EAA 62

EXCAVATIONS IN THETFORD by B.K. Davison between 1964 and 1970

East Anglian Archaeology

Field Archaeology Division, Norfolk Museums Service 1993

EAST ANGLIAN ARCHAEOLOGY

Frontispiece: Brandon Road: Building J during excavation, from the south.

Excavations in Thetford by B.K. Davison between 1964 and 1970

by Carolyn Dallas

with contributions from
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Cover Illustration
Kilnyard 1966. Excavating a large storage jar (D16 F80).

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Abbreviations

Ae	copper alloy
Cal. Pat. Rolls	Calendar of Patent Rolls
CUL	Cambridge University Library
DB	Domesday Book
EM	Early Medieval Ware (11th – 12th century)
	Fabric A 11th into 12th century
	Fabric B mid to late 12th century
	Fabric C mid 11th into 12th century
EM/M	Early Medieval/Medieval (12th-early 13th century)
EPM	Early Post-Medieval (16th century)
ES	Early Saxon (5th-7th century)
GMM	Grimston Medieval (13th – 14th century glazed)
GMT	Grimston Thetford-type (late 11th – 12th century)
GRE	Glazed red earthenware (16th – 17th century)
HM	Hedingham Ware
HMD	Handmade
IW	Ipswich-type ware (late 7th – 9th century)
LM	Late Medieval (14th – 15th century)
LM/EPM	Late Medieval/Early Post-Medieval (15th – 16th century)
LMT	Late Medieval Transitional Ware (15th – 16th century)
LS	Late Saxon (10th – early 11th century)
M	Medieval
Med	Medieval
NRO	Norfolk Record Office
OGS	Old Ground Surface
PM	Post-Medieval
R	Roman
RB	Romano-British
SFB	Sunken-featured building
SN	St Neots-type ware (10th – 11th century)
ST	Stamford Ware (10th – 13th century)
TBA	Thetford Borough Archives
TH	Thetford Ware
THS	Thetford Smooth ware
Unident.	unidentified

List of abbreviations used in microfiche

(A)–(C)	EM Fabric types
A1, B3 etc	ST Fabric types
EM	Early Medieval wares
EPM	Early Post-Medieval wares
GMM	Grimston-type Medieval wares
GMT	Grimston Thetford-type wares
HM	Hedingham ware
HMD	Handmade pottery
IW	Ipswich-type ware
LM	Late Medieval wares
LS	Late Saxon
M	Medieval wares
PM	Post-Medieval wares
R	Roman pottery
SF	Small find
SN	St Neots-type ware
ST	Stamford ware
T	Sherd total
TH	Thetford ware
V	vessel estimate
?	Not known

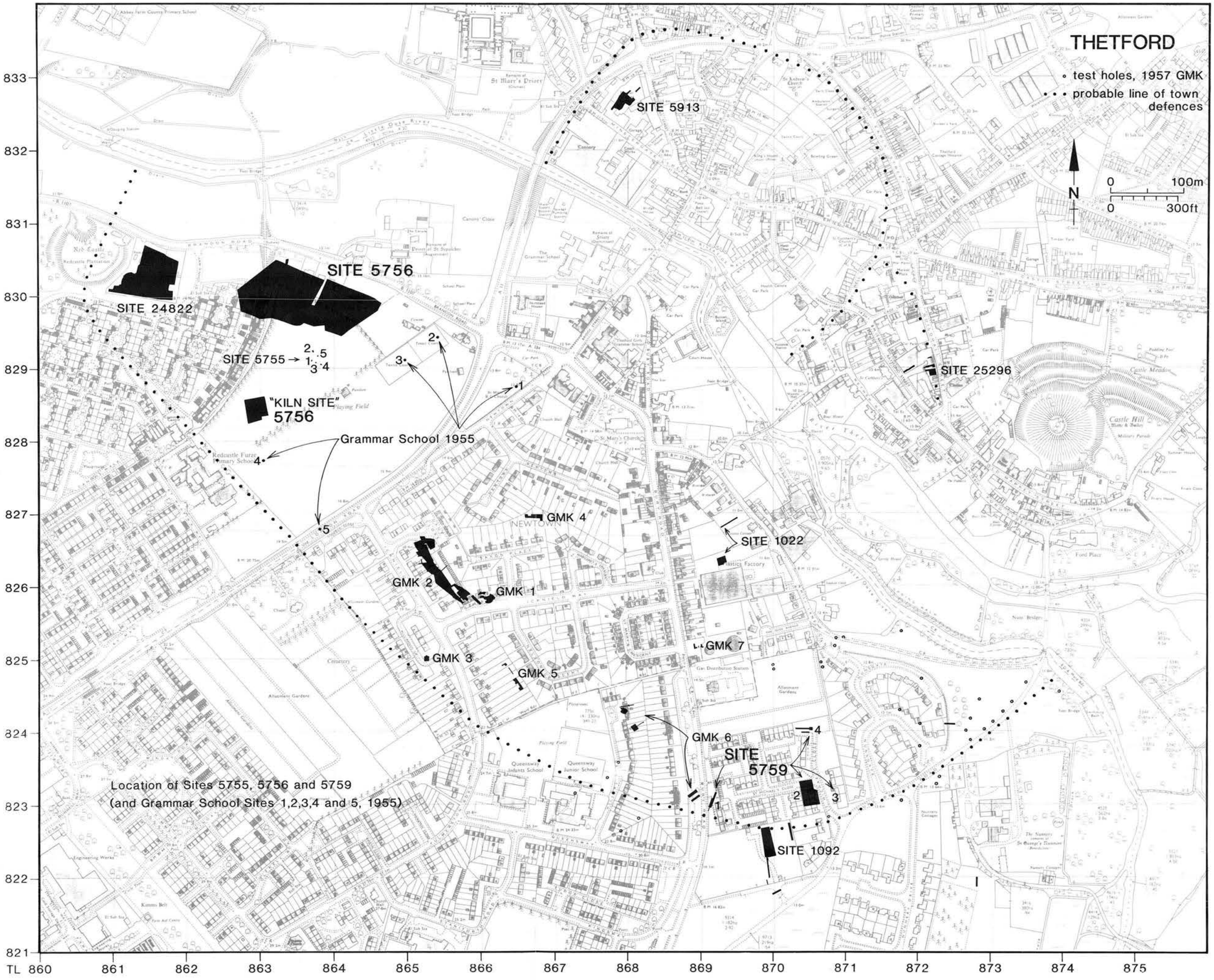


Figure 2 Map of Thetford with underlay based on O.S. 1:2500 maps Crown Copyright Reserved. Excavations by G.M. Knocker are designated GMK. Sites 5755, 5756, 5759, 1022 and 1092 are County Sites and Monuments Record numbers. Scale 1:5000.

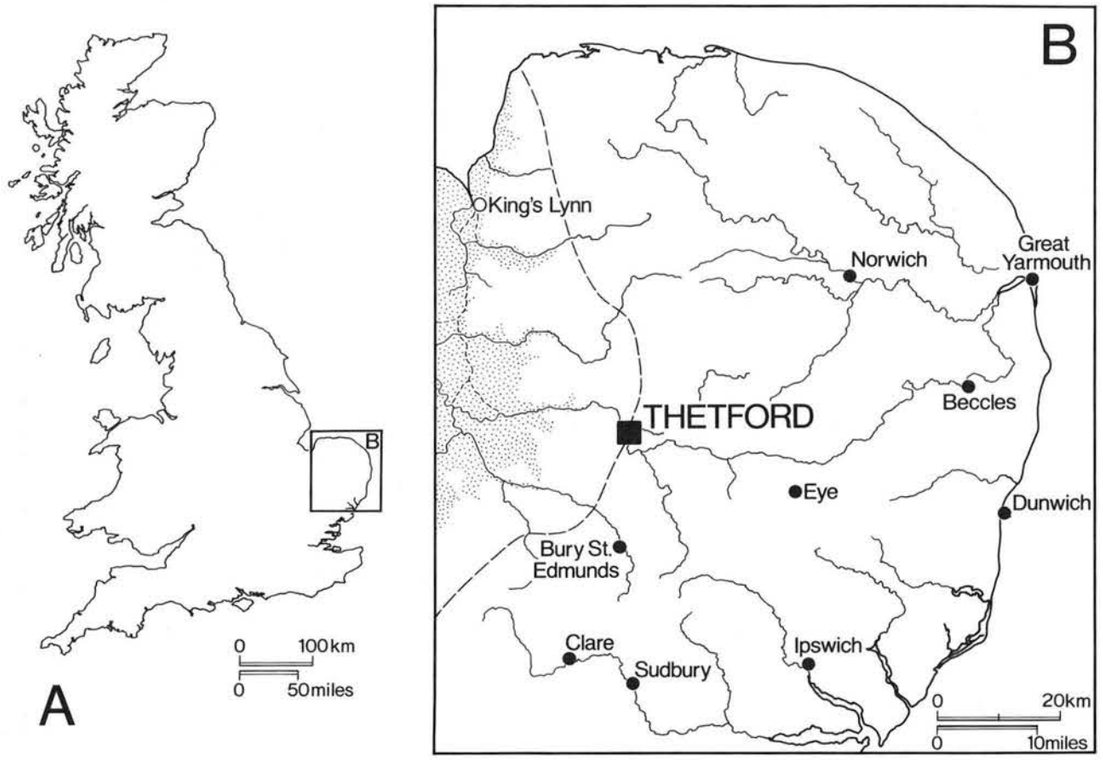


Figure 1 Location maps. B shows: Domesday Book boroughs; King's Lynn; the Icknield Way; the Fen edge; the original course of the Great Ouse River (after Darby 1974).

Part I
General Introduction

Anglo-Saxon and medieval Thetford developed on the Icknield Way at a fordable point at the confluence of the rivers Thet and Little Ouse (Fig.1B) which then connected with the Great Ouse and the Nene, reaching the coast near Wisbech. Therefore, as well as being situated on a major north-to-south route, there was access by water to the Fens, the Wash, and the North Sea. The position of Thetford near the edge of the Fens also provided a depot for east-to-west trade from across the Fens into the heart of East Anglia. Such a dominant position suggests origins in military considerations, trade, and communications.

Although there are some prehistoric finds in the area, the present town has so far not produced major evidence earlier than the Iron Age. Thetford Castle seems to have been an Iron Age fort reused in the Norman period (Green and Clarke 1963), and a site occupied from the Late Iron Age to the fourth century AD has been excavated on Fison Way at Gallows Hill north of the present town (Gregory 1992). Evidence of unstratified finds suggests Roman period occupation on the north river bank opposite Red Castle, and Early and Middle Saxon settlements lay on the south bank in that area (Knocker 1967).

Entries in the Anglo-Saxon Chronicle could indicate that an important base for the Vikings was established at Thetford (see below, Documentary Evidence) and the continuous history of the town is usually taken to begin in this period, in the later ninth century. There was a mint here by at least the mid-tenth century, and for a brief period in the late eleventh century Thetford was the seat of a bishopric. The importance of the town in the tenth and eleventh centuries is attested archaeologically by the extent of the defended area on the south bank (Fig.2), of which some of the boundary remains visible on the north-west side of London Road, by the excavation and observations of Guy Knocker within this area (Rogerson and Dallas 1984), and by the possible Late Saxon defences on the north bank. The south bank area was gradually abandoned after the twelfth century (see below, Documentary Evidence) and became little more than pasture by the sixteenth century. The building of new houses on the south bank began in 1912, and continued intermittently with large-scale post-war redevelopment as part of the London County Council's 'overspill' programme. No archaeological work was undertaken until T.C. Lethbridge and Group-Captain G.M. Knocker in 1947 recognised the significance of the pottery which had been found there and realised the potential of this still largely undisturbed area for the study of a large Late Saxon town, unhindered by roads and standing buildings (Rogerson and Dallas 1984, 2). Knocker carried out excavations and observations from 1948 to 1960 (Knocker and Hughes 1950 a and b; Dunning 1949; Knocker 1967; Rogerson and Dallas 1984).

Within a few years, little of the area remained available for archaeological exploration, and when Thetford Borough Council and London County Council announced plans for building further estates, the opportunity was seized to excavate the last remaining area of any great extent in 1964–6 (Davison 1967). An area south of Brandon Road (Fig.2, Site 5756) was surveyed by the electronic devices available and an area of some three acres was examined (Wilson and Hurst 1965, 173; Wilson and Hurst 1966, 172–3; Davison 1967; Part II below). Evidence of pottery kilns resulted in a separate trench to the south containing six related Late Saxon pottery kilns (Davison 1967; Part III below). Both of these sites remain unique in British archaeology (1987). In 1969–70, further excavations by Brian Davison in the south-east part of the town revealed the complete plan of a pre-Conquest timber church which was replaced in stone (Wilson and Moorhouse 1971, 130–1; Part IV below).

A few other, smaller, excavations have also taken place in Thetford on both south and north banks (see Green and Clarke 1963; Dunmore with Carr 1976; Hare 1979; Rogerson and Dallas 1984; Davies 1991, and Mackay 1957, as well as some trenching by the Thetford Grammar School (Appendix).

Gardens and playing fields are now the only open ground within the southern defences which remain undisturbed by modern activity, and the chance is most unlikely to come again for major excavations such as those described below. The sites remain of not only national, but European, importance.

Part II
Brandon Road 1964–6

I. Summary

In the summers of 1964–6 B.K. Davison undertook three seasons of excavation at Thetford, south of the Little Ouse River, in advance of development. The site chosen for investigation, some three acres in all, had stood open for centuries, and promised to enlarge understanding of this important Late Saxon town, with its probable origins in the submission of East Anglia to the Danes in the late ninth century. Hitherto, knowledge of pre-Conquest Thetford was based largely upon a few scant entries in the Anglo-Saxon Chronicle, the evidence of *Domesday Book* and the excavations carried out by G.M. Knocker. The archaeological evidence of Davison's site indicated that it had been occupied twice before, once in the Roman period and again in the Early Saxon period. About ten round buildings and a few pits represented occupation in the first century AD, when native traditions were still strong. The next period of occupation, the Early Saxon, was represented by four sunken-featured buildings and pits. These were found at the west end of the site and may have been outliers of contemporary occupation at Red Castle, 250 m to the west. After this, the site again lay open until some time in the tenth century when after a period of use of a rural character, this area was densely occupied as part of the sprawling town of Thetford, and within its defensive circuit. The site was now continuously occupied until the sixteenth century. The main interest and aim of the excavation was in the form and character of the Late Saxon town; it was hoped to recover a general plan of a large part of a town of this period, not readily available anywhere else in the country.

Davison's work revealed dense settlement, loosely planned but ranged along well-maintained roads. Buildings, of post-hole construction, were set within individual 'properties', bounded by fences and gullies, which contained many pits. The pits and ditches contained material which hinted at the commerce and industry of Thetford, both in its role as a local port and as home to its inhabitants, estimated at 4000 to 5000 in 1086 (Darby 1971, 141). Sometime in the twelfth century, Thetford's fortunes waned; occupation continued on the north bank but on the excavated site (and elsewhere on the south bank) dense occupation was replaced by a more open pattern of use, possibly industrial, connected with the textile industry, and later agricultural use involving paddocks and corn driers. Even this reduced level of activity came to an abrupt end in the sixteenth century when those parts of Thetford in the hands of religious houses were seized and came into the hand of just one great landowner and were turned over to grazing. Thus the archaeology of Thetford south of the river remained virtually intact until this century.

II. Introduction

In 1964 an area of some seven acres south of Brandon Road was designated for house building by Thetford Borough Council in conjunction with London County Council as part of the scheme to develop Thetford as a small 'New Town'; the development is now part of the Redcastle Furze housing estate. As this was a chance for a large area excavation within the Late Saxon town, the then Ministry of Works arranged for Brian Davison to conduct excavations in advance of development. The area was examined, and some three acres selected which could be excavated over three seasons.

III. Geology

The site lies on the west side of Thetford 20 m south of Brandon Road at a height of 14 m OD. It is 100 m south of the Little Ouse River and situated on river gravels which in turn rest upon solid chalk 4.50 m down. The gravels are mainly flint gravels, probably derived from glacial sand and gravel, and are probably part of the Freckenham Series (Corbett 1973, 67–8).

In the area opened for excavation, yellow sand (30–60 cm deep) capped the gravels in the northern part of the site. In the southern part, the gravels were exposed but contained many sand pockets. The sand subsoil had weathered yellow-red-brown down to a depth of *c.* 15 cm and there were many brown and red stained areas in the gravel.

IV. Aims and Methods of Excavation

The aim of the excavation was to recover a general plan of a large area of the Late Saxon town and record as much of the overall plan as possible. This sometimes resulted in loss of detail, but the larger relationships were more clearly revealed.

Before excavation, the land had been under plough and there was a general surface scatter of pottery.

Before excavation, an area of one hundred and ten 50′ (15.24 m) squares was examined by three proton magnetometers and one resistivity meter, which showed dense disturbance. In April–May 1964 this survey was followed by twenty hand-dug test trenches 10′ (3.04 m) square spread over the entire area available, which revealed evidence of occupation. Work took place over three annual seasons; 29 June–21 August 1964, 28 June–7 August and 30 August–1 October 1965, and 18 April–14 May and 20 June–6 August 1966 – a total of about sixteen weeks in all.

The size and position of the excavated area was determined by the position of boundaries, trees and farm tracks.

A grid of 50′ (15.24 m) squares was laid out (on baseline C11–N11). The grid was given a code system of letters running from south to north (J to Q) and numbers running from west to east (17–29) (Fig.10).

Work began on the north part and continued from north-west to south-east. About eighteen grid squares were dug in 1964, about fifteen in 1965, and nineteen in 1966.

A north-to-south trackway in the area of grid line 23/24 had to be left intact in 1965, but the south part of it was cut through in 1966 (in L23 *etc.*). The area excavated measured overall about 610′ (186 m) east to west and 360′ (110 m) north to south, some 1800 square feet in all.

Topsoil was invariably removed by mechanical excavator, as were the post-medieval layers below, which had accumulated after the main use of the site. Late medieval chalk walls were planned before removal. In some areas any occupation material was removed by hand but usually, as it represented various dates, and features were not visible in it, it was all cleared by machine. The lowest soil, *c.* 6″ (15 cm) of Old Ground Surface (OGS), was nearly always removed by hand. Many of the features cut into this could not be seen, so natural sand and gravel subsoil was exposed and features excavated and recorded from that level. Plans and feature depths were measured from the surface of the natural subsoil, although *c.* 6″ (15 cm) could be added to allow for the OGS. The surfaces of the OGS and natural subsoil were cleaned with trowels and hoes. Sometimes the top *c.* 3″ (7 cm) of the natural was skimmed off because features were difficult to see in areas of natural staining.

The features were given 'F' numbers, beginning with 'F1' in each square. Occasionally neighbouring features, especially post-holes, have 'a' 'b' *etc.* suffixed (*e.g.* F2b) and some larger features have 'A' 'B' *etc.* after the number if they were in the same area or had been misnumbered (*i.e.* the same number used twice). One or two features were simply called 'A'. Sometimes different sections cut across linear features were called 'A' 'B' *etc.* to distinguish the finds from these different places.

Each 50′ grid square was planned at a scale of ½″ – 1′ (1:24) and some features, *e.g.* cellared buildings J and L, were also planned in more detail at 1″ – 1′. About thirty-five sections of features were drawn, and contour plans were made of some of the post-holes in cellared Building J. The features were recorded on index cards. General comments and discussions on relationships and interpretation were recorded in day books and notebooks for each year. The finds were also listed by bag number on the feature cards.

Almost all features, including post-holes, were sectioned, although there was rarely time to excavate many features completely. The deeper features were often not dug beyond about 6′ – 8′ (1.82 – 2.43 m); as well as being very time-consuming, digging below this depth would have required shoring. This method provided some information about nearly all of the features so that their nature, and often date, can be established.

Because the aim was to obtain a general plan of a large area and as no feature showed up well in the OGS whilst major features would be cut through into the underlying natural, the working level was the natural gravel (it is possible that some shallow features cut into the OGS only escaped detection and recording). Only cursory attention was paid to overlying medieval features.

V. Overburden

The overburden in general deepened towards the south, from 1′ – 1′6″ (30 – 45 cm) in grids P and Q to 3′ (91 cm) in grid J. It may be that for some reason the ground surface did not rise in the area to the north, but it is more likely that this is the result of intensive activity on the south side of Brandon Road levelling earlier layers. There was a deposit of mortar debris in the north of the site below the topsoil, in M26, probably building rubble derived from beyond the excavated area. The modern topsoil averaged *c.* 1′ (30 cm) deep; plough damage was observed in the extreme north of the site (in grid areas P and Q) where the occupation layers and OGS had been ploughed away and the natural disturbed. South of this the deeper overburden restricted plough damage and the post-medieval deposits were intact.

Beneath the modern topsoil and above the remains of the late medieval walls there was a light brown wind-blown sand which covered the site after its abandonment (in *c.* 1550). Beneath this soil, and over the latest road (Road D), was a layer of dark soil *c.* 6″ – 9″ (15 – 22 cm) deep in places (*e.g.* in K24) which must have accumulated after the roads had gone out of use. Late medieval chalk wall-footings lay beneath these two layers, in K24, L23 – 5, and M23 – 4 (see below).

The notebooks mention 'occupation debris' immediately above the OGS over much of the 1965 – 6 excavations (it had been mostly ploughed off in the 1964 area), particularly in J24 – 5, K25 – 7, L21 – 4, M18 – 25 and N25. It varied in depth from 3″ (7 cm) to 12″ (30 cm) and would seem to have been of all periods in an indistinguishable jumble.

An 'Old Ground Surface' was clearly present beneath all of the occupation. It was called layer (g) where it appeared beneath the east to west Road A (Fig.51); here, and on most of the site, it was 6″ (15 cm) thick (although it ranged from 4″ to 9″ (10 – 22 cm) in depth). It is described (layer (g)) as 'a brown gritty soil which merges gradually into the top of the gravel subsoil', 'dark sandy soil', 'a dirty sandy soil', 'brown sand' and 'humified' or 'humic'. In N18 it was observed as 'level and horizontal'.

Some section drawings (50 – 2, 72 – 4, 76 – 7, 84, 88 – 93, 95, 98, 108 – 9, 112) indicate the topsoil, although it was machined off; it has been restored on the basis of recorded levels, baulks and remaining sections.

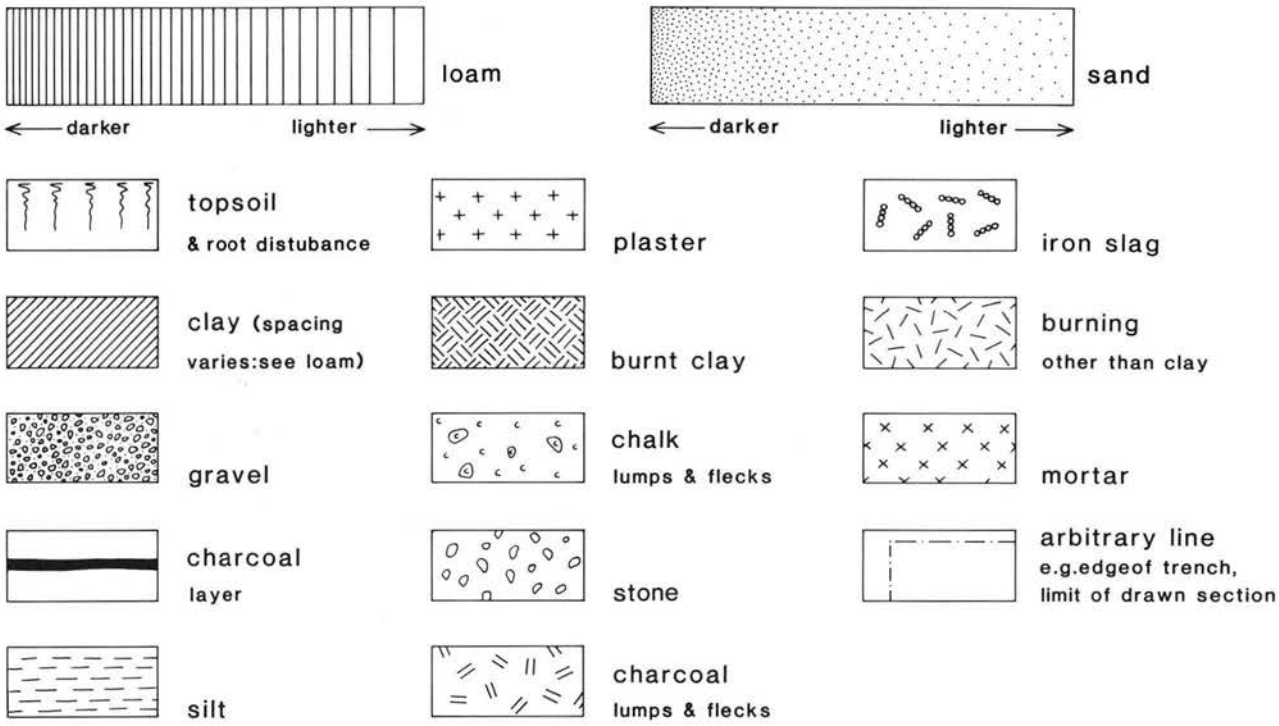
VI. Site Phasing

The hundreds of large features on this site have been phased with varying degrees of certainty, and isolated post-holes with no finds are left unphased unless they can be associated with features, especially buildings.

Some features could be phased by their character, *e.g.* the round buildings (Period I), the SFBs (Period II), and the features made of chalk and mortar (medieval and later, Periods V – VII), but the many pits, gullies, and post-holes were not intrinsically datable. Little or no pattern seemed obvious from their character, size, shape or filling. These features have mostly been phased by (a) finds, (b) stratigraphy, and (c) position.

a) Finds were surprisingly few for such a vast area and from many features no finds were retrieved. In features with finds (only *c.* 600, *i.e.* 12%), the evidence was often ambiguous as many had later material slumped into the top or lying on the surface. In most cases the 'top' finds bags were well labelled but this was not always so, and shallow features in particular are very difficult to date for this reason. Therefore the major features with finds were firstly divided into those which were more likely to have contained uncontaminated groups, so that the

PLANS AND SECTIONS



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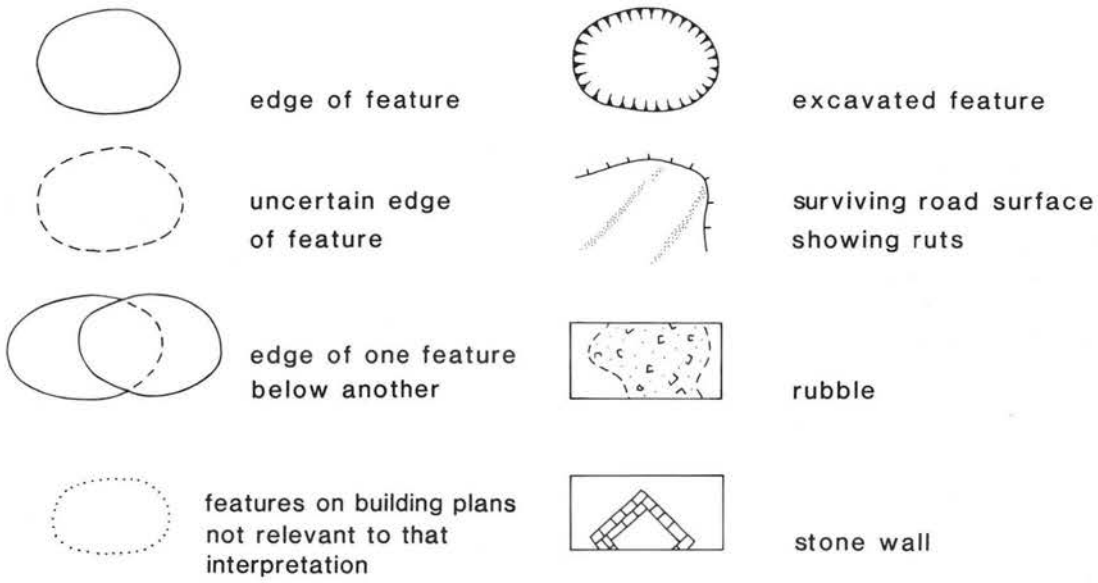


Figure 3 Key to plan and section conventions.

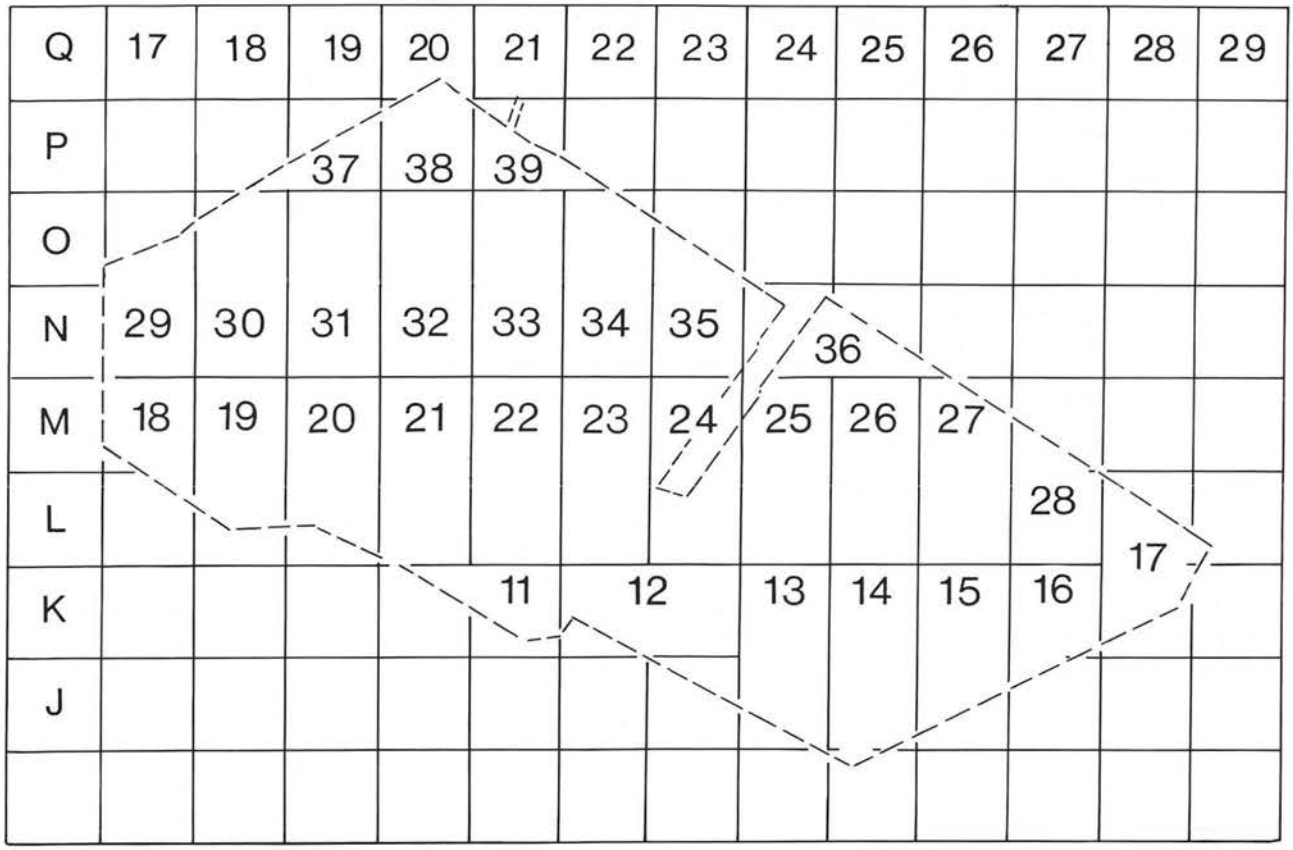


Figure 10 Key to layout of grid plans (in microfiche), showing figure numbers. Not to scale.

significance of later material was unambiguous. Moreover, some small sherds cannot be positively identified and some finds have been muddled or lost since the excavation. Finds are considered in conjunction with stratigraphy (b) below, as residual material is difficult to identify as such. Finds, of course, only provide a *terminus post quem* for the features which contain them.

b) Stratigraphy was often obscure as so many features were filled with 'dark sandy soil' which was often homogeneous and rarely distinctive; attempts to ascertain feature relationships were thus usually inconclusive. The relationships shown on the grid plans (Figs 11–39) follow the site feature cards and are as objective as possible. The period plans are interpretive (Figs 4–9).

c) The relative positions of features were considered after (a) and (b) and were sometimes significant. Coherent patterns of alignments or pits in groups do seem to be composed of features of the same date. Also, the position of some features may refine datings, *e.g.* pits were unlikely to have been dug inside buildings and cannot be contemporary. The following phasing has been used:

Period I Roman
Period II Early Saxon (fifth to seventh century)
Period III Late Saxon (tenth to early eleventh century) } Saxo-Norman
Period IV Early Medieval (eleventh to twelfth century) } Saxo-Norman
Period V Medieval (thirteenth to fourteenth century)
Period VI Late Medieval (late fourteenth to late fifteenth century)
Period VII Late Medieval/Early Post-Medieval (late fifteenth to sixteenth century)
Unphased

VII. The Report

Dealing with such a large number of features of various or often doubtful dates is complicated and unwieldy, and scant attention is given here to unphased features. Most recorded occupation and activity occurred in the Saxo-Norman period, the object of special interest and greatest archaeological effort.

The division into Period III ('LS') and Period IV ('EM') is somewhat artificial but has been employed in an effort to distinguish earlier (tenth to early eleventh century) and later (eleventh into twelfth century) features within the Saxo-Norman occupation. In some areas activity spanned more than one period. Where it is not clear whether the features were replacements of each other or not, some have been split into different periods (*e.g.* in area K25 east of the north-to-south road, and area J26–K26 where pit digging continued over 300–400 years). To relate features to each other on an open plan site is extremely difficult, but some possibilities may be suggested.

Except for the multi-period road sequence, dealt with first, the periods follow in order. Certain types of features have been grouped together, *i.e.* gullies, pits, hearths, wells *etc.*, roughly in chronological order and by areas or groups. There is a discussion of each period, and details of features and finds are included only where necessary.

Feature lists have been included on microfiche and individual details can be seen there.

Many features, especially gullies, overlapped two or more grid squares, and have more than one feature number in the site records. In the text this is represented by an oblique stroke between the numbers (*e.g.* L17 F7/M17 F112/M18 F29 refers to one feature, a gully). For this reason, and to simplify the grouping together of some features, gullies are here numbered G1 *etc.*

Features are catalogued under the earliest letter and number, *i.e.* J before K, 17 before 18 *etc.* The south and west ends of features should therefore be checked to find overlapping features in the microfiche features lists.

