Acre in the late 12th century (Coad and Streeten 1982), and a sherd of imported Picardy fabric found in Phase 4, [904] has a late 12th – early 13th century date. Phase 6 (595 sherds) produced dark sandy fabrics (35 sherds), probably originating in west Norfolk, dated at King's Lynn to the 13th century (Hall forthcoming b). Phase 6 also produced a pewter brooch (<824>) of late 12th – early 13th century date.

Period II (Phases 7–11): 14th – early 15th century (Fig. 8)

By this period the properties have become firmly established, with some showing more than one phase of construction. In properties A and B structural elements of buildings were recorded in plan (A2, B2) superseded by a phase of levelling (or even abandonment), followed by re-establishment of structures (A3, B3). A3 and B3 underwent a series of changes, including a shift to the east of the west wall of A3. A well and pits were recorded in Property E to the west of a gravel alley way or yard between A and E. Occupation also continued at the south end of property F, with possible floorboarded areas, internal room divisions, and the re-establishment of the eastern boundary wall (F3). Alley way M was maintained throughout this period. The northern part of F may have been an unroofed space with access to the alley way, property E and another property beyond the northern limit of excavation. Occupation in property G (G1), was rapidly overlaid by silts and remained unoccupied until the later part of the period, when occupation was resumed (G2). The property division between J and K was re-defined as a wall (N2). Early in the period in J an area of animal stabling was replaced by a mortared surface, indicating a possibly structure (J2), while in K, a structure was defined by a north – south and an east – west wall (K1). In phases 11–13 both properties were covered in garden soils.

Buildings A3–4, F3 and, possibly, K1 could conform to the 'right-angle' type medieval town house plan (Pantin 1962), or the linear plan (Type B in Atkin, Carter and Evans 1985, p.252). This form was suited to narrow tenement holdings in that the building was gable end to the street and additional rooms to the main hall and solar could be added the rear of the structure. A2 and F3 had two rooms apiece, ranged at right angles to the street, but in both buildings the street front was beyond the limit of the site, and the north wall of the back room could not be identified, thus the room lengths were not calculable. Moreover, the east wall to A2 and the west wall to F3 were beyond the excavated area, although the width of the rooms in A2 could be estimated as 4m, assuming the east wall followed the alignment of the boundary between A and E at the north end of the site. Similarly, the west wall to F3 could be aligned with the phase 10 clay sill ([1145], Fig. 8) to the north, giving a room width of approximately 6m. The true form of both buildings remains speculative and the possibility must not be discounted that either F or A could have additional rooms beneath the standing building no. 47. They appear to have been constructed from similar materials to the last phase, ie timber structures on clay foundations.

Sherds from the complex building phases of this period are dominated by Ely wares and also many from Grimston. Dating is provided by the first appearance of Scarborough sherds (in Phase 8) which have a *floruit* of 1200–1350, and Hedingham fabrics, which begin in the 13th century. Phase 9 produced 1540 sherds, dominated by Ely and Grimston fabrics and containing material from Scarborough and Essex. Three stoneware sherds are likely to date from no earlier than the 14th century. A 13th-century lead seal matrix came from [1026]. Phase 10 (216 sherds) had little diagnostic material; Scarborough fabrics are consistent with an early 14th-century date.

Period III (Phases 12–14): Early 15th – early 16th century (Fig. 9)

In this period the western part of the site was subject to a major rebuilding programme. Structures in property B were demolished and levelled and building A was replaced by structure C, a three-roomed, substantial structure which also encroached upon property B to the west. The northern room of C was later altered to accommodate industrial structures (ovens), modified in phase 14. A room with substantial east and west walls was built at the back of property E, with a flagstone yard surface to the north. The yard was connected to a room to the east, in property F, that housed two clay ovens. Towards the end of this phase there were signs that the dwelling area in property F contracted to a single southern room with a newly established north wall. The end of this period was marked by separate, but contemporary measures to raise and level the ground in plots E and F. In the eastern part of the site, there was little major change: a free-standing outhouse was built in property G, a western wall in J was located, and a wall was constructed on the west side of property K, associated with a patch of mortar floor and a pit.

The standing building at Number 47 appears to date from this time and lies at the southern end of E.

Number 47 (Anthony Baggs) (Fig. 2)
The standing building was analysed in 1991 by Anne Holton-Krayenbuhl and the report was incorporated into a reappraisal of the building in 1995 (Baggs 1996). Elements of the surviving building suggest a medieval timber frame with a first floor jetty on the street frontage. The timber roof was supported by a central crown post with four-way bracing of which three braces survive. The crown post roof structure is a feature of the east and southeast (ie lowland) Britain. The rare examples surviving from elsewhere are from medieval buildings of high status. The frontage was formerly divided into three equal bays and may have been used for storage and a shop. There is evidence that the original structure incorporated a further room to the west and may also have extended to the east. A relatively high status for the building is implied. In the earlier analysis of the building, the crown post roof structure was interpreted as 14th century but a 16th century date was suggested in the later report (Baggs 1996). The crown post became rapidly scarce in the early 16th century, but the style of the crown post in the standing building (tall and narrow) suggests a late date as an advanced example of the tendency to narrower and taller posts in the later examples.

The two back rooms to building C1 appear to retain the linear plan of building A, although the wall alignment had shifted, but the front room, with a substantially increased width and solid stone foundations, indicated a new design to the front range, roofed parallel to the street, and possibly already incorporating what was to become no. 47 Forehill. As such, it could be considered to be an L-plan or T-plan (Atkin, Carter and Evans 1985), the L-plan was a characteristic form in 15th century King's Lynn (Parker 1971), but less so in Norwich, where their occurrence was often the result of adaptation of existing structures (Atkin, Carter and Evans 1985). However at Forehill, where the house plans are only partially within the excavated area, the categorisation of building forms is not so simple. The similarity of construction between room E1i, apparently added to the back of property E, and building C1 strongly suggests they were part of the same building. Without the opportunity to excavate within the safety baulk round the standing building at no. 47, it was impossible to establish the relationship between the building sequence in Property E and that in Property F. In phase 10 (period III) E and F appear to share a boundary, but when room E1i was built, a gap of 0.30m was maintained between the east wall of this room and the west wall to room F3vii, although F3vii had a threshold into the yard immediately to the north of E1i. It is possible that during this period, property E extended east into the northern part of F, and that the occupants of E used the ovens. Given the extent of the building behind the street frontage, it seems unlikely that property F was also incorporated into the building complex, unless provision had been made for light to enter the central part of the building complex via a central courtyard or passageway

Shortly after the westerly street front expansion of C1, and the possible amalgamation of E, pressure on living space at the rear of the building appeared to lessen, and room Ciii was converted to industrial use.

At the end of this period (phase 14) F appeared to undergo a radical contraction to a single, wider room at the street frontage, before additional rooms were added to the north in the following period. The pits and post holes to the rear of this room suggest that the period between demolition and rebuilding at the back of the property was more than a short break, although there is also evidence to suggest that some of the walls to the back rooms erected in phase IV are rebuilds from an earlier phase.

Phase 12, which had 207 sherds, is still dominated by Ely and Grimston fabrics. Dating is provided by Essex (Mill Green) and Scarborough sherds, suggesting a 14th-century date. Phase 13 (283 sherds) has Essex fabrics (including a sgraffito sherd) and one stoneware. Early stonewares (Siegburg and Langewehe) date from the 15th century. A token dated 1200–1425 (from [1036]) is consistent with an early 15th century date for the beginning of this phase. Phase 14 has less proportion of Ely (210 out of 334 sherds) and more Essex material than previously. Stonewares and Dutch Glazed Red Earthenware confirm a late 14th/ early 15th century date, concordant with metalwork from a purse of the type used 1480–1520 (from [632]).

Period IV (Phases 15–19): Early 16th–17th century (Fig. 10)

This period sees increased evidence of infilling in backspaces, especially toward the eastern side of the site in properties G and J. The north end of C was enclosed and new industrial structures were erected, two with burning inside. Industrial activity within the site and beyond the northern limit of excavation continued until the end of this period. A significant building development was construction of new fireplaces with wall-fast chimneys in properties C, F and G. A room with stone foundations was built in E, and in F, two new rooms were constructed and a small hearth was replaced by a large fireplace serving both rooms. At the beginning of the period the outhouse in G was rebuilt with a fireplace, but after a fireplace was constructed in the main building in G the outhouse appeared to have served for storage of lime. The latest phase of alley way between H and J was recorded. Property J was divided into three rooms and the cobbled alley way between J and K was re-gravelled.

Some of buildings in period IV (F, G and K) reflect the national trend of subdivision and extension as a manifestation of population increase and pressure on land, but others (C, E, and H) although subject to rebuilding, adhere to the same layout. Building C appears to have been unaffected throughout the period;

a shift of the industrial focus to the north may be a response to new fire precautions, rather than pressure on living space. We cannot speculate about E, apart from observing that there is no apparent expansion or subdivision at the back of the property (which may be an amalgamation of C and E). In property H a single roomed building replaced traces (unexcavated) of an earlier structure.

Amongst the buildings that were extended was building F, which acquired two rear rooms in a linear plan, but with longer dimensions than the period II rooms, both rooms measuring approximately 5.80m N-S by 5m E-W. Building G was extended with a second room to the rear and the outhouse was reconstructed, possibly with a second storey.

Property J underwent a series of subdivisions and rearrangements of internal space, the layout at the beginning of the period was of two largish rooms (room Jiii had an east-west width of 5.40m and a length of at least 6m) flanking a smaller room or east-west corridor. By the end of the period the space was divided into three rooms of roughly equal dimensions (5m x 4m), with the suggestion of a fourth room towards the street.

Phase 15 (240 sherds) still has Ely fabrics, but stonewares and Essex fabrics occur in greater quantity. The presence of Ely Babylon sherds and Bourne D appearing for the first time put the date late in the 15th century. Ely fabrics fall to less than half in Phase 16 (347 out of 705), and many sherds may be residual. Glazed Red Earthenwares, Essex red wares, Bourne D, Babylon and stonewares occur in quantity and a late 15th century date is likely. From the same Phase came a silver-gilt ring, dated to the second half of the 15th century [470]. Phase 17 (283 sherds) has a similar composition and Phase 18 has less than a third of Ely fabrics with Essex types more than a third. The presence of Surrey fabrics (Tudor Green), stonewares and Dutch Glazed Red Earthenwares indicate a date in the late 15th or early 16th century.

Period V (Phases 20–24) 17th/18th–19th century (Fig. 11)

During this period new plumbing and sewage systems were installed in all properties. Most drains were constructed of brick with a flat base and an arched roof. In Areas C/D a pre-existing cess pit was reused as a soakaway. The fireplace in Property C was repaired. The industrial zone to the north went out of use, and a cobbled yard was established. Towards the end of this period, the back rooms to C were rebuilt over part of the yard surface, now no longer in use. Building D was constructed at the west end of the site. The firestack in F was converted to smaller hearths and a second fireplace was established at the south end of the building. Property G was used as a smithy. The little evidence available from later phases suggests that the building forms established in the previous period were maintained without substantial change until demolition in the 19th or 20th century.

Phase 20 has a small group (90 sherds) with very few Ely fabrics and containing Glazed Red Earthenwares, late Essex reds, Babylon and Surrey sherds, dating to the 16th century. Phase 21 is dominated by Glazed Red Earthenwares of likely 16th-century date, and Phase 22 is similar, but dating from the 17th century. Phase 23 has some residual contexts and material from the 17th century and later.

Review of building materials and construction

Interpretation of buildings from the archaeological context is often hampered by the most common constraint of the archaeological record: that buildings rarely survive above foundation level. Moreover in an urban context additional factors are likely to adversely affect the survival of evidence. In constricted conditions, the rebuilding of a house does, of necessity, require the demolition of all, or part, of the previous structure. Recycling of building materials is also a common contributor to destruction of earlier building remains. As building techniques improve, more durable constructions and materials are introduced, inflicting considerably more damage to the earlier surviving evidence than straightforward replacement of the earlier structure. Thus, earlier remains suffer the cumulative effects of later buildings.

All these conditions apply to the Forehill site with the additional problem of interpreting the earliest structural evidence from sections. However despite these caveats some broad trends can be identified both in use of materials and construction techniques.

Wall construction

At Forehill there is little evidence for earth-fast posts as a major construction technique (but see building A1 in phase 4 during the 13th century), although found occasionally as components of internal divisions and additional wall supports. This is consistent with evidence from other medieval sites, where post hole buildings are replaced by other forms of building at the close of the 13th century (Clarke and Carter 1977, Atkin, Carter and Evans 1985). The most prevalent form of wall construction in the earlier phases is a sill or plinth to support a timber frame superstructure. Timbers in beamslots are observed less and are mostly confined in their use to thresholds and some internal walls. Timber for internal walls occasionally appears to have been laid straight onto the floor surface, and this usage undoubtedly contributes to a lack of surviving evidence for the minor, non-load-bearing walls.

The earlier sills or plinths were clay banks, placed straight on the underlying levels, or in a shallow gully,[2] thus where truncation has occurred the sill will resemble a shallow clay-filled beamslot. The sill width averaged 0.30m but could be up to 0.70 wide or as narrow as 0.28m, the width of some sills had been variously affected by truncation, or the flattening effect of overlying deposits. The use of the plinth must be, in part, a response to prevailing wet ground conditions,

for which there is considerable evidence, both archaeological and documentary (Lee 1850).[3] The contiguous floor-and-wall construction is frequently found in the earlier phases (eg F3 in phase 11 of the early 15th century, rooms iv and v) and would have provided an effective seal against rising damp. An exception to the use of clay at Forehill in the early periods is the bank or sill of clunch supporting the east wall of F8. It is not apparent why subsequent clay sills were built against the west side of the bank rather than reutilising the clunch bank itself, but the clunch would have served well as a supporting buttress.

Evidence for timber superstructures is sparse.[4] Traces of wood survive on the plinths in isolated examples (eg F2 in phase 7, F3i in phase 8 and K1 in phase 9, all of the 14th century), but the majority of surviving wood appears to have been in secondary use, as lining for the alley drain for instance, or as ad hoc support for subsiding walls (Fig. 12). Extensive reuse of timbers was probably the norm on the site and a contributory factor to the lack of surviving *in situ* structural elements.[5] An exception to this appears to be the timbers from properties A and B phase 7 (early 14th century), recorded after overlying deposits had been machined off. The plan suggests traces of internal room divisions and two parallel north – south walls flanking a clay-filled cut, originally interpreted as a clay-filled drain. Taking other structural evidence into consideration, it seems evident that the cut is a truncated clay plinth on which the main wall must have rested, while the flanking timbers may have had a subsidiary role, supporting the planks of a raised floor (discussed further below).

Norwich evidence (Alms Lane) identifies a clear cut-off point for clay walls *c.*1500; this sudden demise may have been prompted by the two disastrous fires of 1507, but was also a reflection of changing building styles (Atkin 1991). This broadly concurs with the Forehill sequence, although the transition here is less abrupt: solid rubble filled foundation trenches were introduced in properties C and E in the late 15th century, but there was also a brief *floruit* of beamslot construction *c.*1500 in structures G3 in phase 12 and J3 in phase 14, soon replaced with rubble plinths. The clay walled structures at Norwich were predominantly one or two roomed buildings, with only two examples of evidence for a second storey. Clay walling possibly lacked the load-bearing capacity to support additional storeys, particularly when less flammable roof tiles replaced thatch.

At Ely the majority of the masonry sills or plinths were narrow constructions, between 0.20 and 0.30m wide, built of bricks and brick fragments,[6] in various combinations with brick and tile rubble, flint, flint cobbles and stone,[7] either resting directly on the ground or in a cut no deeper than 5–6 cms. The rebuilding during C and E in phase 12 of the early 15th century, was considerably more substantial, in rooms C1ii and iii the brick and flint rubble plinths stood on foundation trenches 0.50–0.60m wide, 0.20m deep packed with mortar, stones and brick rubble on a base of flint nodules in clay. The foundations to room C1i were a massive 1.20m wide and 0.40m deep, filled with crushed chalk over flint nodules in clay and could have supported a full-height masonry wall, although there is no other evidence to suggest this. In room E1i foundations of compacted mortar were 0.80m wide, 0.35m deep, supporting a limestone and mortar wall 0.4m high. The slot to accommodate a timber baseplate had survived in wall [582], property J in phase 17 of the 17th century. The slot was between 0.13m and 0.16m wide, formed of bricks set on edge.

Analysis of wood samples shows that the majority of identifiable samples were oak; however the superior survival qualities of oak would result in the under representation of other species.[8] All the fragments of

Figure 12. *Detail showing reused timbers for underpinning (Structure F2, Period II). Scale 1m.*

structural timbers were oak. This fits the general rule for timber framed buildings in this period; oak appears to have been the only species used for major structural elements, with other species used for non-structural elements. At King's Lynn alder was recorded for piling, and hazel for wattling (Clark and Carter 1977).

Roofs

It is assumed that most of the medieval buildings on the site were thatched. Great fen sedge would seem to be the most likely material, given its local availability and the lack of evidence for other thatching materials. Great fen sedge was found in charred or unburnt form in environmental samples taken from the 13th/14th deposits (mainly from property F), but in its carbonised form is more likely to represent residues from kindling or fuel (see Stevens, below). Roof tile[9] would have been a more expensive commodity in the early periods, probably reserved for workshops or outhouses where fire precautions were more necessary. Small quantities of roof tile were found in residual 12th to 14th century contexts in Period I, but only in the late 13th and early 14th century backyard deposits of property K in phase 6 was it in great enough quantities to suggest a tiled roof nearby. Considerably more roof tile was found in Period II, occurring in pits and layers in property K in abundance and also in the cultivated soils in J dating to the 14th and early 15th centuries. It is possible that one or both of these properties accommodated a tiled structure, but not necessarily in the excavated area. Tile was also noted in moderate quantities in dumped deposits, possibly transported from elsewhere for ground consolidation in properties A and B and E in phases 9–11 of the late 14th and early 15th centuries, and reused as post packing, and post-pads in property F. It is not until Period III (early 15th to early 16th centuries) that roof tile occurs in sufficient quantities to indicate demolition or collapse of tiled roofs on site. The incidence of tiles in almost all deposits within and without the buildings in the following period (IV) is consistent with widespread adoption of this roofing material from the mid 16th century onwards.

Floors

Indications of floors and hearths were available from most phases of occupation, although traces of internal partitioning, doorways, furniture and evidence for staircases were mostly destroyed by later truncation. The partial excavation of many of the buildings, and the rooms within, impaired analysis of the internal arrangement of features. Clay was commonly used as a floor base throughout the duration of the site, chosen no doubt for its availability and damp proofing qualities. Remnants of mortar surfaces appear from the 14th century, and become the most common form of flooring in the later period, with some cases of mortar applied as a continuous surface to the floors and the inner face of the wall footings.[10] Featuring prominently in the earlier period (I and II) of the 12th to 14th centuries however, were also deposits composed of fine laminae, mostly laid perfectly horizontal and consisting of alternate deposits of silts, or silty clays and organic or ashy material creating a finely striped effect. Although interpreted on site as floor layers, these deposits had caused some puzzlement during excavation. They did not bear the hallmarks of most domestic surfaces, such as compaction, trampling and disturbance or hollows and repairs, although small fragments of ceramic material, bone and even plant fibres were present.

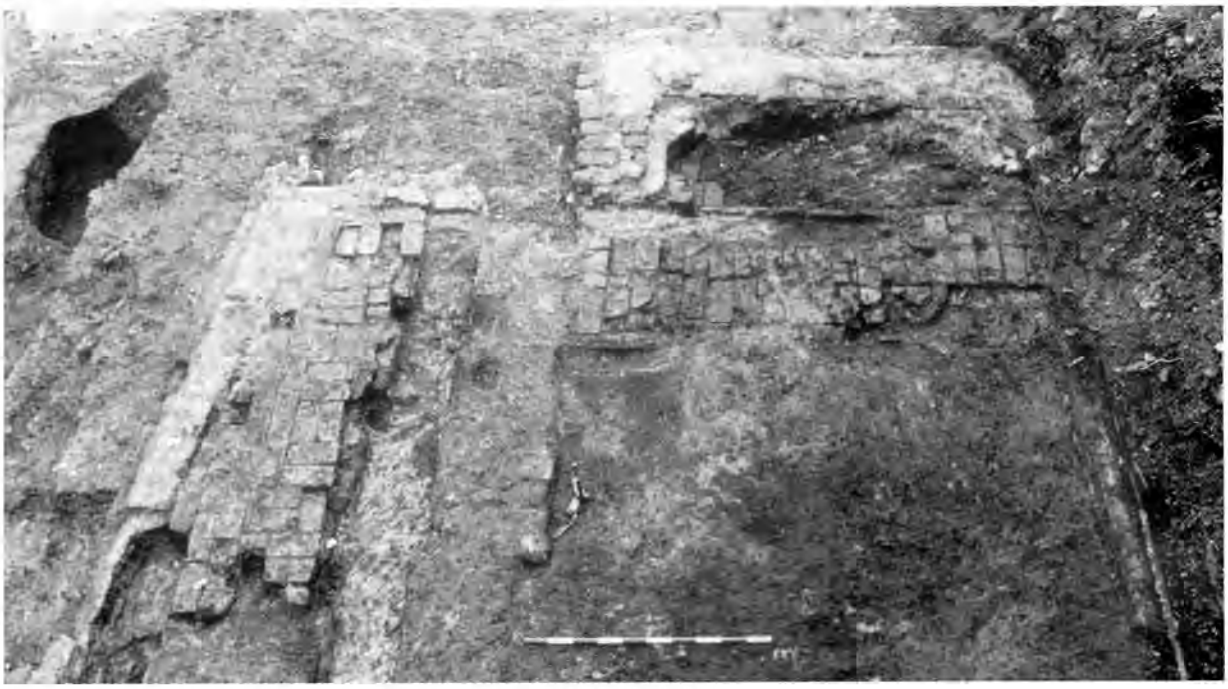


Figure 13. *Back-to-back fireplace (Structure C1, period IV). Scale 2m.*

Micromorphological samples taken from a series of these deposits in property F, confirmed that the fine layers consisted of organic matter, occupation debris and different sediment types that had accumulated in a still, protected environment. Post-depositional compounds such as iron pan, indicative of periodic rise and fall of water levels were also identified. The examination concluded that the sediments were the result of the accumulation of occupation debris in the cavity below raised floorboards in conditions of fluctuating ground water.[11] At Ely the floor board cavity deposits rest on a variety of material. This was often a clay base, laid above preparatory dumps of silty clay and rubble (eg A1 in phase 4 of the 13th century). Thick deposits of silty clay or ash, in between two or more episodes of cavity deposits, suggest the floor boards were temporarily taken up, while measures to mask rotting smells or to raise the level of the floor base were undertaken (F3i in phase 9: [1091], [1008], F3i in phase 10: [979] and [946] of the late 14th and early 15th centuries). The small body of comparative evidence from other sites suggests floorboarding was not a common practise, but a product of unusual environmental conditions – a pragmatic solution to the periodically waterlogged conditions.

Hearths/Ovens

The presence of a hearth in the earliest phase of building (phase 4, 13th century, building A) is inferred by spreads of ash amongst the floor deposits, in the following phase (5, 13th century) the hearth was a clay-lined, flat-bottomed straight edged cut ([1834]). The remainder of early hearths in properties A and B were recorded in section, and appear to be scoops in the ground, lined with clay (A1 in phase 6: [1686], A3 in phase 9: [1680], [1795], B3 in phase 9: [1292] of the late 13th to late 14th centuries). The sections suggest some may have had a sloping side for rake-out but there is no evidence for a superstructure. In contrast, the early 14th century hearth in F in phase 7: [1807] was based

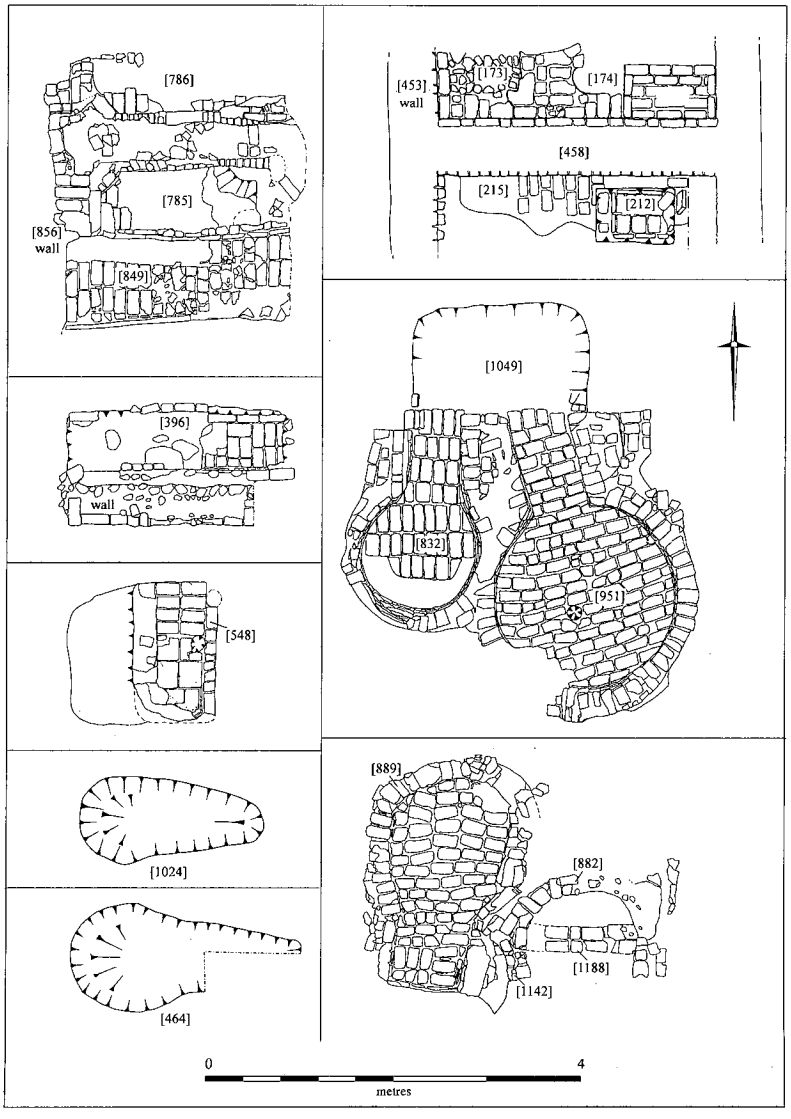


Figure 14. *Hearths/Ovens from various phases*

on a thick layer of crushed chalk, over a 0.20m deep cut filled with clay, and had the surviving remains of a sandstone surround. The presence of hearths within main rooms is unusual in this period (13th –14th century), when hearths were generally found in lean-to's or outhouses, and rooms were presumed to be heated by portable braziers (Atkin, Carter and Evans 1985). It is possible that the scooped hearths at Ely served some industrial function, especially the late 14th or early 15th century hearth from B3 in phase 10, which was 0.90m wide and 0.50m deep and associated with a thick build-up of burnt clay and ash. Two hearths to a room is particularly rare (A3 in phase 9 of the late 14th century: [1680], [1795], and may indicate a room division missing from the section evidence.

The buildings at Forehill show a gradual development from centrally placed hearths to chimney stacks built into a gable or partition wall. A series of changes inspired by pressure of space as well as, no doubt, by fashion, were affecting the internal arrangements of urban housing in this period, but were not necessarily implemented in the same order or with the same outcome. In contemporary urban sites, a trend was developing towards flooring over the hall, traditionally open to the roof, to create a complete first storey room, or suite of rooms. Wall-fast chimney stacks were often part of this development, and if required, allowed the upstairs chambers to be heated. The back-to-back fireplace could serve the hall (or parlour) and an adjacent kitchen, and was often to herald the demise of the separate kitchen outhouse. At Norwich chimney stacks and rubble wall plinths were contemporary developments in the early 16th century, whereas at Forehill rubble walling was replacing other types of construction early in the 15th century, and the wall-fast chimney stack appears to have been a later, and separate development (Fig. 13).

Several stages of the brewing process have been identified at the Marks and Spencer site in King's Lynn (1500) (Clarke and Carter 1977) and Alms Lane, Norwich (*c.* 14th century) (Atkin, Carter and Evans 1985). Clay-lined soaking pits were found at both locations, both containing discarded millstone fragments from the crushing process. There are no equivalent pits at Ely, but some of the unburnt brick structures ([889], [882] and [1142] in property C (see Fig. 9) could have functioned as soaking vats, particularly the keyhole shaped structure [889] with its sealed floor (Fig. 15). This type of structure is known to have been used in the early medieval period for soaking cloth as part of the fulling process (Egan 1991), and is a type of construction which appears to have been put to a variety of uses. At St Martins, Stamford they clearly function as ovens for an unspecified, but possibly industrial purpose (Mahany, Burchard and Simpson 1982).

The identification of grain-roasting ovens at Forehill must remain speculative in the absence of any significant quantities of burnt grain in the environmental record, but a number of external ovens do occur on the site which require some comment. The earliest external ovens E/F in phase 12 of the early 15th century were simple scoops in the ground, similar to the earlier internal hearths, but larger and with flues (Fig. 16). Their function was probably purely domestic but they are similar to the grain-roasting oven at Alms Lane (oven 1479). The later circular brick-built ovens with straight flues [832] and [951] (C1 in phase 16 of the 16th century), were subject to intense heat and can be paralleled to ovens A1 and A2 at King's Lynn; moreover the circular cavity in a rectangular rubble block [448] (C1 in phase 18 of the late 16th or early 17th centuries) at the north end of the site closely resembles Oven (?) (sic) D2 from the same site, which also bore no signs of burning.

Samples taken from the ash at the base of [832] and [951] contained a small amount of grain, but also a variety of other domestic waste. However sedges formed the dominant component, indicative of the fuel source rather than the material processed. In samples taken from the deposits in front of [448], wheat and other cereal grains were present with considerable numbers of free-threshing wheat rachis. The presence of free-threshing wheat rachis in large quantities is indicative of grain processed straight from the sheaf either for brewing or baking, the rachis would supplement the fuel supply (Chris Stevens pers comm). It is evident from the comparative literature that the ovens could be put to a variety of uses as the demand arose (Hilton 1984, p.60), and may have served for cooking, brewing or even boiling or soaking clothes – fragments of a large copper alloy vessel were found in the backfill of structure [889] (<911>).

Figure 15. *Possible soaking vat (Feature [889]). Scale 0.5m.*

Figure 16. *Pair of ovens (Property F, Period III ([464] and [1024]). Scale 2m.*

Figure 17. *Complex of brick ovens (Property C, Periods III–IV). Scale 1m.*

The complex may indicate a small business enterprise, as a laundry, brewery, or bakery possibly providing rented cooking space for those too poor to have the space or resources for their own oven (Fig. 17).

Stairways

Stairways to upper storeys were difficult to identify. The 'L' shaped wall added to G5 had a parallel in building B5ii at Alms Lane, Norwich, where it was interpreted as a staircase (Fig. 18; Atkin, Carter and Evans 1985). The springer arch of the fireplace in G4 could have also supported the staircase, this type of combined construction was observed at Chester, and elsewhere (Schofield 1997). Internally, the staircase could take various forms, and be found almost anywhere within the building, as the early 17th century survey of London properties by Ralph Treswell shows (Schofield 1994). Staircases adjacent to the front entrance would allow access to important rooms such as a first-storey hall, when the ground floor has been given over to industrial activity, commerce or storage. This arrangement is exemplified at The Brooks, Winchester in House I, 1st period (mid 12th century), where a stairway next to the front entrance led to a first-storey hall (Biddle 1964). Both F3i in phase 10 (late 14th or early 15th centuries) and C1i in phase 19 (17th century) had a rectangular cut at the street end of the room, where the foot of a staircase could be situated, and in room C1i the cut contained the possible base of a structure.

External Surfaces

Gravel predominated as the material used for paths and alley ways but cobbles were also utilised. The yard behind E, was a well-made surface of flagstones and tiles in keeping with the high quality rebuilding of properties C and E in Period IV of the early 16th to 17th centuries (Fig. 19).

Discussion of the building sequence

Given that the property boundaries and site layout in general altered very little apart from minor boundary shifts and the amalgamation of A and C in Period III between the early 14th and early 15th centuries, most of the changes relate to construction techniques and floorplans of the structures (Fig. 20). As with other urban sites excavated from this period, building techniques employed recognised general trends, but were also strongly affected by site-specific conditions. Poor drainage and a high water table must have made living conditions damp, but not uninhabitable, influencing the choice of building materials and building techniques employed in the early period. The use of earth-fast posts as a major construction technique was generally in decline in the 13th century, replaced by timber frames, most commonly recognised in the archaeological record by beamslots. The building sequence at Forehill begins in the late 12th century, and earth-fast posts are mainly employed in a subsidiary role, the predominant technique is a timber frame raised above the ground surface on clay plinths, often forming a continuous damp proofing with the clay floor base. The use of a plinth or footings to support the timber frame occurs frequently on medieval urban sites, and often the most readily available materials were used. At Forehill this was the underlying Kimmeridge clay, additionally useful for its impermeable qualities.

Measures to raise the ground level to counteract the problem of rising damp and the generally damp

Figure 18. *Outhouse (Structure G5, Period IV). Scale 2m.*

environment itself, combined to provide rare survival conditions for series of unusual deposits. Interpretation of these finely laminated layers as indicators of a raised boarded floor relies on a conjectural analysis of the micromorphological samples, but appears to fit with the excavated evidence. The use of clay for plinth construction is not unique to Forehill, but the study of its use in an urban medieval context is relatively new and owes a great deal to the analysis of excavated evidence from Norwich (Atkin 1991). It is hoped that the evidence from Forehill will make a significant contribution to this field of study. The interpretation of the laminated deposits is still speculative and would benefit from further analysis of comparable deposits from other sites, but could emerge as an invaluable tool in the interpretation of truncated structural features. More work needs to be done on the correlation of building methods with the environmental contexts of medieval urban sites.

Excavated evidence from the site spans the 'Age of Transition' (*c.* 1400–1600) in which profound economic and social changes transformed the medieval world into a society that provided the foundations of our own modern culture. Attendant on these changes, and prompted by both fashion and necessity, were modifications in the form of buildings and the materials of their construction. There have been attempts to establish a typology of house-plans in this period (Pantin 1962) and to identify house-types within the urban context, but as more urban sites of this period are excavated, the less it seems possible to apply a rigid classification. As John Schofield noted, changes were adopted more often than not as a response to specific circumstances and 'the notion of types arising mainly through alteration is closer to reality' (Schofield 1997).

Figure 19. *Exterior backyard (Property E, Period III). Scale 0.5m.*

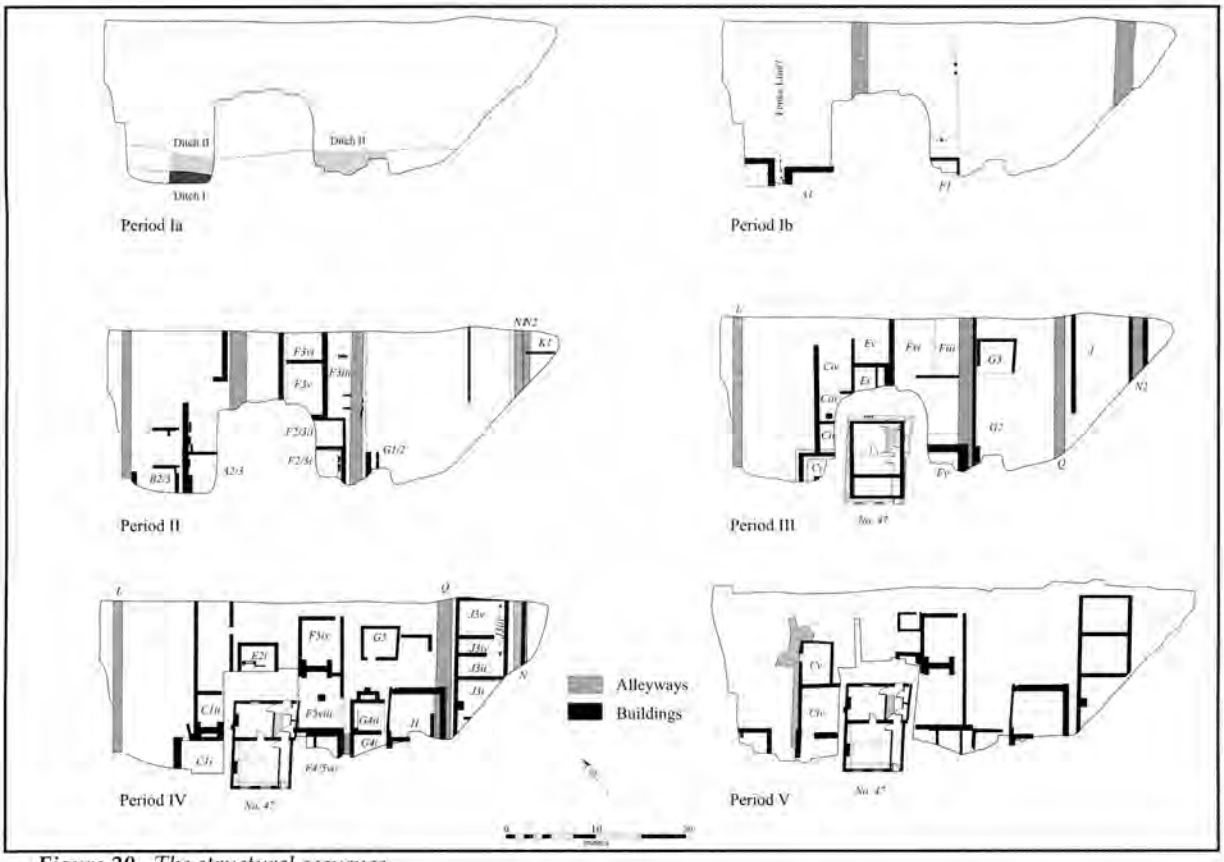


Figure 20. *The structural sequence*

The demise of the open hall, enshrining a rigid sense of status and community, is more apparent in the larger and higher status buildings in town and country than in the smaller houses; this is partly due to the more numerous examples of high status buildings still standing. The smaller house such as those at Forehill is more often studied from the archaeological record. By the 14th century it was common in the small and medium sized town dwellings for the hall to be situated on the first floor, with the ground floor utilised as a commercial space. Later in the 16th century the open hall was superseded by the more private parlour. Business and social/family affairs were beginning a disconnection that would achieve its ultimate expression in the separate work place. With an increase in material culture moveable goods such as furniture and fittings became more important as markers of status, and the function of a room was less rigidly defined by its form alone (Johnson 1997).

Some of the changes that typify this period can be detected in the buildings at Forehill, although the form of the superstructure of the buildings was not always apparent or easy to interpret from the excavated evidence. Where the evidence is available new building materials and forms appear to be adopted in a piecemeal fashion, a gradual process of alteration, dictated by the lifespan of the old structure and the individual householder's resources. Properties A/C and E appear to be the first to adopt new building forms, but whether this is a measure of the household's disposable income, upwardly mobile aspirations, or simply the imminent collapse of the old structure, is difficult to establish (but see Discussion below). The radical rebuild of building A3 as C1 appears to mark the amalgamation of property A/C with E and coincides with the documented tenancy of John Plomer in both properties. The foundations of the new building are substantial enough to support a second storey, but the building appears to have been originally conceived with a ground floor open hall, to judge from the central fireplace; the back-to-back firestack is a later addition. This pattern is followed elsewhere on the site, with brick rubble walls or plinths replacing earlier wall forms, but with wall-fast fireplaces as later additions. Tile fragments are numerous in the new rubble plinths and in other residual deposits from the late 14th century onwards. It may be a measure of the cosmopolitan attitude of the inhabitants that tiled roofs appear to have been readily adopted not only for industrial structures, but probably for domestic structures as well, despite the availability of thatching materials from the fens. In short, the solidity and scope of the new construction work suggests a degree of wealth that is perhaps not matched in the other excavated properties.

The Finds

Pottery

David Hall

Pottery from Ely Forehill consisted of 7980 sherds (excluding 19th century material from context [275]). The total quantities are listed by fabric in Table 1, below (also see Figs. 21–22). Each individual context is detailed in an archive spreadsheet that provides the number of each fabric type, an estimate of the date, and the numbers of rims, bases, decorated sherds and any other significant item of interest. In all 565 collections were studied, most of them being individual contexts. Excluding post-1740 wares, the number of sherds studied is then 7768.

The main group of sherds dates from the 11th to 17th centuries. As expected, the dominant fabric is material from the nearby Ely kilns, which were active from the 12th–15th century. Other identified medieval fabrics come from Grimston, Norfolk, Toynton, Lincs, and from various places in Essex, Lincolnshire and Yorkshire, as well as northern European imports of mainly stonewares and some finewares. The well-stratified series from Forehill provides a useful sample of the range of pottery used in medieval Ely. A few residual Roman sherds (5) were recovered, probably deriving from one of the numerous Roman sites on the Isle of Ely. There were two abraded Middle Saxon sherds.

Saxon-Norman Wares

St Neots, Stamford and Thetford type were present in the ratio 42:18:34. The total was 94 sherds, representing 0.5, 0.2 and 0.4% respectively of the total. St Neots shelly wares occur in lower amounts at Ely than in the south and west of Cambridgeshire as would be expected with the nearness of Ely to Grimston, where a hard, sandy, Thetford-type of pottery was made.