Features which were not excavated to bottom have been described as 'over x feet' deep. The terms 'soil' and 'earth' have been retained from site records, but 'loam' was not as it would indicate the unlikely presence of clay; these soils were probably humic sand. Feature numbers and details can be found on Figs 11–39 which contain plans of all grid squares at 1:120 with north at the top. These are arranged from west to east and south to north, with some inconsistencies owing to the irregular shape of the site: a key to these figures can be found on Fig.10, and to the symbols used on Fig.3.

On the original site plans, the numbers of some features were omitted; these have not been given new numbers on these figures as confusion would arise if the original numbers were discovered, and no relevant information can be recovered about them.

On the figures, broken lines and open hachures represent features cut by, or of uncertain relationship to, others. The limits, or even existence, of some features were uncertain as the subsoil contained many stains and root-holes, and these features also have been left without solid lines, *e.g.* N20 F101 Fig.32.

Road B is on the plans with earlier Road A visible beneath it in some places, *e.g.* in J25. Stone-by-stone drawing of the road surface was done in sample areas only (Fig.53). The grid plan figures show the edges of the surviving surface metalling and cart ruts only where planned. In K25 these cart or wheel ruts were sufficiently deep to penetrate the underlying road make-up but elsewhere only indented the patches of surviving surface metalling.

Many features cannot be dated, and the period plans show uncertain attributions with dashed lines: therefore some features appear on more than one period plan. The period plans remain interpretive and include various degrees of certainty. Some patterns and trends may be discerned which may lead to further (less certain) judgements and allow general comments on the arrangements of the settlement within imprecise time spans. Stratigraphical relations across the site often cannot be demonstrated; the period plans do not necessarily represent close contemporaneity and some plans may include both contemporary and successive features. These uncertainties have determined the layout of the report and presentation of the evidence. The Site Atlas and Feature List are to be found in microfiche.

Periods I and II do not represent continuous occupation and therefore remain relatively discrete: they are dealt with first. Periods III–VII were probably continuous and the features are considered by type rather than by period. This is followed by general discussions of each of Periods III–VII and by some general comments at the end. The parts of the report are:

Period I
Period II
Periods III–VII:
- Roads
- Gullies and fences
- Post-holes and buildings
- Anglo-Norman buildings
- Chalk and flint wall-footings
- Pits, wells and tanks
- Culvert
- Hearths
- Pottery kiln
- Drying ovens
- Burials

Periods III–VII: discussion
General Discussion and Conclusions

The phasing: a further note

The difficulty of separating the excavated features and their contents into clearly divided Periods which accurately represent their sequence and associations led to the phasing being heavily influenced by the pottery assemblages. Thus the Saxo-Norman occupation is divided into Periods III and IV, their division (somewhat artificial) occurring in the early eleventh century. However, the major change in the appearance of the site, the laying of the roads and the establishment of dense occupation along parts of them occurred a little earlier *c.* 1000. Thus the Period III and IV plans both show the roads, and the Period III plan shows dense occupation. The phasing may be tentatively refined as follows:

Period III (early)	Possibly kiln N19 F7 of mid-tenth-century date
Period III	Later tenth-century features
Period III (late)	Laying out of the roads and establishment of associated buildings. *c.* AD 1000
Period IV	Early eleventh to twelth-century occupation

The Period III plan (Fig.7) has features of all Period III phases and C/D of Building B/C/D, which may belong entirely to Period IV.

VIII. Description

Period I (Roman)

Occupation in the mid-first century AD was indicated by two pits (O23 F14 and M17 F13) and several round buildings. There were many pits on the site with no finds and some of these may be of this period: such pits in the vicinity of the round buildings have been indicated on the Period I plan (Fig.6). The profusion of post-holes and post-pits of different dates on this site makes interpretation difficult (Fig.4), but posts placed in arcs or circles suggest at least ten round buildings. No features produced any dating evidence. In at least five instances (R3, R4, R5, R6, R8) arcs of posts existed with little or no visible evidence for corresponding sides; the reason for this is not apparent, possibly posts were deeper on one side. The overlap of R4 and R5 indicates rebuilding, but the scarcity of finds makes dating difficult. Less than thirty Roman sherds were found in the excavations, scattered widely over the site and of various dates: only half a dozen are clearly early. All that can safely be concluded from the known Roman features is that there was mid-first-century AD occupation, which perhaps continued north of the excavated area. This was contemporary with the site at Gallows Hill (north of the present town of Thetford), whereas there is no convincing evidence of occupation at this period at the Thetford Castle fort (Fig.2) (inf. Tony Gregory).

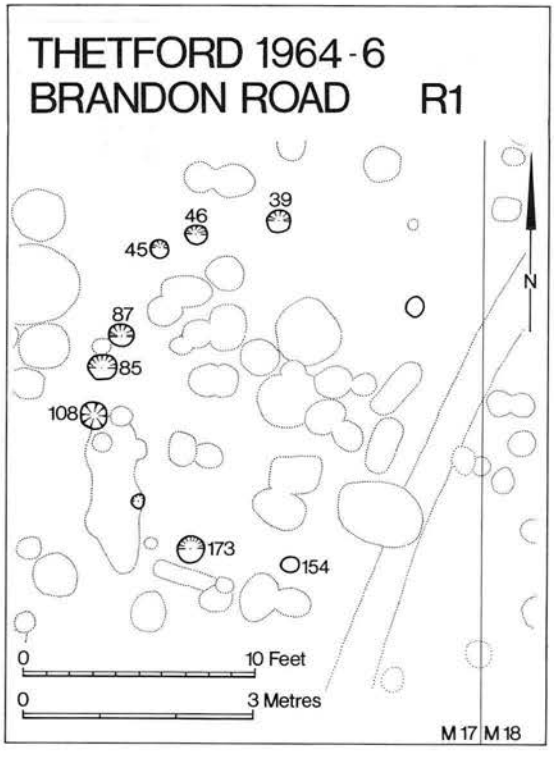


Figure 40 Brandon Road, Round Building R1. Scale 1:100.

Pits

Two pits (O23 F14 and M17 F13) contained mid-first-century pottery; wheelmade Claudio-Neronian pottery only, with many sherds from the same vessels (Fig.136, Nos 1–3). Both pits were sub-rectangular, large and shallow, 1′10″ (55 cm) and 1′3″ (38 cm). O23 F14 was filled with layers of sandy soil but M17 F13 contained an homogeneous soil.

Round buildings

(Figs 40–9)

R1: M17 (Fig.40). Possible building, rather irregular. Internal diameter *c.* 15′ (4.60 m). The post-holes had rounded profiles and were filled with dark to black sandy soil; M17 F106a also contained some yellow clay. The depth of post-holes ranged from 6″ (15 cm) to 1′4″ (40 cm), averaging 1′ (30 cm).

R2: M19, M20, N19, N20 (Fig.41). This was the largest round building, with an internal diameter of *c.* 34′ (10.35 m). The post-holes had rounded profiles. They were all filled with dark sandy soil and three contained grit or pebbles: M20 F47 is described as having packing. Post-holes depths ranged from 8″ to 2′4″ (20–70 cm), averaging 1′ (30 cm): M20 F46 and M20 F47 were both 2′4″ (71 cm) deep; the latter was a double post, and this perhaps marked the position of the entrance.

R3: O19 (Fig.42). Very dubious building, northern arc only. Internal diameter would have been 17′6″ (5.30 m). A SN bodysherd is attributed to post-hole O19 F9 which may not have been associated. O19 F42 may have been a central support although it was not truly central and is described as sloping to the west. Slot-like feature O19 F39 was 1′9″ (53 cm) deep and may not have been associated. The other post-holes ranged in depth from 1′ to 1′5″ (30–43 cm) averaging 1′3″ (38 cm): their profiles varied but their fillings were all 'sand', usually light brown.

R4: O21 (Fig.43). Arc on north side, internal diameter 28′ (8.53 m). Overlapped R5, uncertain sequence. Post-holes or post-pits had rounded profiles, with flattish bottoms in larger examples. Range of post-hole depth was 10″ to 1′2″ (25–35 cm), averaging 1′ (30 cm). Post-holes were all filled with dark sandy soil, occasionally with some pebbles. O21 F18 was a post-pit containing six posts, and O21 F19 was of similar size although individual posts could not be detected as they were not cut more deeply into the bottom of the feature: these perhaps represent the doorway.

R5: N21, O20, O21 (Fig.44). Possible building; an arc of small posts on south-south-east, a possible returning arc opposite. Overlaps with R4, (uncertain relationship), and Period III–IV Building B (the site records note that O20 F18a was possibly earlier than O20 F18 of Building B; this accords with the probable existence of this round building). Internal diameter 27′ (8.23 m). Post-hole profiles varied; all were filled with dark (sandy) soil, (flint? packing in N21 F22, N21 F23, N21 F17, N21 F8). Depths were shallow, and ranged from 9″ to 1′4″ (22–40 cm) averaging 11″ (27 cm).

R6: N21 (Fig.45). An arc on north-west (and some other possible post-holes surviving intermittently?). Internal diameter *c.* 23′ (7.00 m). The posts in the arc were mostly steep-sided and depths ranged from 6″ to 1′1″ (15–33 cm), averaging 11″ (27 cm).

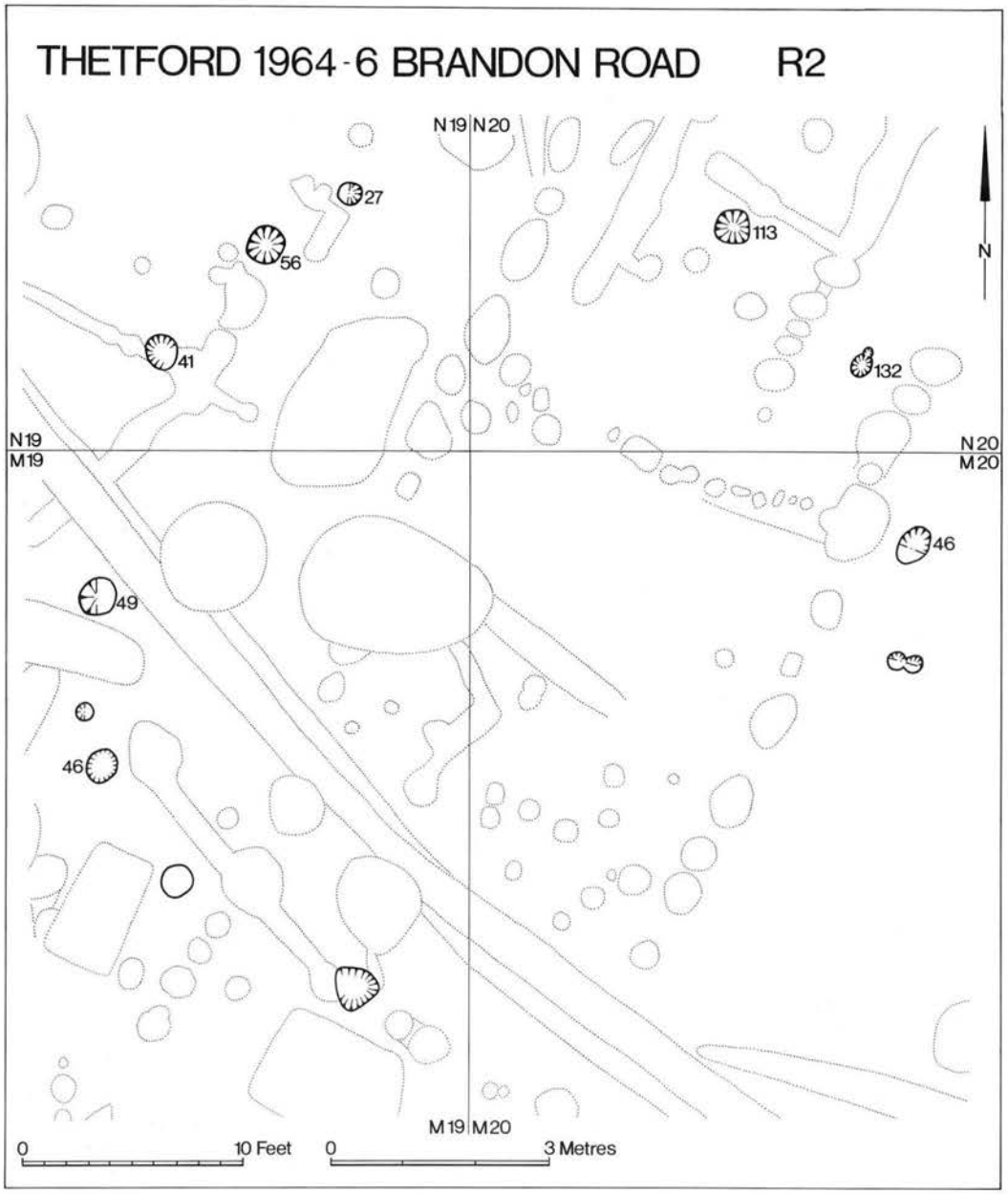


Figure 41 Brandon Road, Round Building R2. Scale 1:100.

R7: N22 (Fig.46). Round building, with fairly evenly spaced posts of similar sizes. Internal diameter 16′6″ (5.00 m). Probable entrance on south-east (N22 F27 and N22 F64 were both double posts with a possible post-pit (no number and no information) between them). The possible extra reinforcing of N22 F65b (same shape, depth and filling as N22 F65a) was perhaps related to this large ?doorway. The post-holes all had steep or vertical sides and dark brown filling. Except for N22 F67 and N22 F57, all had (large) flint and 'stone' packing (mentioned as being 'at bottom' in N22 F72). N22 F15 and N22 F57 may have been associated with a fenceline rather than this structure (Fig.34).

R8: N23, O23 (Fig.47). Round building, mentioned in the interim report (Davison 1967, 191). Internal diameter 24′ (7.31 m). N23 F9 a curving slot with ?posts within; post-holes O23 F45–F47 were 'linked by a humic stain 1″ deep'. N23 F9 seemed to have contained post-holes of various sizes and depths (from 10″ to 1′9″ (25–53 cm)) and was itself filled with dark soil with pockets of yellow sand, strongly mixed with small gravel, pebbles and large flints. The northern arc included stakeholes (for wattle and daub panels?). Information only survives for O23 F44 which had a rounded profile filled with dark pebbly earth: it was 1′ (30 cm) deep. O23 F20 was possibly a post-pit for door post(s): it was 1′4″ (40 cm) deep, steep-sided, and filled with brown soil and possible packing.

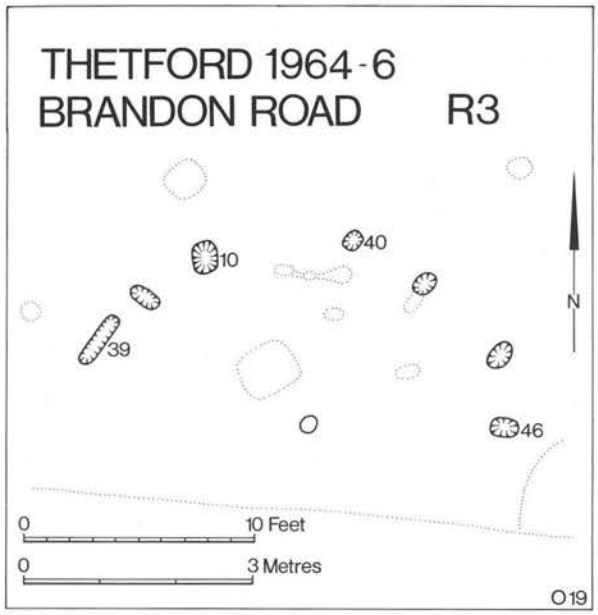


Figure 42 Brandon Road, Round Building R3. Scale 1:100.

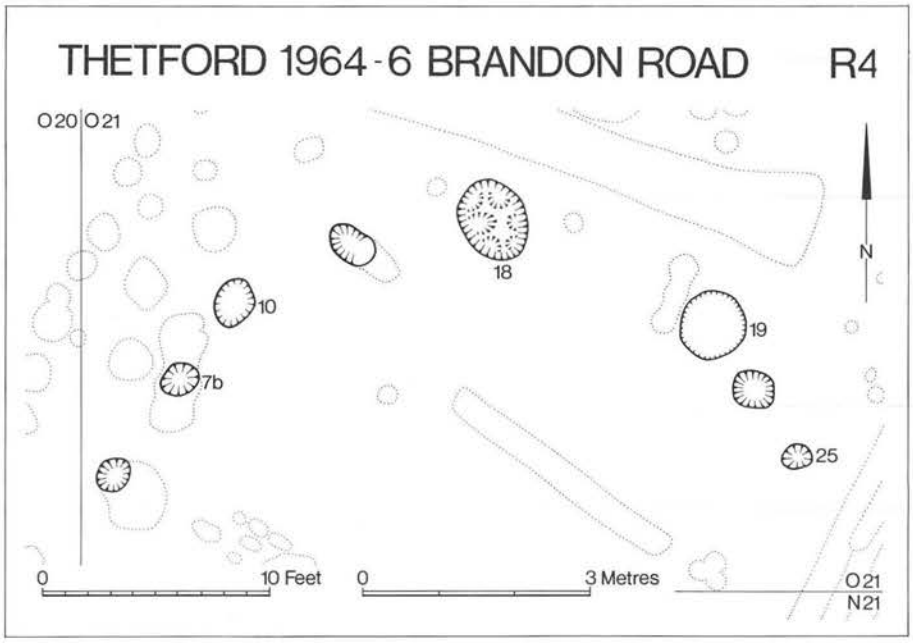


Figure 43 Brandon Road, Round Building R4. Scale 1:100.

R9: L25, M25, M26 (Fig.48). Suggested by an arc on the south-west. Internal diameter *c.* 18′6″ (5.60 m). All posts were small (dimensions between 6″ and 1′ (15–30 cm) with steep or vertical sides. Depths ranged from 10″ to 1′5″ (25–43 cm) (averaging 1′ (30 cm)) with the deepest being found on the north-west (entrance not apparent).

R10: L25 (Fig.49). Possible building, irregular, with posts or post-pits of different sizes. Internal diameter of *c.* 20′ (6.10 m). The posts vary in profile but all were filled with dark soil which often contained gravel or grit. Flints were found in L25 F81c, F43 and F45: F43 had 'north west and south east sides lined with flint', possibly a door post.

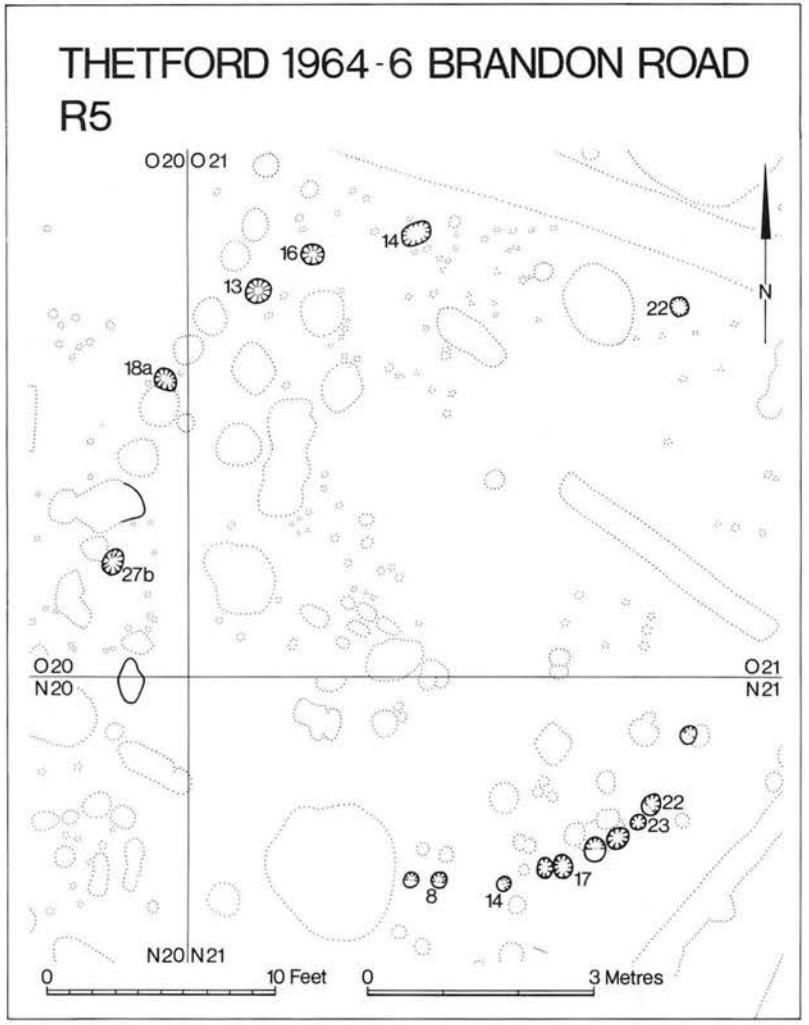


Figure 44 Brandon Road, Round Building R5. Scale 1:100.

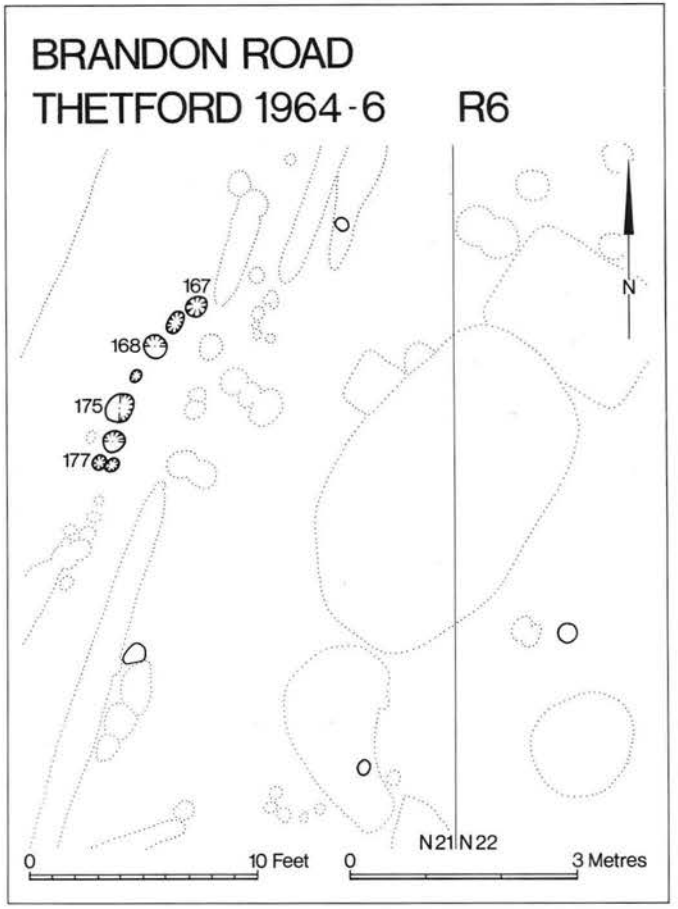


Figure 45 Brandon Road, Round Building R6. Scale 1:100.

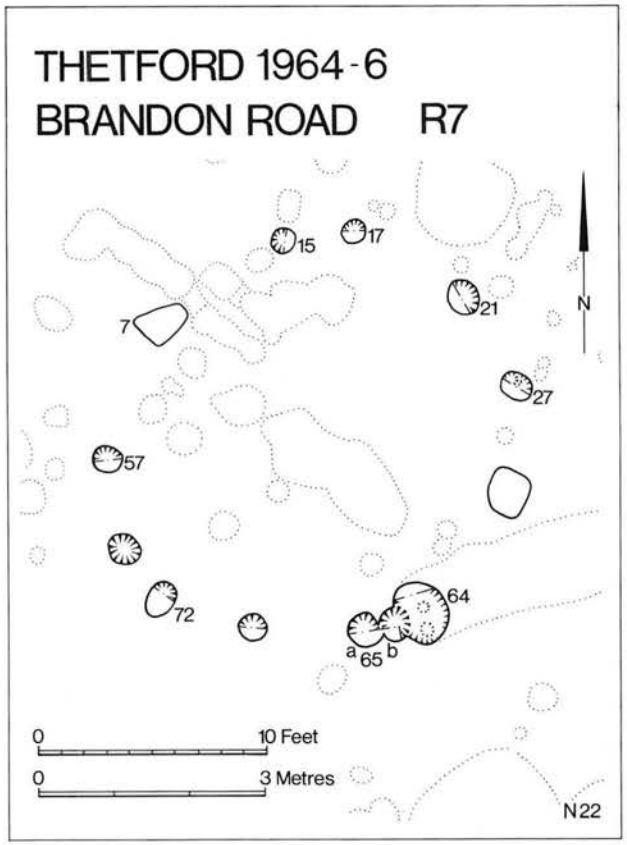


Figure 46 Brandon Road, Round Building R7. Scale 1:100.

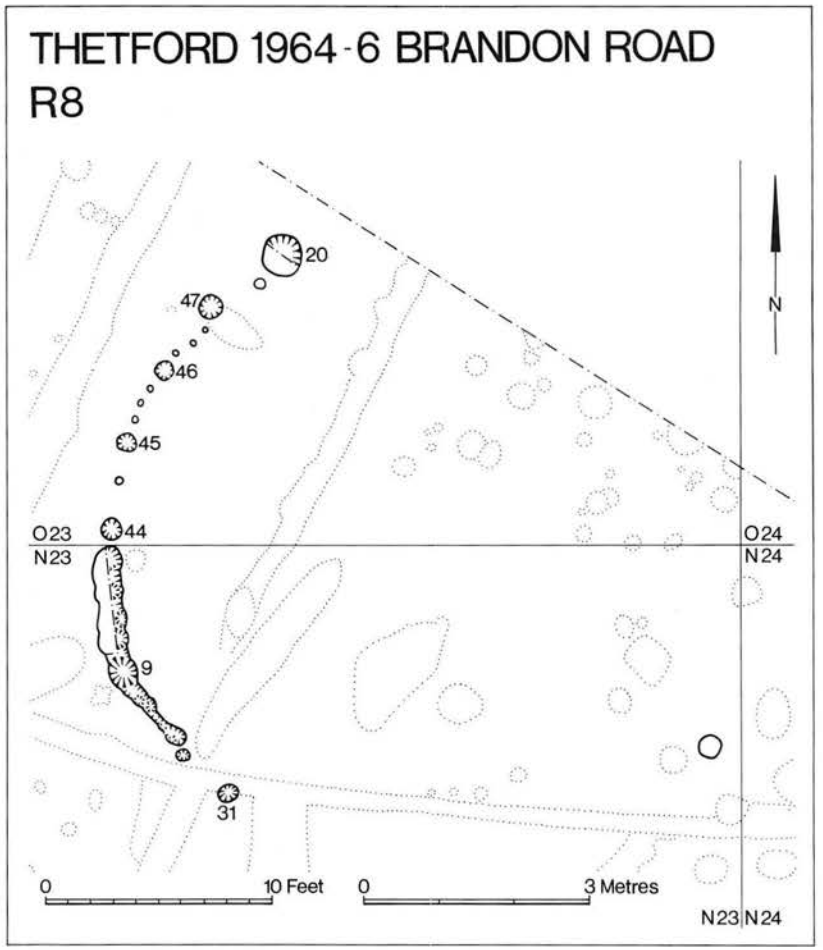


Figure 47 Brandon Road, Round Building R8. Scale 1:100.

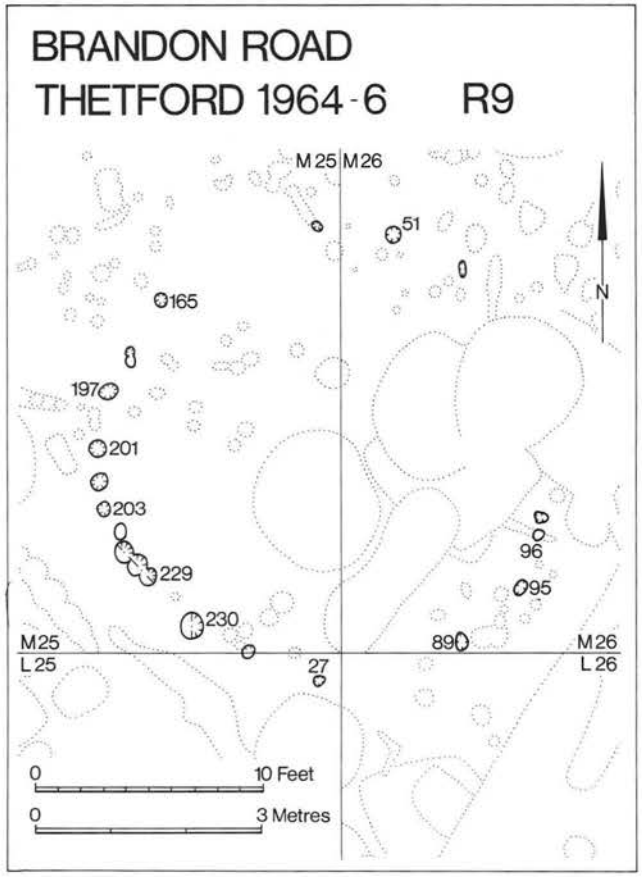


Figure 48 Brandon Road, Round Building R9. Scale 1:100.

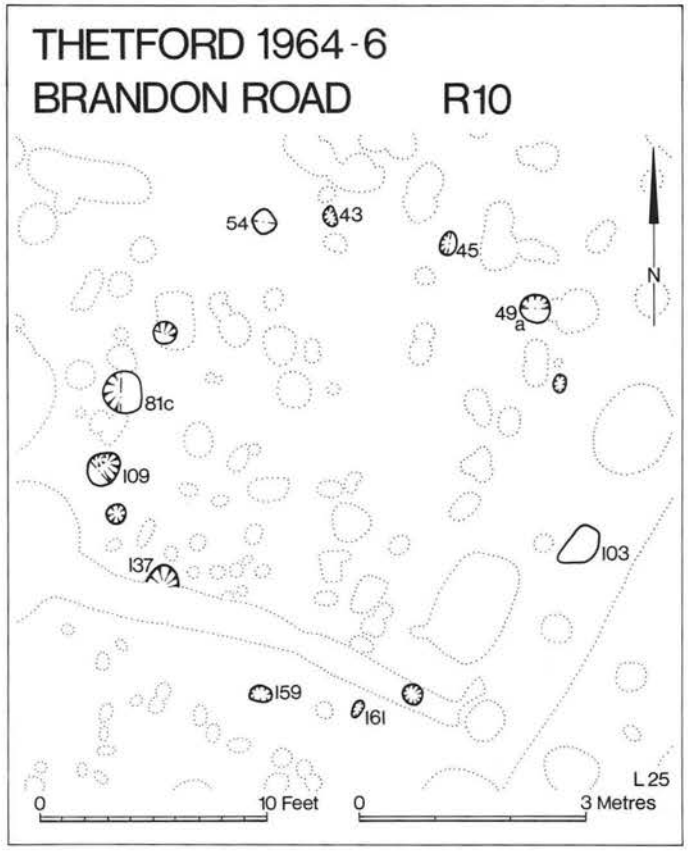


Figure 49 Brandon Road, Round Building R10. Scale 1:100.

Period II Early Saxon (ES)
(Figs 5, 6 and 7)
This period includes possibly four SFBs and at least six pits but no gullies (except perhaps G56 (N22 F62/N23 F8) which ran on a different alignment from Period III–VII features (Figs 7, 34 and 35)). All of the ES features were in the north-west area of the site, clearly the edge of a settlement lying to the north-west, probably that found at Red Castle some 250 m to the west (Fig.3) (Knocker 1967). The evidence of the residual handmade pottery supports this; 87% of it was distributed in grid areas N–P and 17–22, and only 13% in the rest of the site (and some of those sherds could be unusually thick EM and not ES, or even Iron Age). In the 1964 excavations, the SFBs were all of the same type and on the same axis, within an area *c.* 212′ (65.00 m) east to west by 130′ (40.00 m) north to south and ranged from *c.* 20′ (6.00 m) to 140′ (43 m) apart. The pits were possibly a group; except for N18 F34, they form a cluster in area N19 and O19.

No timber halls clearly of Period II were found; Building F, with no finds, remains undated.

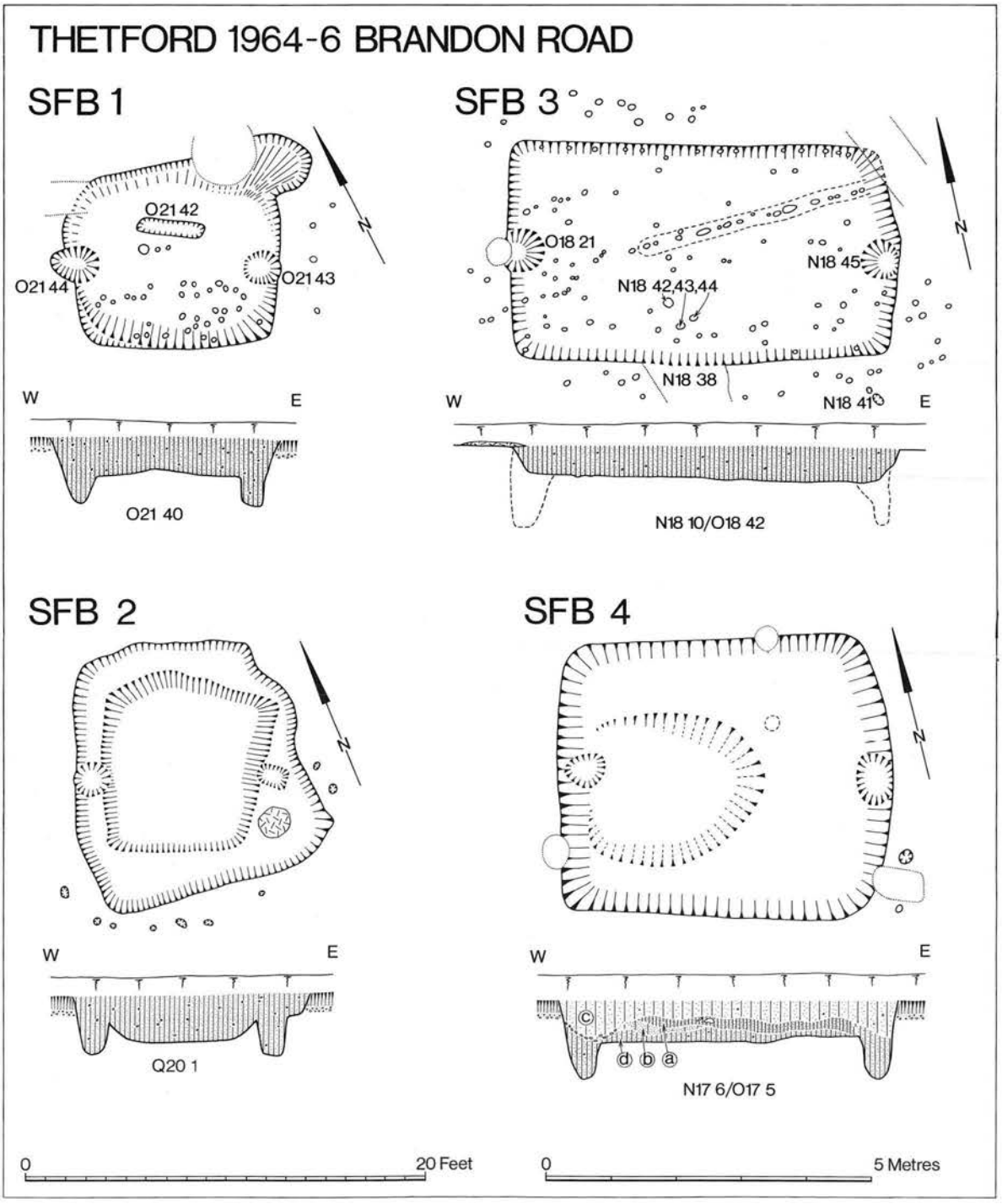


Figure 50 Brandon Road. Period II Sunken-featured Buildings SFB1 (O21 F40); SFB2 (Q20 F1); SFB3 (N18 F10/O18 F42); SFB4 (N17 F6/O17 F5). Scale 1:100.

The ES occupation is difficult to date closely. The lack of obviously early sherds or stamped sherds, like those found at Red Castle (Knocker 1967) suggested the settlement is late in the ES period (sixth to seventh century). It perhaps represents a phase of the expanding Red Castle settlement. The Period II features on this site were abandoned before the introduction of Middle Saxon Ipswich-type ware in the late seventh century, whereas Middle Saxon settlement was found at Red Castle.

Sunken-featured buildings (SFBs)

Four *grubenhäuser*, or SFBs, were found: O21 F40 (SFB1), Q20 F1 (SFB2), N18 F10/O18 F42 (SFB3), N17 F6/O17 F5 (SFB4) (Fig.50). All were subrectangular (although O21 F40 was almost square) of various sizes with their long axes aligned roughly north-west by south-east. O21 F40 had a 9" (22 cm) hollow on the north-east side, perhaps an entrance. N18 F10/O18 F42 may also have had an entrance 'step', represented by N18 F38, a shallow feature whose filling became mixed with subsoil at the bottom and south end, possibly trampling.

The SFBs were cut into the natural between 1'3" (38 cm) and 1'8" (50 cm) deep and had steep or vertical sides. Q20 F1 had a central base or 'floor' area measuring 9' (2.75 m) by 8' (2.40 m) wide by 1'6" (45 cm) deep, not quite on the same alignment as the outer edges, surrounded by a 'bench' 9" (22 cm) deep on which sat a hearth. This SFB was probably associated with stake-holes to the south and east. O21 F40 in its southern half had some internal stake-holes and a possible small slot in its northern part (F42). N18 F10/O18 F42 had over 140 stake-holes in and around it, including a possible line set in a sand-filled groove coming from the north-east corner. N17 F6/O17 F5 had a slight hollow on its west side, but no evidence of any internal (?)fittings. Together, these details suggest that the lower surfaces were the floors of the structures.

These four SFBs were of similar construction, with post-holes or post-pits in the centre of their short sides. Their possible ridge supports were markedly deeper than any other posts on the site (except for L25 F32, see below). The post-holes of N17 F6/O17 F5 were 3'2" (96 cm) and 3'4" (1.01 m) deep below the top of the subsoil, and those of N18 F10/O18 F42 were 3'9" (1.14 m) and 3'8" (1.11 m) deep. The depth of the post-holes of Q20 F1 was clearly similar. O18 F21 of SFB O21 F40 was certainly a post-pit: the post was round, 10" (25 cm) in diameter, and set toward the side of the 2' (61 cm) wide post-pit.

The site records of the SFBs mention no distinction in filling between the post-holes and the main body of the features, and it is possible that all posts except O18 F21 had been deliberately removed: N18 F45 (east side of N18 F10/O18 F42) had a conical upper profile perhaps due to collapse. Except for some layers in N17 F6/O17 F5, the SFBs were filled with homogeneous dark sandy soil. SFB2 (Q20 F1) may have contained a hearth (Fig.50).

The SFBs contained handmade pottery with some later material on top and a few residual Roman sherds. The handmade pottery totalled only twenty-three sherds, often from the same vessels (Fabric I–9, II–2, III–2 same pot, IV–2, V–0, VI–2, VII–6 (including five same pot) see Pottery, below). Some animal bone was found in N17 F6/O17 F5, N18 F10/O18 F42, and O21 F40. Q20 F1 produced a coarse sandstone quern and a bone comb (Fig.159, No.2) from its top (with Late Saxon pottery).

Pits

Two pits produced only handmade sherds – N18 F34 and N19 F8; both were large. N19 F8 was shallow but N18 F34 slightly deeper. N19 F8 contained sandy soil which grew darker towards the bottom, and N18 F34 was filled with very gravelly sandy soil and layers of clean sand. N18 F34 produced some basal sherds from the same pot (Fabric VIII, see Pottery, below), and N19 F8 two handmade sherds (Fabric I).

A further five pits were probably Early Saxon; they all included handmade sherds in their filling and in four of these it is probable that the later sherds were from the top. The date of pit O19 F28 is uncertain; five handmade sherds (all from the south end) with eighteen later sherds (1 ?Med, 1EM (A), and the rest LS). In O19 F7, O19 F16, O19 F20 and O19 F21 only handmade sherds occurred in the lower parts of the pits even though none of the pits were very deep (the deepest pit was only 2'6" (76 cm) (O19 F7)). They all had sloping sides and a flat bottom.

Only a few handmade sherds occurred in the bottom of these pits, and a few animal bones in O19 F7 and O19 F21. A total of ten sherds were found in the bottom layers (Fabrics I–3, II–1, III–2, IV–1, V–3, see Pottery, below) and a further thirteen sherds in the top with other later material (Handmade fabrics I–3, II–2, III–2, IV–2, V–2, VI–0, VII–2). Except for a trace of some burning, there is no evidence for the function of these pits.

Periods III – VII

These have been dealt with as a continuous block: for its arrangement see above.

Roads

(Figs 8 and 51–3)

The east-to-west road (L17 to L21, K21 to K23, J24 and J25 (J23 was not excavated)) joined a narrower north-to-south branch (K25, L25, L26 and M26). Both branches seem to have had four superimposed layers of metalling, labelled A–D from earliest to latest. That shown on the (microfiche) plans is the second road, Road B, with the edge of the earliest road, Road A, protruding from beneath Road B slightly to the north and east in J25 and K25. The east-to-west and north-to-south roads were examined at their junction in Roads A and B and appeared to be contemporary. Roads C and D, which were much narrower than A and B, sloped towards the north and were not found in area L26/M26 where it is likely that Road B continued in use (see below).

Road A

The OGS appeared not to exist beneath the north-to-south branch of Road A; in K25 this was 14'6" – 16' (4.40–4.90 m) wide. In M26 the road is described as 'piled gravel and rests directly on the sand subsoil . . . the old soil (was) deliberately removed before the road was laid.' In K25 it 'consists of a simple bank or causeway of repiled natural gravel, with an extra concentration of pebbles at the upper surface . . . The stones are smallish, with a considerable admixture of sand and "pea grit". The general surface is fairly soft.' In J25 the road is described as 'just a bank

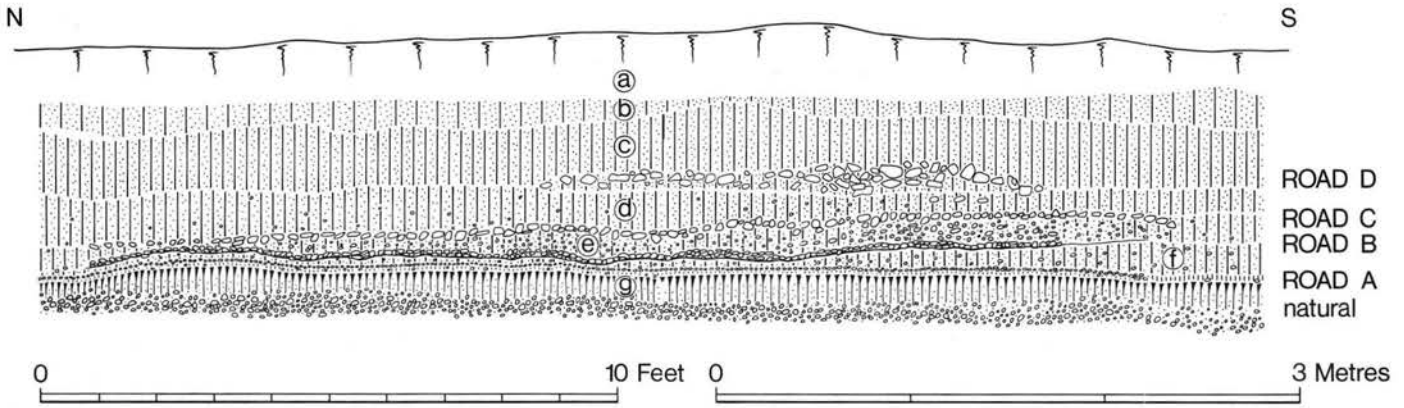


Figure 51 Brandon Road. Section across east-to-west Roads A–D in K22. Scale 1:40.

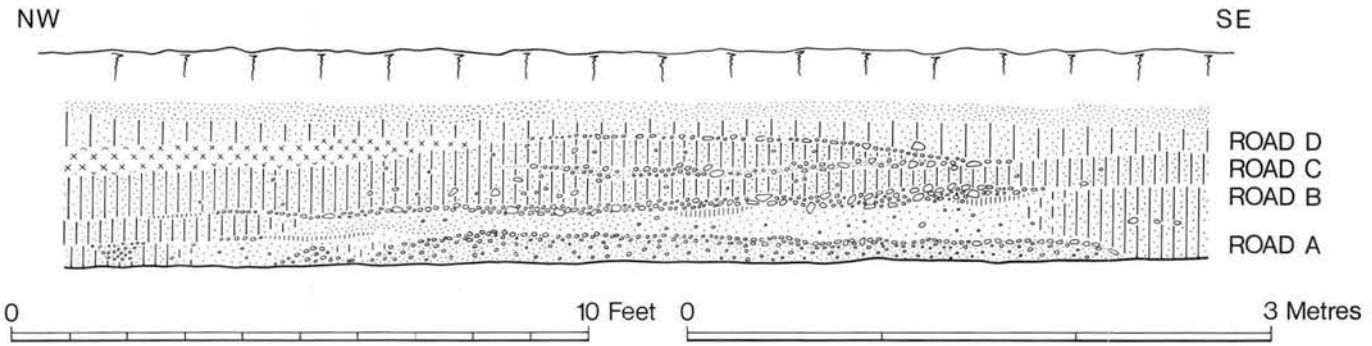


Figure 52 Brandon Road. Section across north-to-south Roads A–D in K25. Scale 1:40.

of reddish-brown sandy gravel with a stone-packed surface'; no OGS was seen.

The east-to-west branch of Road A rested on the OGS (layer (g) in Fig.51). The width of Road A here is similar to Road B above it, 18′ (5.50 m) on average, although it ran 6′ (1.80 m) further north on the east side of the branch junction and 2′ (60 cm) further east in the south end of the north-to-south branch (see J25 Fig.14), and may have been wider. In 1964 (at the west end) Road A was described as 'gently cambered, hard-packed and level. The size of stones (river flints) is fairly constant, 1″ by 1″ by 1″ (2 cm) though larger stones do occur. Numerous cart ruts are obvious to the eye . . . The ruts are depressed 1″ (2 cm) below the general surface of the road, and none run for very far . . . The edges of the road have been eroded and are hard to determine . . . At its widest point (in L19) the road is 22′ (6.70 m) wide . . . although it may have formerly extended further to the north, giving a width of 23′ (7.00 m) or more.' Additional information on the east-to-west branch states that Road A 'is only 1 – 2 stones thick, and consists of small natural gravel pebbles and grit. It appears to have been merely a redeposited layer of gravel, packed fairly hard, and lying on the original ground surface. The stones were smaller than those in the other, later, roads, and much natural grit was included.' Road A was mostly seen in section and was not carefully cleaned or planned.

Road B

The north-to-south branch of Road B was *c.* 14′ – 15′ (4.25 – 4.60 m) wide, and in M26 it had been 'almost entirely destroyed in antiquity'. In K25 it lay on '6″ – 9″ (15 – 22 cm) of deliberate make-up, a reddish sand, with few stones, now concreted to a hard consistency The road is made of flint pebbles, larger than the pebbles of Road A, with no sand admixture, *i.e.* this road is built of carefully chosen stones. The surface is very hard-packed and worn.'

The east-to-west branch of Road B was separated from Road A by a layer of dark grey soil which had a thin layer of charcoal on its top (layer (f) in Fig.51). It was similar to the north-to-south branch as it was 'two stones thick and approximately horizontal. It is some 18′ (5.50 m) wide, very well packed and solid. The stones are graded to match, and include no natural grit; average size 1½″ by 1″ by 1″ (2 cm) with a few large cobbles. The stones are larger than those of Road A, and are entirely different from Road A. Road B . . . is clearly a carefully made road of hand-chosen stones.' In 1964, (at the west end) it is noted that the 'sandy make-up' was only 2″ (5 cm) thick, and that Road B was more cambered, and that the size of stones was more varied and larger on average than Road A.

Road C

Sometimes, especially in the north-to-south branch, this road lay directly on top of Road B, but mostly it was separated from B by soil. In the north-to-south branch, this is described as '6″ (15 cm) of soft dark soil with few stones [which] contains fragments of oyster shell and charcoal flecks The road seems to have been only about 9′ (2.75 m) wide, and the stones are set, in places, in a yellow sand matrix (not mortar)'. The east-to-west branch rested on layer (e) (Fig.51): 'in the south part of area K22, this is a deliberate make-up of redeposited gravel, but this merges into a stony soil further north and west. This too, may be a makeup—in this case of locally gathered soil: it is noticeably more gritty than other soil layers, such as (c) and (d)'. It is noted that 'the division between (e) (above Road B) and (f) (below Road B) can be seen only where Road B occurs; elsewhere it cannot be seen' (K22). The excavator suggests therefore that Road C 'probably represents a further attempt to counter the rising ground level to either side of Road B'. The east-to-west part of Road C itself was '2 stones thick, and made of larger stones than either of the two earlier roads (3″ by 2″ by 1″: 7 by 5 by 2 cm). It is well graded to match and very solid. The surface is flat, with no ruts, and much less sign of wear than Road B'.

Road D

This road existed in both branches in part, but was disturbed by modern ploughing. It was separated from Road C by 6″ (15 cm) of 'dark stoneless soil' layer (d) (Fig.51). The excavator observed that 'this is much less stony than (e) (below Road C), and appears to be field soil . . . Road D was not closely examined or planned, but it was *c.* 9′ (2.75 m) wide and made of large cobbles (4″ by 4″ by 3″: 10 by 7 cm) which were larger than those in the other roads'.

Dating evidence for the roads

The position of the four roads one above the other indicates that they must have been a continuous sequence.

Some features were found beneath Road A, such as a burnt patch (F35) in L20, and post-holes (F119, F123, F124) in L21, but the most significant were the gullies in L17, L18, L19. There were no finds from beneath Road A and the features could belong to Periods I or II, but the gullies, one of which was recut twice, would seem to have been part of the gully system (G5) in this area which contained LS pottery. It seems probable therefore that tenth-century features, including boundary divisions, pre-date the roads, perhaps being of the late tenth century or early eleventh century.

There were no finds from the soil between Roads A and B, but several features were cut into the edges of Road A, *e.g.* pits J24 F2, J24 F3, J25 F56, J25 F57, K24 F65, K25 F15. Pit K22 F11 was also cut into Road A and the soil above it, layer (f) (Figs 12 and 51): it may have predated Road B but this is not clear. All of these features seem to have been eleventh century in date, and pits J24 F2 and F3 are important as they lay beneath the edge of Road B. J24 F3 contained two EM (A) sherds with twenty TH, and J24 F2 contained a large quantity of TH and some SN, with one GMT in the top 30 cm. This last may indicate that Road B was laid late in the eleventh century although it is not clear whether the sherd was beneath the road or beside it.

The east-to-west road was overlain by narrower roadlines C and D. There were some features which appeared to have been beneath Road C (*e.g.* gully 37 (J25 F62, F63, F64)) but none of them contained finds any later than those from beneath Road B, that is, late eleventh century. Pottery and ironwork were found between Roads B and C. Most of the pottery is clearly residual, but there are three Medieval sherds (plus one other mentioned in the site records, now missing), one fragment of Late Medieval roof tile, one large sherd of the late fifteenth-

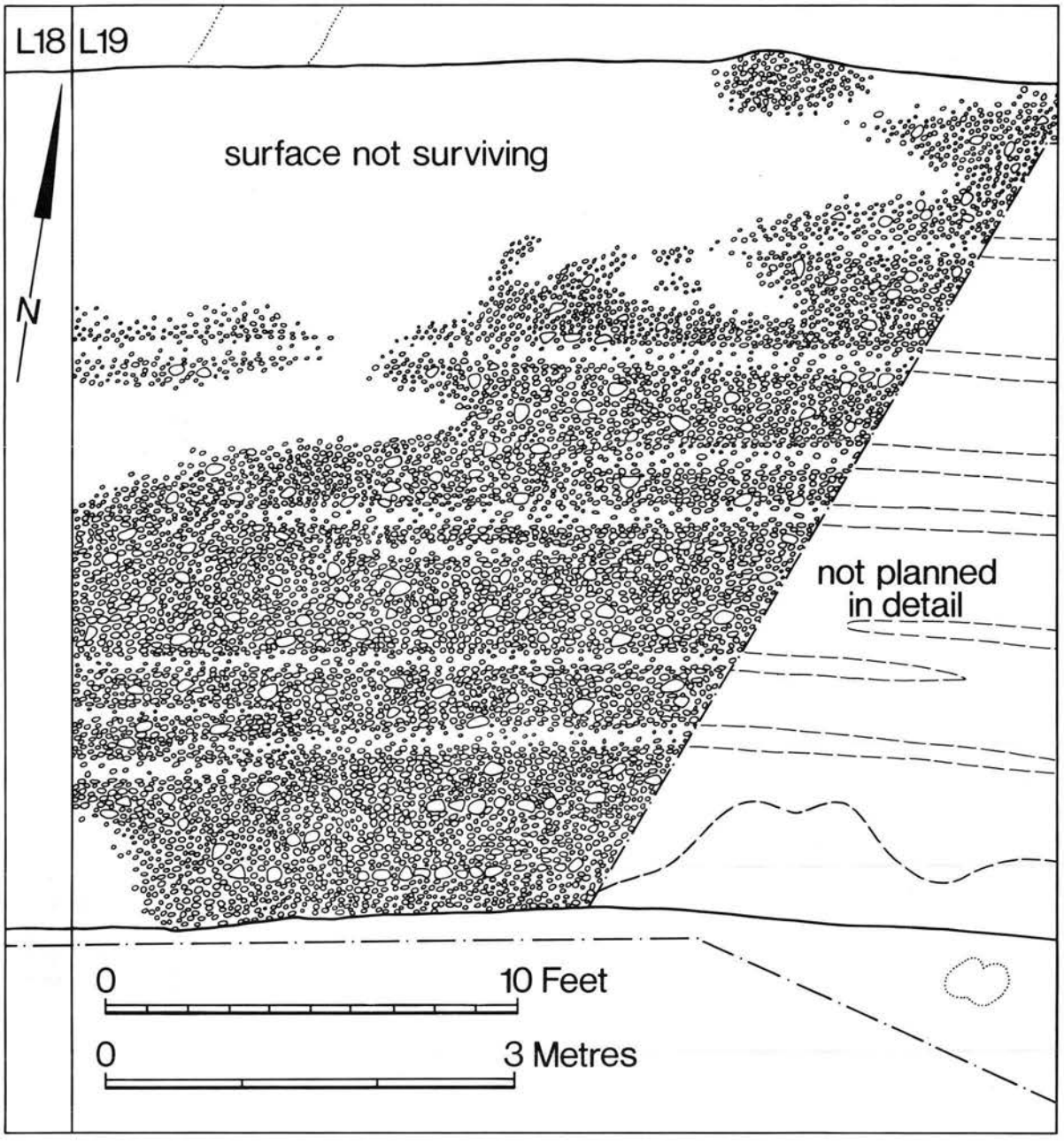


Figure 53 Brandon Road. Surface of Road B in L19. Scale 1:50.

early sixteenth century (found at the road junction in J25) and a seventeenth-century sherd. Even if this last is regarded as having been trodden into the road surface or intrusive (it is abraded), not all of the late sherds can be dismissed in this way. Road C must have been at least fourteenth century, probably *c.* 1500 or slightly later; this accords well with the heavy wear seen on Road B.

Roads C and D may not have continued in the north-to-south branch north of M26 as Road B was very damaged and worn at that end. Many features were cut into the west side of Road B in this area, in K25, L25, L26 and M26, and the more intact area along the east side was the same narrower width as the Road C and D line (Figs 14, 26 and 27). Features M26 F18 and M26 F102 produced some Medieval pottery and they, and the other features cut into Road B here, were probably late Period V – VII in date, encroaching on the old road (B) on a new line (C – D). It is possible that Roads C and D have been swept away here by later activity but it seems more likely that they never existed in this part. This would explain why culvert L26 F103, clearly of Periods V – VII, seemed buried beneath the surface of Road B (see Culvert, below).

Most of the large quantity of pottery from beneath Road D is residual. There are some twenty-nine Medieval sherds, but nothing apparently Late Medieval or Early Post-Medieval. There are, however, two nineteenth-century potsherds, one clay pipe fragment, and two pieces of pantile. These could have been the result of plough damage, but are more likely to have been pushed into the road by wear, or even stratified beneath it, as Road D would seem still to have been in use in 1805. A surveyor's map of this date, based on an earlier map (see below, Documentary Evidence), shows the east-to-west road as

'to Lakengate' or Lakenheath Way (Fig.176). It does not appear on later maps and must have gone out of use during the nineteenth century.

Therefore, approximate dates may be suggested for the road sequence:

Road A late tenth to late eleventh century (*c.* 1000–1100)

Road B late eleventh century to late fifteenth century (or early seventeenth century) (*c.* 1100–1500)

Road C late fifteenth (or early seventeenth century) to eighteenth or nineteenth century (*c.* 1500–1750)

Road D eighteenth or nineteenth century (*c.* 1750–post-1805)

Gullies and fences

Gullies

A number of small linear features were found on the site. Some remain undated, and/or are difficult to relate to any system, but most seem to belong to Periods III–V (tenth to fourteenth century). They were all shallow, cut less than *c.* 50 cm into the natural ground surface (plus 15 cm OGS) except for Period V–VII G49 which rank as ditches. The site is well-drained (natural sand and gravel) and these slight gullies must have been boundaries. Some may have contained planted hedges or bushes but evident changes of line suggest more easily moveable fencing was common. Evidence of posts was not always found, but was clear in some cases, notably O18 F33 and F34 (G4, G38), and palisade structures P19 F13 (G14), P21 F18 (G14) and P21 F7 (G14) and O21 F50 (G1), N21 F29 (G9). The accidental occurrence of earlier or later post-holes within a gully is confusing, but other less neatly-arranged features are also likely to have contained fences (*e.g.* N24 F14 enclosure (G12), and N24 F17, G15). It may be significant that no post-holes or packing were observed in the Period IV gullies of the major north-to-south boundaries in M21/N21/O21/O22 (G20–G32) but how these may have appeared in use is not evident. This major boundary possibly defining a property was frequently recut, but then wooden fencing would have rotted and need replacing at intervals; their life span is uncertain.

For this reason, the site gullies have been treated in some detail below (see also fiche lists). They have been placed in possible associated groups under 'G' numbers (roughly by period and area). The evidence for the groupings includes finds, stratigraphy, alignment and character, so that most features can only be assigned to a broad date band.

Directory of gully groups by feature (see microfiche)

Period III

The main south-east to north-west gullies in the western part of the site seem to have belonged to Period III and three distinct phases of this boundary can be postulated, G1–G4, possibly contemporary or associated with G5–G6.

G1. It seems likely that a series of small gullies was the earliest phase. Their line, later recut, was represented by gullies N19 F16, O18 F39, O18 F40, and it is possible that P19 F8 and P20 F61, and perhaps N18 F25, also belonged to this phase as they match the other gullies in character. Widths ranged from 9" to 1'3" (22–38 cm) and depths from 3" to 9" (7–22 cm). The profiles were rounded where recorded, and the fillings were all dark brown sandy soil. N19 F3 was possibly a terminal post-hole for N19 F16, and there were probably two post-holes in the west end of P20 F61. Some stake-holes seem to have been associated with P19 F8, and neat lines of stake-holes were found in O18 F39 and O18 F40. These narrow gullies may thus have been fence lines. None contained finds but a Late Saxon or earlier date seems likely as their line was cut by gullies containing TH and SN (G2 and G3, below). The east-to-west line in P19 and P20 seems to have survived into the eleventh century (G11, G14) and may have been continued eastwards in Period III by O21 F41 and O21 F50. These gullies did not continue south of N19 F16, unless they were obliterated by later recuts or else represented by a small gully in N19 (whose number was probably N19 F39/F54); this also contained stake-holes, and seems to have had a terminal post-hole in the east end (no finds). Beyond this the line is lost, although M20 F1 contained small post-holes.

Small gullies of similar shallow nature in the area were right-angled M19 F101, N19 F49 and N19 F42 and also O19 F2 (possible terminal post-hole P19 F40) and P19 F32 (possible terminal post-holes P19 F31 and P19 F33) although only N19 F42 may have had post-holes. None had any finds, and their date remains obscure: some may have been structural.

Isolated slot N18 F25 may have been part of this phase (it was similar in character). It clearly contained post-holes, and probably continued south, cut by all other features (*i.e.* N18 F27 (no finds), M18 F4/N18 F14 (III), and medieval features N18 F12 and N18 F15). It possibly lined-up with O18 F39 and O18 F40, and is similar in position to L17 F7/M17 F112/M18 F29 (G9 below).

G2. The main gullies of G1 above were replaced by slightly wider gullies on almost the same line. The first phase of these was represented by (north-to-south) N19 F17/O18 F23 and N19 F1 (which seems to have been contemporary with pottery kiln N19 F7). The line was continued south on a slightly different alignment by M19 F36A and K22 F2/L22 F94/L21 F109/L20 F7/M20 F103, and probably was continued along the north side of the roads by K22 F26 and perhaps K23 F34.

These gullies ranged in width from 11" to 2'6" (27–75 cm) but were only cut 3"–8" (7–20 cm) into the subsoil (or 10"–1'2" (25–35 cm) into the OGS). Profiles were rounded with a flattish bottom, except for N19 F17/O18 F23 which is described as having had vertical sides and a flat bottom. Fillings were dark brown sandy soil with gravel and a few flints and stones. Some of the post-holes in K22 F2/L22 F94/L21 F109/L20 F7/M20 F103 may have been associated with it, and there may have been a post in the west end of both N19 F1 and K22 F26.

N17 F1 produced TH (most of which was made in kiln N19 F7), and other finds from G2 comprise a further five TH, one SN, burnt clay, lava quern, and some animal bone.

G3. The gullies G2 were recut on almost the same line (there seems to have been no northern diversion in the area of kiln N19 F7, although a gap was still left at the position of this kiln). The replacement gullies were (north-to-south) N19 F2/O18 F17, M19 F36/M20 F36C/N17 F40 and K22 F5/L22 F95/L21 F111/L20 F6/M20 F102.

These gullies ranged in width from 1' to 2' (30–60 cm) and in depth from 4" to 1'2" (10–35 cm) below the top of the subsoil. Fillings were dark brown sandy soil with some gravel, stones and flints, like the G2 gullies. Profiles were rounded and sometimes had steep sides. Some stake-holes were possibly associated with M19 F36/M20 F36C/N19 F40 (not on plan).

G4. North-to-south gully O18 F34 would seem to have been associated with lines G2 or G3, although it seems to have overlapped both N19 F17/O18 F23 and N19 F2/O18 F17. It is not clear whether the putative southern part of O18 F34 was part of the gully north of O18 F11. The end of the southern part was cut by post-hole O18 F26 which contained an EM sherd. The northern part, of uncertain relationship to O18 F11, was slightly more substantial than other gullies in the area being 2'6" (76 cm) wide by 1'3" (38 cm) average depth. It was filled with yellowish-brown sand, and contained one sherd of TH.

Area L17–L19, M17–M19 ('Building' T, 'Properties' U, V and W)

The south-west part of the site contained many features including several gullies, mostly aligned on the same north-east to south-west angle as Buildings B, C, D, E, *etc.* and other Period III and IV gullies. Many of these gullies (in area L17–L19 and M17–M19) had no finds, and most relationships and sequences were unclear. However, these gullies were possibly related to G1–G4 as part of the same systems.

G5. Gully L17 F7/M17 F112/M18 F29 ran as one feature under the roads, and seems to have been turning slightly east and not west as the other gullies. It cut post-hole L17 F8 which produced no

dating evidence and could have belonged to Period I, II or early III. This gully was cut by gully M18 F24/M19 F62 (G6), pit M18 F5 (Period III or IV) and probably pit M18 F19 (III or IV?). It was 9″ (22 cm) deep, had a rounded profile with a flattish bottom in L17, and was filled with dark sandy soil. There were no finds.

Further east were two gullies on the same alignment and of similar length: M18 F66/M19 F14 and M19 F13A. These gullies may have been contemporary but were more likely to have been sequential. They are in any case precluded from being a Roman droveway by LS finds attributed to them, or from being medieval by their relationship to gully M19 F20A/N18 F12/N17 F45 (Period V – VII) and their continuations southwards beneath the roads.

Gully M18 F66/M19 F14 was 1′3″ (38 cm) deep with a rounded profile and a filling of dark soil without any gravel. It cut M18 F64 (no finds) and was probably cut by late eleventh-century gullies M18 F68 *etc.* (G31). The large number of sherds (including one EM (Fabric A) of unknown depth) attributed to this shallow feature suggest that the contexts and finds must be muddled.

The line of this gully was continued south beneath the road system by gullies L18 F2, L18 F4 and L18 F3, all of which were cut by pit L18 F1 (no finds except shell) so that a direct connection with M18 F66/M19 F14 cannot be proven although the alignment makes this likely. L18 F2 was 10″ (25 cm) deep with a rounded profile and a filling of very dark soil. It was possibly cut by L18 F4 which was 1′2″ (35 cm) deep with a rounded profile and dark soil filling. L18 F4 was cut in its turn by L18 F3 which ran slightly further south. L18 F3 was cut unusually deep, 3′ (90 cm) into the subsoil (only J25 F62 was a comparable depth, G37). It had vertical sides and flat bottom and was filled with dark soil with a top layer of gravel pebbles in a soil matrix. There are no finds from any of these features. No records survive for M19 F13A, but it produced one SN and two TH. The gap between M19 F13A and the gully south of it (L18 – L19 no number) is genuine, and it seems more likely that it was the central gully in M19 F53 which turned west into M19 F56 and not M19 F13A. There is no information on the L18 – L19 gully and no finds: it runs under Road B (and assumedly Road A) on the site plans. See G40 below.

G6. Running across these gullies at a right angle was north-west to south-east gully M18 F24/M19 F62. This seems to have cut gully L17 F7/M17 F112/M18 F29 (G5) and was cut by M18 F68/M19 F65 (G31) which was at least late eleventh century in date. Its other relationships were undetectable. It was 6″ – 9″ (15 – 22 cm) deep with an irregular rounded profile and filled with dark sandy soil. No finds.

G7. N19 F35. An east-to-west gully enclosing a mass of post-holes and stake-holes to the south. It produced three sherds of TH, and must have been tenth century at least. It was possibly associated with some phase of the G1 – G3 system as it existed in the area of the repeated gap in N19 by kiln N19 F7, but this is not clear. The gully was 10″ (25 cm) deep and filled with dark sandy gritty soil. It is not certain whether some post-holes found in the gully were associated with it or not.

There were at least three sets of aligned features which might have been associated to form yards or enclosures, G8 – G10. They were all shallow, with little or no dating evidence.

G8. O20 F42 lined up with N19 F62 and N19 F33. It is not clear whether it could have been associated with Building E but that seems unlikely as the alignment is different. It was 1′4″ (40 cm) average depth, and filled with dark sandy soil above yellow sand. N19 F62 was 10″ (25 cm) deep and filled with very gritty dark sandy soil. It contained at least three post-holes. N19 F33 was 6″ (15 cm) deep and was filled with soil similar to N19 F62. Both were noted as indistinct. No finds.

The only possible return for this putative enclosure (on an awkward alignment) is represented by N21 F96, as both this and the G6 gullies were opposite gaps in the G2 – G3 boundary. This would have formed a yard some 70′ (21.50 m) wide east-to-west by at least 36′ (11.00 m) north-to-south. N21 F96 was 3″ – 7″ (7 – 17 cm) deep and filled with dark brown stony soil: it may have contained some post-holes. No finds.

G9. O21 F23 and N21 F29a – c/N20 F165 (which may represent the north and east sides of a possible enclosure) produced no finds and were not aligned on any other features but resemble the enclosure in M23 – N22 (G8). O21 F23 had no apparent post-holes in it and was only 4″ – 6″ (10 – 15 cm) deep, filled with dark sandy soil with a few pebbles. N21 F29a – c all contained post-holes, often packed with stones and flints. N21 F29a, N21 F29b, and N21 F29c/N20 F165 were all shallow (3″ – 8″, 7 – 20 cm). They were filled with dark sandy soil. No finds. The line was possibly continued by post-hole line M20 F50 (no finds), which was connected to N21 F29c/N20 F165 by a humic stain, with pits N20 F166 and N20 F168 intervening (both TH only).

G10. There was a possible enclosure in the centre of the site aligned west-north-west by east-south-east. The north side was formed (east-to-west) by M23 F3, N22 F136/N23 F97 (possibly incorporating M23 F1), N22 F133, and N22 F92. The west side was represented by (north-to-south) N21 F184 and M21 F10. Any east side did not survive and the only possible feature on the south side was K23 F16. It is not clear whether M22 F33 or N22 F99 could have been part of this enclosure: slots L21 F70 and L21 F71 seem to have been later in date (see G45 below). Although K23 F16 was a long way from the other slots and gullies mentioned above, the shape of enclosure this would have formed with them would have been almost square, about 96′ (29.00 m) in both directions. Otherwise, the known extent was *c.* 96′ (29.00 m) east-to-west by *c.* 64′ (19.50 m) north-to-south.