Table 1. *Ely Forehill fabric types. GRE = Glazed red earthenware.*

Fabric	Total	% of 7768
St Neots	42	0.5
Stamford	18	0.2
Thetford	34	0.4
Other 12th/13th	10	0.1
Ely Oxid	2555	33
Ely Reduc	1977	25
Grimston	601	8
Ely Grim.	51	0.7
Reduc sandy	437	6
Other Medieval	324	4
Essex reds	499	6
Lyveden	38	0.5
Yorkshire	55	0.7
Stoneware	63	0.8
Surrey	25	0.3
GRE	887	11
Babylon	113	1
Bourne D	37	0.5
Post 1740	214	-
Total	**7980**	

Ely fabrics

The principal sherds were Ely fabrics that dominate the collection, being 2555 oxidised (33%) and 1977 reduced sherds (25%), or 4,532 in all (58%). Pottery production at Ely was only satisfactorily identified in 1995 (Robinson 1998). The site then examined was a waster dump and not a kiln, but the quantity and nature of the sherds made it certain that the material was waste from industrial production. The location lay just above the appropriately named Potters Lane, recorded as early as 1280 (Reaney 1940, p.215). Many more sherds lie in profusion in the gardens of Cherry Hill, lying next to Potters Lane. Two principal fabrics have been identified, one called 'oxidised' and the other 'reduced', the difference probably only being the final oxygenation conditions in the kiln. Both fabrics are hard with a slight sand component and characteristically contain white flint-grits evenly distributed throughout the fabric and visible on the surface. The grits are usually small, but can be up to 1.5mm in diameter.

Early Ely fabrics (those occurring at the lowest levels mixed with Saxo-Norman sherds) are fairly good quality, do not have that many grits, and can be rather similar in appearance to St Neots Ware, except that they feel rough from the sand content. Soon after the fabric takes on a lighter colour and the coarse white grits are normally very obvious. A few sherds (51 sherds, 0.7%) are well made with few grits and reduced to a grey colour, very similar to Grimston material, probably deliberately imitating it. A major difference between Ely and Grimston Wares is the glazing. Grimston is always clear and green. Ely is almost always opaque, sometimes green and often has a muddy, opaque white colour with a rough pimply surface. Ely glaze is also often very thin and patchy. A sample of 582 sherds had 109 with some glaze (19%). Probably many vessels were glazed on the upper surfaces only, so that a higher percentage of vessels had some glaze than is found with the sherds.

Ely forms are typically of thick-sided bowls, and rather squat jars and jugs. Rims from 165 Ely fabric vessels were studied and classified, of which 79 (48%) were bowls, 52 (31%) were jars ('cooking pots'), and 34 (21%) were jugs. This proportion is consistent with most of the vessels being hand-made and receiving only limited wheel finishing – bowls being the easiest to fashion and jugs the most difficult. Of the bowls 30% were decorated, being predominantly on the rim of type B2 (Fig. 21.3, 4) where it was 39%. The commonest types of rims were B2 and B3 (Fig. 21.5). Jars seldom had decoration, amounting to only 12%. Jugs, apart from handles, were rarely decorated (a single vessel). Handles, mostly from jugs (a few handles were identifiable as belonging to large cooking pots), were frequently decorated (42%). The most

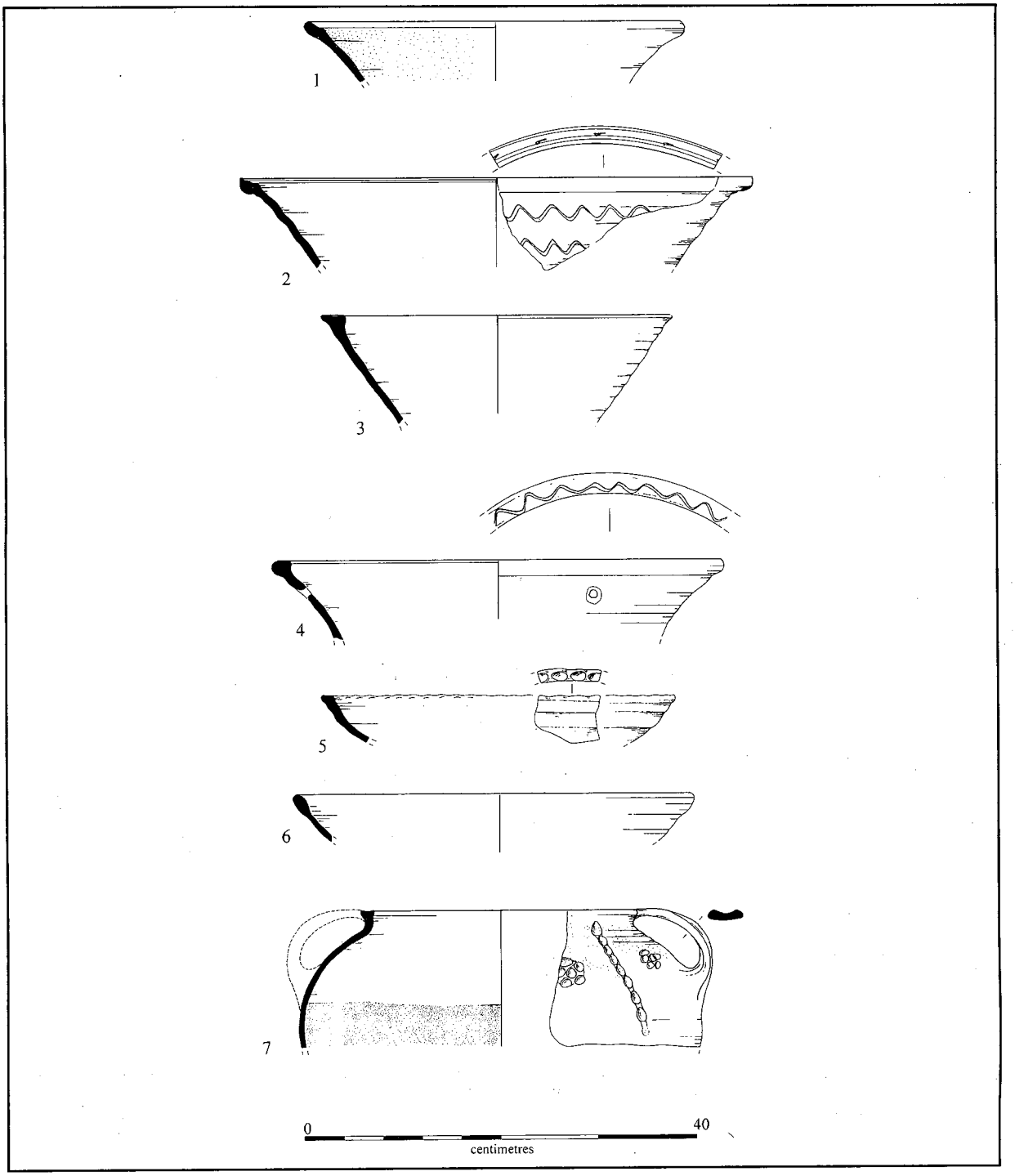


Figure 21. Pottery

1. Buff-pink surfaces & dark core, outside slightly blackened. Fairly large white grits; light green patchy interior glaze.
2. Square-rim type, with only slight hollowing; dark buff inner surface and pink-buff outer surface. Stabbed decoration on inner flange of rim. On outside of the body, two rows of zig-zag.
3. Internal rib with raised outer rim; coarse gritty fabric, pink-buff surfaces with darkened exterior.
4. Flange-rim bowl with wavy line decoration on upper part of the rim, hole made after firing.
5. Thumbed decoration on upper surface; dark core, grey inside, darkened outside, roughly finished.
6. Simple thickened rim, dark core, buff with slight darkening on outside.
7. Large piece of a large jar with a strap handle. Flat topped rim with a hollow except near the handle. One vertical thumbed applied strip (presumably there were others) and three impressed rosettes. Two slight decorative rills were made before the strip was applied. Buff surfaces, outer flaked away on the lower parts. Patchy light-green glaze on top exterior and bottom interior.

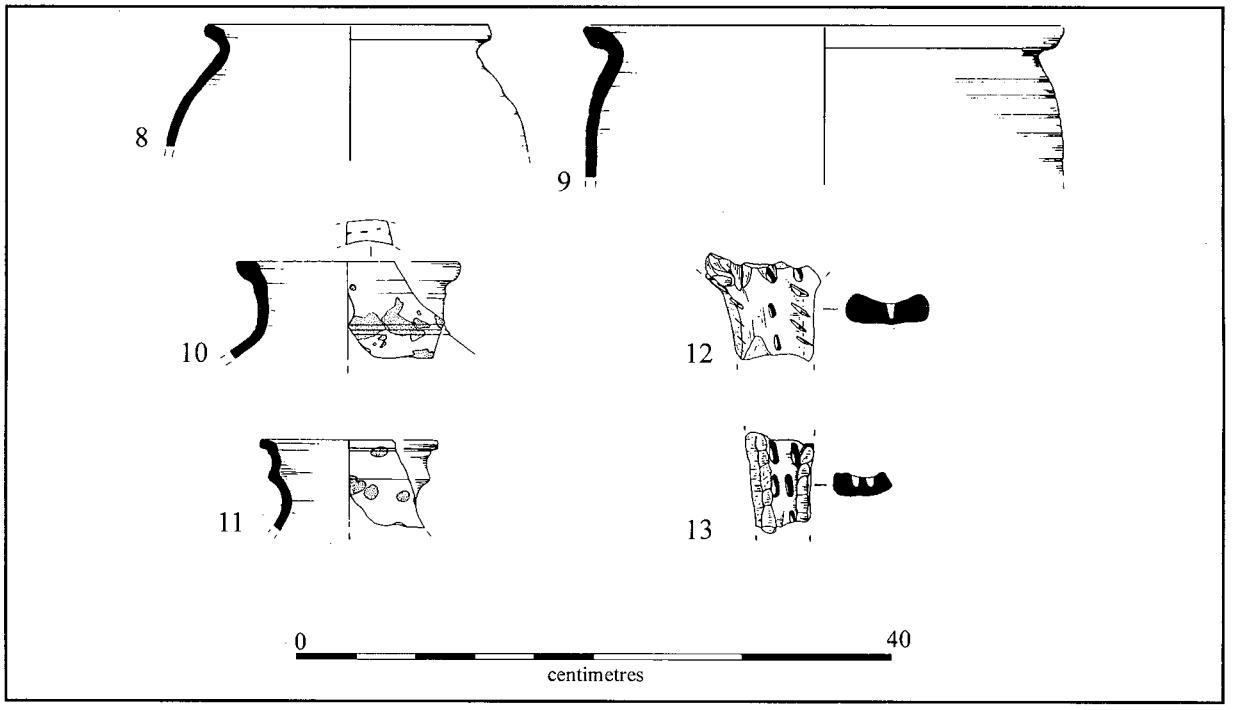


Figure 22. Pottery

8. Slightly squared finish, both surfaces grey-buff.
9. Squared flange, irregular external rilled decoration; buff and darkened.
10. Well developed rim with small holes of stabbed decoration on the upper surface; simple straight neck.
11. Rim and jug lip, pink-buff outside, buff inside, patchy green glaze. Neck has one rib.
12. Pink, partly glazed, two rows of central slashing with both edges thumbed.
13. Grey, central row of stabbed holes and a row of sideways slashes on both edges.

characteristic forms are single and multiple rows of slashing made with a knife (Fig. 22). Sometimes round holes were made. Both these decorative elements were used on the bowls, which additionally often had wavy line motifs on the body. Wavy lines were also used on the bowl rims instead of slashes or holes.

Ely fabrics seem to be identical with material previously known from Lynn and published as 'soft Grimston ware' (Clarke and Carter 1977, pp.186–91). It has subsequently been observed that Grimston is an unlikely source for this fabric, since it has not been found there in spite of numerous excavations (Little in Leah 1994, 86). The published Lynn forms, especially the stabbed handles, and the fabric descriptions exactly match material from Ely. The Ely kilns continued production until the 15th century, but 'soft Grimston ware' at Lynn was found mainly in period I (1100–1250), declining in period II (1250–1350). This is almost certainly explained by the rise of the glazed Grimston industry producing fine wares that would have eclipsed the poorer quality Ely material.

No absolute dating was found with material, so dates have to be deduced from stratified associations and context. The associated pottery types suggest that Ely pottery was in use from the 12th to the early 16th century. It first makes an appearance in some of the earliest levels of the site, along with all three standard forms of Saxo-Norman sherds (mainly St Neots). These are generally reckoned to cease by the end of the 12th century. The date is consistent with the reference to *pottereslane* in 1280, when the industry was presumably well established. The fabric continues with very little change until the 15th century. At the late date the fabric occurs with Surrey Ware (Tudor Green), Raeren stonewares, and late Grimston wares. Ely rim forms were examined for any chronologically useful changes. The industry was very conservative and there were few changes in forms nearly 400 years. The only changes were in decoration. Thumbing, especially on applied strips, is early, mostly 13th century, and on bowls, decoration is mainly a 15th century feature.

Samples of 21 sherds were submitted for petrographic and chemical analysis of the Ely fabric from three contexts, two from the earliest 12th-century contexts [1830, 1831] and one 15th [650]. After thin sectioning three fabrics were identified based on the amount and composition of sand and calcareous components. Fabrics A and C occurred in the 12th-century sample, fabric B was entirely 15th century. The chemical composition was determined by spectroscopy (ICPS) and the data analysed. Provisional interpretation is that Cretaceous clays were used for the pottery with detrital tempering from Jurassic clays. However, further work on the clays and sands from Ely is necessary to establish the sources of materials used for Ely pottery. The potters had a wide range of raw material close at hand to chose from; Kimmeridge Clay,

Lower Greensand, Till (boulder clay), and Glacial Sand.

Other fabrics

Grimston fabrics: Sherds from the well-known kilns at Grimston, Norfolk, occur at Ely (51, 0.7%). Most of them are in the standard fine grey sandy fabric with highly translucent green glaze often containing flecks of brown. The fabric occurs less commonly in an oxidised buff or pink-red colour. Decoration consists of various arrangements of brown slip bands, some rouletted, as well as face jugs with very small handles ('arms') around the top. Most of the Grimston sherds found at Ely seem to date from the *floruit* of production, in the 14th century, but there are some sherds of the 15th century with a denser glaze and yellow flower motifs.

Reduced sandy wares: Reduced sandy wares were fairly common at Ely (437 sherds, 6%). The fabric is different from Grimston, having mainly sand in the grog with very few or no white grits, similar to the reduced sandy material known from Blackborough End, Middleton (Rogerson and Ashley 1985). This site lies near to Grimston and a northwest Norfolk source is likely for the material. The forms at Ely are almost entirely jars, and are closely paralleled from, King's Lynn, Norwich and from sites excavated at Grimston. The fabric is associated with the earliest levels at Forehill.

Essex red wares: Fine quality red wares (jugs) come from a variety of Essex sources, most probably Hedingham, Colchester and Mill Green. There are also a few sherds of sgraffito ware, commonly called 'Cambridge sgraffito' from the place of its first recognition (Bushnell and Hurst 1952). There is no evidence that it was made at Cambridge and it is has the fine Essex-type fabric.

Lyveden, Bourne and Toynton wares: These wares occurred in small quantities only. Lyveden is normally a pink shelly fabric, often soapy, with shells up to 2mm diameter. Often they are leached out giving a corky appearance (Steane 1967, Bryant and Steane 1969). A decorated form, probably made at nearby Stanion (both in Northants) is decorated with a yellow slip of stripes and grill-stamped blobs (Bellamy 1983). Forehill produced 37 sherds. Toynton, Lincolnshire, on the northern fen-edge, produced jugs in a grey fabric with pink surfaces, often decorated with brown applied strips (Healey 1975, MacCarthy and Brooks 1988, p.261). Only 12 sherds were identified at Forehill. Bourne, in the same county, had kilns producing a pink-orange fabric containing small white inclusions and having a very smooth finish, often covered with a light green to yellow and brown glaze (Healey 1969). A total of 38 sherds was found at Forehill.

Yorkshire wares: Fine jug-sherds of Scarborough ware from Yorkshire were found at Ely among the earlier levels. It is known that the men of Scarborough exported pottery into ports along all of Eastern England and Scotland from Aberdeen to Canterbury and farther round the English Channel as well as across the North Sea to Norway (MacCarthy and Brooks 1988, p.95). The Ely material would have come from King's Lynn.

Continental sherds: Continental fine wares occurred in small quantities only (7 sherds). Identified sherds came from France (Picardy and 'North French micaceous' fabrics), Flanders (green glazed over a slip), and from Haffner, Germany. These complement the imported sherds found at King's Lynn, where many more fabrics have been identified. It is interesting that the last two of the Ely types were not found at Lynn, suggesting that many more imported sherd fabrics are yet to be identified at both places.

Late fabrics: Post-medieval sherds (16th and 17th century) consisted mainly of glazed red earthenwares (GRE), almost certainly of local origin (887, 11%). Additionally there were a few (10) of Dutch origin. These last are to be distinguished from local GREs in being slightly better made and having a lustrous glaze. There were 25 sherds of green-glazed Surrey ware (Tudor Green) and 113 (1%) of 'Babylon'. This is the name given to a late Ely fabric (16–17th century), being named after a site near the Maltings where large quantities of wasters and tile kiln-spacers were found. It is a red earthenware often with a dark brown or black lustrous glaze, small cups and multi-handled tygs being a common form. Babylon is a local copy of Cistercian Ware from Yorkshire, which is to be distinguished by having a hard dark-brown almost vitrified fabric. Only a few sherds of Cistercian vitrified fabric were recovered. Imported German stonewares, although not found in large amounts are important dating markers (63 sherds, 0.8 %). Most of them are the early types from Siegburg, Langewehe and Raeren, dating from the 15th and early 16th centuries.

Conclusions

The Forehill site produced a large quantity of stratified sherds that has enabled a type series to be established. It forms the first large undisturbed sequence ever excavated from Ely, dating primarily from the 11th to 16th centuries. Although no pottery kilns were discovered at the site, the material shows a full range of material likely to have been produced at the Ely pottery kilns, and used by the nearby community. In this respect the site is more useful than study on say a single kiln, that would perhaps have produced only a limited type of pottery for a limited period and also yield unrepresentative 'one-off' forms.

The medieval kilns began production in the 12th century and continued until the 15th, when they were superseded by various types of red earthenware, some made elsewhere in Ely (Babylon). Although the quality of some of the material was not high, the pottery had a long life, presumably because of the political and economic dominance of Ely monastery and

bishopric. Ely owned much of the Fenland and southern Cambridgeshire and was able to control what products went to its estates. It also controlled the Ouse, the chief southern Fenland waterway, and so had influence on what went to Cambridge from the north. Hence the distribution of Ely wares is greater than might be expected from the quality of the material. It is found on all Fenland sites and at Cambridge and elsewhere in the south. North of Ely, it occurs at King's Lynn, where it was called 'soft Grimston ware'. Ely wares have been noted in southern Lincolnshire and west Norfolk (pers comm 1996, Hilary Healey and Andrew Rogerson). Further study will probably show that they only occur in these regions at the early dates, being subjected to the same Grimston competition as King's Lynn.

The evidence of the fine wares from Ely can be linked with data from Cambridge and King's Lynn to study regional trade routes. The importance of King's Lynn as a port is well known and illustrated by the occurrence of fine quality decorated jugs from Scarborough and northern Europe (Clarke and Carter 1977, pp.112–18, 225–32). It is possible that fine red wares from Essex arrived at Lynn by sea via Colchester. However, from the regional pattern of recovery it can be shown that the route was landward to Cambridge and then by the fenland waterways to Lynn. This is proved from the large quantities of Essex red wares that occur in Cambridge (36% at Bene't Court, Edwards and Hall 1997, p.156), with a smaller amount at Ely Forehill (6%) and yet smaller quantities at Lynn (1%; Hall forthcoming b). Even allowing for any differences in date range of the sites, and that the three sites compared are only single samples of each town, the differences are striking. Had the trade route been by sea and then via the fenland to Cambridge, then the amounts of sherds recovered would be the other way round, Lynn and Ely keeping more of the fine wares before the residue reached Cambridge. The reverse effect can be seen with the fine quality Scarborough wares. At Lynn they amount to 4%, falling to 0.7% at Ely, with none so far identified at Cambridge.

In conclusion, it can be seen that the Forehill site was occupied from the 12th century to the present. The medieval assemblage is dominated by local wares made at Ely, but has a significant number of imports from Yorkshire and the Continent that demonstrate the wide trading connections of Ely via the port of King's Lynn.