The gullies which seem to line up on the north side were all very shallow, having been cut only a few inches into the natural. Those on the west side were little deeper, ranging from 2″ to 10″ (5 – 25 cm). The profiles seem to have been irregular and it is possible that all of these slots contained round posts, somewhat unevenly placed. Fillings, where deep enough to be described, were dark brown soil, with some pebbles in the south end of M21 F10. K23 F16 was also cut only 4″ – 5″ (10 – 12 cm) into the subsoil and was filled with dark soil, but its profile is described as having had vertical sides and a flat bottom with no evidence of any posts.

Finds from this enclosure seem to have been muddled but there is burnt clay, animal bone and shell. N22 F92 is assigned one ST (A1, 900 – 1150), seventeen SN, and seven TH which may be correct as the high proportion of SN is repeated in the pottery from the groups of pits in the area (see Pottery, below). K23 F16 produced seven TH.

Period IV

This period contains the gully systems along the north end of the site (G11 – G17 or G19), the main north-to-south boundary in M21/M22/O21/O22 (G18, G19 or G20-G32 or G33), a possible structure in L25 (G34) and gully systems near the road junction (G35 – G36) including one enclosure (G37).

G11. P19 F5/P20 F58 was on the same alignment as O21 F14/P21 F12/P20 F59 and these two gullies replaced P19 F8 and P20 F61 (G1) with a staggered entrance. Gullies P19 F5/P20 F58 and O21 F14/P21 F12/P20 F59 ranged from 1′ – 2′6″ (30 – 76 cm) in width and were both *c.* 10″ (25 cm) deep. Post-holes are not attributed to these gullies except for at least five small post-holes (6″ (15 cm) diameter) in an expanded east end to P19 F5/P20 F58. This ?entrance, *c.* 14′ (4.26 m) wide, seems unlikely to have held a gate, archway, or barrier as the two gully ends were not directly opposed. The fillings of these features varied, with P19 F5/P20 F58 having contained mottled dark brown sandy soil and O21 F14/P21 F12/P20 F59 a very dark soil which was both sandy and silty and had 'a core of flints' in the western half of P21. Some forty potsherds are attributed to these two gullies, the latest being four EM(A) and ST datable to post-1020, as well as SN, TH, lava quern and an iron buckle frame (SF499).

Building A in P21 was aligned on these gullies and may have been associated: it was clearly not contemporary with P21 F18 (G14). A probable fence-line (post-holes P20 F6 – F13 and F15) was also aligned on these gullies and ended at the same eastern point as P19 F5/P20 F58. It was in a strange position if contemporary, being only *c.* 22′ (6.70 m) to the north of P19 F5/P20 F58 but lined up with the south-east part of Building A. This line of posts, was not excavated. It is probable that pit P20 F3 belonged to this phase as it contained similar ST.

The position of short gully lengths P20 F2 and P20 F14 in the sequence in this area is not clear, and they might have been the remains of structures. P20 F2 was 9″ (22 cm) deep and comprised three 'troughs' separated by 3″ (7 cm) high ridges; it was filled with dark stoneless sandy soil. It produced an EM(A), as well as some SN, TH, HMD, lava quern, and animal bone. P20 F14 was cut only 1″ (2 cm) into the subsoil and contained five hollows 3″ (7 cm) in diameter, 2″ (5 cm) deep, at *c.* 1′ (30 cm) intervals which may have been post impressions. The filling was brown sand. No finds.

G12. Long, thin, curving gully O22 F27/O23 F29/N23 F6/N24 F14/N24 F37/N25 F2 would also seem to have belonged to this Period. The only detectable relationship to another feature was its cutting by N24 F18 and N24 F19 (G16). All other relationships, including those in N23, were unclear. This gully enclosed an area lying to the north.

It ran for over 116' (35.35 m) but was only between 9" and 1'5" (22–43 cm) wide and 2" and 6" (5–15 cm) deep. The gap between N24 F37 and N25 F2 seems too small to have been an entrance; perhaps illusory, the result of shallow depth. The profile was irregular as this feature contained an uneven (as it survived), but continuous, line of post-holes or post-pits and stake-holes, probably a fence or palisade. The post-holes were round or oval, *c.* 8" – 11" (20–27 cm) in diameter, 5" – 8" (12–20 cm) deep, and packed with stones. The filling otherwise was very dark sandy soil and contained gravel and pebbles.

Only three potsherds were found in this feature; EM (Fabric A), ST post-1020, SN: also some burnt clay, animal bone, and shell.

G13. M23 F2/N23 F11. This stopped at N23 F6 (G12) and would therefore seem to have been associated. It may have continued northwards, either as linear stain M23 F13 or post-hole line O23 F23 a–e/N23 F12 although this was not quite in line. Gully G13 was 4" – 1'1" (10–33 cm) deep, although the greater depths may only have been irregular post-holes: this feature is described as 'deep pockets in shallow trench'. The filling was darkish stony soil with gravel, and small gravel at the bottom. Some animal bone possibly found in this gully.

G14. P19 F13 and P21 F18 probably represent a boundary with a *c.* 50' (15.25 m) wide gap when found. P19 F13 was 6" (15 cm) deep with a filling of brown jumbled sand and soil, but details for P21 F18 are now lost. That they both contained lines of posts is shown by oval indentations *c.* 1'6" – 2' (45–60 cm) long by 1'6" – 1'10" (45–55 cm) wide spaced only 2" (5 cm) apart. These therefore must represent a fairly solid line of posts or palisade; the posts in the gully terminals were no larger than the rest. These two gullies produced twenty-three potsherds, the latest of which is an ST post-1060, an ST post-1020, and two EM(A), as well as SN, TH, HMD and Roman, an iron nail, lava quern, and animal bone. It is probable that these gullies were associated with L-shaped feature P21 F7a and F7b as the alignment was the same and P21 F7 produced a sherd of EM (Fabric C), probably late eleventh century. The function of P21 F7 is obscure but (like P19 F13, F18) it was also constructed of regular oval posts or post-pits only a few inches apart.

G15. N24 F17 and N24 F58 (and perhaps G13) seem parallel; they were both 1'6" (45 cm) wide and ranged from 4" to 9" (10–22 cm) deep. Fillings were dark brown sandy soil with evidence in N24 F17 of irregular post-holes. N24 F17 was cut by Period VII pit N24 F29 but its relationship to pit N24 F7 (no finds) and gully N24 F14 (G12) was uncertain. Finds were one ST (1020–1175), one ST (900–1025), TH, animal bone and shell.

G16. N24 F18 was replaced by N24 F19. Both were cut by Period VII pit N24 F29, and they were both cut into N24 F14 (G12). They were 6" – 1' (15–30 cm) deep, and filled with black sandy soil. No finds.

G17. P21 F28 cut P21 F18 (G14) and was of uncertain relationship to pit P21 F27 (Period IV). The feature details have been lost, but finds include one EM(A), an ST (900–1150), TH, HMD, a hone of Norwegian ragstone, and animal bone.

It is not clear whether O22 F7 and O22 F5 (G18 and G19) belong to the gully systems G11–G17, or to the major north-to-south boundary G20–G32.

G18. O22 F7 was cut by O22 F6 which was possibly medieval (G51). It was 9" – 1' (221–30 cm) deep. The filling was dark brown flinty soil. No finds.

G19. O22 F5 was cut by O22 F4 (G25). It was 10" (25 cm) deep with a filling of dark brown soil. No finds.

A large number of gullies seem likely to have been involved in the major north-to-south boundary running through M21/N21/O21/O22, turning westwards in M20 to M18 and L18.

G20. N21 F120 was also cut by G25 at N21 F101. This complicated feature was probably two north-to-south gullies but it was not clear whether any of the post-holes might have been associated. The broken lengths of these features were classified in three parts: A *c.* 4" (10 cm) deep, B 7" – 11" (17–27 cm) deep, and C 4" – 8" (10–20 cm) deep, all with similar fillings of dark soil with some gravel. Profiles were all rounded or dished. No finds in any part.

G21. N22 F1e and N22 F1f appear to have been two lengths of gully which may have been obliterated by N22 F1/O22 F9 (unphased G51) which butt ended in N22. There is no information for N22 F1f, but N22 F1e was 1'1" – 1'4" (33–40 cm) deep and was filled with dark soil with some stones. These gullies may be part of the Period IV boundary line, although there were no finds.

G22. O21 F85 was 3" – 5" (7–12 cm) deep and filled with dark soil with gravel. It may have cut O21 F84 (G23) but the relationship with O21 F86 (G24) is not known. No finds.

G23 – 5. These three long gullies in the main north-to-south line ran for over 160' (48.76 m); in probable (not certain) order of recutting.

G23. M20 F114/M21 F57/N21 F99/O21 F84/O22 F2. This was 3" – 8" (7–20 cm) deep. The filling was very dark to black sandy soil with stones and a little gravel. It was cut by the other features. Finds were ten EM (Fabric A), one SN, one TH, stone spindlewhorl SF552, fe nail SF184, and animal bone.

G24. (M21 F6a/N21 F100/O21 F86/O22 F3) cut G23 and was 2" – 3" (5–7 cm) deep. The filling was dark sand with some gravel. It was recut by G25 and may have been related to M20 F86 (G27).

G25. (M21 F7/N21 F101/O21 F87/O22 F4) was 6" – 1' (15–30 cm) deep and cut G23 and G24. It was filled with dark brown soil and 'stony packing'. No finds.

A number of other lengths of gully seem to have been associated with these three gullies. These are G26–G30.

G26. M20 F97 was probably associated with G23 and cut by G27. It was 2" (5 cm) deep and filled with dark brown soil. Finds were three EM (Fabric A), eight TH, and animal bone.

G27. M20 F86 was probably related to M21 F6a (or M21 F6b)/N21 F100/O21 F86/O22 F3 (G24 or G28). It was 10" (25 cm) deep and filled with black sandy soil. Finds were one ?EM (Fabric A), one SN, five TH, animal bone and shell.

G28. M20 F115/M21 F6b cut G24. It was 1' (30 cm) deep. The filling was black sandy soil with some (stone) packing at the north end. No finds.

G29. M20 F113 to the south of pit M20 F111 may have been associated with this boundary. It was only 3" (7 cm) deep and was filled with black soil. Finds were an fe nail SF577 and possibly some animal bone.

G30. (L20 F10/M20 F112) like G29, was south of pit M20 F111 and cannot be shown to connect with the north-to-south gullies. It was 5" – 6" (12–15 cm) deep. The filling was dark brown to black sandy soil with flint and stone. Finds attributed to it are one GMT, three EM (Fabric A), one SN, three TH, fe nail SF214, animal bone. The position, or depth in this shallow feature, of the GMT sherd (which would make this feature, and perhaps the whole north-to-south line if it were connected, late eleventh century) is not known.

The main north-to-south line was cut by pits M20 F111, M21 F91 and probably M20 F116. It is possible that two gullies forming a corner were associated with these pits if the proposed sequence of M20 F111 and M21 F101 and M21 F102 (G31) is correct. Medieval pottery is attributed to L21 F3/M21 F124 and also to N21 F189/O22 F6 in the north, with M21 F33 and N21 F186 on line in between, so these features have been phased as ?Period V (G51). If these attributions are not correct, this line might otherwise have been part of the Period IV north-to-south boundary; or corner L21 F47/L21 F4 (G32) may have been associated with Period V. These corners were represented by G31–G32 and possibly included G33.

G31. M21 F101 and M21 F102 were probably cut into the top of pit M20 F111 and certainly connected with L20 F1 and L20 F3, although it is not clear whether the two gullies crossed or ran directly into each other. In any case it was clearly a defined corner with a recut. These gullies were 5" – 10" (12–25 cm) deep. The filling was dark brown soil with flint and stone. No post-holes are mentioned in connection with them. The only finds were associated with L20 F1 — one ST (1020–1175), four SN, nine TH including eleventh-century types, 2 fe SFs175–6, fe knife SF334, and animal bone. As these gullies were probably cut into M20 F111, which contained GMT, ST post-1060, and EM Fabric (C) in its top filling, and also come at the end of a sequence of so many eleventh-century recuts, they must be late eleventh, or early twelfth century in date.

The line was continued by gully M18 F68/M19 F65, and a gully with no number running through grids L18/M18 and L19/M19. There is no information on this last-named feature, but M18 F68/M19 F65 cut G6. It was 6" (15 cm) deep and was filled with dark sandy soil. No finds.

G32. L21 F47/L21 F4 was L-shaped and only 2″ (5 cm) deep. Filling was dark soil. No finds.

A number of other gullies on the site may have belonged to Period IV, G33–G37.

G33. (L21 F48) relationships to other features not detectable as it was too shallow in places. This could possibly have been medieval, or associated with the complex of gullies G45 (L21 F5, L21 F22, L21 F71 *etc.*) but it was aligned with late eleventh-century G31 (M18 F68/M19 F65 *etc.*) and seems more likely to have been of this period. It was 2″–10″ (5–25 cm) deep. There was no evidence for any post-holes and the filling was dark soil. Finds were one ?TH (possibly later), one SN, fourteen TH, and animal bone. It may have formed a yard with G41 but there is no direct evidence for this.

G34. (L25 F133/F136) presumably one east-to-west gully, cannot be contemporary with the buildings represented by the many post-holes in the area but none of the relationships were clear. The gully was 5″ (12 cm) deep and filled with dark soil with very little gravel. It produced one EM (Fabric A), three SN, one TH and animal bone, and was possibly later than the Building K phases if it was not structural.

G35. K25 F31 on the west side of the north-to-south road was stratigraphically earlier than hearth complex K25 F32 which dated to *c.* 1200. It was probably cut into Road A and pit K24 F65 (Period IV?). The only finds it contained were some fragments of ae slag which were probably contemporary with the discarded ae working debris in the top of pit K25 F8 nearby. These were in the primary silt and this gully must have been open when the top of pit K25 F8 was filled, probably in the late tenth or early eleventh century. The gully was 8″ (20 cm) deep, and filled with soft stoneless dark soil.

G36. J24 F15 was an L-shaped gully defining the west side of the junction of the east-to-west and north-to-south roads. It was 4″ (10 cm) deep, and filled with soft dark soil. One sherd of ST (D5 900–1000) was found in it. Its position, width and filling suggest that it may have been connected with K25 F31 (G35). It may also (or instead) have been contemporary with L-shaped gully J25 F62 (G37) which was cut into Road B on the east side of the junction of the roads, which also contained 'soft dark earth' in its lower filling, but was unusually deep. J24 F15 is described as cut by pit J24 F16 which contained SN and TH, some of this last possibly being eleventh century. If it was contemporary with J25 F62 (G37) it could have been late eleventh century.

G37. A yard area seems to have existed in grid J25, possibly associated with Type I ovens J25 F50 and J25 F52 (*cf.* G45), although this is not certain. This complex was at least late eleventh century (probably eleventh-twelfth century if the laying of Road B dated to the late eleventh century). The features, in probable sequence, were as follows:

J25 F62 was an L-shaped gully on the east side of the junction of the east-to-west and north-to-south roads (*cf.* J24 F15, G36). It cut Road B and was cut by the other gullies (J25 F63, F64, F41, F42). It was dug to the unusual depth of 3′8″ (1.11 m) deep with vertical sides and a flat bottom (*cf.* L18 F3 (G5) for the only other deep gully on the site). The lower filling was soft dark earth, and upper filling layers of charcoal which may have slumped into the top. There was no gravel in the filling. Finds were two TH and animal bone.

J25 F63 cut into F62, and possibly the same features as J25 F41. It was cut by J25 F64. It was 2′ (61 cm), unusually deep. The filling was homogeneous soft dark soil, and the finds were nineteen TH and animal bone.

J25 F41 also cut into J25 F62, and may have been the counterpart of J25 F63. It was beneath hearth J25 F53. It was 4″–11″ (10–27 cm) deep. The filling was grey sandy soil with 'carbon' *c.* 3″ (7 cm) above the bottom at the south end (not retained). Finds attributed to this feature are three EM (Fabric A), twenty TH, burnt clay, and animal bones; sherds from some of the same vessels occurred in the filling of oven J25 F50 and were associated with hearth J25 F53 above the gully.

J25 F64 cut J25 F63, and may have been the same feature as J25 F42. It was 1′ (30 cm) deep. No description of the filling survives. Finds were one SN, nineteen TH, burnt clay and animal bone.

J25 F42 perhaps the same as J25 F64 above, although its relationship to F41 was not certain. It was under hearth J25 F53. It was 6″ (15 cm) deep and filled with grey sandy soil. Finds were one EM (Fabric A), six TH, one Roman, and animal bone.

J25 F40 and F43 were probably part of this complex as they were on the same alignment and similar in character, with a sandy grey filling, unusual on this site. Perhaps ash was involved in producing this colour as some burning seems to have occurred in the area (in J25 F62 top, J25 F41 and hearth J25 F53).

J25 F40 was 4″–10″ (10–25 cm) deep. Finds were an EM (Fabric A), one SN, three TH, and animal bone.

J25 F43 was 5″ (12 cm) deep. No finds.

With J25 F54, these gullies formed a possible enclosure, *c.* 24′ (7.31 m) north-to-south by 32′ (9.75 m) maximum east-to-west, which was later than Road A and the laying of Road B but earlier than Road C. If Road B was late eleventh century then this enclosure was late eleventh century or later, but earlier than Late Medieval (see Road C). Hearth J25 F53 was on top of gullies J25 F41 and F42, and this had a sherd of EM Fabric (B) (second half of twelfth century) attributed to it. This would suggest that these gullies were in use some time between the later eleventh century and *c.* 1200: perhaps they enclosed ovens J25 F50 and J25 F52 but this is not certain.

Period III or IV

Some gullies must remain unphased, but were clearly earlier than Period V.

G38. Three lengths of east-to-west gully or ditch in O18 are difficult to date. These were:

O18 F1 (feature card is missing; no details are known). The finds were in the top of the feature only: one ST (1060–1250), one SN, two TH and animal bone.

O18 F33 was *c.* 1′3″ (38 cm) deep. Relationships to other features were unknown, and it did not touch O18 F11. Finds were two TH on top, and two first-century AD Roman sherds in layer (d).

O18 F11 was 2′4″ (71 cm) deep. The north side was steeper than the south, and the bottom was flat. It was cut by medieval Ditch A (O18 F10/O19 F15/O20) (Period V–VII G49), but other relationships are unknown. It was filled with dark soil with sand in the bottom. The finds were all on the top and included LM tile, EM (Fabrics A and B), SN, TH, and fe nail SF616, animal bone and shell.

These gullies were probably related recuts, particularly O18 F33 and O18 F11 which ended in approximately the same place. O18 F11 was cut by Ditch A (O18 F10/O19 F15/O20) and these gullies must all have pre-dated this medieval boundary. The only finds properly associated with these gullies were two sherds of mid-to-first-century AD pottery in O18 F33 (G38) which were from the same vessel but had been broken in antiquity. As all other finds were in the top slump it is possible that these ditches were Roman (Period I); however, the cutting of medieval Ditch A (O18 F10/O19 F15/20) in the same place suggests that they are tenth to twelfth century in date; perhaps tenth century associated with Period III G1–G7 as N19 F2/O18 F17 turned west before it disappeared, or returns of poorly dated north-to-south gullies G46 and G39 (the former was probably late twelfth century as it was certainly earlier than the Structure G complex of *c.* 1200).

G39. (N17 F2/O17 F28); relationship unknown to gullies G4 and G46 on either side (with which it may have formed a sequence), or the G38 gullies to the north-east. As it seemed to have been cut by all contiguous features (pit O17 F29 (?IV), post-hole N17 F16 (no finds), pit N17 F36 (no finds), and gully N17 F45 (Period V–VII G49)), it was certainly pre-thirteenth century and may have belonged to Period III or IV. It was 8″–9″ (20–22 cm) deep. The profile was irregular, and the filling was light brown sandy soil. No finds.

G40. Gullies in L17–L19, M17–M19; they yielded little information, with stratigraphy obscure and no finds. M19 F48 possibly formed a corner with M19 F53 and M19 F56 and/or M19 F13, similar to L20 F1 and F3/M21 F101 and F102 (IV G31) and L21 F4 and L21 F47 (IV G32), which would both seem to have been late eleventh century. M18 F54, M18 F67, and M19 F13 may also have been aligned with these late eleventh-century systems (G31). Smaller features M17 F30, M19 F69, M19 F75 remain enigmatic (as are M18 F69 and M19 F92; not on period plans). Some of these features may be structural (see below, Structure G). See also G5–G6 for this area.

G41. This long north-to-south gully (M22 F31/N22 F134/N23 F7/O23 F22) produced one SN and some animal bone and was probably Period IV or Period III. On a similar alignment with the other IV gullies at the north end of the site but probably not contem-

porary with G12 or G56 (relationship to N23 F6 (G12) and N23 F8 (G56) undetectable) and seems too close to M23 F2/N23 F11 (G13) to have been in the same system. It also cut into the Period III ?enclosure G10. It is possible that it may have belonged to a phase of Period III, perhaps forming a boundary with L22 F91 (G41) which may have respected the east end of Period III gullies G2 and G3, but a Period IV date seems more likely, perhaps matching G20 (N21 F120) or forming a late eleventh-century yard with G33 (L21 F48). This gully was 6" – 10" (15 – 25 cm) deep. It must have held a fence as it had an irregular profile with U-shaped post-holes and a filling of dark brown sandy soil with large stones which may have been packing. It may have had two posts at its south end (M22 F110 and M22 F112).

Gully L22 F91 seems to have had too wide a curvature for a Period I round building. It was cut by medieval pit K22 F4, and seems to respect the road system and/or Period III G2 – G3 gullies. It may belong, therefore, to Period III or IV, possibly forming a boundary with G41 (M22 F31/N22 F134/N23 F7/O23 F22). It was 4" (10 cm) deep, with gently sloping sides and a flat bottom, and was filled with dark stony soil. The north end seemed to have contained post-holes. Finds: some animal bone only.

G42. At the extreme east end of the site; this was a north-to-south boundary represented by staggered gullies K28 F114, K28 F64 and L28 F83. K28 F114 was 9" (22 cm) deep, and filled with dark sandy soil. It had a 'distinct north end' and K28 F101 may have been a post-pit for a terminal post. It was connected to K28 F64 by a shallow trough. K28 F64 was 7" – 1'3" (17 – 38 cm) deep. It was filled with dark sandy soil and some flints. L28 F83 1'6" (45 cm) deep, and filled with dark sandy soil with flints and gravel. None of these gullies showed evidence of containing post-holes and none produced any finds. The two northern gullies were cut by fourteenth-century (Period V) well L28 F114. L28 F83 was probably cut by pit L28 F84 (SN and TH only). These gullies were certainly pre-medieval, but they were not the earliest features in the area as K28 F64 cut feature K28 F20. Why this boundary was not dug in one length is not clear. That the position of the line did not have to be precise is demonstrated by recuts in other parts of the site in Periods III and IV, particularly Period IV major north-to-south gully system G20 – G32.

G43. K21 F59, south of the east-to-west roads, had unknown relationships. It was 3" – 5" (7 – 12 cm) deep. The filling was dark loam with a few stones. It produced SN, TH, burnt clay, animal bone and shell, and may have belonged to Period III (*i.e.* earlier than Structure M).

G44. (K20 F2/L20 F39): an uncertain feature only a few inches deep with a dark brown pebbly filling. Its position opposite the major north-to-south Period IV boundary (G20 – G33) may have been fortuitous. No finds.

Period V – VII

G45. A gully complex forming a yard or possibly a building around oven L21 F19 (EM (Fabric A), SN and TH in its filling). The oven was central in an area measuring about 13' (4.00 m) east-to-west by 32' (9.75 m) north-to-south internally. The west side was formed by L21 F5/M21 F127, the east side by L21 F22/M21 F112, and the south side by L21 F71 (there were no gullies on the north side). The alignment of these gullies and the oven was that of the Saxo-Norman buildings (B, C, D, E, *etc.*) and some other site boundaries, rather than the east-to-west road-line.

L21 F5/M21 F127 and L21 F22/M21 F112 were very similar in character. They ranged in depth from 3" to 7" (7 – 17 cm). The fillings of both were dark stony soils and they contained post-holes (Figs 9, 22). As surviving, L21 F22/M21 F112 extended 14' (4.25 m) further north than L21 F5/M21 F127 (which may have continued as post-holes M21 F128 and M21 F106 and M21 F107, reducing the difference to *c.* 7' (2.10 m)). At the south end, L21 F5/M21 F127 ended where it met L20 F71 but the line may have continued south for another 12' (3.65 m) as post-holes L21 F78 and L21 F79, linked by a 1" (2 cm) deep linear stain. It seems probable that this vestigial feature, L21 F86, L21 F99, and the east half of L22 F71 formed two ancillary yards to the south. L21 F86 was 4" – 6" (10 – 15 cm) deep, and was composed of dark brown pebbly soil (no finds). L21 F71 ran for *c.* 25' (7.60 m) as a continuous feature west of gully L21 F22/M21 F112, as shorter and less regular gully lengths east, then south until cut by a modern feature in L21. L21 F71 was 4" – 9" (10 – 22 cm) deep, and had dark sandy soil filling with flints and some small stones; there were traces of inset post-holes. L21 F70 may have been an earlier version of L21 F71 (they were exactly parallel) and ran from the point where L21 F22/M21 F112 met L21 F71 to the east end of L21 F71. L21 F70 was also very similar in character to L21 F71, being 6" – 10" (15 – 25 cm) deep with inset post-holes and a filling of dark sandy soil with flints and some stones. L21 F99 was 2" – 4" (5 – 10 cm) deep. It had sloping sides and a flat bottom, and was filled with dark brown soil with flint and small stones (cf. L21 F71) but no obvious post-holes.

Finds from these gullies were:

L21 F5/ M21 F127: ST (900 – 1150), SN, TH, animal bone.

L21 F22/M21 F112: EM(A), SN, TH, fe nail SF584, animal bone, shell (discarded).

L21 F71: EM(B), EM(A), ST (1020 – 1175), SN, TH, ?TH or (?EM), R, animal bone.

L21 F70: EM(A), ST (1020 – 1175), SN, TH, animal bone, (69% SN); possibly also a late eleventh-century EM(C) sherd from this feature (depth unknown).

L21 F86 and L21 F99: no finds.

These finds suggest gully L21 F71 may have been open in the late twelfth century (and L21 F70 was at least late eleventh century) which accords well with the probable dating of Type I ovens, early Period V. See also G37.

G46. (M17 F15/N17 F3/O17 F25) was over 105' (32 m) long and 10" – 1'7" (25 – 48 cm) deep. It had a rounded profile and filling of dark soil with sand and stones. It was cut into pit N17 F72 to which is attributed a (late?) twelfth-century group of pottery. It was earlier than the Structure G complex of *c.* 1200. No finds except a fragment described as mortar (not kept).

G47. (N17 F1/O17 F32) G47 was on the same alignment as G46. It was 4'6" (1.37 m) wide and 3'2" (96 cm) deep and this unusually large size may indicate that it was medieval (Period V), perhaps associated with G49 Ditch A (M19 F20A/N17 F45/N18 F12 and O18 F10/O19 F15/O20). It remains unphased. No finds.

G48. N19 F2 was cut by G49 (M19 F20A/N18 F12/N17 F45). It was 1' (15 cm) deep, and filled with dark sandy soil. Finds: one medieval Grimston sherd (late thirteenth to fourteenth century), animal bone.

G49. On the west side of the site were two gullies probably associated with each other and possibly with G48: (M19 F20A/N18 F12/N17 F45 and O18 F10/O19 F15/O20 Ditch A).

M19 F20A/N18 F12/N17 F45 ran for over 137' (41.75 m) east-to-west. Its width ranged from 1' (15 cm) to 2'6" (76 cm) west-to-east, and its depth from 9" (22 cm) to 2'1" (63 cm) west-to-east. It was filled with dark, almost stoneless, sandy soil. It probably cut all features except pits N18 F15 and N17 F36 although its relationship to some pits in M19, especially M19 F19B, was uncertain. Finds: one M (thirteenth century), SN, TH, burnt clay, lava quern, animal bone and shell. Even without the medieval sherd, this feature can be dated to the thirteenth century or later as it was later than the Structure G complex of *c.* 1200, and it probably cut N19 F2 (G48) which produced a late thirteenth to fourteenth-century sherd.

Gully O18 F10/O19 F15/O20 Ditch A was probably contemporary. It ran for over 107' (32.60 m) east-to-west with a 43' (13.10 m) north-east to south-west arm. It ranged in depth from 1'7" to 2' (48 – 60 cm). It was filled with dark earth with stones and had dark sand in the bottom. It probably cut all other features. Finds were two M (one on top, one thirteenth century HM? in layer (c)), fifty-three EM (Fabric A to layer (e), B and C in 'upper filling'), ST (latest 1060 – 1250), SN, TH, HMD some uncertain sherds, fe SF244 (knife) and SF165 (shears), lava quern, burnt clay (discarded), ?mortar and plaster, animal bone and shell.

G50. Gully 50 (O20 F10/O21 F10) was also Period V – VII, and cut all other features in the area. It was 1'1" (33 cm) deep. It was filled with humic sand, contained lumps of white clay and had a ?packing of large flints (?on the bottom) in the east part. Finds were seven M (including one late thirteenth to fourteenth-century Grimston in layer (e)), four EM(A), SN, TH, fe nail SF47, animal bone and shell.

These four gullies (G48 – G50) were probably at least late thirteenth century in date; that they could have been LM or even EPM should be borne in mind as

(a) there was one LM (fifteenth century) sherd in the top of pit M19 F19B, of uncertain relationship to M19 F20A/N18 F12/N17 F45 but probably cut by it,

(b) there was one LM roof tile (late fifteenth to sixteenth century) in top of gully O18 F11, cut by O18 F10/O19 F15/O20 Ditch A,

(c) there was mortar and plaster in the lower filling, layer (e), of O18 F10/O19 F15/O20 Ditch A, and

(d) there seems to have been unfired clay (from walling?) in gully O20 F10/O21 F10 (see below, Chalk and flint walls).

G51. This possible north-to-south medieval boundary to the east of the Period IV major north-to-south boundary in grid line 20–21 (G20–G32) comprises L21 F3/M21 F124, M21 F33, N21 F186, N21 F189/O21 F75/O22 F6, and possibly gully N22 F1/O22 F9 to the east. Triple post-hole N21 F174 produced medieval pottery and was possibly associated. This north-to-south gully line was very shallow, the deepest feature being N21 F189/O21 F75/O22 F6 10″–1′5″ (25–43 cm) deep. All the gullies were filled with stony dark brown soil, and there were possibly some associated stake-holes in N21 F186. Finds from these features were very muddled, but N21 F189/O21 F75/O22 F6 (which cut Period IV gullies O22 F5 and O22 F7) may have produced one M (thirteenth to fourteenth-century Grimston), and one ?M and there may have been thirteen M and ?M (thirteenth to fourteenth century) from M21 F33, and one fragment of LM roof tile and four ?M from L21 F3/M21 F124; the overall quantities of finds seem far too great for features only a few inches deep and the attributions are uncertain.

N22 F1/O22 F9 produced no finds, but its size (3′9″–4′6″ (1.15–1.35 m) wide and 1′6″–2′ (45–60 cm) deep) would be unprecedented for a Period III–IV feature. It probably cut gullies N21 F199/N22 F1e and N22 F1f (Period IV? G21).

G52. An isolated length of gully, N24 F68: the finds suggest it belonged to Period VI–VII. It was 4″ (10 cm) south to 10″ (25 cm) north deep, and filled with soft dark brown soil. It contained a brick fragment, an LM sherd, one TH, lava quern, and animal bone; many mussel shells in the north end.

G53. Two gullies cut into the west side of north-to-south Road B in grids L26/M26 dated to Period V at the earliest. In this area, Roads C and D may not have existed, as Period V–VII features were cut into Road B on the west side leaving a 'passage' on the east side the same width as Roads C and D. M26 F18 was cut into Road B, but of uncertain relationship to pit M26 F48 (no finds). It was 1′6″ (45 cm) deep and filled with dark soil and gravel. Finds were two M (thirteenth to fourteenth-century Grimston), SN, fe hinge pivot SF375.

M26 F102 was of uncertain relationship to the other features but cut Road B. It was 1′ (30 cm) deep and contained three layers: dark earth, gravel, and 'red sand'. Finds were from the top layer: two M (thirteenth to fourteenth century, including one Grimston), EM (Fabric A), ST (latest 1060–1250), SN, TH, animal bone.

Gully L26 F3 (no finds) on the east side of the north-to-south roads may have been a counterpart to M26 F102, but this cannot be demonstrated as this feature was of uncertain relationship to both pit M26 F103 (Period IV) and L26 F26 (Period VII).

Unphased

G54. Curving feature P21 F19 occurred in an area of much Period IV activity but it was not excavated. O21 F39 (no information) perhaps continued the same curving line (for O21 F41 and O21 F50 see G1).

G55. Short irregular features N19 F11 and N19 F19/N20 F117 cannot be dated. The latter was 1′–1′3″ (30–38 cm) deep and contained stake-holes. These two features may have been structural rather than part of gully systems, although N19 F19 may have been associated with G8 (N19 F33 and N19 F62) if its position with regard to N20 F117 was fortuitous.

G56. Gully N22 F62/N23 F8 was on a different alignment from all Period III–VII features, and may have been earlier, perhaps Period II. It would seem in any case not to have been part of the Period IV gully systems, nor likely to have belonged to Period III. All relationships were unclear. It was wide and shallow, 3″–6″ (7–15 cm), and filled with dark soil and flints. No finds.

Fences

The presence of many 'single-post' fences on the site is likely, and some have been suggested on the Period III and Period IV plans (Figs 7 and 8).

The line of double posts in N19 (F20 and F21 to F16 and F17) resembles features on other sites, such as the earlier settlement at Cowdery's Down, Hampshire (Millett and James 1983, 209). The east side of putative Building T may have been a return for this line. The alignment suggests Period IV, but Period III is possible, defining the properties in the L17–L19/M17–M19 area.

The plan of the post-holes (Fig.5) may suggest separate fences fronting properties along the road, stepped back at intervals, but this is not certain.

The major north-to-south boundary line in grids M21/N21/O21/O22 defined by gullies in Period IV was probably represented by single-post fencing in Period III, partly obliterated by later features. Small structure X may have been enclosed within a yard (Fig.7).

In general, however, the presence of single-post fences is obscured by the great mass of post-holes.

Post-holes and buildings

Thousands of post-holes were found on this site, ranging in date from the mid-first century AD to at least the fourteenth century (Figs 4 and 5). Many represent buildings, but fences, animal pens, drying racks and industrial structures are also likely.

The post-holes varied in size, some having been post-pits, but most were shallow, cut a maximum of some 2′ (60 cm) into the natural ground. Some of the post-holes were packed with stones or flints as extra support. The only deep post-hole was post-pit L25 F32 which was cut 3′3″ (99 cm) into natural and had a post of 1′5″ (43 cm) diameter set on the north side. This was at the end of a line of Period III pits between 'Building' K and 'Structure' Q and was possibly a boundary marker.

Many stake-holes were found, often in groups. Some of these may even represent light buildings or lighter structures such as chicken coops, animal pens, or loom supports.

The Saxo-Norman timber buildings are mostly of shallow post-holes and thus survive only partly. On Fig.5 lines of posts may be seen for which no return exists, and posts often form groups by size but no plan can be deduced. It seems likely that buildings were often replaced (or merely rearranged) on the same spot. The most obvious buildings are D, C, B in a line, possibly a single massive building (see James and Millett below) which it is difficult to place in the site sequence (?late III or IV), particularly as Building D overlaps both the early G1–G3 boundary and the intense occupation of the grid L/M 17–19 area. However, B, C and D have some internal variations and seem to have genuine ends rather than a coherent system of partitions: viz. the ends of Building C are slightly bowed, Building D overlaps Building C at the north-east corner, and the post-holes or post-pits of Building B are smaller than the other buildings. Within the general site sequence, it seems likely that small Building S (and possible Building T) may belong to Phase III here.

Other buildings appear to have been smaller, and made of slighter posts. Some of the linear features may also have been structural, but Building A has the only complete plan. The two cellared buildings, J and L, were not contemporary, but within Periods III and IV respectively.

Building A

P21 (Figs 8, 54)

An irregular building with internal dimensions 7′3″ (2.20 m) (west) to 10′8″ (3.25 m) (east) wide by 26′6″ (8.10 m) (north) and 28′6″ (8.70 m) (south) long. Formed by irregular slots cut some 8″ (20 cm) into natural. Ridges of compact sand and flint in P21 F14 provided evidence for individual posts or post-pits measuring some 1′9″ (50 cm) by 1′6″

(45 cm), possibly with flint packing. A round post some 1'6" (45 cm) in diameter was represented by a hollow in the west end of P21 F22, perhaps a doorpost at the side of the 2'3" (70 cm) gap between the slots which presumably represents opposed doorways in the long sides.

Dating evidence: Although the slots produced some TH, this building seems more likely to have been eleventh century, aligned with Period IV gully G11 to the south which produced post-1020 ST. The relationships to the overlapping features were not certain, although P21 F17 was likely to have been cut by Period IV pit P21 F16. Relationship to P21 F18 remains obscure. Building A has been assigned to Period IV.

Building B
N20, O20, O21 (Figs 8, 55)
Part of B/C/D
Internal dimensions 39' (11.90 m) by 17' (5.20 m). Individual posts, fifteen each side and one central each end. The posts were cut 10" to 1' (25–30 cm) into natural on average (originally 1'4" to 1'6", 40–45 cm), including the corner and ridge posts. Most had rounded profiles, and were filled with dark sandy soil. On the west side, O20 F19b and O21 F21 had profiles with vertical sides and flat bottom; O21 F21 was the deepest (1'5" (43 cm) into natural) and was the only post on that side to have stone packing. The other posts on the west side were cut 10" to 1' (2530 cm) into the natural and had rounded profiles. The east side was less regular with O20 F51/O21 F1 only 4" (10 cm deep), and more post-holes cut over 1' (30 cm) into natural: O20 F27a (1'2", 35 cm), O20 F28a (1'2", 35 cm), O20 F20 (1'3", 38 cm), O20 F18 (1'9", 53 cm), O21 F3 (1'6", 45 cm). O20 F18 also contained many flints, and some flints were noted in O20 F28a. Both of these post-holes had steep sides, and O20 F51/O21 F1 and O21 F3 had vertical sides and flat bottom. The posts at the north end of the building (O20 F8, O20 F12a, other cut by O20 F10/O21 F10) were cut 10" to 1' (25–30 cm) into natural, rounded, and held no surviving packing. The posts attributed to the south end (N20 F76, N20 F68, N20 F4) were cut 9" to 1'1" (22–33 cm) into natural, were rounded and did not contain packing.

Dating evidence: Post-hole O20 F9 contained three bodysherds of one late TH vessel of eleventh-century date. Posts were cut by Period V–VII gully O20 F10/O21 F10, and probably by Building E post-hole O20 F22a and slot N20 F2/F3. Building B belongs to Period III or IV.

Building C
N20, M20 (Figs 7, 8, 56)
Part of B/C/D
Length of side walls 44' (13.40 m), bowed ends project *c.* 1' (30 cm) each; overall length 46' (14.00 m), by 16' (4.90 m) wide internally. Irregular, individual post-holes. West side thirteen post-holes, mostly cut 1'–1'6" (30–45 cm) into natural, with steep-sided or rounded post-holes. In two instances, N20 F142 and N20 F92, the features were postpits, probably flanking an entrance. N20 F142 was cut 2'2" (66 cm) into the natural and was the deepest feature associated with the building. N20 F92, cut 1'6" (45 cm) into natural, contained a rectangular post 1'3" by 1' (38 by 30 cm).

The east side, of seventeen post-holes and three stake-holes (for panelling?), was of irregular depths ranging from 4" (10 cm) (N20 F129) to 2' (61 cm) (N20 F14) into natural. The shallower posts, except for N20 F131, were at the southern end (the line N20 F135, F134, F133, F130, F129, F128 were all cut less than 1' (30 cm) into natural). Details for N20 F141 are missing, but it seems to have been a post pit located opposite N20 F92 in the west wall: the deepest recorded post, N20 F14 mentioned above, was opposite deeper feature N20 F142. N20 F141 and F14 probably flanked the eastern entrance.

The ends of the building were shallower than the sides. The south end showed a vestigial hollow for posts (grouped as M20 F15) suggesting that they may have been in a shallow slot: they were cut 2"–6" (5–15 cm) into natural. The corner post-holes N20 F121 and M20 F14 must have been post-pits, and were cut 1'4" (40 cm) and 1' (30 cm) into natural. The north end contained at least six posts, cut 8" to 1' (20–30 cm) into natural. The corner ?posts, N20 F57 and N20 F6b, were cut only 1'4" (40 cm) and 8" (20 cm) into natural respectively. No post-holes or post-pits in this structure appeared to have had flint or stone packing (a few pebbles occurred in N20 F145 and N20 F70 on opposite sides near the north end); fillings otherwise were dark brown sandy soil. Profiles were usually rounded, exceptions being N20 F145 (west side), N20 F142 and N20 F92 (see above), N20 F127, N20 F126, N20 F128, N20 F130 (east side) which had steep or vertical sides and flat bottom.

Dating evidence: Several post-holes contained LS potsherds: N20 F92 two SN, N20 F120 one TH, N20 F133 one ST (A1 900–1150), N20 F135 one TH, M20 F14 one TH. The relationship of Buildings C and D is not entirely clear (see James and Millett, below). Building C cannot have been contemporary with Building E as it was overlapped at the north end by N20 F2/F3. The relationship to Building S is not clear. Building C was cut by Period V ovens N20 F31A–F31C. Building C belonged to Period III or Period IV.

Building D
M19, M20, N19 (Figs 7, 57)
Part of B/C/D
Internal dimensions 48' (14.60 m) long by 16' (4.90 m) wide, wider at the north end by nearly 2' (60 cm) to *c.* 18' (5.50 m). There were eighteen post-holes on each side (with no trace of end walls): they were irregular, and usually shallow, from 2" (5 cm) to 1'3" (38 cm) into natural. Most had steep sides and were filled with black or dark brown sandy soil. The deepest posts on the west side were also the largest – ?post-pits M19 F76 and M19 F79, cut 2' (61 cm) and 1'8" (50 cm) into the natural ground. Only N19 F63 (1'6", 45 cm), M19 F73a (1'2", 35 cm), M19 F71 (1'1", 33 cm) and corner M19 F102 (1'3", 38 cm) were cut over 1' (30 cm) into natural on the west side and on the east side only M20 F2 (1'4", 40 cm). Flints in the fillings seem to have occurred on the east side only, in M20 F2, M20 F5, M20 F31, M20 F34. It is not clear whether the blackness of the fillings could indicate burning.

Dating evidence: M19 F76 contained five TH and one Roman sherd. The relationship to gullies M19 F36/M20 F36C and M19 F36A (G1) was rather ambiguous as post-holes were not observed on the east side, but M19 F76 appeared to cut the gullies on the west side: it seems likely that Building D post-dated this early Period III gully system. Pit M19 F55 (Period III or IV) cut Building D; M19 F100 had no finds and is of uncertain date; pit M19 F110 had late eleventh-century material in the top filling. Taken in conjunction with other features in area M17—M19 (see below, Building T, 'Properties' U, V and W), it seems likely that the pits may have belonged to Period IV and have been later than Building D. Therefore, although evidence is slight, Building D is considered to be later than the G1 gullies and earlier than the pits. A date late Period III to early Period IV seems possible (*c.* AD 1000), and this may be the date of the whole complex.

Building E
N20, N21, O20, O21, O19 (Figs 8, 58, 59)
Internal overall dimensions 68' (20.70 m) by 15' (4.60 m), possibly two buildings in line. Composed of two lines of irregular post-pits and slots. Slot O19 F22 was filled with light brown sand but fillings otherwise were dark brown sandy soil. Stone packing was only found in N21 F58 and N21 F60 on the south-east corner of the structure(s). Most features were cut over 1' (30 cm) into the natural, the deepest being N21 F10 and N21 F57 (both 1'4", 40 cm), and N21 F60 (1'3", 38 cm). The north-to-south post-holes in O20 F50 were shallow (5"–9", 12–22 cm), but perhaps represent the east end of a separate structure rather than an internal division in one large building. L-shaped feature N20 F2/F3 would in that case be situated on the south-west corner of the eastern structure, the opposite corner of which has been cut away by O20 F30 of Period V.

Dating evidence: LS and earlier potsherds were found in O20 F22a (one TH, one R), O20 F26 (one SN, one HMD) and O20 F50 (one TH). Stratigraphically, Building E was later than Building B as a post (O20 F22a) seems to have obliterated a smaller post from Building B. It was perhaps also later than Building C, which it overlapped. It was earlier than Period V oven, O20 F30, and was also presumably earlier than O20 Ditch A of Period V–VII. A precise date is not possible, but Building E probably belongs to late Period IV or early Period V, late eleventh to twelfth century.

Building F
M20, M21 (Figs 7, 8 and 60)
Internal dimensions 15'6" (4.70 m) by 12'6" (3.80 m). Individual post-holes, with larger central ridge posts in north and south ends. The post-holes were all of rounded profile and filled with dark brown or black sandy soil. Stone or flint packing was observed in four instances: M20 F60 (ridge post?), M21 F24a (north-east corner), M21 F26, M20 F67a (southwest corner). The post-holes were all shallow, cut 3" to 9" (7–22 cm) into the natural.

Dating evidence: None (probably Period III or IV).

Structure G

M17, N17, N18, O17, O18 (Figs 5–7, 61)

Four irregular lines of shallow post-holes, running for at least 105′ (32 m), and 30′ (9.15 m) wide. These may have been tentering frames, for stretching cloth after dyeing (Clarke 1984, 134) but the posts seem rather large. A similar example at Winchester seems to be of the same general date (Biddle 1970, 298).

Dating evidence: Post-hole M17 F78 produced late twelfth-century pottery (one EM(B), one GMT) and M17 F80 produced twelfth-century EM and GMT. Stratigraphically, Structure G was later than gully G46 which cut into twelfth-century pit N17 F72, and several pits of later eleventh-twelfth century date (M17 F4/N17 F58 and probably M17 F57, N17 F56 and N17 F27). Structure G was also cut by Period V–VII gully G49 and must therefore date to the late twelfth to early thirteenth century, *c.* 1200.

Building H

L22, L23 (Figs 7, 62)

Internal dimensions at least 14′ by 14′ (4.26 m) apparently with an extension on the north-east side some 8′ (2.45 m) by 5′10″ (1.78 m). This structure was obscured by later pits, and may originally have been a rectangle whose south-east corner lay under pit K23 F3. The building comprised small irregular post-holes (1′ (30 cm) or less, except for L23 F132, 1′3″ (38 cm) diameter). These mostly had rounded profiles and were filled with dark soil and gravel. Flints, described as packing in L23 F78, L23 F105, L23 F132, were also present in: L22 F104, L23 F122, L23 F140, L23 F155, L22 F122, L22 F120 (south-west corner). Depths were shallow, with all posts only cut from 2″–6″ (5–15 cm) into the natural.

Dating evidence: There were no finds. Pits in the area (L22 F111, L22 F112, L22 F113, L23 F119, K23 F3) have been tentatively phased as Period IV (see sand storage pits, below). These cannot have been contemporary with Building H, which was probably earlier, Period III (late).

I: not used.

Building J

K27 F15 (Figs 7, 8, 63)

Rectangular feature, probably a cellar, 19′ (5.80 m) by 13′ (3.95 m), cut 4′6″ (1.35 m) into natural, with sloping ?entrance ramp at south-east end and a floor described as mortar *c.* 1″ (2 cm) thick (no samples have survived for analysis). The structural elements were slots at the ends, and post-holes at the sides and corners. The north-west end slot was represented by a gap *c.* 11″ wide by 4″ deep (27 by 10 cm) and a raised lip on the edge of the mortar. The south-east end slot (feature xvi) was *c.* 8′6″ long by 6″ wide (2.60 m by 15 cm) and possibly contained post-impressions although it was noted at the time of excavation that these may be 'impressions of bumps on the bottom of the sill' (there seems to have been a post on the east end and perhaps internal posts suggested by hollows ranging from 2″ to 5″ (5–12 cm) deep but mostly 4″ to 5″ (10–12 cm)). Overall depth of the feature was 1½″ (3 cm), with steep sides and a flat bottom. The mortar floor lipped up against the north edge. It was filled with 'dirty gravel and sand with some lumps of mortar', as were the post-holes.

There were five sets of post-holes on each side, which were double or triple (except for two on the south side (xxvi and xxvii)), and two extra opposed smaller posts (vi and xxiii). In eight instances there was a vertical post on the outside edge, with a shallower inner post apparently slanting inwards at *c.* 45 degrees. The outer posts (i, iv, vii, ix, xii on the north-east side, and xxiv, xxix, and xxxi on the south-west) seemed to consist of post-holes with a conical upper profile due to collapse, erosion or damage by removal of posts, and a lower profile with vertical sides and flat bottom: apparently, they were not in pits.

The lower oval or rectangular impressions of the posts themselves seemed to range from 4″–11″ by 4″–7″ (10–27 cm by 10–17 cm) with most having been 6″–8″ by 4″–5″ (15–20 cm by 10–12 cm). Depths ranged from 1′4″ to 1′8″ (40–50 cm) below the level of the mortar floor.

The inner posts (ii, v, vii, xi, xiv on the north-east side, and xxv, xxx, xxxii on the south-west) probably consisted of slanting posts in oval pits, although the 'pits' may have been caused by rocking the posts to remove them. If they were pits it cannot be determined whether there was any stone or flint packing as the original fillings did not survive. Evidence for possible D-shaped posts occurred in three instances: xi and xiv on the north-east side, and xxx on the south-west side. They were shallow, 4″ (10 cm) and (two) 8″ (20 cm) deep, whereas the general depths of the inner post-holes otherwise ranged from 11″ to 1′6″ (27–45 cm), mostly *c.* 1′ (30 cm). Extra post-hole xxviii was only 2″ (5 cm) deep; small post-hole vi opposite was 3″ (7 cm) deep. Some holes cut into the floor in the north-west area were also shallow: xxxiv (1½″, 3 cm) and xxxv 7″ (4 cm).

The north corner is cut away by Period IV pit L26 F104, but the remaining three corners had small, shallow post-holes in them. Those at the south-east end, xv and xxiii, were round and 4″ (10 cm) deep. The west corner, xxxiii, was a rectangle with a projection on the north side, 3″ (7 cm) deep.

The sides of the cellar may have been retained by planks, as indicated by feature xxii at the south-west end of the building. This was a thin slot 1′10″ (55 cm) long by 2″ (5 cm) wide by 3″ (7 cm) deep, with vertical sides and flat bottom: it was filled with dark stained sand and a few gravel pebbles.

Most of the features contained carbonised wood, which suggests that this building had burnt down. Identification of the samples indicates that the outer cellar posts had been made variously of oak, ash and birch. The inner post sampled was of oak. The overlying building probably had floorboards of oak and ash, wattle panelling, and a thatched roof of rye straw (see below, Plant Remains).

The fillings of some of the features contained lumps of mortar, probably derived from the floor of the cellar. The cellar was filled with layers of 'gritty' dark brown soil and dirty sand and gravel. The lowest deposits of sand and gravel filled the slots and most of the post-holes, indicating that the timbers had been removed by the time the cellar space was being filled, either by fire, rotting or deliberate extraction.

Entrance ramp

At the south end, a rectangular ramp *c.* 14′ (4.25 m) long, widening from 4′6″ (1.37 m) to 6′6″ (2.00 m), was probably an entrance to the cellar. It had vertical sides and the bottom sloped gradually, with a step down into the cellar; cut a maximum of 3′6″ (1.06 m) into natural. There were two post-holes where it entered the cellar: xviii and an unnumbered hollow on the south-west side. Feature xviii was only 2″–3″ (5–7 cm) deep and there were two faint round impressions in the bottom, suggesting it may have been a pit for two posts 4″ and 5″ (10 cm and 12 cm) in diameter.

There were four opposed post-holes (A–D) on the ramp, spaced equally from xviii and its counterpart. A–D were cut more deeply into the subsoil than xviii, being 11″–1′3″ (27–38 cm) deep. All were small posts with vertical sides, and B was a 4″ by 3″ (10 cm by 7 cm) diameter post set in a 9″ (22 cm) diameter hole. All of the post-holes were filled with dark soil, including B which contained 'dirty' gravel. As these were the only features in this structure to retain separate fillings, and had no conical upper profiles, it may be that these posts (indicating a revetment, or even a sheltered entrance) had been left to decay *in situ*. The layers filling the cellar continued into the entrance ramp, and appeared to seal the fillings of the ramp post-holes.

Dating evidence: Two post-holes contained potsherds (xxiv six TH, xxix two TH). Finds from the filling of the cellar include three bodysherds from a vessel of uncertain identification, but were otherwise one ST (D5 900–1000), twenty-six SN, and eighty-five TH mostly from different vessels. Similarly, post-hole A on the ramp contained two TH, and there was one TH 'on the floor of the entrance way'. There was no EM (eleventh century). Of twenty-five sherds attributed to the lowest levels of the cellar a high percentage (56%) are SN, which may indicate that the cellar had gone out of use in the early eleventh century. This filling was cut by pit L26 F104. The finds from this pit have been muddled, but most likely belonged to Period IV (or later). The pit 'blocking' the entrance ramp, K27 F43, can probably be related by finds to late Period IV, although this is not certain.

This evidence indicates that Building J was in use in Period III.

'Building' K

L25 (Figs 7, 64)

L25 (Fig.26) contained many post-holes within an area bordered by pits, perhaps representing a single 'property'. Several interpretations are possible of the post-holes within this small 'property', and a sequence of buildings may have been erected on the same spot. The pits enclose an area of some 36′ (11.00 m) north-to-south by 24′ (7.50 m) east-to-west, the same size as 'properties' containing structures Q and R (shown on Fig.7).

Lines of posts are clear; one on the south side, between L25 F165 and L25 F175, an eastern line from L25 F175 northwards at least as far as L25 F128, but probably to L25 F49, F48 or F31. The western area was cut by many pits. Some other east-to-west lines are possible, such as L25 F77, F79, F80, F93, F94, F95, F98, F99 or L25 F14, F37, F39, F41, F44a, F46a. In the south-east corner of the area was a cluster of stake-holes.

The post-holes in this area were shallow, cut 3″ – 10″ (7 – 25 cm) into the natural. Most profiles were rounded. Fillings were dark brown sandy soil, often with gravel or flints (too small to have been packing).

Dating evidence: Few post-holes in this area contained dating evidence (L25 F21 TH and L27 F76 possibly EM(A), SN, TH). Gully L25 F133/F136 produced an EM(A), but the pits within the building area remain unphased except for L25 F91 which produced late eleventh-century finds.

As the pits which help define this 'property' belonged to Period III, possibly continuing into Period IV, any buildings here are also likely to have belonged to that date. The pits and post-holes here lie alongside the road (late Period III) and are probably of that date, or early Period IV.

Building L

J26 F6/K26 F52 (Figs 8, 65)

Rectangular feature 19′ by 11′ (5.79 by 3.35 m), cut 4′ (1.21 m) into natural, cellar of building. Structural elements are represented by a robbed beam slot on all four sides, 1′6″ (45 cm) wide, 9″ to 1′ (22 – 30 cm) deep. There was no trace of any lining. There was a made 'floor' of graded flints, *c.* 2″ – 3″ (5 – 7 cm) average size, piled up *c.* four flints high (about 9″ (22 cm) thick) above an undisturbed layer of black soil which also seemed to run under the slots around the edge of the feature. The soil in the slots seems to have been separate from the layers in the backfilling. The lower soil layers of the feature filling appeared to have been tipped in from the middle of the north side and from the southwest corner. The main filling consisted of layers of dirty gravel (probably deliberately tipped) becoming more sandy towards the top. However, this thick pile of flints seems unlikely to have been a normal floor, even if some sort of floor was desirable above the soft sand of the natural soil.

The upper part of the filling of L and pit J26 F14 to the south were deposited together. This pit seems to have been an earlier one dug out at least partly, and reused in conjunction with Building L, possibly to shelter the hearth found at a depth of 3′4″ (1.00 m) in the pit filling, or perhaps as an entrance to the cellar from outside. Both Building L and pit J26 F14 were surrounded by stake-holes cut a few inches into the natural. The surviving descriptions are of numbered post-holes, which had grey sandy soil filling: J26 F4 was packed with flints. It may be that the building was abandoned and fenced off before the hole was filled in.

Dating evidence: Pottery of eleventh-century date was found beneath the flint layer at the bottom of the cellar, including one ST dated *c.* 1020 – 1175 and eight EM(A), as well as some SN and TH. This dates the laying or dumping of the flints to post-1020; it was noted at the time of excavation that the underlying sand was undisturbed suggesting that this flint 'floor' was primary flooring. Above the flints, the many finds from the filling form a consistently late twelfth to early thirteenth-century group and the feature must have been finally filled in *c.* 1200. However, the sharp vertical edges probably indicate that the cellar did not stand open to the weather for long before being filled. Pit J26 F14 contained a high percentage of SN in its lower filling which elsewhere on the site seems to have occurred in the early eleventh century, reinforcing an eleventh-century date for this pit.

'Structure' M

K21 (Fig.11: no separate plan)

An area of post-holes 31′ by 15′ (9.45 m by 4.60 m). Northern line of post-holes smaller and shallower than those on south (cut 4″ – 9″ (10 – 22 cm) into natural). The north-east 'end' was slot K21 F36 (post-hole F36d only 5½″ (13 cm) deep), possibly matched at the west end by a linear feature (unnumbered) cut by pit K21 F23. The south line is more irregular, and may have included two post-pits with multiple posts K21 F75 and K21 F79 at the west end. The south-east end lies beyond the trench. Post-hole depths on the south line ranged from 7″ to 1′1″ (17 – 33 cm). The post-holes may represent fences, aligned generally with Road B.

Dating evidence: K21 F75 contained an eleventh-century potsherd, and a sherd in K21 F86 is also probably of this date. Late Saxon sherds (TH and SN) were found in K21 F81/F82/F83. Relationships to other features in the area were not clear.

'Structure' N

O22 O23 (Figs 34, 35: no separate plan)

Two irregular lines of posts, possibly structural or a small yard. The features were mostly large, and probably post-pits, often for double or multiple posts. They were all shallow, cut 6″ to 1′ (15 – 30 cm) into natural and some (O22 F22, O22 F33, O22 F82) contained stones (which may have been packing) in their filling. Fillings otherwise often had gravel in the soil.

Dating evidence: The only feature with finds was O22 F47 (some SN and TH).

O: not used.

'Structure' P

M22 (Fig.23: no separate plan)

Represented by an area of post-holes inside proposed Period III enclosure G10 which was not cut by pits. In the south-east quadrant of grid M22 a rectangular area some 22′ by 10′ (6.70 by 3.05 m) lies on the same alignment as the G10 gullies. Most features here seem to have been post-holes rather than post-pits, and were cut only 5″ – 10″ (12 – 25 cm) into natural. Details of any structures are obscure; there may have been a succession of fences here. The southern limit of the area (M22 F244, F242, F237, F236, F235, F234, F230, F229, F228, F227, F225, F224, F251, F222, F170) may be continued westwards (as fencing?) by M22 F161, F160, F150, F145, F144, F97 and M21 F72, M21 F71. This last (to which a sherd of LM pottery is attributed, perhaps only on the surface) may have been structural and related to small posts M21 F81 – F89, or slot M21 F52. Also, it is noticeable that the possible west side (M22 F173, F167, F169, F170C) was in line with boundary gully G41 (M22 F31/N22 F134/N23 F7/O23 F22) – unphased but probably Period III or IV – but if the posts were fencing they did not continue south of pit M22 F248. M22 F244, F247, M23 F121, F120 may represent an east side; a central partition could be the line M22, F206, 205 . . . 188, 189.

Dating evidence: None.

'Structure' Q

L25, L26, M25, M26 (Figs 7, 26, 27)

A 'property' on the west side of the north-to-south road (cf. 'Building' K) may have contained a succession of structures within an area some 23′ by 35′ (7.00 by 10.65 m) defined by lines of pits. This area was much cut by later pits and no reconstruction is possible, but the posts were smaller than those in 'Building' K (cut 4″ – 9″ (10 – 22 cm) into natural). An arc of posts in this area may represent a round building (R9).

Dating evidence: The only post-hole to produce finds was M25 F68 (one SN, one TH). Like K, Q lay alongside the road (late Period III) and must post-date it or be contemporary.

'Structure' R

L26 (Figs 7, 27: no separate plan)

An area some 26′ by 36′ (7.90 by 11.00 m) maximum, containing post-holes, opposite 'Building' K and 'Structure' Q, and bounded by pits, may represent a property with structures; no plan can be reconstructed.

Dating evidence: None of the post-holes produced any finds. Like K and Q, R lay alongside the road (late Period III) and must be contemporary or post-date it.

Building S

N20 (Figs 7, 32, 66)

Asymmetrically within Building C, and presumably not a contemporary structure, Building S measured externally 20′ by 10′ (6.10 by 3.05 m), with the west side (F105) one foot shorter than the east (F104). Building S was constructed of closely set posts in two roughly parallel slots, N20 F104 and N20 F105. The slots had sloping sides and were cut 10″ to

1′4″ (25–40 cm) into the natural, depending upon the depth of the posts: they were filled with dark brown sandy soil with pebbles. Another slot, N20 F111, was possibly an internal partition dividing the building into two rooms, with a connecting doorway on the west side. This feature N20 F111, did not show evidence of palisade construction, but the large post-hole within it may have been associated as it occurred in the centre of the building and N20 F111 was much more shallow on the west side of it, cut 8″ (20 cm) into natural rather than 1′1″ (33 cm) as in the eastern part.

Dating evidence: No finds. Building S seems unlikely to have been part of Building C, but may have belonged to a different phase of Periods III–IV.

Building T

M19 (Figs 7, 67)

Dubious, especially as the proposed north-west corner post M19 F78 is alternatively used for round building R2, but it is neatly situated within the early gully system of Period III (G1) and may have been an precursor of Building D. The proposed sides are: west M19 F89a, M19 F68, M19 F43, M19 F72, M19 F78?; north end in east end of M19 F75, M19 F111; east side M19 F112, M19 F115, M19 F120 (M19 F122?); south end M19 F126?, and a post-hole with no number. These post-holes were rather irregular in size and filling, but depths cut into natural were consistently 6″ – 10″ (15–25 cm) except for M19 F78 which was only cut 2″ (5 cm) into natural. Alternatively, these lines of posts might represent fencing, or have been structural but not associated with each other.

Dating evidence: No finds. If associated with G1 gullies, Building T would be Period III.

'Properties' U, V, W

(Figs 7, 19, 20)

Grids M17–M19 (and L17–L19) clearly contained sequences of Period III or IV structures, but these cannot be disentangled. The major gullies may have divided 'properties', called here U, V, W for convenience (Fig.7). However, some linear features may also have been remains of structures or enclosures:

i) M18 F64 was an L-shaped gully cut 1′4″ (40 cm) into natural with a terminal post-hole at the north-east end. It may represent a building, with L-shaped gullies M19 F56 and the central gully of M19 F53. These lines may have continued northwards to post-holes M19 F34 and M19 F5 on the west, and some post-holes on the west side of M19 F48 (or M19 F48 itself) on the east.

ii) The east gully of M19 F53 may have formed a pair with M19 F21, a slot which contained many post-holes. Post-hole M19 F60a occurred midway between these two features.

iii) Linear feature M18 F54 had vertical sides and flat bottom, and was only cut 2″–4″ (5–10 cm) into natural; it may have been structural. It ended at a right angle to M18 F67 which was of similar profile and depth. The eastern arm of M18 F67 ran into M19 F13 which was of different character but contained many post-holes. M19 F48 joined M19 F13 but did not form a right angle with it. M19 F13 may have continued east into slot M19 F69; a possible return might be represented by posts M19 F88, M19 F72, M19 F46, and M19 F49. These features were all shallow (less than 1′ (30 cm) into natural) and M19 F49 is situated opposite the point where M18 F54 ends. The only post-hole found on the possible northern line was M19 F2a but most of the area was obscured by pits and gullies. As this defines a rectangular area some 40′ by 28′ (12.20 by 8.55 m) it seems most likely to represent a small enclosure. The general alignment matches the late Period IV gullies to the south (M18 F68/M19 F65, and L20 F1, F2 *etc.*, see G31).

U

(Figs 7 and 19)

This area contained post-holes which appear to define a square enclosure measuring 17′ (5.18 m) in each direction, but with untidy sides. The post-holes are M18 F88, F90, F41, F91, F42, F47, F46, F48, F71, F70, F20, F22, F21, F14, F13, F55, F7, F11, F12. These were all shallow (cut 3″–9″ (7–22 cm) into natural) except M18 F11 and M18 F12 (cut 1′2″ (35 cm) and 1′5″ (43 cm) into natural). Central to these possible fence lines and perhaps enclosed by them were M18 F25 and F26.

V

(Figs 7 and 19)

In M18, a line of posts M18 F132, F133, F134, F135, F121, F122, may have been a fence (continuing to M18 F85 and M18 F76 to the north?), or may have been the east end of an untidy enclosure. A possible north side continued into M18 F116, F113, F110, but becomes obscure further west (M18 F109, F107, F80, or F81, or F82?): south side may have been M18 F131 F130, F128, F117, F104, F96 but these are irregular; depths were similar (cut 5″–9″ (12–22 cm) into natural) except for M18 F128 and M18 F96 which were deeper (1′ (30 cm) and 1′6″ (45 cm) into natural). This possible enclosure appears to have stood in the corner of two gullies F24 and F66 (although they were unlikely to have been contemporary).

W

(Figs 7, 18)

In M17 west of gully F112 a dense concentration of post-holes, not part of Structure G nor round building R1, may represent the remains of structures here. M17 F17 and F20 were probably contemporary as they contained numerous sherds of the same TH storage jars.

Building X

N21, N22, O21, O22 (Figs 7, 33, 34; no separate plan)

A Period III fenced yard (Fig.7) contained centrally a group of small post- or stake-holes, cut 5″–9″ (12–22 cm) into the natural. These presumably represent some light structure, but not a formal building; there is no evidence for a north-east corner.

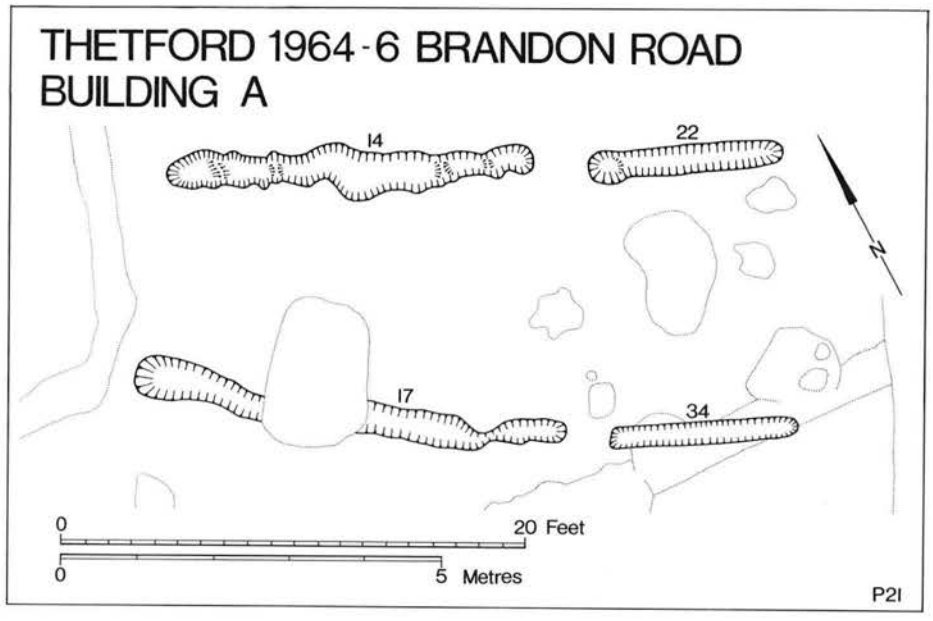


Figure 54 Brandon Road. Plan Building A. Scale 1:100.