Small Finds

Quita Mould, Sandra Garside-Neville, Lorraine Higbee and Maisie Taylor

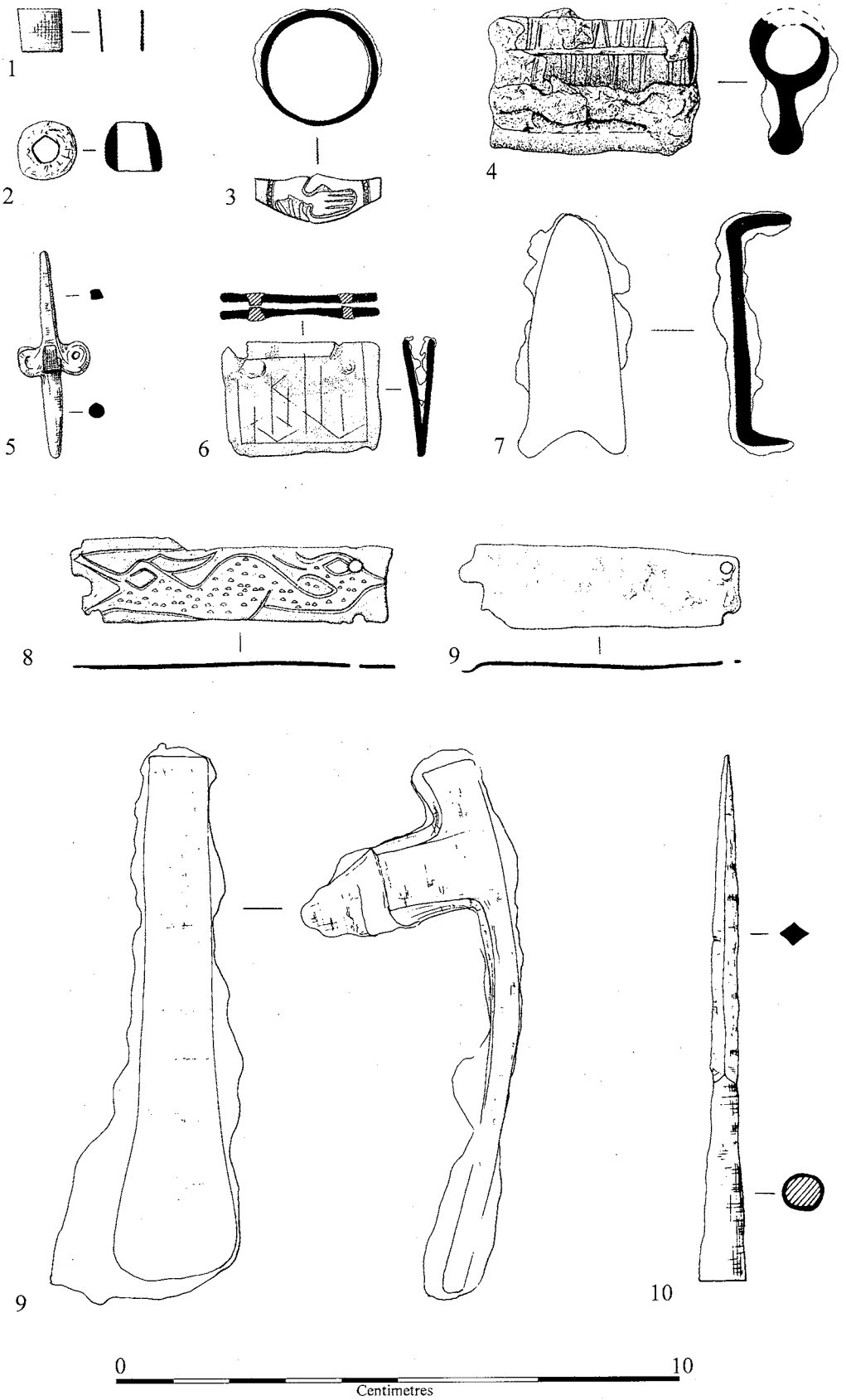
A relatively large and rich assemblage of small finds was recovered, consisting predominantly of metalwork, but also objects in bone, wood and ceramic and these are discussed below by broad functional groups. The metalwork is discussed by Quita Mould,[12] bone objects by Lorraine Higbee, wood by Maisie Taylor and ceramic items by Sandra Garside-Neville, their initials appearing at the head of the relevant sections.

Dress accessories (QM)

A range of dress accessories, principally of 14th and 15th century date was recovered. The most notable personal decorative item was a gilded silver finger ring, <820> [470] phase 16 found in the floor of structure G5 (a freestanding outhouse with internal fireplace probably used for cooking) associated with 15th century pottery (Fig. 23.3). This ring is a love token, probably a betrothal ring, and a relatively expensive piece of jewellery. The ring is decorated with a pair of clasped hands. This motif has a long history going back to Roman times and still in use today. Known as a 'fede' ring (from the Italian *mani in fede* hand in hand) it is comparable with another of gilded copper alloy with a decorated hoop found at Alms Lane, Norwich in a context dating to the second half of the 15th century (Margeson 1993, p.5 and fig 1 no. 4).

Two small annular brooches were found; a decorated brooch of pewter <824> [877] phase 6 found in a late 13th/early 14th century context and a fragment of a plain brooch of copper alloy sf.148 [1248] in area 2 associated with pottery of 13th–14th century date. The pin from another pewter example <819> [946] occurred in a 14th century deposit. These brooches were less expensive trinkets. A large copper alloy pin with a solid globular head<1033> [330] phase 13 comparable with others from a late 14th century deposit in London (Egan and Pritchard 1991, 302 fig 201) was found in a deposit of 15th century date, while four wound wire-headed pins and a single lace tag <841> [855] phase 23 occurred residually.

Various copper alloy belt fittings were recovered dating to the 14th and 15th centuries, which can be paralleled from collections elsewhere (see below). Three buckle plates were found, most notably one decorated with a double-headed animal motif <783> [383] phase 21 (Fig. 23.8), three strap ends <823> [881] phase 14, <834> [352] phase 15, 837 [100] (Fig. 23.6), u/s, a strap loop with internal projections <831> [565] phase 10 and a bar mount <840>[1136] phase 11. The strap loop can be exactly paralleled by an example from the Billingsgate Lorry Park recovered from a context dating *c.* 1350–1400 (Egan and Pritchard 1991, p.233 and fig 149). The bar mount is comparable with others dating slightly earlier to the late 12th through to the late 14th centuries. The distinctive design decorating the buckle plate <783>, comprising a double-headed beast with gaping jaws, lozenge-shaped eyes and scales or fur depicted by a series of pecked lines, occurs on a range of belt fittings dating to the 14th century. A crudely executed example occurs on a strap end from St Botolph Street, Norwich (Margeson 1993, p.28 and fig 14 no. 140), while another on a composite strap end with a forked spacer was found in House 19 Croft B at Goltho (Goodall 1975, p.92 and fig 43 no. 3) which was abandoned shortly after the mid 14th century. A reused buckle plate with the same motif was found in a 15th-century context at Winchester (Hinton 1990, p.510 and fig 132 no. 1191 and comparanda); the


1
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6
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Centimetres

Ely buckle plate is certainly residual to this pit fill.

A wide strap end <837> [100] u/s (Fig. 23.6) deliberately cut from the strap was recovered from area 4. This simple type of strap end, probably used at the end of a belt, is of a type found in late medieval contexts; none from London occur earlier than the late 13th century (Egan and Pritchard 1991, p.129). These wide belt ends are often decorated with a religious inscription or monograph. A gilded example probably dating to the second half of the 15th century from St Benedict's Street, Norwich (Margeson 1993, p.36 and fig 21 no. 241) is inscribed dn in black letter for dominus (lord). IHC and AVE were also popular (*ibid*, 36). It is uncertain what monogram is represented on the Ely example if, indeed, it is any more than a crude parody of lettering.

A 'locking' buckle <825> [843] phase 18 dating to the late 14th or early 15th century used to suspend a purse on a belt and an arm broken from an iron purse frame <879> [632] phase 13 were also found (Whitehead 1996, pp.87–9 nos. 552–4). The fashion for wearing suspended purses was at its height *c.*1480–1520. A small annular shoe buckle of pewter <1038> [457] phase 17 and another of iron <996> [285] phase 22 of 15th century date were found occurring residually. Four copper alloy buttons were present in post-medieval contexts.

Household implements and domestic fittings (QM, LH, SG-N, MT)

The remains of seven knifes were found in contexts dating from the 14th/15th to 16th/17th centuries eg <896>[780] phase 12, <862> [606] phase 14, <842> [650] phase 16. A single broken scale tang knife was found <852> [650] phase 16, the others were whittle tang knives, one <842> with a stamped maker's mark on the blade. The stamped crescent, the principle component of the mark on the Ely knife <842>, is the earliest mark noted on knives from London, occurring on blades of 13th century and late 14th century date (Cowgill, de Neergaard and Griffiths 1987, p.20 nos. 31 and 84). The scale tang knife <852> had part of an inlaid maker's mark present.

A barrel padlock <771> [1828] phase 6 (Fig. 23.4) of Goodall's type B (Goodall 1990, p.1008) was found in a late 13th/early 14th century floor. Two padlock keys of different types were also found <782> [1837] phase 2, <955> [1080] phase 18. One <782> of Goodall's type C (*ibid*, p.1006), a early medieval type, was found in an early 12th century context, the other <955> of Type A (*ibid*) was a common and long-lived medieval form. A small rotary key with a kidney-shaped bow <994> [307] phase 18 was found in the clay floor of structure 472 dating to the 16th/17th century. A small tin-plated iron handle <854> [946] phase 9 found in structure 1852 in a 14th century context may have been used on an item of domestic furniture, as was the hinge

Facing Page: Figure 23. *Metalwork*

1. Iron sewing ring with virtually straight sides with pits running in vertical lines of 10, the pits appear to be hand drilled. Complete, fractured, soil adhering. D. 16mm, Ht 14mm. [1008] <836> sf 119 phase 9
2. Lead alloy plano-convex spindle whorl with a flat lower face and large central hole. Complete. D 21mm, Ht 17mm, hole D 10mm Wt 46.42g. [761] <1008> phase 11
3. Silver gilt 'fede' finger-ring with simple flat-sectioned hoop and gently expanded bezel decorated with a pair of clasped hands motif. Complete, D internal 19mm, external 22mm, hoop W 4mm, bezel W 7mm. [470] <820> sf 62 phase 16
4. Iron barrel padlock, cylindrical case with cylindrical ribs running along its length and a horizontal rod present along the case on each side. The tube to take the free arm of the bolt is joined to the case by a rectangular fin, a fragment of the bolt arm from the padlock bolt appears to be present in the tube. Both end plates are missing. Non-ferrous metal brazing suggested in the radiograph. L 70mm, Ht 50mm, D 23mm. [1828] <771> phase 6
5. Iron pricket with central stem with rounded tip at one end and extending into a pointed tang at the other with four tight scrolls around the middle one on each face. L 70mm, max W 27mm. [1836] <1028> phase 2
6. Copper alloy wide strap end of sheet folded widthways with the straight end secured by two rivets. Minerally preserved remains of the strap present were deliberately cut away. Front face decorated with an engraved linear motif of six parallel vertical lines ending in two simple chevrons within a linear border. W 28mm, L 20mm, strap Th 3mm. [100] <837> sf 49 general cleaning
7. Iron flat-sectioned strap bifurcated at one end, extending into three short arms at right angles to the strap. Possibly this is a wood cramp or simple trivet. L 85mm, max W 42mm, arm Ht 24mm. [736] <964> Area 3 phase 3
8. Copper alloy buckle plate, rectangular front and back plate originally joining, from a folded buckle plate recessed for the buckle frame and with a central slot for the pin, with a pair of rivet holes at the opposite end. One of the rivet holes lies over one edge suggesting it was poorly aligned, mis-stamped or very heavily abraded along that edge. The upper plate decorated with an engraved design of a double-headed beast, bothe heads face toward the buckle, with gaping jaws and lozenge-shaped eyes, scales on the body indicated by small pecks. Almost complete. L 57mm, W 15mm Associated with it is a fragment of buckle frame with a large central bead moulding between two smaller raised collars. Ht 25mm. [383] <783> sf 197 Area 4 phase 21
9. Iron adze with small square flat butt and rectangular-sectioned curving blade with flaring, gently convex curving edge. The small sub-circular eye and protruding socket contain much minerally preserved wood from the original handle of Ash wood (*Fraxinus* sp.) identified by Jaqui Watson (AML, EH). The entire object found to be plated with copper (XRF analysis copper with traces of zinc, tin and possibly lead). L c 210mm, blade W 70mm, socket L 30mm, socket D 31mm, eye D 17mm. [234] <1638>Area 3 phase 6
10. Iron arrowhead with long, narrow pointed head of lozenge-shaped section and round-sectioned socket. Jessop type M7. Total L 195mm, head L 116mm, W 8mm, socket D exterior 17mm, interior 14mm. [1229] <844> Area 2 phase 9

<881.2> [1046] phase 9 and fragments of nailed binding recovered. Handles similar to <854> of copper alloy are found on reliquaries and caskets of 12th and 13th century date. An example thought to have occurred residually in a late 15th century context was found at Oak Street, Norwich (Margeson 1993, p.78 and fig 45, no. 484) where a use as a purse hanger on a belt was also suggested.

Lighting was represented by a small candle pricket <1028> [1836] phase 2 (Fig. 23.5) recovered from an early 12th century context. The size of a small iron swivel <849> [1327] phase 9 suggests it may have been used to suspend a hanging lamp. The highly fragmentary remains of a cauldron <911> made of copper alloy sheet, likely to be of 15th century date, were recovered from a brick built feature [889] phase 14. The surviving fragments of rim suggest a diameter in excess of 318mm and that it may have held a supporting ring of iron. A cauldron of *c.*350mm in diameter with an iron rim support dating to the late 15th century that was found in London (Egan 1998 fig. 139 MOL acc. no. 90.108) would seem to be a similar vessel. An unusual three-legged strap <964> [736] phase 13 (Fig. 23.7) was found in a post hole associated with structure G3 a free-standing outhouse. The function of the object is uncertain; while it may have been used as a heavy cramp or cleat to join structural timbers it could perhaps have served as a low trivet in a hearth.

A number of ceramic objects were identified and include a possible water pipe, confectionery tray, palette and trough. The identification of a water pipe is very tentative. The fragments are obviously part of a tube shaped item. The pieces seem to be coil built, and perhaps finished on a wheel. The fragment walls are quite rough and sag a little in places. Two fragments are knife trimmed at the end and may be part of a socket fitting (Fig. 24.7). Dunning (1967, pp.86–89) reported on water pipe found in Ely during excavations at Market Hill in 1964. That example was glazed and had knife trimming on the outside surfaces. The Forehill fragments are neither glazed, nor knife trimmed along the body. Several fragments of a compartmentalised tray came from context 194, assigned to a 16th–17th century period on the site. It has various shapes cut out of a clay slab which was either square or oblong in shape, and is 42mm deep (Fig. 25.1). It may be a compartmented tray, used for small cakes or confections, similar to the 14th–15th century example illustrated in Cunningham and Drury (1986, p.79, fig. 48.6). However, the Forehill example has a green, bubbled glaze and some of the compartments show traces of a white deposit around the top. It may be that the tray has been reused.

The possible inkstand/palette is represented by an unstratified, fragmentary piece which has one complete circular, shallow hole 55mm across and 27mm deep and there are two other incomplete holes, which would have been of similar size (Fig. 25.2). There are two other holes, one measuring 16mm across and 23mm deep, and the other 17mm across and 17mm deep which tapers inward. There is scoring between the holes. The depth of the piece is 32mm. An example of an inkstand from Byland Abbey in North Yorkshire shows similar features, though in a different configuration. The small holes were used to stand quill pens, while the large holes contained either ink, water or sand for blotting ink (Dunning 1961, p.307). An alternate function may have been as a palette for mixing pigments. Due to traces of what appears to be white mortar, it is likely that the Ely item was reused. Lastly, the trough is in a typical Cambridgeshire yellow fabric, and was found in Phase 16 dating to the 16th–17th century. It probably had two compartments, and has a small nail hole drilled in the side of the remaining one (Fig. 24.8).

Three bone objects were also found, a possible musical instrument fragment, a pricker/stylus and a pen. The former was a cylinder fashioned from the long bone shaft of a large mammal with screw threads inside both ends and lathe-turned decoration ([001] topsoil). It has four small holes in square formation on one side of the cylinder and a sunken central hole on the opposing side. It is possibly part of a musical instrument but no exact parallels could be found in the literature. The possible pricker or stylus is represented by a spherical head with single lathe-turned collar ([932] phase 4 (12th–13th century)). It has been suggested that when recovered from a domestic setting they were used for the transfer of patterns to embroidery. Most examples recorded in the literature (see MacGregor 1985, Margeson 1993) come from medieval contexts. Finally the pen was fashioned from the radius of a goose, with the distal shaft cut at an oblique angle to form a fine point ([1757] phase 6 (13th–14th century)). The limited modification of the bone suggests that it was made by the user as needed. Biek (in Hurst 1963) suggests that they may have been used for measuring out powdered oak galls for making ink. However, MacGregor (1985) suggests that they could have been used for charging quills or as economisers for broken quills. Pens of this type have been recovered from contexts ranging in date from 14th to 16th century such as those from Oak Street, Benedict's Street and Westwick Street in Norwich (Margeson 1993).

Wooden objects included a stave vessel, a turned bowl and a spigot. The stave built vessel [970] phase 6 is an example of a small and finely made artefact, rather than a large barrel. There is no evidence for pegging the staves together or for handles. (Earwood 1993) Although a large part of several staves survive (indicating that the vessel was approximately 460mm high), there are no definite signs of any hoops or banding. Plank D does have a possible hole, but it is very small and inconclusive. The staves are well made, mostly split radially out of high quality oak, the groove to take the base is finely and neatly cut. The other fragment is probably from the base, as it is quite thick (15mm) and does not have the distinctive nail marks that lids seem to invariably carry (Platt and Coleman-Smith 1975, p.233 figs 1661 and 1662). The staves from Forehill are slightly larger than the fragments identified as possible bucket staves from Southampton (*ibid*, p.236 figs 1666 and 1668).

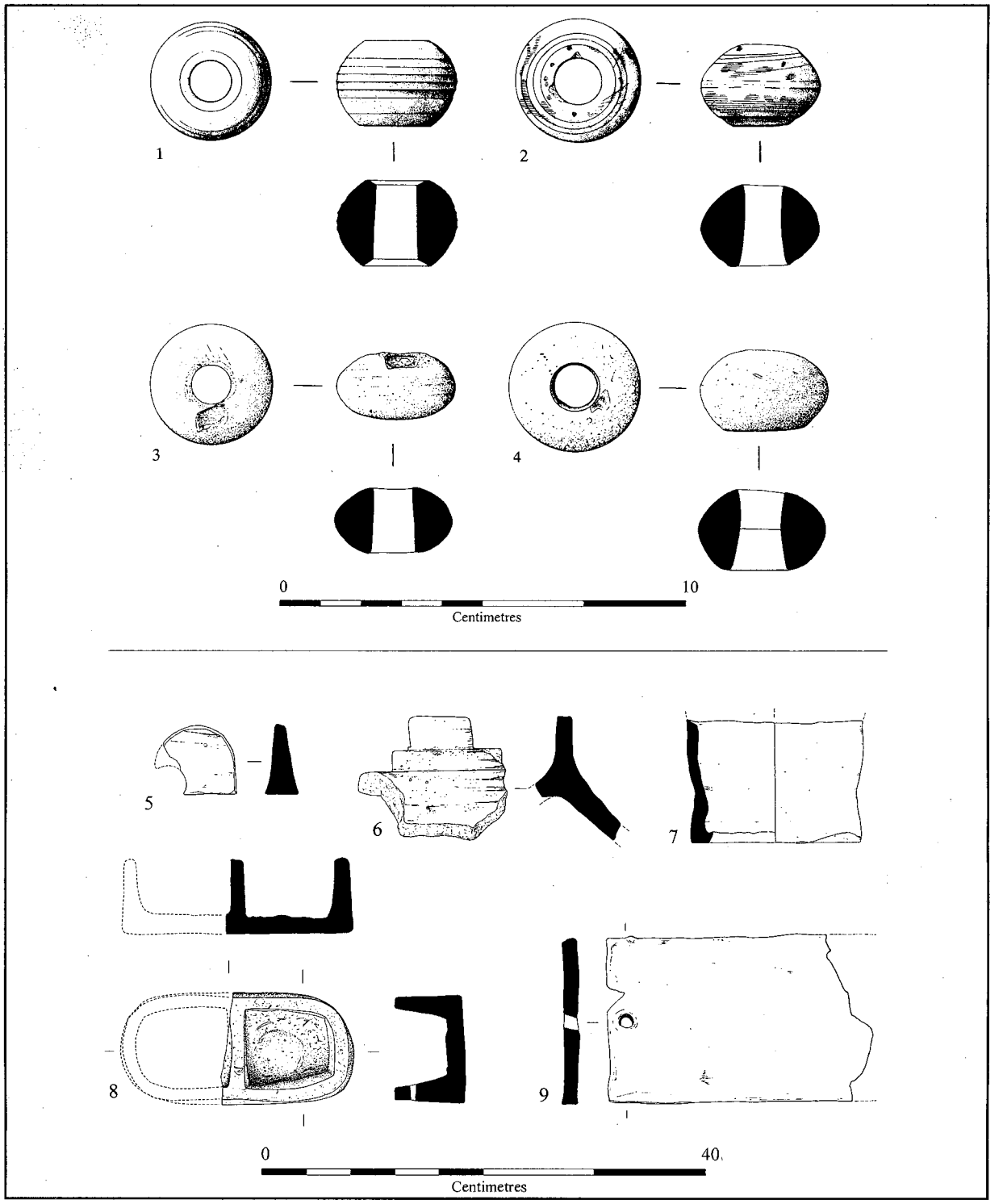

Figure 24. Ceramic objects

1. Spindlewhorl, entire surface covered with a light blue glaze. 15th century Siegburg ware [880] <791> sf 97
2. Spindlewhorl with a spiral design unwinding from the upper pole to the equator. Traces of red paint survive [1352] <792>, sf 157
3. Spindlewhorl with smooth burnished surface. [1185] <793> sf 144
4. Spindlewhorl with minute pitting of surface, one small patch of original burnished surface [995] <790> sf 115
5. Curved crested ridge tile, white slip under a clear glaze [100] <270>
6. Stepped crest; yellow-green glaze [314] <1308>
7. ?Water pipe [780] <533>
8. Trough. [512] <400>
9. Peg tile. [1139] <1317>

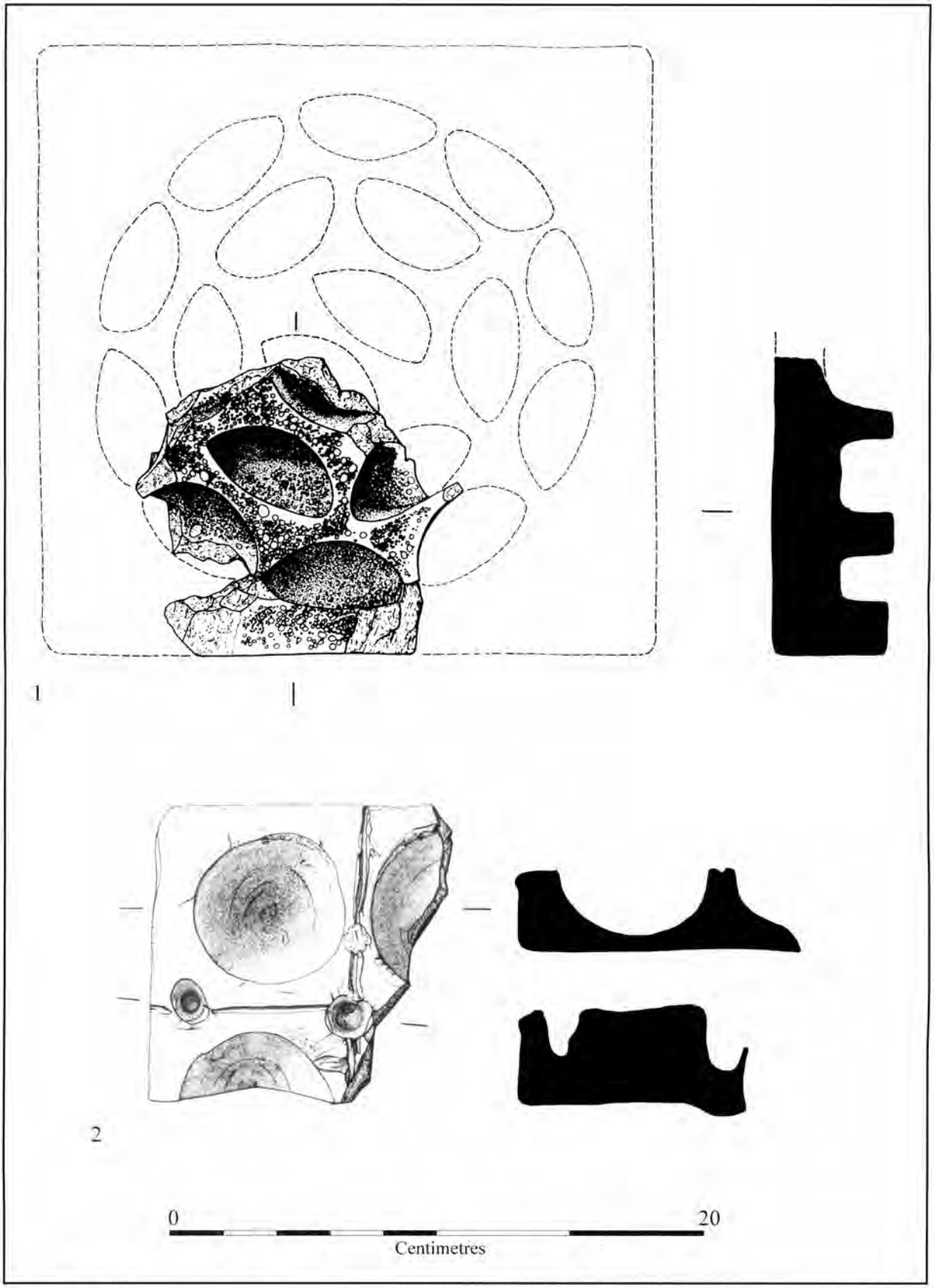

Figure 25. *Ceramic objects*
1. Compartmented tray. [194], <276>
2. Ink stand or palette. [100], <266>

Fragments of a small stave vessel were found at Norwich (Morris 1993, pp.593–96). The development of the stave built vessel began in prehistory and continues until the present day. Finely made tankards, tubs and buckets have been made since the Iron Age (Earwood 1993), and they may have been reasonably common at all periods, but very few survive, and when they do they are often fragmentary. It is not common to have so many staves, so well preserved, with part of the base.

A small turned bowl [992] phase 7 was probably made from a burr of ash wood. As with stave built vessels, wooden bowls must have been produced in vast quantities, but only a small proportion are seen in the archaeological record. For example, of all the material excavated in the Norwich survey excavations, only one bowl survived (Morris 1993, fig.63). More wooden bowls and platters survive from medieval Southampton, but all different from the Forehill example. This little bowl is very small and finely made. Finally a tapered dowel [292] <22> phase 6 proved impossible to identify to species, but is certainly softwood. It was originally cut down from a big log, is tapered and the thicker end is finished with facetting. It is almost certainly a spile or spigot for a stave built cask (Morris 1993, p.597), and, as such was probably made in quantity (and discarded in quantity on this site and many others of this period (Hurley 1982, p.302).

Craftworking tools (QM, LH).

A small number of objects were recovered which are associated with the working of wood and textiles. In addition, a very small amount of possible bar iron associated with the working of iron, small offcuts of copper alloy and lead alloy sheet, and runnels of solidified molten lead alloy were noted. This waste material was found in very small quantities, insufficient to represent any significant metalworking in the vicinity (see Starley and Dennis, in Alexander 1998b).

Woodworking tools found included an adze <1638> [234] phase 6 (Fig. 23.9) from a late 13th/early14th century deposit and two spoon bits <963> [554] phase 11, <974> [330] phase 13, of differing length but each boring a hole of similar size, from contexts dating to the early 15th and the mid 15th centuries. The curve of the blade and the small size of the eye suggest the adze may have been used by a cooper. The remains of a stave built bucket, the staves possibly reused as a drain cover, was also found on the site. The cooper's adze was highly unusual being covered in a plating of copper; the edge of the blade could not be sharpened so that the tool was never intended for ordinary use. It is difficult to suggest any explanation other than it was a ceremonial object. No records can be found of ceremonial tools being owned by the Worshipful Company of Carpenters or the Cooper's Company who controlled the activities of the respective trades in London, though coopering was a widespread trade occurring in every town and it is possible that individual customs developed in the provinces. Substantial remains of the ash wood handle are preserved and it has been suggested that the size of the eye and angle of the socket are such that the handle would be liable to snap if the tool was subjected to heavy use.

Textile-working was relatively well represented; items used in the preparation of fibres, their spinning and the sewing of the finished cloth were found. Three fibre processing spikes were found separately coming from a wool comb or flax heckle. One <775> [1836] phase 2 having a round section can be identified as being a tooth from a wool comb, the other two <777> [1830] phase 6, <973> [313] phase 13 although having an angular section do not differ significantly in shape or size and may also belong to a wool comb, differentiation being difficult (Walton Rogers 1997, 1727). Two lead alloy spindlewhorls were recovered; one <1008> [761] phase 11 (Fig. 23.2) was of plano-convex shape, the other <805> [718] phase 13 was discoid. <805> appears to be a spindlewhorl, though at 106.7g it is rather heavy; the heaviest spindlewhorl recovered from Winchester was 101.3g (Woodland 1990, p.216). The shape can be paralleled by smaller spindlewhorls from Winchester (*ibid*, p.225 and fig 46 no. 196) and at this weight it was probably used to ply yarn. Weighing just slightly light of a 1/4 lb mercantile weight (109.4g; Egan 1998, table 14) the possibility exists that it may have been used as a hanging weight.

Four brass thimbles were found along with an iron sewing ring <836> [1008] phase 9 (Fig. 23.1) for sewing heavier weights of cloth used by the tailor. The sewing ring was found in a late 14th century context in building F3. The brass thimbles derive from post-medieval contexts, but one <815> appears to be a light duty type dating between 1350 and 1450 (Holmes 1988, type C p.1 and fig 1) occurring residually in a phase 18 context (context [1080]). The spinning of yarn and sewing of cloth was carried out in the domestic setting, though the presence of the iron sewing ring <836> may suggest a tailor was working in building F3 at the end of the medieval period.

Two bone tools were also found. One was a socketed tool fashioned from a sheep/goat radius ([1004] phase 6 (13th–14th century)). The socket for the insertion of a handle is represented by a circular hole on the proximal articulation and the mid shaft is cut at an oblique angle on the anterior surface to form a wedge shape. The function of this tool is uncertain but similar tools were recovered from 16th century contexts at Heigham Street, Norwich (Margeson 1993). The other was possibly a sailmakers' needle made from an antler tine from [1486] phase 2 (Fig. 26.2).

Commerce and trade (QM[13])

A lead alloy seal matrix and a range of tokens and jettons recovered reflect local commerce. The seal matrix (<803> [1066] phase 9), probably dating from the early 13th century, has an inscription around a six-petalled flower. The inscription is read as '+ S' MARTINI STARC'. The legend may be interpreted as 'The Seal of Martin Starc'.[14] (Fig. 26.1). An irregular disc of lead

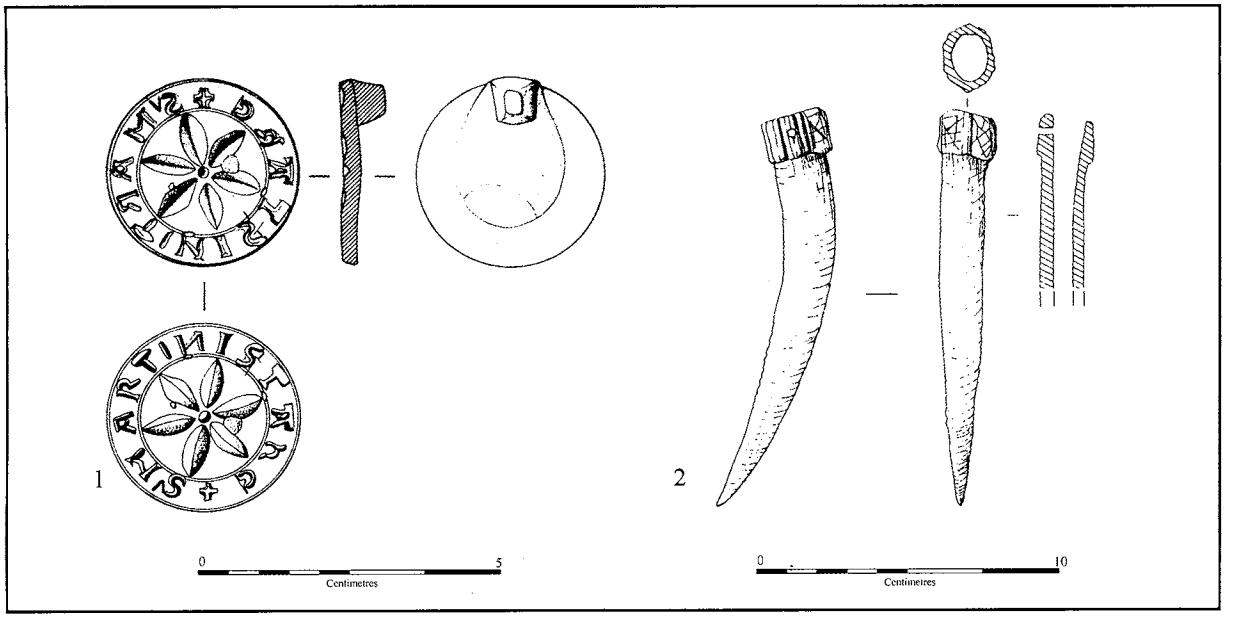

Figure 26. *Lead seal and antler tool*

1. Lead seal matrix with an inscription around a six-petalled flower. The inscription is read as '+ S' MARTINI STARC'. The legend may be interpreted as 'The Seal of Martin Starc'. [1066] <803> phase 9
2. Sailmaker's tool in antler. [1486] <1297> sfno.169 phase 2

sheet <804> [296] phase 20 possibly with a seating for a suspension loop may represent a one ounce weight (actual weight 30.86g, an ounce weighed 29.2g in the mercantile system of weight used in England in the Middle Ages Egan 1998, p.302 table 14). Trade tokens of the type found at Ely were in circulation from 1648 to 1674. These tokens were prohibited in 1672 and in 1674, when they were replaced by small denomination coinage. A farthing token of John Reade of Ely Grocer 1656 ([171] <812>), has the Fishmonger's Arms, three fishes in pale, in chief three of stock fish saltires. The token describes him as a grocer but the symbols used suggest he was a fishmonger. His signature appears in the Holy Trinity Churchwardens Accounts in the years 1663 and 1676, and he was churchwarden in 1673. The family of John Read were Quakers, and in 1664 four of his family were sent to Ely Gaol for refusing to take the oath of allegiance. Another farthing token ([100] <813>) of John Weatherhead has an inscription which reads 'John Weatherhead. The Bakers Arms in. Ely. Baker. 1666'. The initials I.R.W. lie in the centre.

An unidentifiable token ([729] <829>) in base metal is possibly 18th or 19th century, possibly German. On the obverse: A crown with alternating rosettes and anulets around. On the reverse: Unidentifiable. Made deliberately smooth, possibly as an imitation of a halfpenny (Martin Allen, pers comm). An English jetton ([1026] <838>) is a Wine tavern token in pewter, dated to the third quarter of the 13th century. Possibly the same mould as Mitchener's, number 57 plate 5, p.51 (Mitchener and Skinner 1983).

Transport (QM)

Transport was represented by three horseshoes <778> [1836] phase 2, <779> [1837] phase 2, <974.2> [330] phase 13 of Clark's type 2 (1995, pp.95–6) dating between the late 11th and mid 13th century and a small quantity of horseshoe nails found separately. Five fiddlekey nails from horseshoes of Clark's type 2 were found, two with 'eared' heads came from shoes of 13th–14th century date (Clark's type 3 *ibid*, p.96) and two with cuboid heads came from shoes dating no earlier than the 15th century (*ibid*, p.89 fig.70). A tin-coated iron buckle <957> [312] phase 15 from horse harness, a late 13th – mid 14th century type, was found in a early 16th century context.

Weaponry (QM)

Two armour-piercing military arrowheads were found <844> [1229] phase 9 (Fig. 23.10), <843> [1042] phase 12, along with a possible third example <909> [512] phase 16. The implement with a collared tang <843> [1042] is of unusual design but does appear to be a projectile, though the pointed head which has undergone specialist hardening (Margaret Brooks, conservation report – available in archive) could have been used to make a hole in a number of materials.

Structural metalwork (QM)

A small range of structural ironwork was recovered including a cramp-ended strap <880> [865] phase 9, broken window bars, joiner's dogs, cleats and flat-headed timber nails (137 complete nails and 84 broken nail shanks), along with U-shaped staples of iron and lead alloy.

Boy bishop tokens[15]

Two examples of boy bishop tokens[16] were found, one in an unstratified context [100], <1036>, and one in a

residual context derived from the demolition material from outhouse G, [463], <802>. Both appear to be unrecorded types.

[463] <802> Boy bishop token. This example has some affinities with Rigold's series III, which were inspired by the profile groats of Henry I, but is penny-size. The legend on the reverse reads 'Sancte' or 'Beate' followed by 'nICho/ LAE SOS' possibly to be read as 'Sancte Nicholae Sospiti'.

[100] <1036>) Boy bishop token. This token bears characteristics of Rigold's later Ely series (VIII 'Specimens from Ely with Garbled Legends') but is groat sized. The reverse legend possibly reads 'EPIS/ COPV(s?)/ ELIEN/(?)', a variation on 'Episcopus Eliensis' in keeping with other Ely tokens.

Leather

Ian Carlisle

The leather assemblage numbers 47 finds, comprised of 401 individual components, fragments and scraps. The material is entirely of footwear fragments and leatherworking waste, probably deriving from cobbling. Finds date typologically to a range between the 12th and 19th centuries, though most fall between the 12th and the 15th centuries. Finds were recovered from a wide number of contexts of various types, but the majority was from pit and other cut fills. A smaller number came from dumps, layers and sections. Most of the finds are fragmentary and dateable artefacts relatively few. Those that could be dated were for the most part consistent with site phasing, though there are a few instances of residuality. Finds dated typologically to the 12th century were recovered from an early 14th century context [1422], and a 13th century context, [1833].

Footwear

Most of the footwear fragments are of *turnshoe* construction, a manufacturing method prevalent throughout the period represented in this assemblage. Uppers were typically cut from a single piece of leather, (eg [1413] sf.174) with additional inserts used to facilitate a particular shape or style, to correct mistakes in clicking (cutting out), or to make best use of the material. They were also used in some ankle shoes and boots to increase the height of the quarters. Though the assemblage consists entirely of footwear and associated waste, the fragmentary nature of the finds means that only a single example is of a clearly identifiable shoe type. This is an ankle-shoe upper, [1413] sf.174, front fastening, closed with two overlapping flaps at the vamp throat. One flap is integral and the other an insert stitched to the throat and the front of the quarter. The upper is whole-cut, that is cut from a single piece without separate rand and quarters, and originally had a triangular insert at the top of the medial (inside) quarter to bring it up to full height. A second, extant, insert takes the form of a narrow strip filler between the quarter and the vamp. The cordwainer may have used these inserts as a way of using smaller pieces of leather or may simply have made a mistake while clicking (cutting) out the pattern. A drawstring, now absent, originally passed around the leg and was held by two pairs of vertical slits in the quarters. This shoe type was introduced in the late 11th century and persisted until the middle of the 12th. This example is cut from goat or sheepskin, which became popular in the late 11th century with the introduction of fashionable Spanish Cordovan goatskin (cordwain). Calf had been the most common leather used in shoemaking until this date, and superseded goat again from the 13th century.

Although there was only a single clearly identifiable upper, three fragments, [268] sf.12, may be from a front-laced shoe or boot. One of the fragments has possible lace holes, and tunnel stitching typically used to secure a tongue in footwear of this type. The late 14th century date of its context is consistent with this interpretation as front-laced footwear. The top edge of a turnshoe was often finished with a topband. The most common type, of which there are two examples from this site ([1414] and [1593]), was a leather strip, folded lengthways and attached to the quarters with a binding stitch.

There are eight substantially complete soles, including two foreparts from two-piece soles, and fourteen fragments, from this site. Turnshoe soles wore out fairly rapidly, so they were often repaired. The usual method of repair was to attach separate clump soles over the worn holes, usually at the toe, across the tread and at the seat. There are 16 separated clump soles and clump sole fragments from this site and several soles have tunnel stitch holes indicating clumping. One, [268] sf.13, has been clumped at least six times, three each at the tread and the seat, suggesting that Ely's medieval townsfolk did not discard old footwear until they really were worn out. Some shoe fragments have clearly been cut-down eg uppers fragments, [1615] sf.171, and sole fragments, [820], sf.88, which have been salvaged and reused for an unidentified purpose. Cutting down of footwear was generally for one of two purposes. Either to adapt an ill-fitting shoe or to reclaim usable leather from worn out footwear. The latter could either be in the form of whole components for cannibalisation, ie translation, or to cut into clump soles or other pieces used in the refurbishment of old shoes, ie cobbling. The material cut-down here is in the latter category, so probably derives from cobbling.