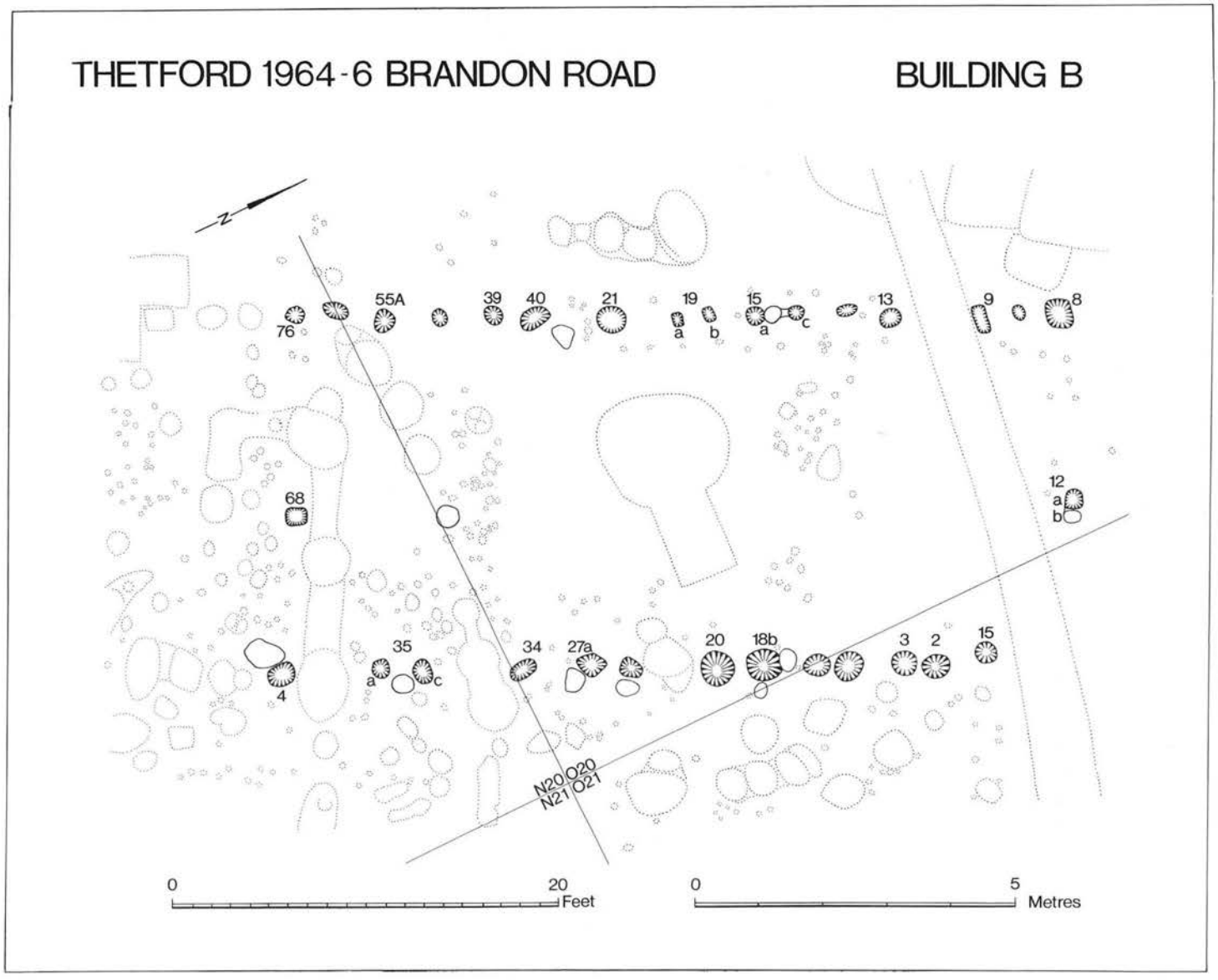


Figure 55 Brandon Road. Plan Building B. Scale 1:100.

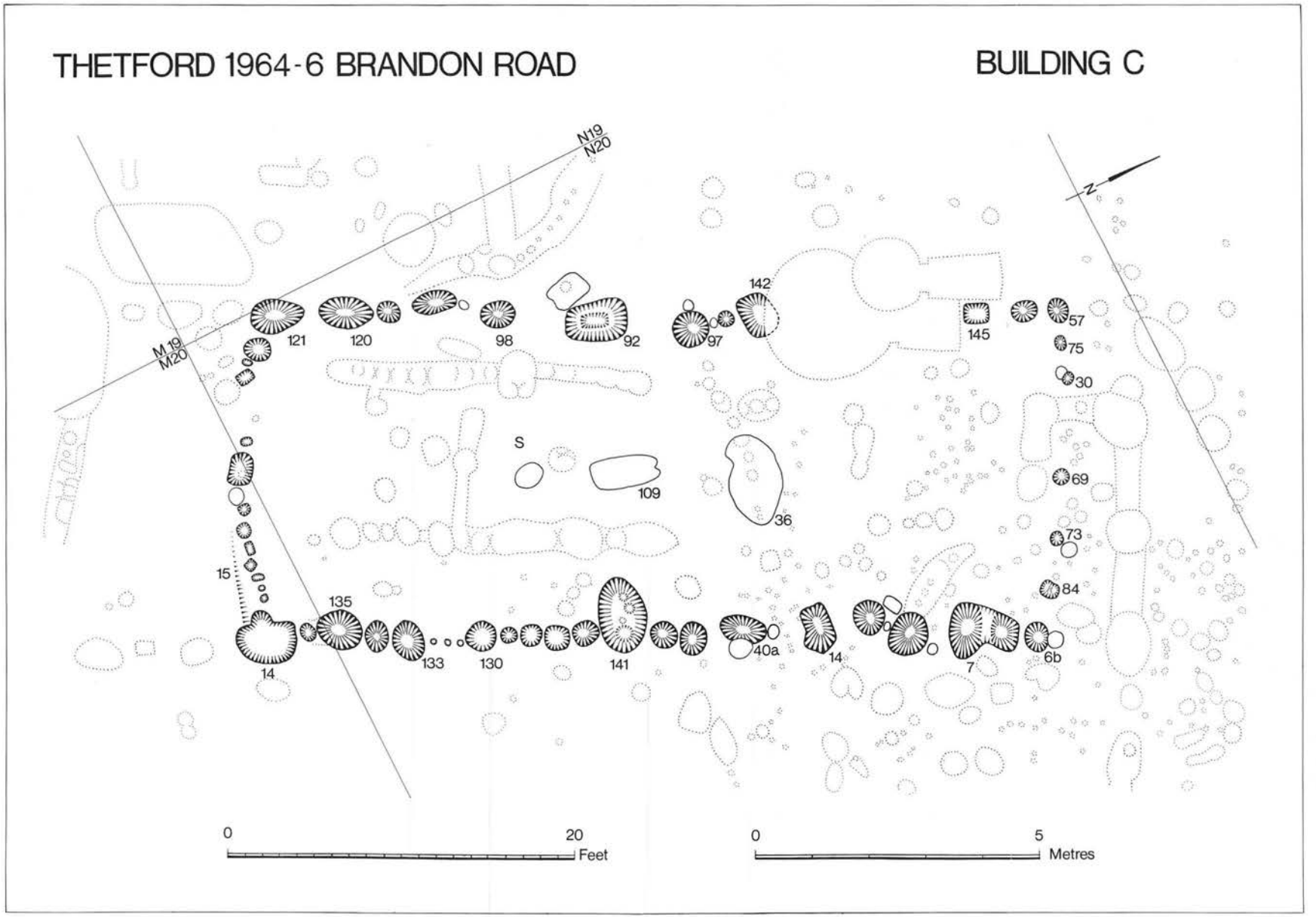


Figure 56 Brandon Road. Plan Building C (with Building S inside). Scale 1:100.

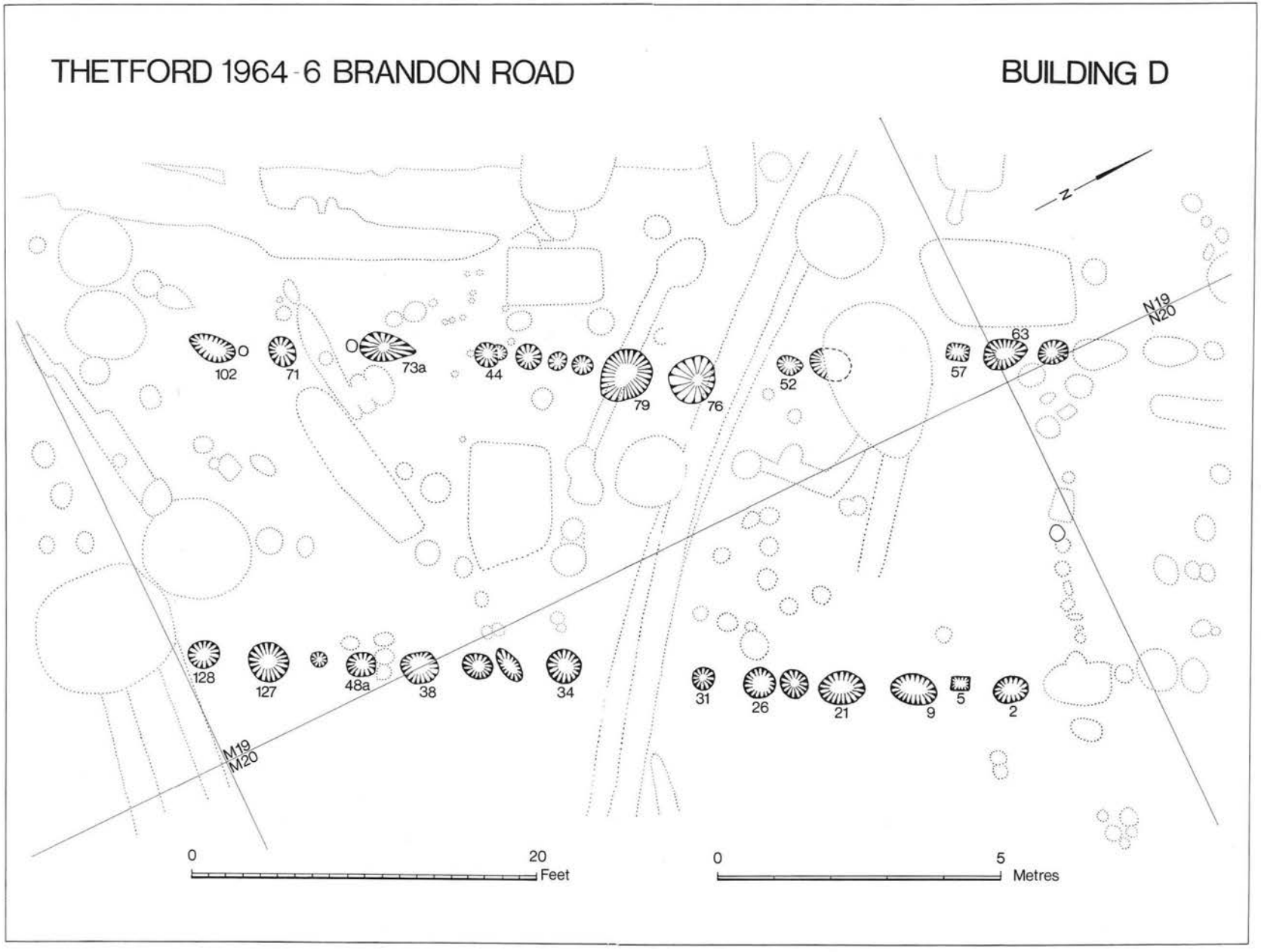


Figure 57 Brandon Road. Plan Building D. Scale 1:100.

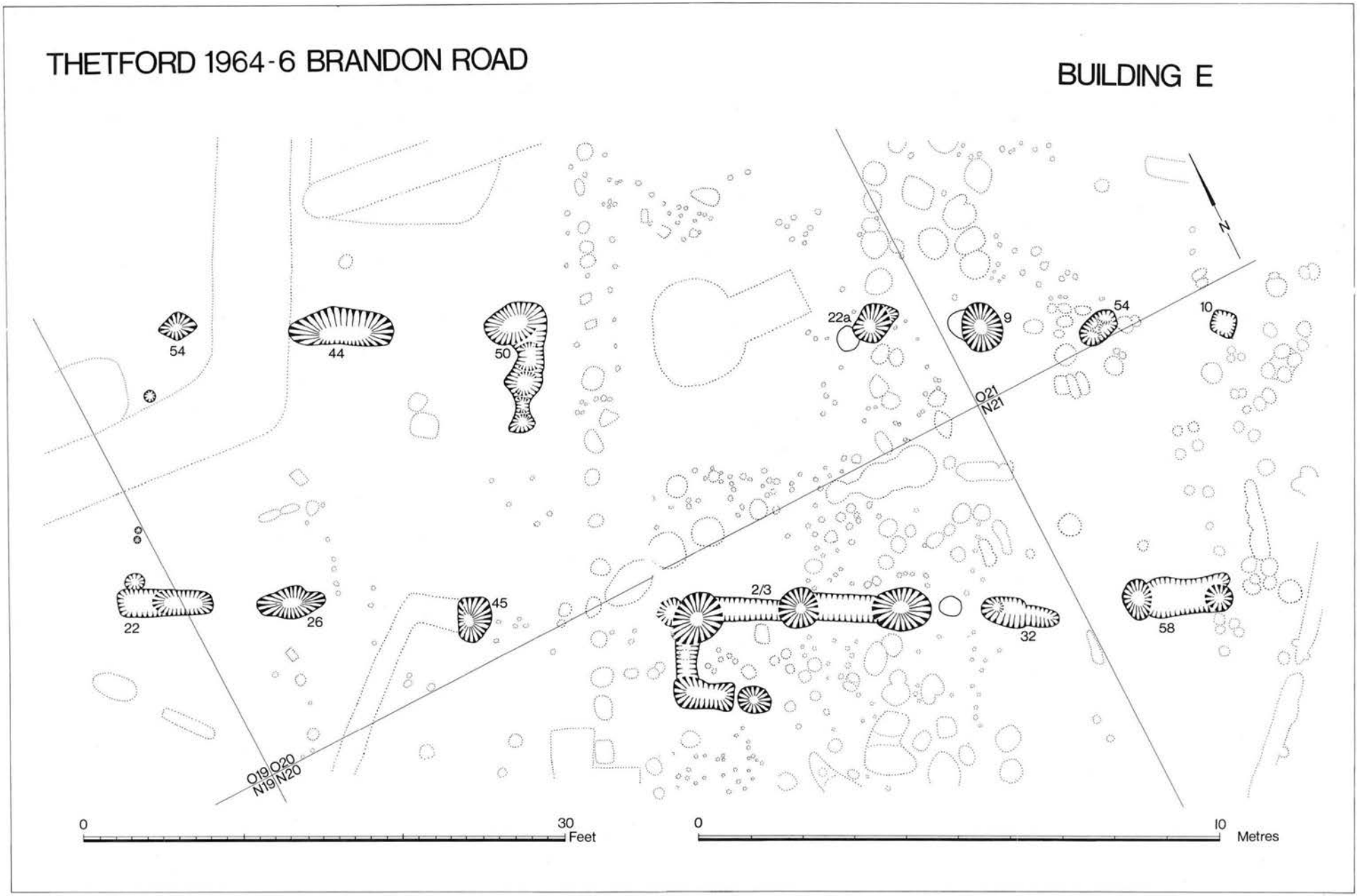


Figure 58 Brandon Road. Plan Building E. Scale 1:100.

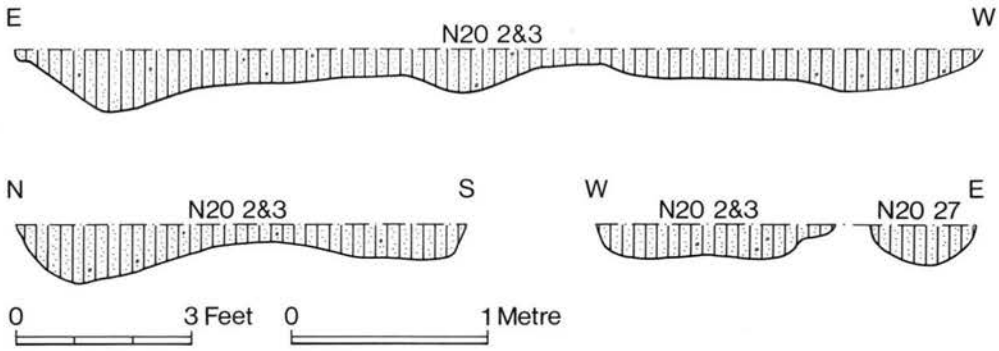


Figure 59 Brandon Road. Building E, longitudinal section N20 F2/F3. Scale 1:40.

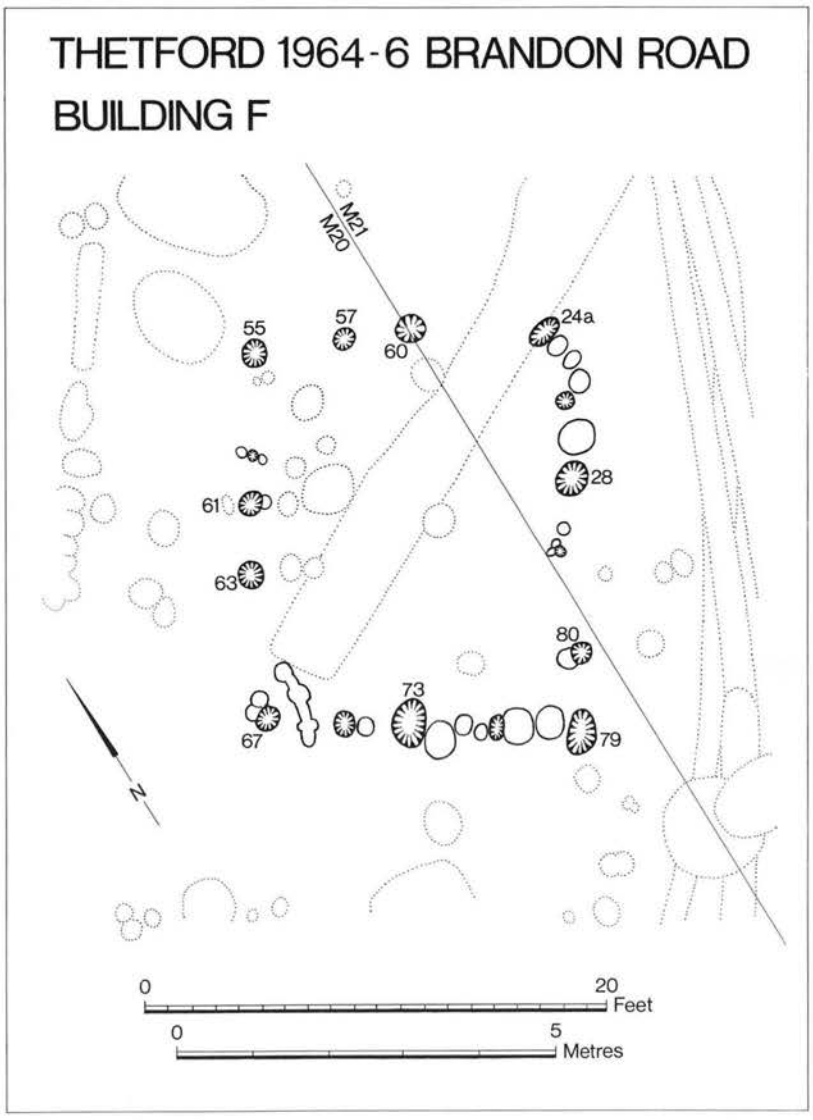


Figure 60 Brandon Road. Plan Building F. Scale 1:100.

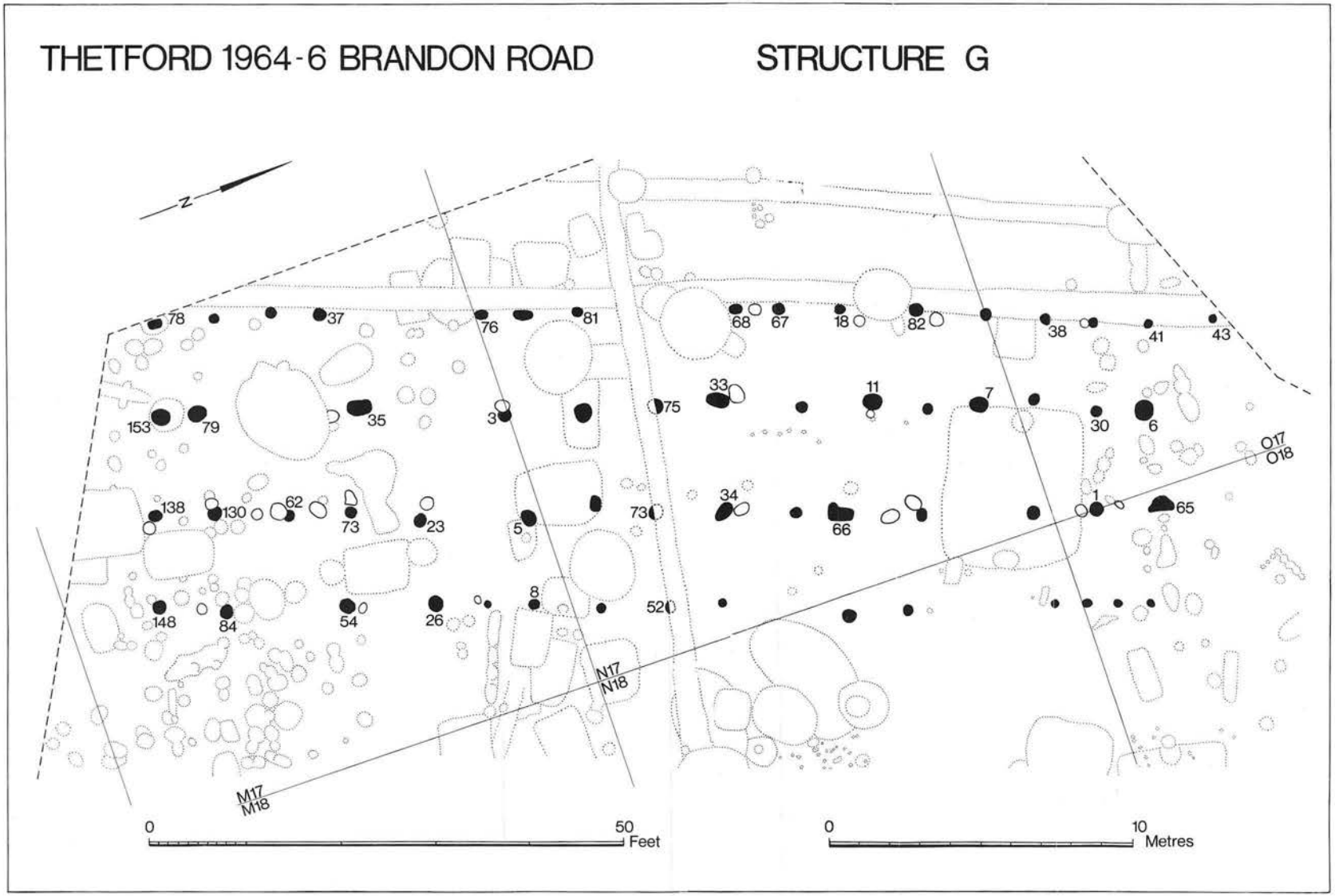


Figure 61 Brandon Road. Plan Structure G. Post-holes of Structure G shown in black. Scale 1:200.

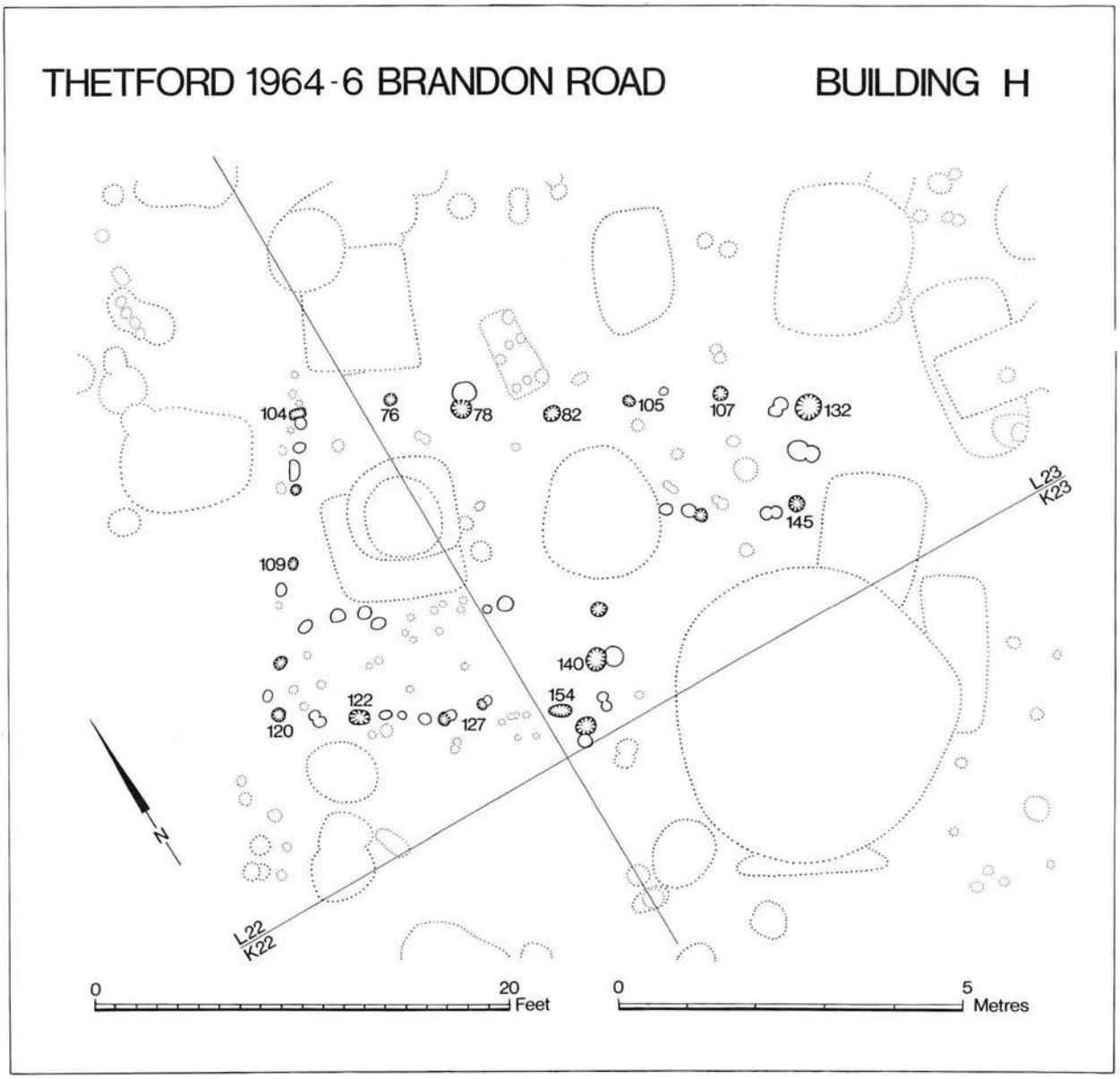


Figure 62 Brandon Road. Plan Building H. Scale 1:100.

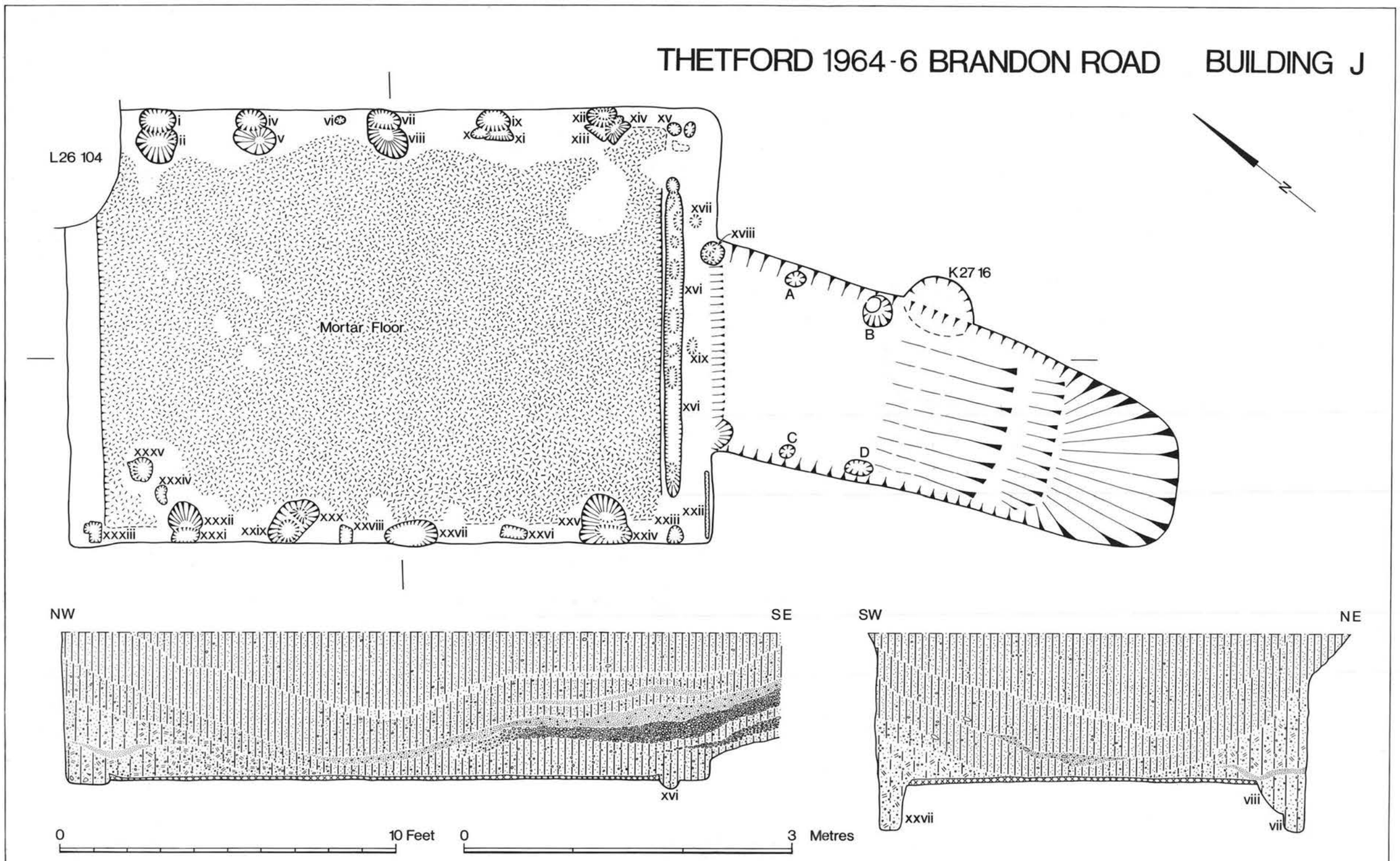


Figure 63 Brandon Road. Plan and sections Building J. Scale 1:40.

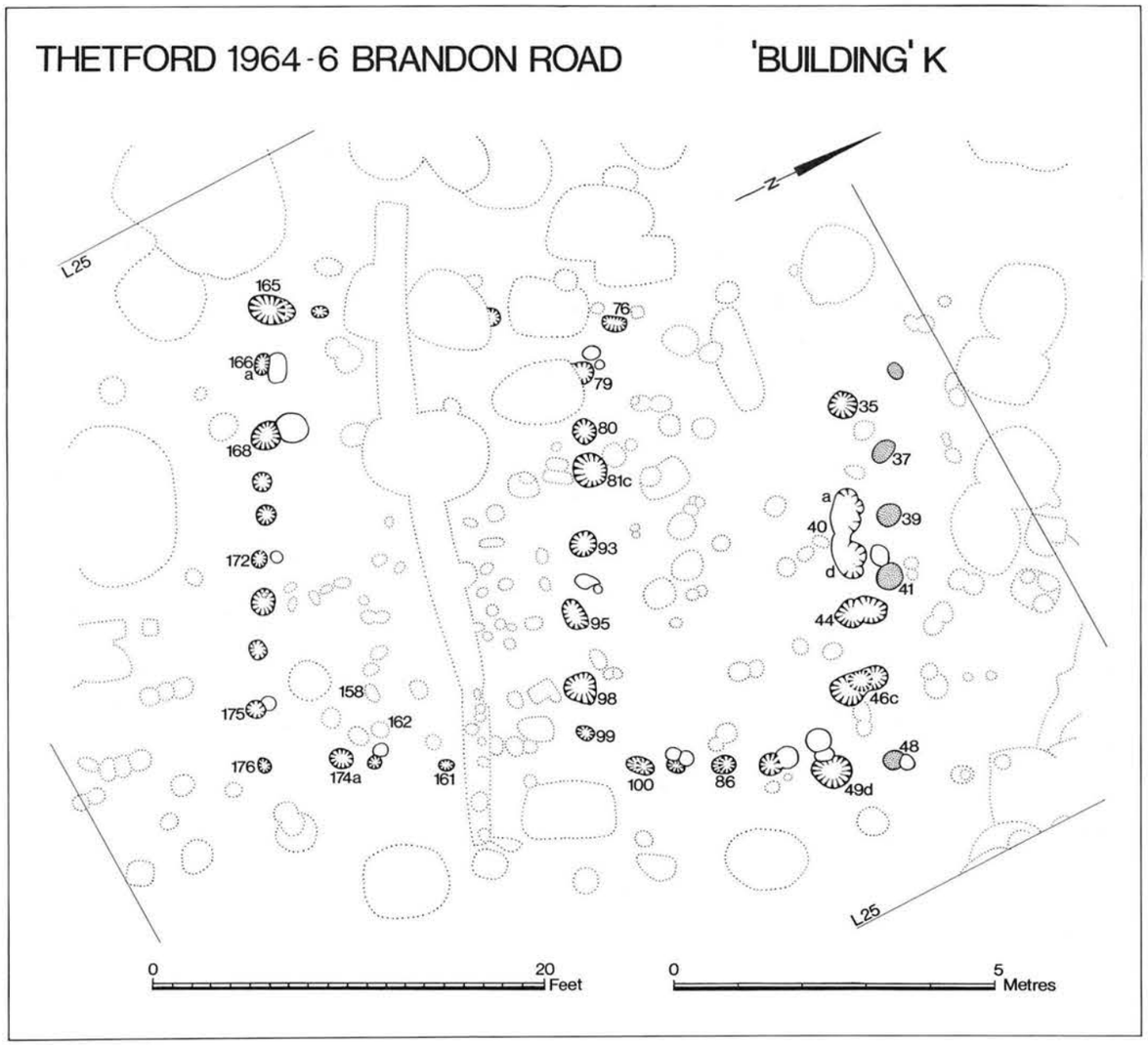


Figure 64 Brandon Road. Plan 'Building' K. Scale 1:100.

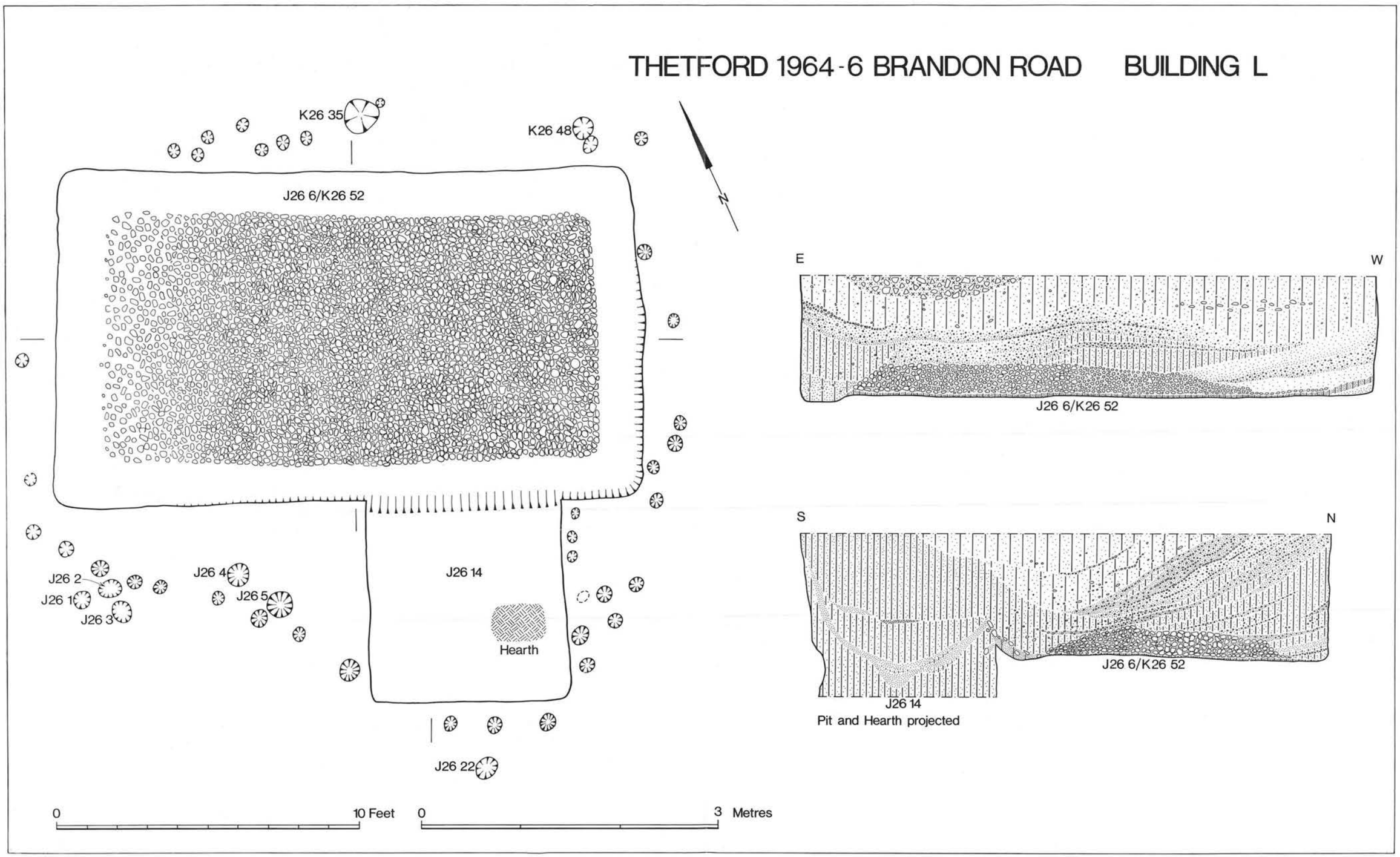


Figure 65 Brandon Road. Plan and sections Building L. Scale 1:40.

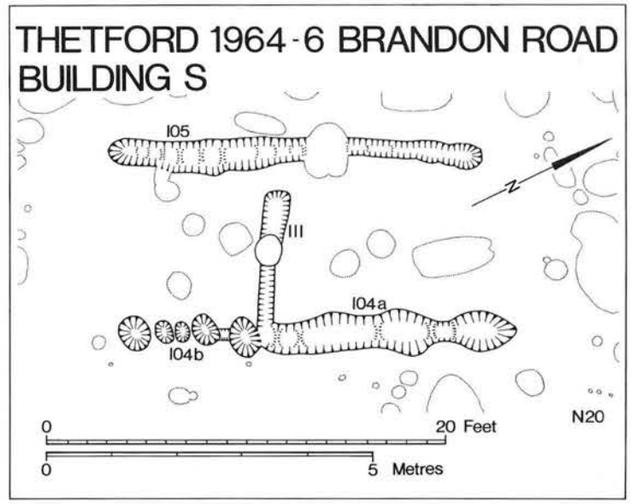


Figure 66 Brandon Road. Plan Building S. Scale 1:100.

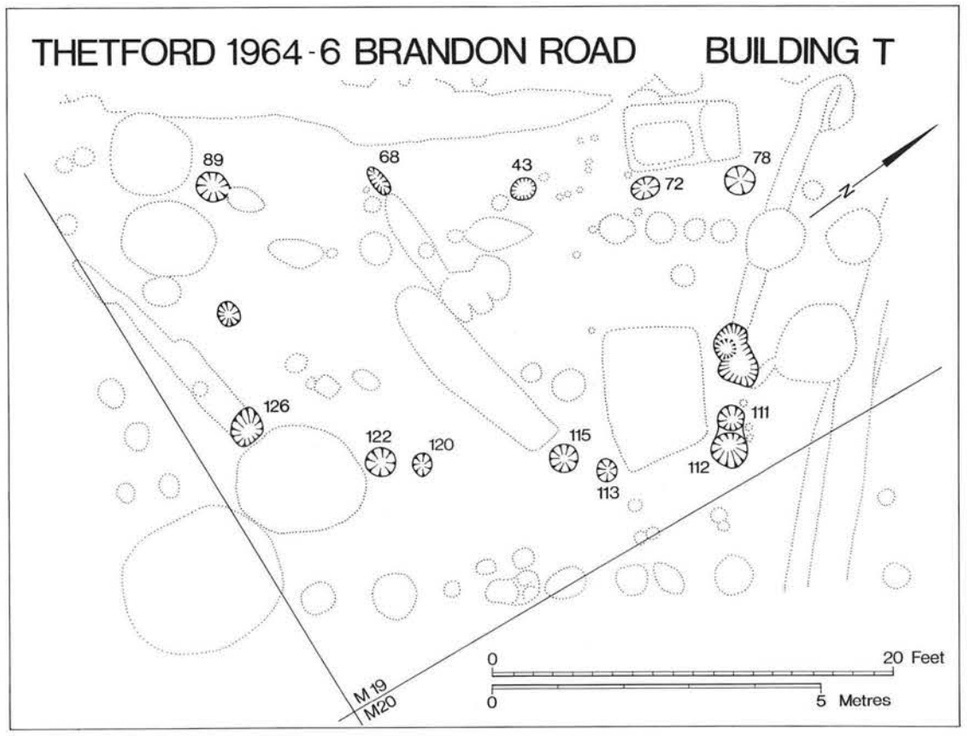


Figure 67 Brandon Road. Plan Building T. Scale 1:100.

Anglo-Norman buildings
by Simon James and Martin Millett

Introduction and general comments

A reasonably large number of timber buildings of the fifth – tenth centuries has now been excavated and some fully published (see Rahtz 1976 for a general survey). The Thetford structures bear comparison with a number of them, although in common with most, their remains are too fragmentary for full interpretation on their own. To understand the buildings it has therefore been necessary to make comparisons with the better preserved examples from elsewhere. Although the most important of these are more distant from Thetford than sites like West Stow (West 1985) comparison is valid because recent work has demonstrated a common building tradition covering much of eastern Britain during at least the earlier part of this period (James *et al.* 1984). Worthwhile comparisons with structures on later Saxon sites in the region like North Elmham (Wade-Martins 1980) or St Neots (Addyman 1965; 1969; 1973) are impossible because the buildings on these sites tend to be fragmentary or otherwise difficult to interpret. The fact that the earlier buildings are more regular in plan and have better preserved structural details than the diverse Late Saxon examples, like Thetford, perhaps suggests some weakening in the building tradition in the later Saxon period. Further evidence is, however, needed to confirm this trend.

For worthwhile building reconstructions to be proposed there needs to be some regularity of layout, and very full details of the ground plan are needed (Smith, J.T. 1982). Unfortunately the evidence from none of the Thetford structures meets these criteria as it is unspecific in important particulars, probably as a result of truncation during excavation, resulting from the inability to see features in the homogeneous soil of the old ground surface into which the features were cut. Nevertheless, there is sufficient information to allow some general conclusions to be drawn especially when contrasts are made with other recently published sites (see especially James *et al.* 1984).

The most notable feature of these buildings is the consistent presence of roofs based on a ridge-post construction. This is certainly seen in Buildings B, C, D, and F, and possibly also in H, J, and S. It is implied by strong, load-bearing side walls and weak end walls in structures A, J, and S. In this respect the Thetford buildings are within the early medieval tradition. Several of the plans (A, B, C, and possibly D) also conform to that tradition in apparently being based on the 2-square module (James *et al*, 1984, fig.4).

In other respects these buildings show interesting variations from the model with weak corners, external raking timbers and opposed axial doors seemingly uncommon or absent. Continuous wall trenches are represented only in the side walls of some of the more minor structures (S, see below, The church) with the majority of the buildings being constructed in discrete post-holes. These deviations are consistent with the suggestion that the tradition became devolved in the later Saxon period, with more variable and often more irregular ground plans together with the disappearance of features like the external raking timbers.

The buildings have been examined individually and the following interpretative comments are made:

Building A

(Fig.54)

This building is very narrow, but corresponds in several respects to the Cowdery's Down type (Millett with James 1983). The doors (represented by the gaps in the wall trenches) are opposed in the standard way, but are not central, being about one-third of the way along the long walls. It has strong side walls but end walls apparently so shallowly founded that they have left no trace. This is consistent with the long walls taking the load of the roof.

The overall layout of the building may correspond to three squares, *i.e.* a 2-square-building-plus-annexe (James *et al.* 1984, fig.4.14). The irregularity in the middle of P21 F14 may mark the junction between the 'main building' and the 'annexe', but in the absence of well-defined timber ghosts this is highly speculative.

Buildings B, C and D

(Fig.68)

These buildings were broadly contemporaneous, at one stage standing together as a single complex. The reasons are:

1. Exactitude of alignment. This is so precise that it is hard to see how B and D could have been positioned as they are if C was not still standing.
2. Precision of spacing. There is neither any gap nor any certain overlap between C, and B and D, again consistent with the latter structures being extensions to the former. (There is a possible overlap between C and D at the south-east corner of the former although this is not certain and no sequence was established.)
3. Buildings constructed end to end are known at several sites, although there is usually a small gap between them. Examples include Cowdery's Down Structures C14 and B/C15 (Millett with James 1983, 221 – 24, fig.31), and Chalton A1 and A2 (Addyman *et al.* 1972, fig.9). Both of these examples suggest a rather early date – sixth to seventh century.
4. The south gable post of B (N20 F68) lies offset to the east of that of C (N20 F70). Its north gable post (O20 F12a) is also offset eastwards, to the same amount. This allows B to be built up against C, and the two to stand together, with B's ridgepiece tucked under and to one side of C's ridgepiece.

A similar case may be made for D, if the west post of M20 F15 is seen as its offset gable post (the southern one being destroyed by later pits?).

The generally lighter scantling and shallower post-holes of B and D explain the absence of traces of the end walls, which at this and other Saxon sites are typically shallower than the side walls.

It is noteworthy that in all the components of this complex, evidence for doors is much clearer on the west side than the east. Where west

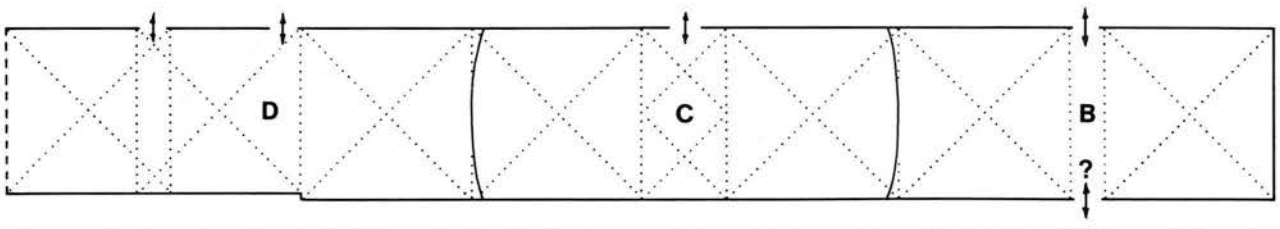


Figure 68 Brandon Road. Buildings B, C, D. Conjectural interpretation of ground plan (by Millett and James). Not to scale.

doors are fairly clear, opposing openings are not so obvious, and it is possible that all the doors were on the west. This may have implications for understanding the layout of the surrounding area.

Building C
Argued to be the first element and core of the complex, this building is in plan consistent with the 2-square-plus-doors layout found at many sites (James *et al.* 1984, fig.4.16 with refs). It corresponds to buildings of that tradition in other respects such as the relatively shallow end walls, and gable supports.

Other evidence for elements of the roof structure includes possible interior ridge supports (N20 F36, N20 F109 and N20 F108). N20 F141 is a possible base for some kind of cross-frame (see James *et al.* 1984, 191–4 and figs 7 and 8), but is not matched by any equivalent feature at N20 F92. (Could such a hypothetical feature have been lost? On analogy with the buildings at Cowdery's Down, it would probably have been shallower than the wall posts: Millett with James 1983.)

The long walls are straight enough to have carried some form of wallplate, and this is likely given the fairly poor pairing of posts across the building. However, the presence of gable posts, and the curvature of the end walls precludes such timbers across the ends.

There are no coherent signs of internal partitions.

See also Building S.

Building B
This also approximates to a 2-square-plus-door plan measured from the north corners of Building C. The only reasonably clear door appears to be between O20 F21 and O20 F19a/b (the latter being the truncated base of a single large door timber?, compare Millett with James 1983, fig.41, north-west door post).

The evidence for gable posts in B was discussed above. There is one post-hole (O20 F37) in the south part of B in a suitable position for an internal ridge support.

Building D
This structure seems to have two doors, both on the west side. One is between M19 F79 and F76. There is no clear equivalent on the east side, although had it existed it should have been identifiable despite later disturbance. There seems to be another door between M19 F44 and F73a. The elongated lobe at the north end of M19 F73a resembles gate and door features elsewhere (*e.g.* Millett with James 1983, figs 32 and 37).

The possible positions of gable posts were discussed above.

Building D is claimed to taper slightly to the south, but a close examination of the plan suggests that it narrows suddenly on the east side (the back of the building?), between M20 F31 and F34. This could be due to sloppy laying-out, but the particular location of the narrowing raises another possibility, namely that D is actually two separate 'modules' attached to the south of C, *i.e.* a square annexe, and a slightly longer rectangular structure. The locations of the doors are not inconsistent with this interpretation; the door between M19 F44 and F73a would be in the middle of the west wall of the proposed rectangular module. If correct, this suggests that building D consists of two structures probably built at different times.

Post-holes between M19 F52 and M20 F26 perhaps indicate a partition within D.

The asymmetrical ridges of these buildings deserve comment for their occurrence here and in the church (below) which implies either (a) some asymmetry in the roof pitch, or (b) the attachment of the ridge to the side of the ridge post. Since the latter has strong disadvantages in loss of strength, and provides no obvious advantages, one should presume the former is correct. In BCD this would allow the buildings to stand closely end to end with the ridges of the secondary buildings set just to the sides of those of the primary building. This may have been designed simply to allow the structures to stand close together, but may have been to allow the ridgepieces to be joined, perhaps to enhance longitudinal stability. In the latter case, it would probably have been easier to overlap the projecting ridges rather than join them end to end. Whatever explanation, the close proximity of the structures was clearly more important that the symmetry of the roofs. This would in any case be comparatively minor, and could be disguised through differential thatch thickness.

Building E
No structural comments are offered on this building. There is fairly poor pairing of posts across the building. The pairs are skewed in opposite directions at opposite ends of the buildings, which also suggests that it was not a single coherent structure.

We note that the north wall of this building is aligned on the north side of the west door of B. These two structures could both have been built with regard to a persistent sharply defined plot boundary or fence.

Building F
Presumptive ridge posts M20 F60 and M20 F73 are the only notable features. There may be a central door on the north side of M20 F63, but this is very uncertain.

Building H
This structure is best understood as a rectangle with the south-east corner obliterated by later disturbance. If so the plan suggests that the east end was partitioned off with a subdivision to the north. There was probably a door in the south wall between L22 F127 and L23 F154. There is no obvious matching door in the north side, but there could have been doors at several other places.

There is a possible gable post at L22 F109. Any matching east post would have been lost in later disturbance.

Building J
The plan is extremely regular, but does not conform to the 2-square module, although there is a possibility that this cellar lay within a larger structure of which no evidence survives with the possible exception of one post (K27 F16, see below).

The side walls are more sturdy than the ends, implying that they took the roof load if the cellar was an integral structure. No ridge posts occur within the pit.

The verticality of the pit edges and the mortar floor edge demonstrate that the structure had a wall with a double skin. The apparently raking inner posts should probably be seen as a result of collapse/demolition, allowing for two lines of verticals in the side walls to revet a double plank wall, one skin against the wall of the pit, and an inner one coinciding with the mortar edge, as seen at York (Hall 1984, figs 71 and 75).

The ramp to the south is skewed to the otherwise precisely laid out building. This implies either (a) the avoidance of the post-hole K27 F16 which should thus have some structural significance, or (b) a temporary function for the ramp during construction, or (c) that the ramp is secondary to the construction of the cellar. Both interpretations (a) and (b) involve difficulties:

a) the mortar floor stops short of the ramp, and the slot (xvi) containing post-holes appears to block the entrance. This could, however, represent a threshold or a bottom step with post-holes A to D (plus xviii and its opposite) being either the other steps and/or revetment for the sides. They are unlikely to represent door posts or a porch because of their asymmetry with the rest of the structure and their disjuncture with the floor edge.

b) the sections show that the fill of the cellar and ramp were of one phase, although the slot (xvi) does superficially appear to strengthen the wall to allow for made ground behind.

If explanation (a) is accepted, as seems most probable, the significance of K27 F16 is emphasised. This is approximately axial to the structure and is perhaps best interpreted as the south-east ridge post of a structure which encompassed the cellar. The difficulty with this is that the stratigraphic relationship of the post-hole to the ramp was unclear with the post-hole apparently cut by the ramp. It is possible that this results from erosion of the ramp sides but in the absence of more certain information the problem remains unresolved.

General parallels with cellars in London (Grimes 1968, fig.35; Perring 1982, fig.2) should be noted, although in the absence of full publication neither these nor those at York (Hall 1984) help with the understanding of the superstructure.

'Building' K
Owing to the uncertainty of layout, no reliable reconstruction is possible. However, the north rectangle of post-holes (corners at L25 F76/99/49/35) might constitute a building although the absence of the north corner posts must then be explained. The south post-hole line L25 F165–F176 could constitute a wall, but the rest of the hypothetical building is not identifiable.

Building L
The gravel and hearth appear secondary to the use of the cellar, as do the stake-holes around pits. It is not possible to draw any structural conclusions except to note that the absence of post-holes within the cellar indicates a structure different from that of Building J, perhaps based on sill beams. Such constructions have been found at York (Hall 1984, fig.73).

Building M
No structural interpretation is possible. The area shows no features diagnostic of roofed buildings, and may simply represent a series of fencelines.

Building S

If this is a coherent building it is consistent with the others in having strong load-bearing side walls and weak end walls. If the post-hole in the middle of N20 F111 is contemporaneous it may be for a ridge support. It is difficult to see this as part of the surrounding structure C, although it is worthwhile recalling the complex internal structures in some of the buildings at Yeavering (Hope-Taylor 1977).

Chalk and flint wall-footings (Fig.9)

Except for a fragment of chalk walling above pit M17 F57 and walls P19 F7 and P20 F25, chalk and flint walls were confined to the eastern half of the site.

There is some thirteenth to fourteenth-century pottery attributed to the walling in M23 but it is not clear which wall(s) this is from. Wall A in K22/K23/L23 was later than drying oven K23 F26 (Period V). The nature of these walls suggests fifteenth to sixteenth-century date (Period VI–VII), although there is little intrinsic dating evidence from them. No information survives for P20 F25. P19 F7 contained no mortar, and was made of small closely-packed chalk fragments and flints. It survived only *c.* 3″ (7 cm) high and was damaged by recent ploughing.

L27/M27 contained one small length of walling, two courses high, of faced blocks set in a yellow sandy mortar.

The major lengths of walling survived in areas K22–K24, L23–L25, and M23–M24 (an area *c.* 130′ (40.00 m) east-to-west, by 106′ (32.00 m) north-to-south), with the maximum surviving length for an individual wall being 80′ (24.40 m) north-to-south and 28′ (8.50 m) east-to-west (wall A of K22/K23/L23). Most of these walls had been robbed, or damaged, in antiquity.

In the southern area, little is known about the wall fragments in K24. In K23, Wall D was probably the earliest. It was replaced by Wall C on a slightly different alignment, but its line was restored by Wall B which may have been associated with Wall A. Wall A in K22/K23/L23 had no footings, and rested on 9″ (22 cm) of soil (OGS and some occupation material) above the subsoil. Its south-west part in K22 consisted of two courses of chalk beneath an upper two courses of flints, all set in yellow sandy mortar. In L23 it was also two courses high, of well-faced chalk blocks with a rubble core, all set in a yellow sandy mortar with chalk specks. It probably continued further north originally.

L24 Wall A survived two to three courses high and was made of roughly-faced chalk blocks with a rubble core set in yellow sandy mortar. It was over a layer of grey clay as was wall M24 B (and M24 C) and it was therefore later than walls M24 A, M24 D and E, and L25 A.

M24 A and M24 D were on the same alignment but D was set deeper than M24 A by one course and was wider, with its north face in line with A but its south side offset. Wall M24 A was a single course of chalk lumps, fairly well faced, with a rubble core and set in yellow mortar. In places the top of the wall was covered by a well-defined layer of charcoal. The records suggest the '"wall" can hardly have been more than a setting for a sill beam (?destroyed by fire)'. The earlier wall of L25, Wall A, to the east was 'identical in build'. Wall M24 D was 'two courses high of well-laid chalk blocks, well-faced with a rubble core, set in yellow mortar': a scalloped column capital (Fig.157, No.3) was found built into it. The west end of wall M24 D overlay M24 E which was cut into the OGS. Wall E consisted of a single course of chalk blocks set in yellow mortar, and may have been reused with wall D as a mass of mortar to the north of wall E made up the width of wall E to that of Wall D. 'Butted onto wall E was a mass of pitched footings with no clear faces': these footings were dug into the OGS so that they rested on the surface of the subsoil.

The footings and walls E, D, and A of M24, and lower wall (A) of L25 were covered by a 'layer of dirty grey clay (*c.* 6″ (15 cm) thick) which contained crumbs of chalk and charcoal', possibly collapsed cob walling, clay lump, or daub. M24 wall B, which appears as the later wall in L25, and M24 C (not on plans), as well as L24 wall A, rested on this grey clay. Wall M24 B (the later wall on the L25 plan) was made 'entirely of flints, undressed, and survived four or five courses high in places'. It was surrounded by a mass of fallen plaster and mortar debris (associated with 'PM pottery' now missing) 6″–9″ (15–22 cm) thick. Wall M24 C (not on plans) may have post-dated the plaster and mortar debris and it was roughly bonded on to the top surviving course of M24 Wall B at its west end. It consisted of a single course of mortared chalk blocks.

The walls in M23 had no footings and stood on the OGS, but the west wall in M23 stood on the western edge of a 'raft' of mortar and small chalk lumps 9″ (22 cm) thick on top of the OGS. These walls were one or two courses high, and were made of chalk blocks which were various sizes but usually flat, and were set in a softish white mortar. The gap between the two north walls was original. The excavator notes that these walls were 'too narrow and too flimsy to have carried a masonry superstructure: it is more likely that there was a half-timbered superstructure on these footings' (cf. M24 Wall A and L25 Wall A).

Pits, wells and tanks

Over 500 pits were found, ranging in date from Periods I to VII (first to sixteenth centuries AD). Many had no finds to date them, and/or no stratigraphical relationships, some (15%) were too large or deep to excavate fully, and only about 350 can be assigned to a period with any confidence. About fifty-five may be dated by association, although this is really guesswork: the remainder are unassignable and are indicated (dashed) on more than one period plan. Two pits (N17 F8, L20 F40) remain enigmatic; they contained good groups of early (III–IV) pottery but were stratigraphically later (Figs 21 and 29). At least four have material which gradually became significantly later higher in the filling, suggesting that they may have been left open to fill gradually over a long time: L24 F56 (Period VI?), M22 F48 (V?), M22 F248 (IV?) and O22 F10 (III?). The presence of later material slumped into the top of the pits is a further complication and in some cases pits may have been given too late a date. In general, attributions have been biased towards Periods III and IV as occupation seems to have been most dense in the Saxo-Norman period and some 70% of the pits have thus been assigned to these periods. Analysis of the pits by period suggests that there was little or no chronological significance to shape, size or filling, except that all chalk-lined features belonged to Periods V–VII.

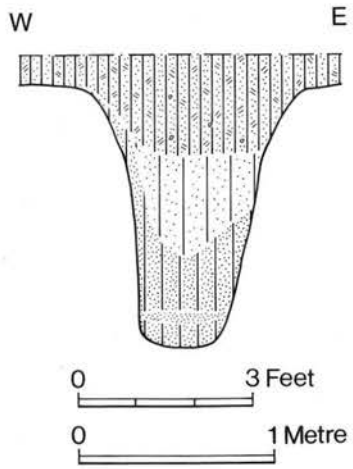


Figure 69 Brandon Road. Section pit N19 F10 (unphased, I–early III). Scale 1:40.

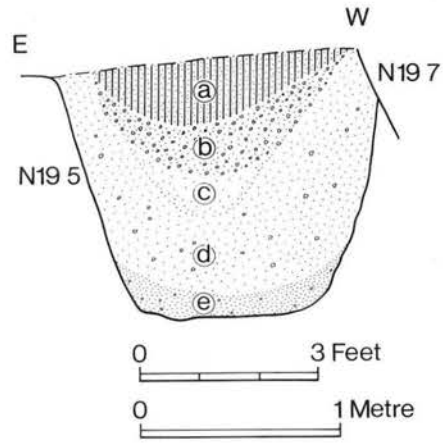


Figure 70 Brandon Road. Section pit N19 F5 (unphased, I–early III). Scale 1:40.

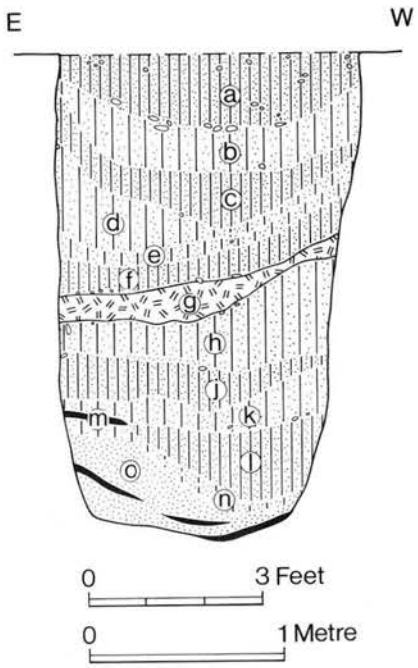


Figure 71 Brandon Road. Section pit L20 F13 (III). Scale 1:40.

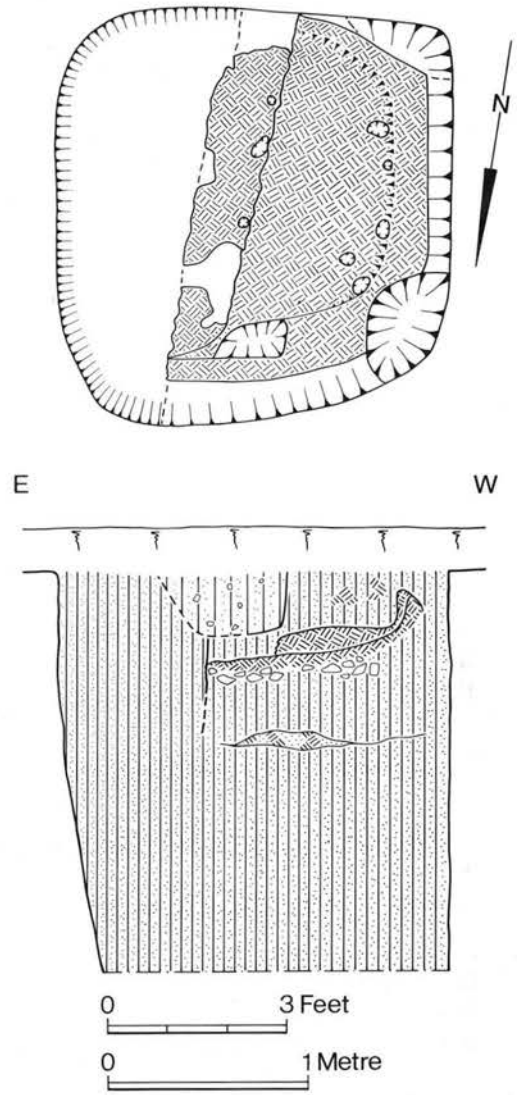


Figure 72 Brandon Road. Plan and section M20 F90 (III pit, hearths, later recut). Scale 1:40.

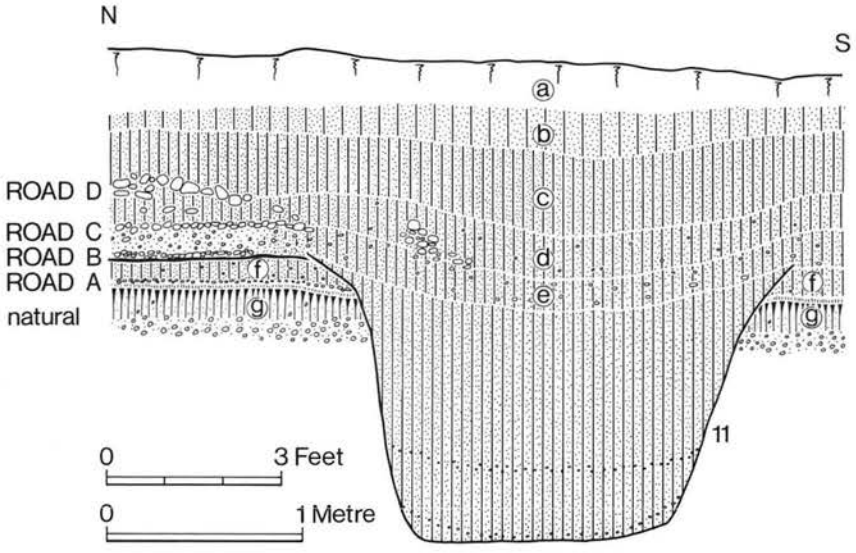


Figure 73 Brandon Road. Section pit K22 F11 (IV). Scale 1:40.

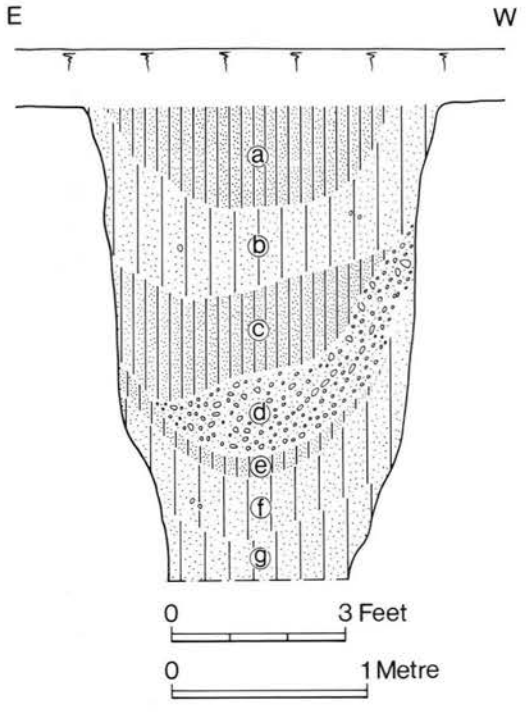


Figure 74 Brandon Road. Section pit P20 F3 (IV). Scale 1:40.

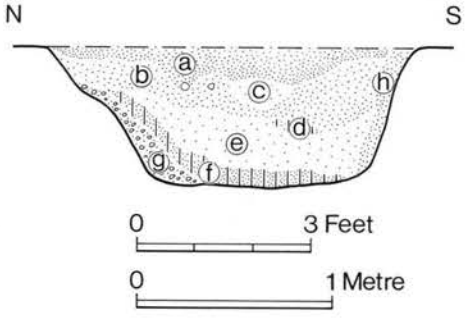


Figure 75 Brandon Road. Section pit P21 F16 (IV). Scale 1:40.

Lined pits:
Vertical-sided pits must have been lined in the sand and gravel natural, or else were filled-in immediately. Although many pits contained homogeneous fillings the latter seems unlikely unless the pit had been dug for sand or gravel extraction (see below) or for some immediate use; it must then be assumed that most pits with vertical or nearly vertical sides had wooden linings, although evidence was only visible in eight instances. In some pits a vertical layer at the side was the only remaining evidence of lining. None, except K25 F15, were bottomed and thus these may have been wells:

L24 F70 (III), layers of filling stopped 2″ – 3″ (5 – 7 cm) from side of pit. Over 6′ (1.82 m) deep. Possibly related to 'Building' K.

N25 F79 (III or IV), at north side of pit dark filling ended *c.* 3″ (7 cm) away from the undisturbed gravel, the gap having been filled with grey (?leached) sand. Over 6′6″ (1.98 m) deep. Related to 'Structure' Q?

K25 F15 (IV), pit described as 'wood lined from 3′' (91 cm). 5′19″ (1.74 m) deep.

L26 F88 (IV?), charcoal layer around walls at 5′ (1.52 m) depth and below. Over 6′ (1.82 m) deep.

N9 F6 (IV), 'black charcoaly ?lining', with two distinct alignments. Over 7′ (2.13 m) deep.