Leatherworking Waste

There is a small quantity of new leather waste. Carol van Driel Murray (1985, p.49) developed a typology of offcuts which recognised three distinct types, deriving from the three main phases of manufacture. Primary offcuts were produced during initial rough trimming of the hides, when edges, lobes, nipples, orifices and stretcher holes were removed, and often exhibit these characteristics. Secondary offcuts resulted from the clicking – cutting out – of shoe components, and are often of diagnostic shapes eg the 'cigar' shape between two soles at the waist. They may also have hide edges not removed in the primary phase. Tertiary offcuts are the final trimmings produced when the shoes

were finished, and are usually narrow strips, though may be small triangles and other shapes. All three types are represented here, though in small numbers. Two contexts produced finds with more than one or two offcuts. A find from a dump context [975], consisted of 12 primary offcut fragments, 7 secondaries and 7 trimmings. This context also produced shoe fragments, suggesting that it was waste from cobbling. Context [1422] produced 20 secondary offcut fragments and 31 trimmings, again with a few shoe fragments. It too is likely too be cobbling waste. There is also a single flesh scraping, [1422] <936>. This type of waste usually indicates a hide preparation industry such as tanning or currying, as both crafts utilised processes in which the flesh surface of the leather was shaved. Perhaps currying is more likely as the leather would have been tanned by the time it reached the currier and so is more likely to have been preserved in the soil. Unfortunately, a single example is insufficient to point to this craft on the site, this find perhaps having been created when a cobbler tidied up a rough piece of leather.

Conclusions

The finds from this site are consistent in character over the entire period. Footwear components and fragments, many cut-down, together with offcuts of new leather suggest that cobbling took place nearby. The finds were recovered from almost all of the properties, largely from pit and cut fills, and it is possible that there was a cobbler's workshop on site operating over a period of several centuries. The main problem with this interpretation is the small quantity of leather recovered, and the scattering of a few finds over many contexts. A cobbler's workshop would be expected to produce far more waste than represented here. This could, of course be explained by one or more factors such as differential preservation, incomplete excavation of the properties, or dumping of the majority of the waste elsewhere, perhaps the river.

Environmental Remains

Plant and fossil macros

Chris Stevens

A total of fifty-five environmental samples were examined from the excavations dating from the 11th to 12th centuries right up to the 15th/16th centuries. Thirty-three of the samples were processed through wet-sieving for waterlogged plant remains, while the remaining twelve were floated using standard procedures. The result flots and samples were then scanned and in some cases sorted for the extraction of biological material, which could shed light on the local environment, and the changing economy of the site. The material found within the samples has been divided for ease of reference into several categories and is discussed in relationship to these criteria (Table 2).

Food Remains (Table 3)

The split between waterlogged and carbonised plant material was quite distinct, with few species appearing within both categories. The charred evidence suggested the processing and consumption of several cereal crops, free-threshing wheat, rye, barley, and oats, and pulse crops, pea and broadbean. A few seeds of grape appeared both in charred and waterlogged deposits, but most other cultivated fruits appeared only in waterlogged deposits. For example, fig, plum, apple and cherry, although the latter may of been of the wild variety. Some fragments of walnut were also recovered. The waterlogged remains also contained many fragments of the stones and shells of wild fruits and nuts. Hazelnut was particularly abundant, while sloe, plum, bramble, and elder (although this may have arrived from other sources) were all present in varying quantities. Much of the evidence for domestic fruits and nuts, ie apple, grape, fig, plum, cherry and walnut all came from the phase 9, 14th century occupation of the building. The 14th and 15th century samples, however, contained much less in the way of carbonised cereals, with the exception of one deposit from an alley way, possibly suggesting that domestic activities involving crop processing were not carried out to any great extent within the house itself during this period. However, it may be that the sheer quantity of waterlogged remains from these periods have

Table 2. Division of material from bulk samples

Plant material	
Charred Remains	**Waterlogged**
Food Remains	Food remains
Chaff and probably crop weeds	Seeds of species growing in vicinity
Fuel	Seeds of species brought in by flooding
	Seeds brought in by anthropogenic means
Non-plant material	
Food Waste	**Other**
Shellfish	Freshwater and land molluscs
Fish-bones	Vivianite
Egg shell	Fly pupae
	Worm cocoons
	Insects
	White clay (daub) with impressions

Table 3. *Food remains*

Phase	Volume (ml) after wet sieving/floatation	Number of samples	Common Name	Species	fig	*Ficus carica* L.	walnut	*Juglans regia* L.	hazelnut	*Corylus avellana* L. (shell fragments)	sloe	*Prunus spinosa* L. (fragments)	plum/bullace	*Prunus domestica* L.	cherry	*Prunus avium* (L.) L.	apple	*Malus domestica* Borkh.	garden pea	*Pisum sativum* L./Vicia faba L.	grape	*Vitis vinifera* L.	**Cereals**	**Marine Shells**	mussels	*Mytilus* sp.	oyster	oyster shell	**Fish and Animal Remains**	fishbones	fish bone + scales	egg shell
2	300	1			-		-		1		-		-		cf. 1		-		1c		-		14c		+++		2		++		+
3	650	3			-		-		3		-		-		-		-		-		-		28		+++		-		++		o
4	300	1			-		-		++		++		-		-		1		-		-		2		+		-		++		-
5	450	4			-		-		-/o		-		-		-		-		-		-		+		o		-		+		o
6	250	5			-		-		-/o		-		-		-		-		-		-		++		+		o		+		+
7	450	4			-		-		2		-		2		-		-		-		-		few		o		-		+		-
8	50	1			-		-		-		-		-		-		-		-		-		few		+		-		+		-
9	1450	14			+		-		+++		-		9		+++		4		-		2		+		+++		o		++		+++
10	50	1			-		-		-		-		-		-		-		-		-		few		-		-		-		-
11	300	1			-		-		-		-		-		-		-		-		-		2		-		4		2		-
12	800	6			-		-		3		-		-		-		-		-		-		few		+		-		+++		+
13	350	2			-		-		o/-		-		-		-		-		-		o/-		few		-		-		+++		++
16	200	4			-		-		-		-		-		-		-		-		-		+++		-		-		+		+
17	50	1			-		-		-		-		-		-		-		o/-		-		++		-		-		o		+
18	350	2			-		-		10c		-		-		-		-		++/-		-		+++		-		-		o		o
19	200	4			-		-		-		-		-		-		-		+/-		-		+		-		-		o		-
20	50	1			-		-		-		-		-		-		-		-		-				-		-		-		-

masked out the carbonised material to the extent that cereals are scarcely visible.

In addition to the plant foods were several remains of marine and freshwater resources. Marine mussel shells were highly abundant within the samples, as were fish and eel bones. Other shell remains included cockles, oyster, dog whelk and periwinkle, some of which may have come in with the collection of mussel shells, but also may have been collected within their own right. Such remains are reasonably well represented until the 16th/17th centuries when their presence declines to the point that fish bones appear in very small quantities and mussels and other marine resources are absent. This is probably more likely related to a change in the disposal practices as it is a change in dietary practice.

Crop-Processing Waste

This category of material was only in evidence in the carbonised samples which also contained cereal remains. The remains frequently contained high proportions of stinking mayweed, a species associated with the cultivation of heavy clay soils. Some of the samples also contained numerous rachis fragments of free-threshing wheat, suggesting perhaps waste from the processing of bread-wheat stored as sheaves.

Fuel

Some of the most noticeably abundant charred remains were those of sedges, both the stems and seeds. The principle components of such assemblages were the seeds and stems of great-fen sedge. The frequent reoccurrence of such material, especially from ovens, combined with the historical references to the exclusive use of this plant as the only fuel in the bakehouses of St Johns College and that Turner (quoted in Horwood 1919) notes '*The people of the Fenne countreys … do heate ovens with it*', would suggest that

it was collected and used for such purposes on a frequent basis on the site and over a considerable period of time.

Local Environment
Many of the waterlogged seeds within the assemblages can be related to several different key environments. Water/fenland species, arable/wasteland species; species of nitrogen rich wasteland soils; and species of shaded woodland/hedge or scrub.

Seeds of fenland and water species are likely to have had two possible sources. One is through the collection of such plants for domestic use. For example; many of the sedges, especially great-fen sedge, may have been brought in for fuel. The other possible source is through flooding. Certainly many of the freshwater molluscs found within the assemblages are likely to have come from such sources. The indication of flooding from the molluscan line of evidence comes mainly from the 14th century onwards, with at least some indication of major flooding during the 16th to 17th century.

Several uncharred seeds of arable species were also found, possibly brought in as contaminants of the crop, but also possibly growing from plants growing wild within the vicinity of the house, which were escaped crop weeds. Many of the species identified within the assemblages are also indicative of nitrogen rich, wasteland soils, which were probably common within the vicinity of the house.

Utilised Plants
The last category of plant remains are those which may have been brought in for other purposes, such as gypsywort which was commonly utilised for the black dye it produced, and bog-bean which was commonly used as both a pipe tobacco and as a flavouring in brewing (Leyel 1992). Lastly, two samples from the 13th to 14th century produced many seeds of vervain. Vervain was much heralded as a cure for plague during the Middle Ages. Given the presence of many seeds in only two samples, of a 13/14th Century date, and the fact that the plant is commonly associated with lighter chalk soils, its deliberate collection for such purposes cannot be ruled out.

Animal Bones
Lorraine Higbee
The total quantity of hand recovered bone is 52,825 grams or 4001 fragments. It was possible to assign species identification to approximately 30% of the assemblage by weight (or 60% by fragment count); the average weight of identified fragments is 26.7 grams. The assemblage was divided into two samples, a 'background sample' which included phases with small samples (ie phases 2–4 and 17–23) and a 'detailed sample' which included the relatively large samples from the interior of no. 47 and its backyard activities. The detailed sample includes phases 5–6 dated to the 13th–14th century, phases 7–10 dated to the 14th – early 15th century and phases 11–16 dated to the 15th–16th century. Analysis of the background sample was kept to a minimum and while analysis of the detailed sample forms the basis of this report, the skeletal elements selected for full analysis are those which have diagnostic zones (after Dobney and Reilly, 1988). Bird bones were also recorded using the diagnostic zone method (after Cohen and Serjeantson 1996) but were only recorded if they retained at least one articular surface. The ageing data of Silver (1969) was used to assess the epiphyseal fusion of the post-cranial skeleton and tooth eruption. Tooth wear was recorded using the methods of Grant (1982) for cattle and pig, and Payne (1973 and 1987) for sheep/goat. Epiphyseal fusion categories are those of O'Connor (1989), as are tooth eruption and attrition categories for cattle and pig and for sheep/goat Payne's (1973) categories were used. The description of cattle horncores follows those outlined by Armitage and Clutton-Brock (1976). The distinction between sheep and goats follows Payne (1985) and Boessneck (1969) and was restricted to Dp4, metatarsals, metacarpals, astragali, first phalages and cranium. Measurements follow Von den Driesch (1976), body weight ratios were calculated using the mid-points in the Manching data range (Boessneck *et al*, 1971) and withers height calculations for the main domesticates are those of Kiesewalter for horse, Matolcsi for cattle, and Teichert for sheep and pig (see Von den Driesch and Boessneck 1974) and those for dog follow Harcourt (1974).

Species identification (Table 4)
The remains of goat (*Capra*) were extremely rare (1 specimen each from the 14th – early 15th century and 15th–16th century assemblages) hence those fragments simply identified as sheep/goat are taken to represent mainly sheep (*Ovis*). Small numbers of hare bones were also identified and these are assumed to be those of the brown hare (*Lepus europaeus*) based purely on biogeographical grounds. The differentiation between chicken and pheasant can be problematic thus the category chicken could include some pheasant bones although no pheasant bones were positively identified using Macdonald's (1992) differentiation. All goose bones were from a large species and although varied in size could not be further identified but probably represent both domestic and wild grey geese although they have been grouped together in the analysis. Very few duck bones were identified from the detailed sample and these could only be identified as mallard-size. Misidentifications may have been made but it is suggested that this group of large individuals represent mostly domestic mallards. The bones of crane are assumed to be those of the common crane (*Grus grus*) due to the geographical location of the site (ie in the Fens).

Occurrence and frequency of domestic and wild species
The main categories of domestic and wild taxa show some variations through time (table 4). Not surprisingly, the main domestic mammals (ie cattle, sheep and pig) occur in high proportions throughout the detailed sample and range from 77 to 87%. The

Table 4. Number of identified specimens per species (NISP)

	Date																						
	11–12	12	12–13	13–14		14–15				15–16						16–17			17–18	18	18–19		?	
Species	Phase																						Unphase	Total
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Cattle	10	6	6		38	3	4	85	19	3	10	11	37	8	11	13	3		2	5	3	1	49	327
Sheep/Go	12	10	18	3	67	5	6	65	13	1	7	19	40	8	6	10	4	1		10	4	4	41	354
Sheep	3	3	5		7	3		11	3	4	1	3	7	1	3	1		1					12	68
Goat								1					1											2
Pig	17	13	3	1	25	2	3	51	5	3	8	6	17	5	12	2	1	1		6	1	1	26	209
Horse					5			2					1				1						2	11
Dog		1						2		1														4
?Dog/Fo																							1	1
Cat			2		1	2		3															1	9
Fallow		1			1			3												3			1	9
Roe Deer																1							1	2
Hare								1						1	1					2				5
Rabbit					1			1			1		4	7	5	2				5	2	1	3	32
Chicke	1				5			12		1	1		2	10	10	3	1			28	3	1	2	80
Goose	2	1	1		7	2		8	2			4	3		13	1	2			5	1			52
Duck					1			2								1				22	1		1	28
Teal															1									1
Crane													1		1									2
?Wood																				1				1
Total	**45**	**35**	**35**	**162**		**319**				**300**						**49**			**2**	**87**	**22**		**140**	**1196**

proportions of minor domestic species (ie dog, cat, horse and domestic birds) range from 11 to 16%. The 15th–16th century sample is the most varied in terms of species range since it has the highest proportions of wild mammals (6%) and is the only assemblage in the detailed sample from which the bones of wild birds (crane and teal which represent 1%) were recovered.

The relative abundance of the common domestic species also shows some variation through time. In terms of the number of identified specimens per species (NISP) sheep dominates the 13th–14th century sample but decreases in frequency relative to an increase of both cattle and pig bones in the later phases. This pattern is repeated by the relative frequency of the minimum number of individuals (MNI) in each sample (table 5). However, the relative importance of meat supplied by these three species indicates that not surprisingly cattle dominate throughout all three assemblages. The proportion of beef consumed increasing from 67% in the 13th–14th century to 80% and 81% in the later phases. Mutton and lamb decline in their dietary importance from 30% to 17% whilst pork remains at a low level and never contributes more than 2–3%.

Table 5. Minimum number of individuals (MNI) for main domesticates

Date	Cattle	Sheep/Goat	Pig
13th–14th century	3	10	4
14th– early 15th century	7	12	5
15th–16th century	5	8	4

Main Domestic Mammals

Carcass representation and butchery

The distribution of skeletal elements indicates a recovery bias against small bones.[17] However, all portions of the beef, mutton and pork carcass are represented which suggests that live animals were bought into the town to be slaughtered. The frequency of proximal metapodia over distal metapodia in the assemblages suggests that both beef and mutton were procured as dressed carcasses or joints. There is a greater abundance of the minor meat bearing elements of sheep (eg tibia and radius/ulna) and primary butchery waste of pig relative to the major meat bearing elements of the upper limbs. This observed bias may be due to the differential preservation of skeletal elements, particularly with regard to the porous nature of immature pig bones. The assemblages under analysis are considered to represent mostly domestic household refuse, the presence of skeletal elements considered to represent butchery waste (ie skulls and feet) could indicate either the procurement of specialist cuts of meat or a degree of on site processing being carried out. No spatial concentrations of particular skeletal elements were observed which might suggest industrial or craft activities.

Butchery marks were recorded with great frequency on the bones of the main domestic species, chop marks were more commonly observed than knife cuts, although cut marks were relatively more common on sheep bones. No distinct change in butchery technique could be discerned for the periods under analysis. The butchery observed on cattle bones is consistent with the reduction of the carcass into smaller portions by the simplest means. Metatarsals recovered from phase 6 (13th–14th century) had all been split longitudinally presumably for the extraction of marrow fat. Butchery observed on sheep bones is less systematic but the location of knife cuts around the periphery of joints indicates the jointing out of limbs by cutting through ligaments. Horn cores were removed by sawing through the basal section and skulls were commonly split along the sagittal plane presumably so that the brain could be extracted. Most vertebrae centra were intact. Damage caused by a meat hook was recorded on two scapula blades, one from a 13th–14th century context and the other from a 15th–16th century context. There is little direct evidence for butchery on pig bones, vertebrae centra were recovered intact and dismemberment appears to have been achieved by chopping through the major joints of the limbs. One scapula blade from a 13th–14th century context also has the characteristic damage caused by a meat hook.

Husbandry and Economy[18]

The low number of complete cattle mandibles from all phases means that age estimates could only be deduced from the 14th – early 15th century assemblage, and were based largely on incomplete tooth rows, isolated teeth and epiphyseal fusion. Based on Silver's (1969) data the majority of this group is less than 5–6 months of age, that is it represents calves that were still suckling or newly weaned. Butchery marks recorded on some of the post-cranial bones of immature cattle suggests that they represent animals killed for their meat. Such data is taken to indicate the importance of dairying, with its associated increase in the availability of veal and has been recorded on other sites of a similar date (O'Connor, 1993, Albarella and Davis, 1996, Dobney, Jaques and Irving 1996). Mandibles from immature, subadult and adult cattle are also present in the assemblage and this is reflected in the epiphyseal fusion data.

The age distribution for sheep mandibles from all three assemblages shows a clear trend towards subadult and adult animals aged 2–3 and 3–4 years. Younger animals aged 1–2 year occur only in the 13th–14th century assemblage and mature adults aged 4–6 years are represented in the 15th–16th century assemblage only. Epiphyseal fusion data generally supports this pattern, it also indicates that small numbers of lambs are present in the two earliest periods. Overall the age distribution is characteristic of an emphasis on wool and mutton and is similar to that recorded from other sites of the same date (Dobney, Jaques and Irving 1996, Maltby 1979, Albarella and Davis 1996). This trend no doubt reflects the economic importance of wool production in England at the time.

A limited number of pig mandibles and post-cranial bones were suitable for ageing the available information indicates that the majority slaughtered were immature and subadult. In all periods under consideration pigs were slaughtered between approximately 7–13 months and 17–22 months. This pattern is supported by the epiphyseal fusion data however, older individuals are represented in two of the periods. The age distribution outlined above is similar to that recorded from a number of sites and probably reflects the rapid fecundity of this animal and the fact that it is not exploited for secondary products.

Although measurements were taken where possible on all type of skeletal elements, most did not yield sufficient specimens for detailed metrical analysis to be carried out. Estimates of shoulder height could only be calculated for sheep and pig. The reconstructed shoulder height of sheep in the 14th – early 15th century assemblage is based upon measurements of two astragali and a metacarpal, the mean shoulder height is 0.53m with a range of 0.49–0.61m. A radius from the 15th–16th century assemblage gave a reconstructed shoulder height of 0.47m. The reconstructed shoulder height of pigs in the 13th–14th century assemblage is 0.68m and in the 14th – early 15th century assemblage it is 0.64m. These estimates are comparable to the size range of sheep and pigs from Coppergate, York (O'Connor, 1989), Lincoln (Dobney, Jaques and Irving 1996), Quilter's Vault (Bourdillon 1979) and Melbourne Street, Southampton (Bourdillion and Coy 1980).

The incidence of non-metric traits and pathological conditions recorded on the bones of cattle, sheep and pig was extremely low. Two examples of hypoconulid (the absence or reduction of the posterior cusp of the third molar) were recorded on cattle mandibles from the 13th–14th century and 14th – early 15th century assemblages. The location of the major nutrient foramen on sheep femora was in all instances recorded on the proximal anterior aspect of the shaft, this is the commonest location in modern breeds. One sheep metacarpal from a 14th – early 15th century context was recorded with a bony extension located on the lateral-posterior aspect of the proximal shaft.

Minor Domestic Mammals

Dog is represented by only three bones, a metapodia and tibia from an adult animal recovered from the 14th – early 15th century assemblage and the pelvis of a puppy recovered from the 15th–16th century assemblage. The tibia is complete and gave an estimated shoulder height of 0.47m. A knife cut located on the medio-distal shaft of this specimen suggests that the animal may have been skinned. Despite the rarity of dog bones recovered from the site the frequency of canid gnaw marks recorded on bones in the detailed sample ranged from approximately 10–16%.

Cat bones occur more frequently than dogs and were recovered from the 13th–14th century and 14th – early 15th century assemblages. Of the five specimens

recovered from the 15th–16th century four are from kittens. The mandible of an adult cat also from this assemblage was recorded with a knife cut located on the buccal aspect of the anterior jaw, this has been interpreted as evidence for skinning when recorded on other archaeological cat bones (Albarella and Davis 1996).

Small numbers of horse bones were recovered from all three assemblages, the two specimens from the later assemblages both bear butchery marks in the form of heavy chops. Five complete long bones recovered from a 13th–14th century context appear to belong to the same mature individual and gave a mean estimated shoulder height of 14 hands and 2 inches. Two of the long bones of this individual show signs of osteoarthritis in the form of lipping around the margins of the joint.

Wild mammals

Hare, rabbit and fallow deer are the only wild species of mammal identified in the assemblages. Of the three species rabbit occurs with the greatest frequency and is represented by both adult and juvenile individuals. Rabbits appear to have been skinned on site given the frequency of foot bones in the assemblage. Four specimens of fallow deer were recovered, the skeletal element distribution indicates that dressed cuts were purchased from a butcher although those represented in the assemblage are not the choicest cuts.

Domestic birds

Bones of chicken and goose were recovered from all three assemblages, all portions of the carcass are represented suggesting that whole birds were brought to the tenement probably still in their plumage. Fine knife cuts were observed on a small number of specimens. The bones of duck occur less frequently and were recovered from the 13th–14th century and 14th – early15th century assemblages only. Goose bones are slightly more frequent than chicken in the earlier periods but this trend is reversed in the 15th–16th century assemblage. Only adult birds are present in the earliest period however, juvenile chicken bones make up approximately 5–16% of the domestic bird bones in the later periods whilst juvenile goose bones make up only 2.5–5%. The greater number of adult geese bones may reflect the importance of this species for its secondary products (eg feathers) and the desire to have a fattened goose for the festive season. Female chickens dominate the assemblages and only one male (spurred) chicken tarso-metatarsus was recovered from a 14th – early 15th century context. The prevalence of females may reflect the probability that chickens were kept by the occupants of the tenements primarily for their eggs (egg shell was recovered from some environmental samples). The relatively large number of juvenile chickens in the later assemblages may represent capons slaughtered for meat before development of the spur. Unfortunately insufficient numbers of measurable elements are available from the assemblages to carry out any biometrical analysis.

Wild birds[19]

Both of the wild bird species identified come from the 15th–16th century assemblage, teal is represented by a single carpo-metacarpus and crane by a humerus, Synsacrum and pelvis. During the later medieval period the crane was regarded as a high status bird to be served at banquets which makes its recovery from a tenement in Ely a little surprising, particularly given the mundane nature of the rest of the assemblage.

Conclusions

The bone assemblages in the detailed sample represent the remains of animals exploited for food and are dominated by domestic species with limited dietary variation provided by the exploitation of locally available wild mammals and birds. The skeletal element distribution for some species suggests that dressed carcasses or joints were purchased and that some carcass preparation was carried out on site. An increase in the socio-economic status of the occupants of the tenement in the 15th–16th century is suggested by the presence of crane, a bird considered to be high status.

Fish Remains

Andrew KG Jones

While the site contained deposits ranging in date from the 12th century until the 20th century, fish remains were recovered from phases 3–22 (12/13th century to 18/19th century). A modest assemblage of fish remains were collected by hand from the deposits during excavation. In addition a series of 300 mml samples were washed on 500 micron aperture sieves and fish remains collected from the dried soil residues. Bones and scales were identified by comparison with the reference collections at the Environmental Archaeology Unit, University York. The terminology for fish remains follows that given by Wheeler and Jones (1989) and names of fish taxa follow the nomenclature of Wheeler (1969).

While fish vertebrae dominate both the hand collected and sieved assemblages the species present contrast dramatically. The hand collected assemblage is made up of bones of large gadid (cod family) fishes with cod, *Gadus morhua*, occuring in 9 phases and ling, *Molva cf molva* being present in 5 phases. Other marine fishes include pleuronectid flatfish, including plaice, *Pleuronectes platessa*, (present in 5 phases) and other haddock, *Melanogrammus aeglefinus*, (present in 2 phases) and conger eel, *Conger conger*. Freshwater fishes were represented by a single opercular bone from chub, *Leuciscus cephalus*, phase 20.

By contrast the sieved assemblage is dominated by small and medium sized fishes, notable herring, *Clupea harengus* (present in 8 phases) and eel *Anguilla anguilla* (present in 6 phases). Cyprinid fishes, mainly represented by scale fragments were also present in 6 phases and included two pharyngeal bones identified as chub. Other freshwater species include pike, *Esox lucius* (4 phases) and perch, *Perch fluviatilis* (2 phases). Whiting, *Merlangius merlangus*, a small marine gadid fish and thornback ray, *Raja clavata*, another marine

food fish, were recovered from phase 9 deposits.

The condition of fish remains was generally good. Most had a hard, often shiny, surface. The colour of fish remains varied from light yellowish brown (typical of fish bone from most sites) to dark brown a colour most common on sites with anoxic organic deposits. There was little sign of post-excavation damage. One bone had distinct traces of gnawing and a few of the herring vertebrae were crushed in a manner that suggest that they had survived passage through a mammalian digestive system (see Wheeler and Jones 1989).

Table 6 summarises the finds of fish remains by taxa and demonstrate that the medieval inhabitants of Ely were drawing on both freshwater and marine resources for their supplies of fishes. The presence of head and trunk bones of cod and conger eel are a clear indication that at least some marine fish was imported as fresh fish. However, it is interesting to note that the ling and haddock were only represented by bones that remain with the flesh when these animals are dried and traded as stockfish. Postcleithra, cleithra and vertebrae are usually present in stockfish and the presence of these bones together with the absence of robust upper and lower jaw bones has been used by several authors (eg Wilkinson 1979, Barrett 1997) to indicate the presence of traded fishes. The Ely assemblage is too small to come to a clear conclusion concerning the importation of dried fish, however the possibility that some fish arrived in this form cannot be excluded. It is also possible that herring were imported salted in barrels, but given the location of Ely and the presence of marine fishes in medieval deposits at many other East Anglian sites, it seems clear that freshly caught marine fish were brought to the site.

Taken as a whole the range of fishes from Ely is typical of that found in several medieval East Anglian urban settlements eg Thetford (Jones 1984), Norwich (Jones and Scott 1985) and King's Lynn (Wheeler 1977). Future work in the city should provide more data on the supply and consumption of fishes to the inhabitants of Ely if a more extensive sampling and sieving strategy are implemented.

Discussion

The Urban Fabric

The sequence begins in the 12th century (Period Ia) with a single feature, a recut ditch which in itself, reveals very little; however it was associated with a relatively rich finds assemblage which is more telling. This included ceramics, leather shoes and other scraps, a padlock key, candle pricket, wool combing spike, horseshoes and structural ironwork (see finds reports). In addition the ditch fills contained a diverse range of environmental data which included abundant shellfish, fruits, legumes and cereals as well as freshwater and (to a lesser extent) marine fish alongside occasional wild fauna and the three main domesticates (cow, sheep/goat and pig). All of this almost certainly denotes occupation in the vicinity (perhaps on the other side of the road) despite the dearth of any associated structural or other features from this period. A pollen profile from the ditch was

Table 6. *Fish remains*

Abbreviations: Ph = Phase. s= sieved samples examined from this phase; - = absent; + = present. TR = Thornback ray, *Raja clavata*; Hg = Herring, *Clupea harengus*; El = Eel, *Anguilla anguilla*; Ce = Conger eel, *Conger conger*; Cy = Cyprinidae (includes records for chub, *Leusicus cephalus*); Pk = Pike, *Esox lucius*; Gd = Gadidae, cod family; Hk = Haddock, *Melanogrammus aeglefinus*; Cd = Cod, *Gadus morhua*; Wg = Whiting, *Merlangius merlangus*; Lg = Ling, probably *Molva molva*, Ph =Perch family includes perch, *Perca fluviatilis*; Pd = Pleuronectidae (includes plaice *Pleuronectes platessa*).

Ph	TR	Hg	El	Ce	Cy	Pk	Gd	Hk	Cd	Wg	Lg	Ph	Pd
3s	--	-+	-+	-+	-+	-+	--	--	--	--	--	-+	--
4s	--	-+	-+	--	--	--	--	+-	--	--	--	-+	--
6	--	--	--	--	--	--	+-	--	+-	--	--	--	+-
7s	--	-+	--	--	--	--	++	--	--	--	--	--	--
8s	--	-+	-+	--	-+	--	+-	--	--	--	--	--	--
9s	-+	-+	-+	--	-+	-+	+-	--	+-	-+	+-	--	++
10	--	--	--	+-	--	--	+-	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	+-	--	--	--	--
12s	--	-+	-+	--	-+	-+	--	+-	--	--	--	--	--
13	--	--	--	--	--	--	--	--	--	--	+-	--	--
14s	--	-+	-+	--	-+	--	--	--	+-	--	+-	--	-+
15	--	--	--	--	--	--	--	--	--	--	+-	--	--
16	--	--	--	--	--	--	+-	--	+-	--	+-	--	+-
17	--	--	--	--	--	--	--	--	+-	--	--	--	+-
18s	--	-+	--	--	-+	-+	+-	--	+-	--	--	--	--
19	--	--	--	--	--	--	--	--	+-	--	--	--	--
20	--	--	--	--	+-	--	--	--	--	--	--	--	--
22	--	--	--	--	--	--	+-	--	+-	--	-	--	+-

not very informative except to confirm its function as drainage with corresponding vegetation.[20]

Unfortunately however, with such circumstantial evidence for occupation, little more can be said except that perhaps this was not necessarily in a marginal settlement area and certainly not agricultural. Determining the wider context of the recut ditch is difficult as little evidence for settlement at this period has been found within Ely. Sporadic finds within the town[21] point to occupation and activity but none of it very informative of settlement patterns. The location of the pre-conquest monastery and an associated secular community have, until recently, been shrouded in mystery, but in the absence of any other archaeological evidence, the area adjacent to the parish church to the west of the abbey was considered to be the most likely focus of Saxon settlement (Taylor 1973, Robinson 1994). Pre-conquest pottery and a substantial stone footing found beneath the cathedral foundations during drainage repairs and other works (Alexander 1994, Regan 2001), suggested a possible location for the pre-conquest church.

All this however, has to be seen in the light of fresh evidence from the western periphery of the city where, in the spring of 1999, a Saxon settlement at West Fen Road, covering 12 hectares and dating from the 8th to the 13th century was discovered (Mortimer 2000, Regan 2001). Until very recently, it had been natural to presume that, as interlinked and possibly contemporary events, the position of the post-conquest monastery and cathedral, and the establishment of a navigable river channel close to the foot of the hill, were the strongest impetus to the development of the medieval town in its present location. However with this fresh evidence to suggest the focus of the pre-conquest settlement was not directly beneath the medieval city, the location of the 11th century monastic institution in relation to the West Fen settlement promotes speculation. It is interesting that the new abbey church was not positioned where it could dominate the well-established settlement on the west side of the island, but was built instead some distance away with a commanding location over looking the eastern hill slope. Equally the explanation may be practical one: the bedrock outcrop beneath the present cathedral would have provided the necessary firm ground and solid foundation for a stone built structure.

In any event, it is an almost inevitable consequence that a road between the new cathedral and the riverside should become a well–used route of some importance. Forehill takes the most direct route from Broadhythe the earliest documented wharf (*c.* 1210) to the monastic precinct and the market, established by licence to the monastery by Henry I. Seen in this context, the ditch at Forehill is possibly marking this route and it is not unlikely that settlement related activity would build up alongside it. As such, it perhaps established the focus for subsequent development in the wake of the demise of the settlement at West Fen. The establishment of property divisions and associated first buildings which appear on the site in the 13th century (Period Ib) century would appear to mark this transition to urbanisation.

Evidence from other investigations in Ely support this picture. Excavation and evaluation in the past decade has established that the street frontage to Broad Street was built up from at least the 13th century onwards, and that the linear plots stretching back from the street to the river also had their origins in this period (Alexander, 1998a and 2002, Regan 1998). The recent renovations of the building at number 41, Broad Street, (lately called The Three Blackbirds) revealed its 13th century origins. At Jubilee Terrace running towards the river from Broad Street, the earliest excavated evidence dated to the 12th century, and in the 14th century a large warehouse was built, in which lime was stored (Connor forthcoming). A dense concentration of intercutting pits found on the southern corner of Lisle Lane and Cresswell Lane during evaluation suggests there was settlement here between the 12th and the 14th centuries (Oakey 1995). 13th century surveys of the town support this interpretation and indicate a system of streets around the monastic precinct with settlement concentrated along the river and the around the market, gradually infilling the space in between, ie along Forehill.[22] Taken together, all this strongly suggests that Forehill forms part of the skeleton of the early riverside settlement and the nature of the site in this period reflects this and the establishment of the urban fabric.

The 14th century (Period II) sees this pattern maintained with accelerated building and rebuilding activity along with more formal, metalled lanes running between the tenements. In effect, at the end of the 14th and beginning of the 15th century, the site clearly shows Ely to be a fully formed small town, with an established urban fabric. This is supported by the first detailed documentary evidence, a survey made in 1416–17 which provides a full list of tenement holdings for the northern side of Forehill covered by the excavated area.[23] The tenement layout for the site was reconstructed from the 1416–17 survey and superimposed on the Period II plan (see Fig 8); it shows a surprising correlation with many of the boundaries defined in excavation.[24] The tenements are labelled according to the recorded owner and include, west to east: the tenement of Richard Hildresham opposite the junction with Broad Street, which seemed to have abutted on the north, a tenement of the infirmarer; the tenements of John Plomer, John Hunte and Robert Botery, all of which probably abut the Bishops vineyard on the north (outside the excavated area);[25] and finally a tenement of the bishop at the junction of Forehill and Lisle Lane.

The pattern which is seen fully established in the 15th century appears to be more or less maintained for the next three centuries (Periods III and IV), although the increase of cess pits, soakaways and wells after the 17th century (Period V) may reflect a subdivision of the properties taking place beyond the limits of the excavation, as well as general modifications of domestic space. Overall though, in terms of the urban fabric, the divisions and buildings within

the site exhibit remarkable continuity over the time span recorded. The major change on the site occurred in the 12th/13th century (Period I) in marking the inception of urbanisation; unfortunately, the evidence from this site is insufficient to fully understand this process and indeed would require data from a much larger area. After the 13th century, with the layout of the site and its property divisions now established, they remain more or less constant for the next seven centuries. What changes is less the urban fabric (except at the detailed level of building/construction methods and the arrangement of internal space – see Building Sequence Discussion above) than perhaps its use, ie patterns of urban living, and it is in this area that the site provides the more useful data.

Urban Space at Ely

Although there is little documentary evidence for how these tenements were used before the 19th century, they almost certainly had a domestic element. Nevertheless, one must be careful when characterising something as domestic for it does not necessarily preclude specialized or industrial activity taking place at the same time and this is where the archaeological data are most useful. Indeed, this is perhaps one of the major themes in medieval urbanism and use of space, the nature and relationship between domestic and commercial activity.

At the very beginning of the sequence at Forehill, there is possible evidence for specialised activity in the form of leatherworking – the quantity of leather waste and shoe soles from the Period I ditch suggest potential specialised industry along this end of Forehill, associated with the general background of domestic waste also retrieved. Indeed, leatherworking possibly continues to form a major component of the finds assemblage into the first half of Period II

Table 7. *Evidence for finds associated with specific activities at Forehill. (n = object/fragment count)*

	Ia	Ib	II	III	IV	V
textile working	1	1	2	-	1	2
farrier	6	1	3	1	-	-
leather working	21	90	74	17	-	6
smithying	-	-	-	-	-	(present)

suggesting this minor industry continued up to the end of the 14th century (see Table 7). However, the likelihood of redeposition must be considered for later phases and indeed the two assemblages considered to be numerous enough to suggest waste from a workshop, were both from contexts with a high residual pottery content. The only other activities represented in this time period are those of a farrier (ie horseshoeing) and textile production, as evidenced in the first case by horseshoes and nails and in the second, wool combing spikes and spindle whorls, a thimble and sewing ring (Table 7).

None of these industries need be anything but small-scale, domestic ventures, indeed it might be questionable to what extent they represent domestic production purely for domestic consumption. This for example, might certainly be the case with textile production and horseshoeing, although the leatherworking might indicate more of a specialised and therefore commercial enterprise. However, it must be noted that given the appropriate conditions for preservation, leather off-cuts are prevalent on almost all urban sites of this period, and were no doubt recycled for a wide variety of uses (Clarke and Carter 1977).

The evidence therefore for commercial as well as domestic activity in the first two to three centuries of occupation at Forehill is rather ambiguous. The presence of a lead seal (Fig. 26) and jetton in this period might be used to argue for more commercial activity being linked with these industries, but this is very slight. Moreover, the data do not suggest clear, specific linkages between properties and industries on the basis of the finds, although the majority of leatherworking waste comes from the properties in the western half of the site (A–F), while most of the textile working artefacts were associated with F.

It is not until the 15th century (Period III) that industrial structures actually appear on the site and provide the first concrete evidence for specialised, commerical activity, which can also be associated with specific properties. Immediately behind the main structure in tenement C were a series of ovens and unburnt brick structures which have been interpreted as part of a brewing complex and continue in use up to the 17th/18th century (Period V). There is documentary evidence to suggest that brewing was a widespread, but subsidiary occupation for the medieval town household, predominantly carried out by women (*'bratriciatices'*), and without the professional status inferred on the full-time trades such as bakers and butchers (Hilton 1984). The brewing process is comparatively simple, but involves a series of processes. The grain is initially soaked and then left to germinate on the malting floor. Once the starch has converted to sugars, the grain is roasted in ovens, crushed and brewed in hot water. The resulting brew was left to ferment in vessels, commonly stave-built barrels, before consumption.

Brewing on a small scale, as was predominantly the case, could be carried out using common domestic equipment (copper cauldrons, the cooking hearth, stave-built vessels and pottery flagons) and would be almost invisible in the archaeological record. Only where production was on a large enough scale to require separate facilities can the process be more securely identified. At 49–63 Botolph St, Norwich the verification of a late 15th century malthouse was considerably aided by the documented occupation of the tenement owner as a maltbrewer, the contemporary archaeological evidence being a room extension to the back of the property, containing a small hearth, an area of heat blackened tiles, and the post hole

alignment of a possible drying rack (Atkin, Carter and Evans 1985). The brewing process became more visible in the later period, when the building was enlarged, and accommodated a drying area and a series of ovens built into the walls in a similar fashion to structure [1074], phase 16 at Ely.

The documentary data for Forehill is not very helpful here – the tenement in which the oven complex sits, according to the overlay, belonged to a John Plomer in the early 15th century, who is recorded as a butcher.[26] He may or may not have lived here however, as he owned several other properties and given the lack of clear archaeological evidence from the faunal assemblage, he almost certainly did not operate his business out of this property (see Higbee, above). A 17th century trade token from the site belonged to a John Weatherhead (see above) who was a baker and although somewhat late, may suggest a bakery rather than brewery. However, it may not be coincidental that the Forehill Brewery, founded sometime in the mid-late 19th century, occupied part of the site in its latter phases, so the interpretation must remain ambiguous. The only other evidence of industrial activity is a smithy which occurs in the 17th/18th century in property G, identified through smithying waste.

In summary, the evidence from the archaeological data on the use of the properties suggests a complex picture; while industrial activity in the form of textile production and leatherworking appears from the earliest period, there is little to suggest it is anything but domestic in scale and consumption. It is not until the 15th century that a more specialized commercial enterprise emerges, probably a brewery. However, this does not mean that the whole site was linked to such activities, nor that the site shifted from a domestic to commercial status – such divisions are peculiarly modern (see below). People were still living and carrying out everyday domestic activities within the tenements, as the archaeological data suggest, and indeed this raises an important question concerning the status of the occupants of these tenements. Is there any link between the development of specialised, commercial enterprises such as the brewery, and the economic and social status of a street such as Forehill?

Wealth and Status along Forehill

Documentary research reveals that from the 15th century, Forehill was occupied by, or at least properties were held by, a mixture of traders and professional people as well as some minor gentry, a pattern which seems to have persisted well into the 19th century on the basis of town directories and census returns.[27] It was not until the 20th century that residential and commercial space in towns started to split, with the rise of suburbia and the transformation of town centres into a zone dominated by business and retail. While some of the smaller scale tradesmen and families may have continued to live above their premises, this has become less and less common, especially since the 1960s with a massive change in the nature of these commercial enterprises (eg the rise of the supermarket).

Given such a mixed composition along a town street such as Forehill for most of its history, how might this have affected the status of its occupants? Again, until the 19th century, archaeological evidence provides the main source of information, chiefly in terms of the environmental data for diet. Taking the main faunal record first (see Table 4 in Higbee, above), there is a clear ascent in both the numbers and diversity of meat sources, peaking in Period II, as observed in the specialist report. This kind of broad and rich meat base to the diet is probably indicative of increasing socio-economic status by the occupants of Forehill, indeed among the wild fowl was crane, a particularly expensive bird. However, it is also interesting to note that diversity, in itself, is not necessarily associated with high status, for the trend after Period II (ie from the 15th century onwards), is toward decreasing overall numbers but increasing variability, especially at the expense of the main domesticates (beef, lamb/mutton and pork). This particularly kicks in with Period IV, that is from the 16th century (Fig. 27).

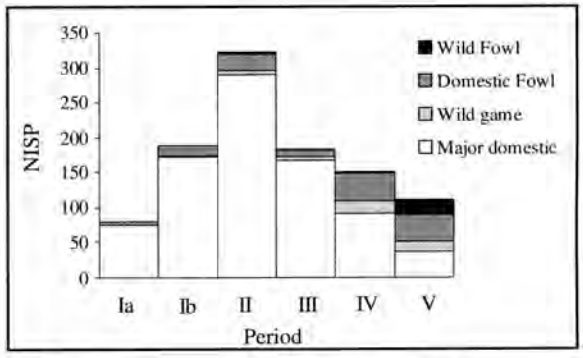

Figure 27. *Summary of mammals and birds*

A similar trend is apparent with the aquatic fauna (see Jones, above), Period II clearly representing the peak of the site in terms of dietary intake – both marine and freshwater fish are present in abundance, declining thereafter (Table 8). The only other feature worthy of note is that freshwater fish seems to predominate over marine fish until the latest periods, except for Period II which again, may suggest something of the higher status of the site, or indeed, the economic wealth in general of Ely in the 15th century. The final source of evidence comes from the plant remains (see Stevens, above). Interpretation is more problematic here, especially as in the case of cereals for example, their presence will be largely in the form of the variously processed crop rather than any

Table 8. *Summary of aquatic fauna*
(+ present, ++ frequent, +++ abundant)

	Ia	Ib	II	III	IV	V
Marine	15	6	92	31	20	3
Freshwater	74	0	77	60	9	1
shellfish	+++	+	+++	+	+	-

final product (ie flour). It is interesting to note however that the occurrence of fruits and nuts is most abundant in Period II, suggesting as diverse a plant diet as with meat (Table 9).

Table 9. *Summary of plant remains (+ present, ++ frequent, +++ abundant)*

	Ia	Ib	II	III	IV	V
Cereals	++	++	+	+	+++	-
Legumes	+	-	+	-	++	-
Fruits	+	++	+++	-	+	-
Nuts	+	++	+++	+	+	
Medicinal herbs	+	+	+	-	-	-

Taken together, all three strands of information resoundingly point to a peak in the 14th century in terms of the diet. Such a rich and varied food supply to the occupants of the site suggest that their social and economic status was comparable to other high status residences, a fact borne out by comparison with assemblages from the Bishop's Kitchen (King's School) in Ely (Higbee 1999; see Table 10). In particular, it is worth mentioning the diversity of wild fowl in a later phase from the Bishops Kitchen including lapwing, swan, wood pigeon, snipe, golden plover, wood cock, grey heron, red grouse, godwit and whooping swan. Moreover in the earlier phase, pig played a greater role in the diet (another indicator of high status).

The relatively high status of the Forehill site at this time is further borne out by the documentary data; out of the four tenement holders on the Forehill frontage at the time of the 1416 survey, three of them are multiple tenement holders: John Hunte and John Plomer with four properties each, and Richard Hildresham with two. Although of course they may not have lived on the site, they were reasonably well to do; Plomer and Hildresham both held a reasonably high status profession (as butcher and Clerk to the Privy seal respectively). The general increase in prosperity is additionally marked by the early adoption of new building styles observed on site (see Building Sequence, above) and moreover, it is at the end of this peak period that the most radical building work takes place as properties A and C are amalgamated.

The artefactual remains unfortunately are not so informative of status as the environmental data – domestic and personal items were few in number and not particularly indicative of wealth apart from the 'fede' ring found in property G. The ring is silver gilt and in comparison to the other dress accessories, is a relatively expensive item (Fig. 23.3). Similarly, ceramics reveal little solid information in this regard; apart from a few continental imports in the earliest and latest phases, the majority of the assemblage is local, indeed during the alleged floruit of the site, most of the pottery comes from Ely itself (see Hall, above). This in itself may of course be more broadly indicative of the prosperity of the town at this time, but it tell us little about this part of Forehill. Vessel types are equally unprepossessing, all essentially functional kitchen wares (jars, bowls and jugs).

The 14th century highpoint occurs just before the first, concrete evidence for commercial industry starting up in the tenements and after this point, the collective environmental information suggests a decline in the diet. Indeed, by the 17th century (Period IV), the main protein source may have changed as meat intake (especially of the main domesticates) decreased while cereals and legumes (beans and peas) increased suggesting a much poorer economic status (see Table 9). It is possible that what we are seeing is a case of people settling along Forehill in the 13th who slowly accumulate a certain wealth and status so that by the start of the 15th century, they move on and rent out their properties to a new wave of artisans and tradespeople. Unlike their predecessors however, these new occupants never seem to attain the same degree of fortune and the status of the street gradually declines.

Looking at documentary evidence for property use along Forehill in the 19th century, it was found that while Forehill as a whole remained fairly prosperous, the eastern end (ie the area of the present site) had declined quite rapidly, 'with the less prestigious businesses and residents occupying the properties closest to the river which had, by this time, become overcrowded and pest-ridden slums' (Went 1999). Indeed, by the mid 19th century, many of the properties had become subdivided, a feature also inferred from the

Table 10. *Comparison of the Forehill faunal assemblage to another contemporary high status site by NISP*

	Ely, Forehill (14th century)	Ely, Bishops Kitchen (14th/15the century)	Ely Forehill (15th/16th century)	Ely, Bishops Kitchen (15th/16th century)
Cattle	114	5	58	28
Sheep/goat	112	15	78	13
Pig	64	85	31	20
Horse	2	1	1	1
Deer	3	0	0	5
Hare/rabbit	2	1	5	24
Chicken	13	3	3	8
Goose	12	1	7	4
Water fowl	2	0	0	11
Wild fowl	0	0	1	3

archaeological remains (see above). This supports the idea that the site had come down in status quite dramatically and on the archaeological evidence, it may be linked to a process that began in the 15th century.

Ely Forehill was, until the recent investigations at Broad Street, the largest open-area excavation to be conducted in Ely. Excavation revealed a deep and complex sequence of deposits, dating from the 11th century and the excavation provided an unprecedented opportunity to investigate a comparatively large area of medieval street frontage and examine aspects of the urbanisation and growth of this part of the town. The relevance of these objectives goes beyond their local setting in defining some aspects of the character of this urban settlement in the context of the small town in medieval England. The genesis of the urban fabric, the relationship of excavated features to documented aspects of ownership and use, and the developments in building construction and use of space at the close of the medieval period are all issues with a regional and national agenda. Although the evidence from Forehill is by no means conclusive, it has provided the best opportunity to date to characterise an area of Ely beyond the precincts of the monastic institution, and has provided a chance to explore the relationship between the documented tenement information and archaeological evidence. The issues of the early development of this part of the city and the evolution of urban buildings in the late medieval period are aspects of the site with a wider relevance to studies of the small town in medieval England and the so-called Age of Transition.

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Endnotes

1. The buried soil was examined by Karen Milek in thin-section and her full analysis can be found in the archive report. In summary, she concluded that subsoils on the site developed under the stable conditions of a forest, and that they experienced a high and periodically fluctuating water table. The first human impact on these soils was the clearance of the forest and the addition of organic matter and occupation debris to the A horizon of the brown forest soil. At some point the soil was disturbed using an implement of some kind, although micromorphological evidence alone is not sufficient to distinguish between disturbance for the purpose agriculture, horticulture or building construction (Milek 1999).

2. This corresponds with Atkin's (1991) type 3 use of clay walling.

3. Several of the possible structural timbers also showed evidence for wet rot. This was always on the under sides of the timbers, not surprisingly. Almost all the timbers from A2/B2 phase 7 showed signs of wet rot (Taylor 1999).

4. Coppiced wood was widely used for wattle panels in buildings and fences at all periods, but there was virtually no evidence for this in the wood from this site. ... Radially split timber is one of the largest groups of wood from the site, ranging from chunky beams to quite thin planks. Only one piece of tangentially split oak was recorded from the site ([1260] phase 7). Various methods of trimming and further shaping wood were also employed including axe or adze trimming: [503](32) phase 24, [1102](6) phase 9, [1115] phase 9, hewing: [1010] phase 9, [1225], and squaring up roundwood: [871] phase 6, [937]a) phase 9, [1071]k) phase 12, [1102](1) phase 9. ... None of the joinery was very sophisticated, and like the timber itself was variable in quality. ... There is a great variety of timber quality and joinery in many of the structures which, with unused joints (such as [1046]), conveys a strong impression that much of the material is reused (Taylor 1999).

5. Throughout the site the quality of the wood, whether the original raw material or subsequent working, is remarkably variable, which suggests that much of it may have been reused. Within structures the variation can be very marked. The timbers identified in the field as structural from F3 phase 9, for example, are of very mixed quality, mostly very poor and they are shaped, some by radial splitting, some by hewing and some by both methods. Even the stakes supporting the timbers are all different: radially split, half split and roundwood. Structures A2/B2 phase 7 similarly had some very poor quality timber and a variety of techniques. The eventual strength, and possibly the aesthetics, of the structure is not necessarily affected by this sort of variation, but it is not ideal. Extensive reuse of timber is likely to be associated with either poverty or problems of supply. Good quality timber would have grown in deep woods or forest and would have been a valuable commodity. The timbers in drain [1071] (alley way M phase 12), for example, were almost certainly reused from a lightweight framework or structure of some kind and some of the timbers are very poor quality: gnarled and knotty. Contrasting this is the reuse of the finely made staves [970] as a drain cover (Taylor 1999).

6. None of the bricks from the site were retained for examination although measurements were taken and occasionally a colour description was noted in the site records. The earliest context where brick is recorded dates from the 14–15th century, but no measurements were taken. Most of the measurements recorded can probably be assigned to between the 14th and early 16th century (Lloyd 1925, 89–100). Dating bricks purely by measurement alone is quite difficult as regional variations need to be taken into account, both in measurements and manufacturing processes. However, generally speaking, brick is longer, broader and thinner during the medieval period. It is likely that these bricks were [originally] being used in walls and hearths (Garside-Neville 1999).

7. Ten fragments of worked stone were recovered and identified by Anthony Baggs. The stone types consisted of Niedermendig Lava, oolitic limestone, clunch and sandstone. The identified worked stone comprised fragments of quern [153], phase 22, coffin [1267] phase 7, door jamb [384] phase 16, flagstone [153] phase 22 and a complete padstone [397] phase 18. Apart from the padstone, all the worked stone appears to have been reused on an ad hoc basis, for constructional support and repairs. Tooling on the sandstone fragment suggests an 18th /19th century date. The remaining fragments could all be medieval (Baggs 1999).

8. A very high proportion of the wood from the site is *Quercus* sp. (oak), which is to be expected, as oak is the best, and most commonly selected building timber. It is also true that oak survives waterlogging well, and most of the wood which did not survive well enough for species identification was probably not oak. This would mean that other species may be under represented because of selective deterioration (Taylor 1999).

9. Only a sample of roof tiles were kept for analysis and of these a variety of different types were identified including: plain peg tiles, ridge tiles, hip tiles and pantiles, in over 20 different fabrics. It is evident that ceramic roof tile, in the form of mostly unglazed peg tile, was deposited in Forehill during the 14th century. It is likely that tile was used on buildings at least as early as the 13th century. The medieval buildings also had glazed, decorated crested ridge tiles. A single hip tile points to the presence of a hipped roof line. (Garside-Neville 1999). A full analysis of the material can be found in her archive report.

10. Some floor tiles were also recovered but not in great numbers or in situ. The fragments of floor tile present are mainly very abraded or burnt, and show signs of reuse. The earliest date that the floor tiles occur is the 14th century. Either they were removed from a nearby high status building for reuse, or perhaps small numbers were used to decorate a small section of floor or hearth. (Garside-Nevile 1999). Nine pieces were submitted to J Stopford of the University of York for further examination, who identified two types, one of which came from the Bawsey kilns (King's Lynn, Norfolk) operating in the mid 14th century (Stopford 1999).

11. Further micromorphological analysis was conducted on these layers in Area A2 by Karen Milek. Again, she suggests that the structures built on Forehill during the medieval period seem to have experienced problems with the high and fluctuating water table, and micromorphological analysis of the floor sediments suggests that floor boards may have been raised over the ground surface in order to improve living conditions. The resulting floor sediments are derived from the range of domestic activities that probably occurred within the structures and the surrounding yards, and appear to have accumulated under the protective cover of the floorboards. Although raised floor boards have not commonly been interpreted on archaeological sites, it is likely that the boards themselves would rarely survive in the archaeological record, and that the distinctive nature of the underlying sediments would be difficult to observe without the high resolution of micromorphological analysis. In addition, it is very likely that such a building technique, if indeed it was practiced at Ely, was a product of exceptional environmental conditions (Milek 1999).

12. A full catalogue of every item of metalwork found is provided in the site archive. A post-medieval lead window came was found during investigations of the site in 1993, while a small collection of metalwork (7 items) including a brass wound wire-headed pin, a lead window came and came tie and iron timber nails were found during work in 1994. 342 items of metalwork were recovered from the excavations at Forehill, Ely undertaken in 1995. It is by far the largest and most interesting assemblage of metalwork to be recovered from Ely in recent years providing useful dating evidence to complement that provided by the ceramic and numismatic finds, evidence of the range of activities being undertaken in the vicinity and an indication of the status of the inhabitants (Mould 1999).

13. Discussion of the jettons, tokens and other similar items is based on verbal and written information from Martin Allen, Museum Asststant, Dept. of Coins and Medals, Fitzwilliam Museum, Cambridge. A note on the seal matrix was provided by John Cherry, Keeper of Medieval and later Antiquities, British Museum. Chris Mycock Museum Assistant, Moyse's Hall Museum, Bury St Edmunds provided written comments on the boy bishop tokens.

14. John Cherry, Keeper of Medieval and later Antiquities, the British Museum.

15. See note 13

16. Boy bishop tokens are peculiar to East Anglia, with a distribution centring on Bury St Edmunds, but widely distributed in Suffolk, with examples from Norfolk and Cambridgeshire, and as far west as St Neots on the Bedfordshire-Cambridgeshire border. Bury was thought the sole source of issue (Caldecott 1936), until examples minted at Ipswich, Sudbury and Ely were identified (Rigold 1975).

    The tokens 'minted' to resemble money: groats or pennies, are presumed to have played a role in the rites and customs of the Boy Bishop or Childe Bishop. The 'reign' of the boy bishop, traditionally lasted from St. Nicholas Day (December 6th) to Childmas or Holy Innocents Day (December 28th), in which time the elected boy performed the functions of a real prelate or abbot. The custom was general to northern Europe, and throughout England, where it is documented from as early as 1299, when Edward I received Vespers from a boy bishop. In Bury the practice existed from at least 1418, although the earliest tokens, dated on numismatic grounds were issued towards the last quarter of the 15th century. In Europe, where the practise seems to have involved a greater element of burlesque, there were attempts at suppression

from 1431 onwards. In England the practise was tolerated until the reforms of the 1540s, revived under Queen Mary and ultimately abolished in the reign of Queen Elizabeth.

17. See the archive report for full data (Higbee 1999).
18. Details on population statistics can be found in the archive report (Higbee 1999).

19. Thanks to John Stewart for his help with the identification of some of the bird species, in particular for confirming identification of the crane bones and providing further mensural data from his own research.

20. Wiltshire 1999.

21. For examples St Mary's Lodge (B Robinson, pers comm), Brays Lane (Alexander and Hunter, forthcoming), The Paddocks (Holton-Krayenbuhl 1988), Walsingham House (Hunter 1991) and Chapel Street (Hinman 1996).

22. Went 1999.

23. Went 1999.

24. The boundaries proposed from the 1416–17 survey, superimposed on the Period II plan, show a surprising correlation with many of the boundaries defined in excavation. There is an almost exact concordance between the width of the Plomer's western tenement of 9ft or 2.74m and the proposed width of buildings A1–4 of 2.70m, based on the boundary between A/C and E at the north end of the site. To the west of Plomers tenement, the massive frontage measurement for Hildresham (18.29m) takes the western boundary far beyond the western edge of excavation, and alleyway L would have subdivided the property. Given this width to the property, it is possible that, following the apparent demise of property B in phase 12, the main dwelling in this property was to the west of L. The eastern boundary of the Hildresham plot equates well with the boundary between properties B and A (later C) which was established as a fence line in phase 3. Moving east the survey gives a combined frontage measurement of 5 perches and 2.5 yards (27.4m) for the second tenement of John Plomer, the two tenements of John Hunte and the tenement of Robert Botery. This measurement added to the widths of alleyways M (1.90), Q (1.50m) and N (1.20m) gives a total length of street frontage of 32m. This figure equals the distance between the western boundary of E, as defined in phase 9 and the eastern side of alleyway N. Under this scheme property E would be the second tenement of John Plomer. The joint ownership by Plomer of the adjacent plots ties in well with the archaeological evidence for the amalgamation of properties C and E, and the structural evidence that standing building no. 47 spanned both tenements in the late 16th century. The boundary between Plomer's eastern plot and the adjacent tenement of John Hunte can be aligned with the western wall of building F5, newly built in the late 15th century. This layout would define alleyway M as a property boundary between the two Hunte tenements, a role it appears to hold in the excavated sequence. The second Hunte tenement could have incorporated properties G and H. Although not much archaeological evidence survived from the period of the survey (Period II), the later evidence suggests there is no boundary between G and H, since the outhouse G3/G5 encroaches into the 'backyard' of H, and G4 and H appear to share a party wall. In this scheme Robert Botery would occupy (J): a tenement fronting Forehill. The boundary between Robert Botery and the tenements of Davy and Hildresham fronting Lisle Lane would be represented by alleyway N: one of the most substantial and enduring boundaries on the site.

25. It is usually assumed that this vineyard pre-dates the plots which were defined by the space left between the vineyard and Forehill but Christine Went has argued against this suggesting the plot may even pre-date the vineyard (Went 1999).

26. We know from the survey that John Plomer was a butcher with a tenement on the east side of Newnham 'towards the old mill of the bishop'. Assuming that there was only one John Plomer in Ely, he also held, in addition to that property, two Forehill tenements and a fourth on the west side of Lisle Lane. There is a fair chance that he also rented one of the lock-up shop in the 'bocherie' (meat market) from the bishop. Of his two Forehill plots, the eastern one was held from the prior and the adjacent western plot from the bishop. The western plot's very narrow frontage – 9 feet – is a viable holding and it appears to have contained a house, but it seems likely that it would have been used in conjunction with the eastern tenement, functioning as one plot. One can only speculate as to whether Plomer actually lived on Forehill – the survey's wording implies that he did – and whether his butchering activities (which may well have included slaughtering) were kept separate from his residence. He cannot have lived or worked in Lisle Lane since his tenement there was vacant but he might have done one or both at the Newnham tenement which, incidentally, was situated next door to the father of another butcher, John Cut. It could be argued that this holding, more conveniently sited for the meat market and the droveway from Turbutsey to Newnham, was his business premises with a sales outlet in the market. His trade as a butcher, appended to the listing of this tenement, may be significant in this respect (Went 1999).

27. Robinson's Directory of Cambridgeshire (1839) notes that No. 45 is occupied by Samuel Dalzell, draper and grocer. By the time of the census of 1881 Mr Dalzell had given way to Moses Macer the shoemaker and another shoemaker, Louis King, continued at the premises until at least 1930 (Blakeman 1985). No. 47 was apparently purely residential in the first half of the 19th century when the 1841 census records its occupant as Rebecca Clark. Forty years later it was the home of John H Clements, printer (Census of 1881) and a photograph of *c.*1912 shows his sign on the building. It was still occupied by the Clements family in 1953 (Blakeman 1985). Ann Cole lived at No. 49 in 1851 when the census return recorded her occupation as 'house owner' meaning, perhaps, that she owned several properties let for rent. From 1881 (Census) until at least 1930 the property was occupied by Nathan Coe, marine store dealer (Blakeman 1985, Went 1999).

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