N19 F4 (Late IV) (Fig.79), 'at sides . . . a narrow band of grey-buff sandy soil with smears of charcoal and ?ash (was) separated from main filling by a layer of charcoal ?lining'. Over 11′4″ (3.45 m) deep.

N17 F27 (Early V?), 'lining: 1½″ (3 cm) vertical skin of light brown earth with a facing of charcoal flecks at south side of pit'. Over 6′ (1.82 m) deep.

N17 F56 (Early V), lining indicated by charcoal layer and buff filling next to edge in vertical line; this did not survive to top of pit. Over 7′6″ (2.28 m) deep.

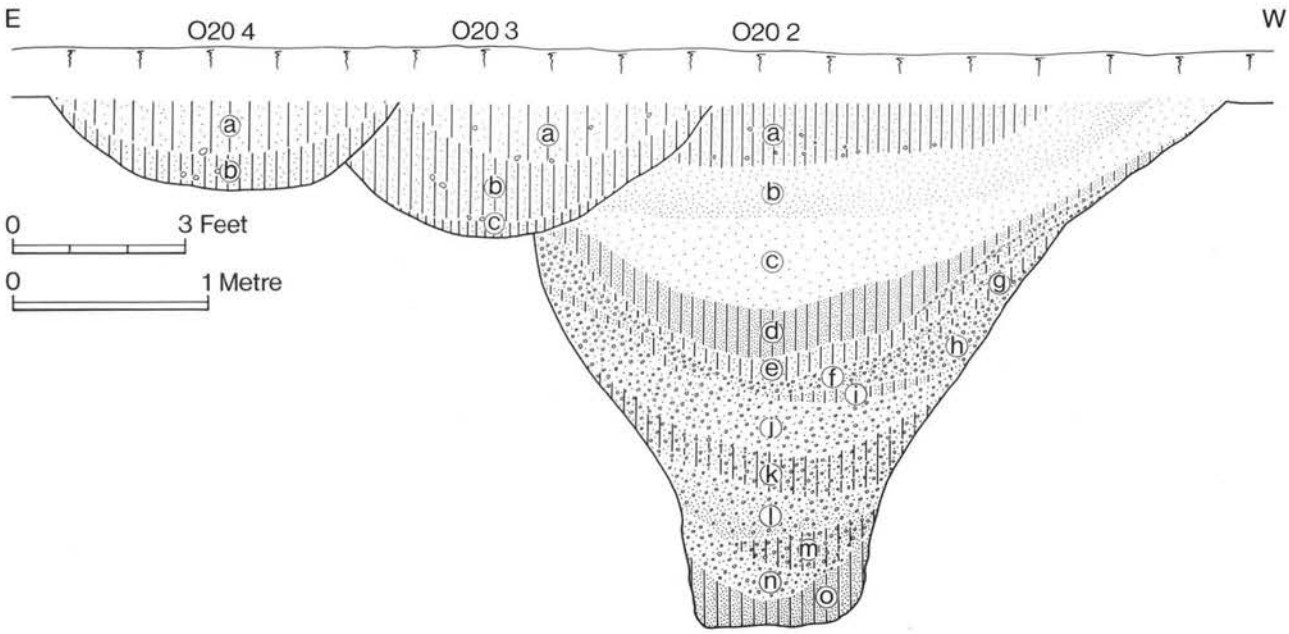


Figure 76 Brandon Road. Section pits O20 F2 (IV), O20 F3 (IV), O20 F4 (IV or V). Scale 1:40.

One pit may have been clay-lined: N21 F202/N22 F78 (III with later 'top'?), had a 'muddy yellow layer' on north side and bottom. 4'6" (1.37 cm) deep.

Another pit had a clay bottom: L18 F1 (unphased); floored with clay and gravel mixture containing many mussel shells (Period V – VII?), whilst a bottom lining of chalk occurred in N17 F72 (Early V), '"floor" of trampled and worn chalk fragments'; filling included layers of charcoal and ash, perhaps for some industrial purpose. Depth 2' (60 cm). Some pits seem to have been set with flints:

M21 F129 (III or IV) and M21 F135 (III?), both lined with large flints, similar in character, both shallow hollows (9" and 1'3", 22 and 38 cm deep).

N22 F123 (III), flint and stone packing, 2' (61 cm) deep.

L24 F185 (III), flint packing, 5'9" (1.75 m) deep, related to 'Building' K?

(M25 F211 (III), patch of hard-packed flints in bottom half, 3'6" (1.06 m) deep. 'Building' K or 'Structure' Q?)

(K25 F8 (III), pile of flints on bottom 'not structural', 6'6" (1.98 m) deep.)

Several Period V – VII features with chalk lining, or partial lining, may be classed as pits (for square/rectangular tanks see below):

K26 F16 (V) was only 3'10" (1.16 m) deep (this is insufficient for a well but it is also possible that quantities of clean slip could have masqueraded as bottom). It is probable that the post-holes on either side, K26 F14 and K26 F17, were associated in a structure, especially as some stones seemed to have been omitted from K26 F16 to accommodate K26 F14. These two post-holes were very similar, being 5" and 6" (12 and 15 cm) deep and filled with dark grey sandy soil with flint packing. K26 F16 was lined with mortared chalk blocks and filled with dark grey sandy soil.

L23 F52 (V?) was lined with mortared chalk blocks on the south and east sides where it cut into pit L23 F51. It was 2'9" (83 cm) deep with a flat, apparently unlined, bottom and it was filled with dark sandy soil and mixtures of soil and sand, collapsed chalk blocks and a patch of clay.

K25 F24 (V) was lined with mortared chalk blocks at the north end where it cut into the filling of pit K25 F23.

L24 F74 had a group of unmortared chalk blocks at the south-east end, perhaps a revetment or remains of a damaged lining (feature was shallow, only 8" (20 cm) deep).

Pits with surrounding structure:

M21 F100 (III): stake-holes around edge (not on plan), only 1'7" (48 cm) deep, finds include misfired TH (probably not from kiln N19 F7).

P20 F3 (IV): stake-holes around edge, over 8'6" (2.60 m) deep, possibly a well, finds include ST post-1020 in layers (f) and (g) Fig.38.

M17 F36 (III – IV): post-holes either side were probably structural: M17 F25 and M17 F65 (depths 2' and 1'4" (61 cm and 40 cm)). Probably a cesspit (see below).

J26 F14 (IV): surrounded by stake-holes which also enclose cellared Building L (J26 F6/K26 F52), and probably ancillary to L. Stake-holes were possibly fencing after abandonment, or perhaps an earlier structure on the same spot. The pit contained a hearth at 3'4" (1.00 m) depth, perhaps used by Building L occupants. Beneath the hearth were eleventh-century finds (including 50% SN) but the finds from above the hearth match those from filling of L (*c.* 1200).

Pit functions

Pit functions are mostly obscure, but must have varied. Many of the pits on the site were very large and involved much effort in digging them.

The following uses can be suggested:

i) Rubbish disposal. This is assumed to have been a common function, although surprisingly few finds were retrieved (even allowing for the fact that many large pits could not be fully excavated and most rubbish might be expected near the pit bottom). Organic rubbish remains undetectable and few pits contained animal bone in any quantity.

ii) Cesspits. Only five pits showed evidence of the green filling typical of cess:

N17 F8 (Period III, IV or V?). Tip lines of filling included green-tinged sand.

M17 F36 (III or IV). Filling of thin bands of purple, green, and grey, sandy earth above primary silting of sand and gravel. It was observed that the layers were very steeply bedded and could have been chemical stains rather than tips. Post-holes either side of this pit may indicate that it was within a structure (see above) or that it may have originally been a well (6' deep (1.82 m)). Associated with structures in M17 – M19 (see above, 'Properties' U – W).

M18 F5 (III or IV). Pottery from this pit has green stains. Associated with structures in M17 – M19.

L22 F10 (III?). Pottery from lowest levels (dug to 7'6" (2.28 m) has green stains. In ?enclosure G10, associated with 'Structure' P?

M25 F46 (III?). Probably two pits, green stained sand at east end. In 'Structure' Q.

iii) Wells. The modern water-table (1964 – 6) was encountered at 5.60 m; the medieval chalk-lined wells (below) were dug 16' – 18' (4.85 – 5.50 m) deep at least. However, none of the Saxo-Norman pits was shown to be deep enough to be a well. The deepest Period III – IV pits were:

P20 F3 (Fig.74), not bottomed, this pit was at least 8'6" (2.60 m) deep and was surrounded by stake-holes. Possibly enclosed by Period IV yards represented by G11.

N19 F4 (Fig.78), not bottomed, this pit was at least 11'4" (3.45 m) deep and had evidence of a probable wooden lining. It was behind 'properties' in M17–M19 and near Buildings C and E. Period IV, late eleventh century.

M21 F99, at least 9' (2.75 m) deep, within possible enclosure G10 and perhaps associated with 'Structure' P. Period III.

M25 F38, at least 8' (2.45 m) deep, behind 'Structure' Q. Period III.

Chalk-lined wells

Ten wells were found on the site, confined to the eastern part (K24 F37, K26 F7, K26 F33, L22 F48, L24 F47/F48, L24 F66, L27 F15, L27 F41, L28 F114/115, M27 F14), and these were all sampled in some way by the excavators. All were circular and vertical sided, with an internal diameter ranging from 2'5" (66 cm) (L24 F66) to 3'3" (99 cm) (M17 F14), except for K26 F33 which was large and irregular at the top but narrowed after a depth of 3' (91 cm). The linings were roughly dressed or faced chalk blocks and yellow sandy mortar.

Two of the wells, K26 F33 and L24 F66, had no construction pits and one of these, K26 F33, had opposing beam chases about 9" (22 cm) long by 6" (15 cm) wide, presumably for some well-head gear. The other eight wells had construction or working pits into which their chalk linings had been set. Where examined, the working pits were filled by layers of sandy soil.

The well fillings included much chalk, mortar, flint and 'stone'. One well (L27 F41) was excavated to a depth of 18'6" (5.63 m) and another (K24 F37) was excavated to a depth of 16' (4.90 m), both reaching the modern water-table.

Because of the size and great depth of some wells not all could be examined in detail. Construction dates can, however, be suggested for: M27 F14 (thirteenth century), L22 F48 and L28 F114 (both fourteenth century), and L24 F48 (fifteenth century). Terminal dates are clear in all but two cases: well filling M27 F14 was not dug, and any finds from L24 F66 seem to be missing (it is described as 'filled to the brim with domestic rubbish' and was excavated to a depth of 6' (1.82 m)). K26 F33 was filled in the fourteenth century, and the seven other wells were filled in the early to mid-sixteenth century.

iv) The extraction of sand and gravel, and sand storage. Sand and gravel would have been useful for covering pathways and floors and for making mortar.

There were seven pits on the site which seemed to have been used to store clean sand, and these were assumed to be associated, especially as they occurred within an area measuring some 115' (35 m) north-to-south, by 180' (55 m) east-to-west maximum in the eastern half of the site. Most of them cluster in area L22–L23 and K23, with outliers in K24 and M22. They were pits K23 F3, K24 F65, L22 F113, L23 F37, L23 F90, L23 F160, and M22 F47. These pits differed in shape and size and, except for L23 F37, their sides were steep or vertical; only three were excavated to bottom. They contained clean yellow sand, often in large quantities (*e.g.* at the time of excavation, K23 F3 was estimated to hold over 25 tons), with a top slump of other soils. The finds all seem to have been in the top slump with none in the sand filling and the latest surviving are eleventh century. Dating evidence otherwise is:

1. M22 F47 (no finds) was cut by M22 F48 which seems to have been eleventh century with Medieval pottery in the top (IV or V).
2. L22 F113 cannot be contemporary with Building H. It cut two pits with no finds (L22 F111 and L22 F112).
3. K23 F3 cut Period III features K23 F4 and K23 F16 (and sand pit L23 F160), and it was cut by Late Medieval wall K23/L23 A (Period VI–VII).
4. L23 F90 cut Period III L23 F91, and cut by Late Medieval wall K23/L23 A (and sand pit K23 F3).
5. K24 F65 cut Road A. It was probably cut by gully K25 F31 which was sealed by hearth K25 F32 (late twelfth-early thirteenth century, Early Period V).

Therefore, although the possibility of these pits being medieval (Period V) cannot be ruled out as the relationship of K24 F65 and K25 F31 (point 5 above) was not certain, it seems that these pits may have been in use sometime between the beginning of the eleventh century and the end of the twelfth century (Period IV to Early V).

v) Industrial purposes. The rectangular chalk-lined pits of Period V–VII outlined below would seem to have been tanks, probably associated with the drying ovens. Some pits may have sheltered hearths (see above, Building L) but these were not heavily fired.

Pits with ash or burning were rare. Ash was found in J25 F15/J26 F12 (IV or V?), K26 F30, F31 and M24 F30 (unphased), and M24 F36 (III) but this could have been domestic.

Pits in the vicinity of Structure G ?tentering frame produced fillings of ordinary soil except for N17 F72 which was packed with chalk at the bottom and contained layers of ash and charcoal.

Chalk-lined tanks

One square and four rectangular chalk-lined features were found in the eastern half of the site: K27 F6, L24 F68, L26 F56, L27 F54, and L28 F33. Three (K27 F6, L26 F56, and L28 F33) are described as mortared chalk and one (L24 F68) was made of chalk lumps and was plastered. Neither sides nor bottom of L27 F54 are described, but this may have included flint in its construction as flint in the filling is described as 'from structure'. Bottom was not reached in two, L26 F56 and L28 F33, but the other two, L24 F68 and K27 F6, had mortar floors. Depths seem to have ranged where known from 2' (38 cm) (L27 F54) to 4'6" (1.37 m) (K27 F6). Fillings were soil with chalk rubble and mortar debris, plus some sand and 'white clay' in L27 F54.

There were no finds from K27 F6, and L26 F56 may have been filled during Period V as there were twenty-seven Medieval sherds from it, representing about seven vessels only. L27 F54 contained sherds of late fourteenth to early fifteenth-century date (Period VI) in its filling. L24 F68 also contained a LM sherd but its plaster suggests that it may have been later (*i.e.* sixteenth century). L28 F33 was certainly very late in the sequence, probably sixteenth century, as it was cut into Period VII pit L28 F59. It is not clear whether these tanks were all in use in Periods VII and VI, or whether they represent a sequence beginning in Period V.

The presence of mortar in the sides and bottom of the completely excavated chalk-lined tanks suggests strongly that these may have been water tanks, in use in Periods VI and VII and possibly V. The purpose of these tanks may well have been an industrial one, connected with the drying ovens. In the malting process, grain was first steeped in water to make it swell and sprinkled with water when it was spread on the malting floor to germinate; it was also useful to have water nearby in case the flammable kiln furniture caught fire while the grain was being dried (Rickett 1975, 13).

Culvert

L26 F103 was 6" – 7" (15 – 17 cm) deep and ran beneath the upper metalling of north-to-south Road B in L26. As Road B may have continued in use into the LM/EPM period in this area this does not date the laying of Road B to Periods V–VII and the culvert was probably dug through Road B in its period of later use. The structure of the drain is not described in the site records, except to say that the soakaway to the west was packed with flints. There is no dating evidence for this feature, which cut pits L26 F45 and L26 F46 and deep post-hole L25 F32, but it clearly belongs to Periods V–VII, probably VI–VII.

Hearths

1) Burnt natural ground. Patches of burning directly onto the natural sand and gravel were rare on this site; two probable examples were, O18 F35, the hearth inside SFB2, another (unnumbered) on the south-east side of SFB4, and possibly L20 F35, a burnt area sealed beneath Road A.

2) Clay hearths. There were fourteen examples of purpose-made clay hearths on the site. These were formed of dish-shaped patches of burnt clay 1" – 5'"(2.5 – 12 cm) thick, usually regularly shaped (K25 F32 was an exception). Average dimensions were *c.* 2' – 3' (60 – 90 cm) but they ranged from 1'9" (53 cm) to 5'8" (1.72 m) in size. Where datable, these features seem to belong from Period III to early Period V (probably late tenth to early thirteenth century at latest).

The made clay hearths can also be classified by the depth to which they were cut (eleven were shallow, three were deep) and to a lesser extent by period.

a) **Shallow hearths**. Four of the clay hearths were situated on the surface of the natural ground (presumably *c.* 6" (15 cm) deep original-

ly allowing for the OGS) or cut into hollows in the natural subsoil a few inches deep. These were: K26 F4 (beneath ?twelfth-century mortar patch K26 F3); K26 F27 (Medieval pottery 'in soil around' but unphased); L23 F62 (may have been associated with some mortar and cut into L23 F91 (III), so possibly Early V); and L27 F36 (unphased). This last clay hearth was above a hollow filled with dark sand and much charcoal, and had unfired strips in the centre of its long sides indicating some structure. It probably had a firescreen to the north-west represented by the line of seventeen stake-holes L27 F34: this line was U-shaped in plan and from 2" to 9" (5–22 cm) deep, becoming shallower at the south end. It is possible that L27 F35 to the north was also associated: this was a mass of stake-holes in a hollow, perhaps with a central post-hole. Two hearths overlay earlier gullies and were associated with late twelfth-century pottery: J25 F53 seems to have been a rectangular hollow of burnt clay with some stake-hole impressions, possibly relined, of late twelfth-century date?; K25 F32 comprised a rectangular bedding of flint cobbles beneath two irregularly-shaped clay layers of which the second was less well fired than the first (late twelfth to early thirteenth-century in date). Five hearths were cut into, or set above, pits and may have dated to soon after the filling of those pits (no later material was found associated with any of them): they were perhaps placed in hollows in the ground formed by the subsidence of the pits. K25 F17 a and b were cut by several Period IV pits and cut into the top of pit K25 F16 (III or IV). This consisted of a sequence of two (probably horseshoe-shaped) hearths with a raised surround, separated from each other by a 4" (10 cm) layer of grey ash and charcoal. The second of these hearths, K25 F17b, had no made floor and was just a curved wall of lumps of wattle-marked daub (?perhaps reused from K25 F17a) set in a clay matrix. K25 F9 was laid on the top of Period III pit K25 F8 above metalworking debris with which it did not appear to have been associated. The other hearths set into the top of pits were: M17 F176 which contained soot and charcoal, at least late eleventh, possibly twelfth, century (Figs 18 and 82); N18 F18 which contained charcoal and pink ash (Figs 30 and 78 Period IV); and M20 F90 two phases, of which the second was less well fired than the first, probably cut into a Period III pit and cut by VI–VII features on the east side and top (Figs 21 and 72).

b) **Deep hearths**. Three clay hearths were found at a greater depth in their respective pits, between 2'3" (68 cm) and 3'4" (1.00 m) down. J26 F14 (IV), J25 F3b (III?), and J26 F31 (III?) all consisted of clay dishes set well into pits with no other evidence of burning.

Discussion. The burnt gravel patches on the site ((1) above), assumed to represent domestic activity, seem to have been early in the site sequence. The hearth inside SFB2 was possibly associated with it (Period II). O18 F35 was clearly later than SFB3, and the burnt patch overlapping SFB4 must have been partly on top of the filling of the feature and therefore post-dated its use. As it is not clear whether all of the SFBs were contemporary, these hearths may still all have belonged to Period II (they are precluded from Period I) but could also have been later. Burnt patch L20 F35 was early Period III (tenth century) at the latest, as it was underneath the road system.

Most clay hearths were shallow, and would all seem to have been dug down 1' (30 cm) or so out of the wind. Samples kept from some of these features (none reconstructable) show that they were normally constructed by laying clay on a bed of withies (average *c.* 1–2 cm in diameter) which mostly ran roughly parallel to each other although occasionally fragments show other withies at right angles on a different level. None of these hearths were heavily fired, and they cannot have been used for industrial purposes requiring high temperatures (*e.g.* metalworking). Domestic uses, baking, and brewing (see below) seem the most likely interpretation, possibly even some function in dyeing cloth near to Structure G in the early thirteenth century (see below). L26 F36 seems to have been a large and elaborate fireplace and it is unfortunate that there is no dating evidence for it. None of these hearths can be proven to belong to Period III and those which may have been earliest in the sequence were K25 F17 a and b (cut by Period IV pits), K25 F9 and M20 F90 (which were both on top of Period III pits), and N19 F18 (which was on top of a Period IV pit). M17 F176 was at least late eleventh century. Dating evidence was better for J25 F53 and K25 F32 as both overlay probable late Period IV features and the latter had pottery beneath or in it which could be as late as the early thirteenth century. How these hearths related to other features is not clear, but J25 F53 was possibly used in conjunction with drying ovens J25 F50 and J25 F52 which were of similar date.

The three deep hearths ((2b) above) are enigmatic. That in J26 F14 may have been used in conjunction with cellared Building L (see above, Fig.65). J25 F3b and J26 F31, in the same area, were both in pits which only produced a few sherds of TH although they were near many later features. How these hearths (which appear to be *in situ*) might have been used at such depths with no evidence of burning, or have been accessible with so little space between them and the sides of the pits, is not clear; they can hardly have been discarded intact, horizontal and well centred within the pits although this must remain a possibility.

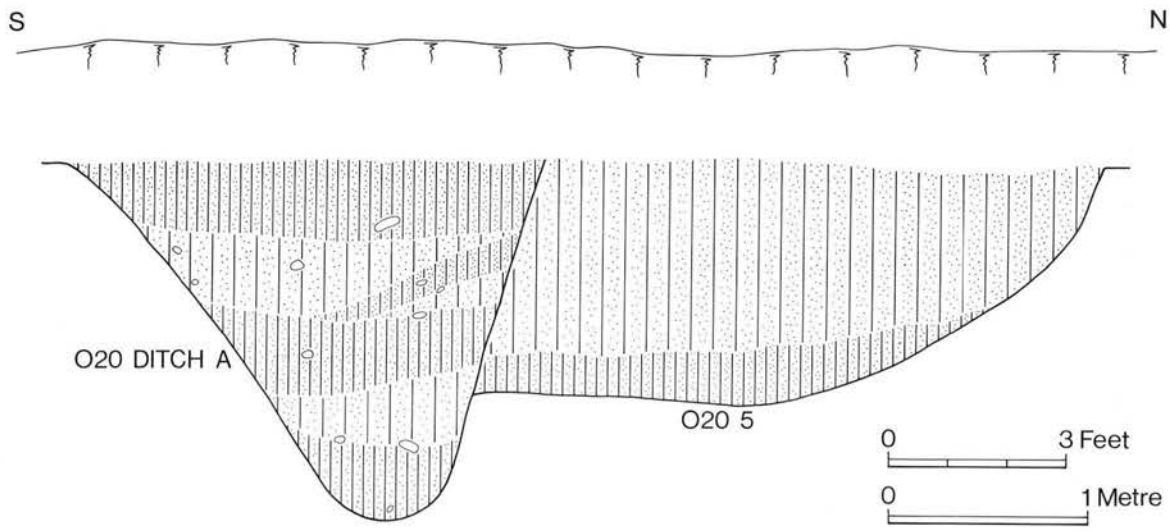


Figure 77 Brandon Road. Section pit O20 F5 (unphased) and O20 Ditch A (V–VII). Scale 1:40.

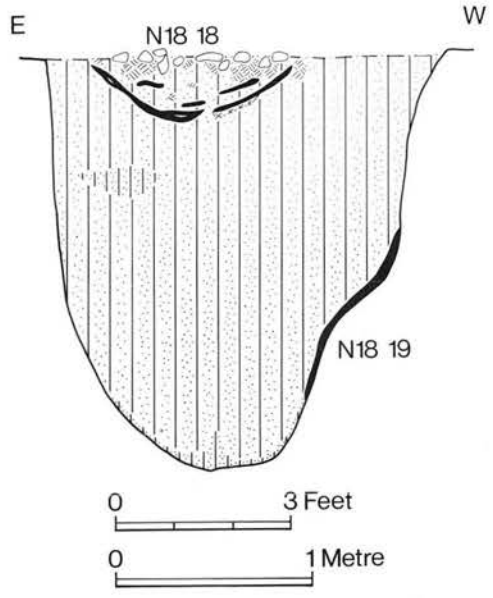


Figure 78 Brandon Road. Section pit N18 F19 (IV), and hearth N18 F18 (IV?). Scale 1:40.

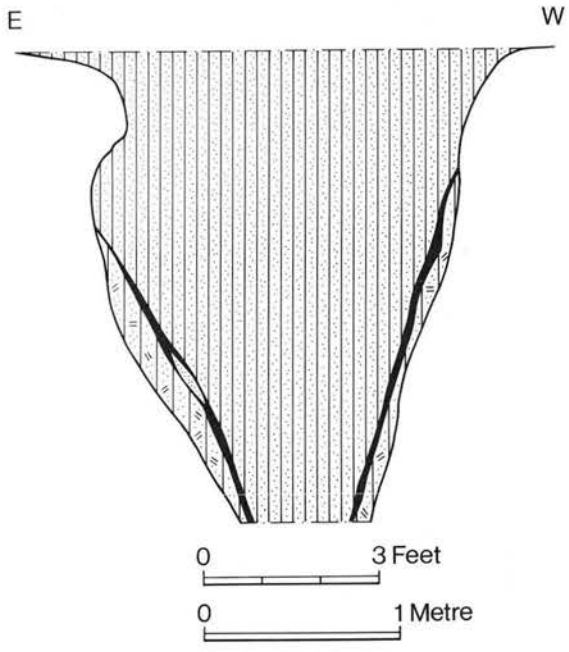


Figure 79 Brandon Road. Section pit N19 F4 (late IV). Scale 1:40.

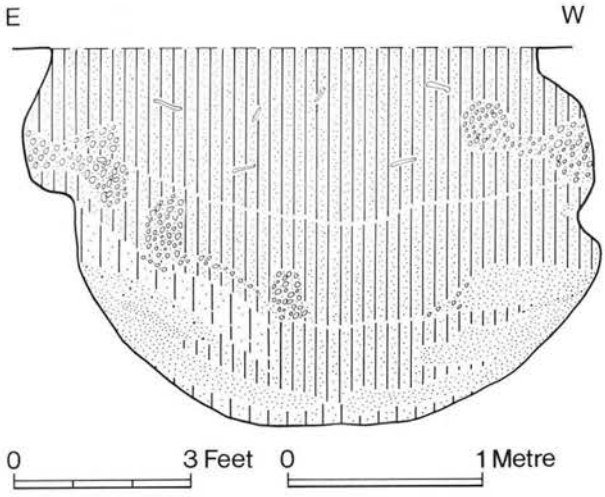


Figure 80 Brandon Road. Section pit M22 F248 (IV?, later top). Scale 1:40.

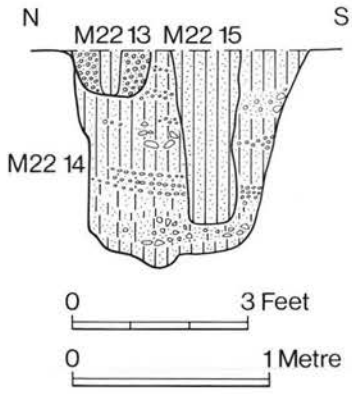


Figure 81 Brandon Road. Section M22 F14 (IV), post-holes M22 F15 (IV or later), post-pit with post-hole M22 F13 (IV or later). Scale 1:40.

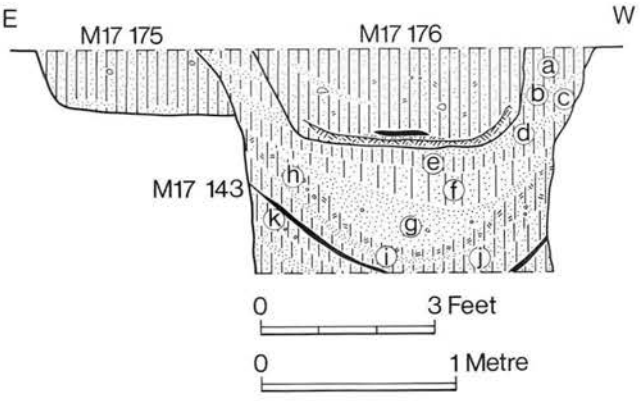


Figure 82 Brandon Road. Section pits M17 F175 (IV or earlier), M17 F143 (late IV) and hearth M17 F176 (late IV–early V). Scale 1:40.

Pottery kiln N19 F7
(Fig.83)
Kiln N19 F7 closely resembles those found some 150 m to the south in 1966 (Part III below), being of similar design, size and construction, and had a similar date; it was possibly slightly earlier if its clearance was related to the disuse of the gully system (G2–G5) to the south at the end of the tenth century.

The relationship between the kiln and the gullies in N19 is obscure. The layout of the gullies and kiln here is suggestive; the kiln appears to be in a gap between gullies N19 F16, N19 F2/O18 F17, and gullies M19 F36A, M20 F36C/M19 F36/N19 F40, and perhaps contemporary with them, or possibly with gully N19 F1, N19 F7.

Evidence for a kilnyard is slight. Undated and Period III linear or structural features in the area could have been associated, such as N19 F35 (which seems to enclose an area of stake-holes), N19 F42, N19 F49, N19 F39/F54 and post-holes in the area, but no clear evidence exists. There are no pits in the area suitable for clay storage, except perhaps M19 F59/N19 F38 which was large and shallow with vertical sides and flat bottom. The absence of wasters and misfired sherds is notable. The only feature full of kiln pottery was N19 F1, and the top slump of pit N19 F31, probably a hollow in the ground at the time.

The uniformity and limited range of the kiln products (see Part V, the Pottery) argue for a short life of this kiln. The kiln showed no evidence of re-lining or patching, and was not replaced by any other kilns.

Kiln structure
Pottery kiln N19 F7 (Period III) was a single flue updraught kiln (Musty Type Ib: Musty 1974, 44). It was built into an oval pit dug 2′9″ (83 cm) into the subsoil: the pit had a flat bottom and sides that sloped at 60 degrees. Except for the south end where the kiln lining rested directly on gravel, there was a layer of grey-black sandy soil *c.* 3″ (7 cm) thick on average (but up to 1′ (30 cm) at the north end) between the pit sides (j) and bottom (h). The bottom sandy soil (h) contained charcoal and small lumps of chalk. The clay of the kiln lining was 2″–5″ (5–12 cm) thick, but up to 6″ (15 cm) thick at the north end which was more heavily burnt. The clay lining was still yellow on the outside, had a zone burnt red *c.* 1½″ (38 mm) thick in the middle, and the smooth-

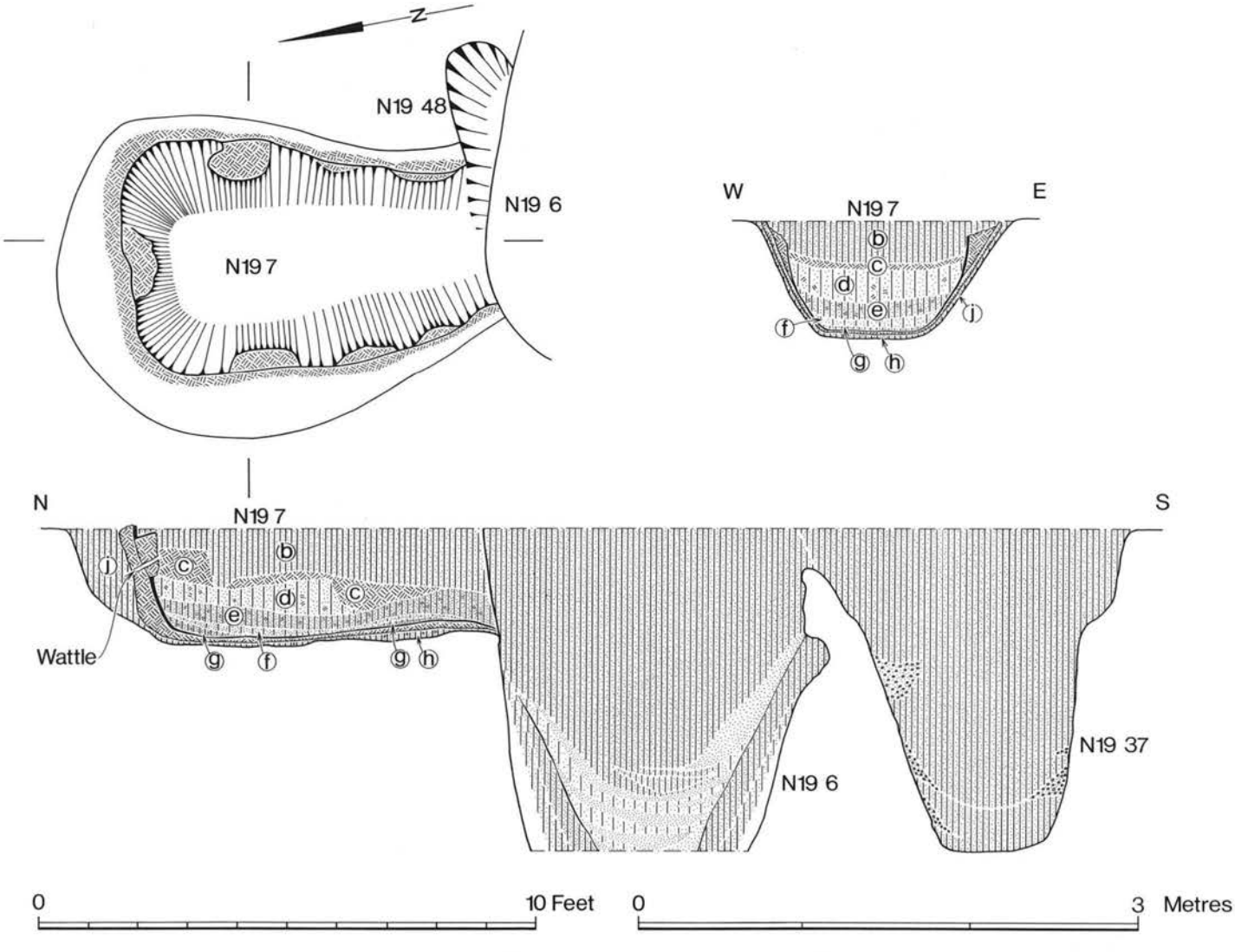


Figure 83 Brandon Road. Plan and sections pottery kiln N19 F7. Scale 1:40.

lining was still yellow on the outside, had a zone burnt red *c.* 1½" (38 mm) thick in the middle, and the smoothed inner face was burnt grey-black. The kiln floor consisted of earthy clay with many chalk fragments: there was also much chalk mixed in the clay of the sides in the lowest 2" – 3" (5 – 7 cm). The kiln floor was about 2" (5 cm) thick and was burnt red 1" (2 cm) deep at the south end and ¾" (18 mm) deep over the rest.

Stumps and scars of rib-arches were found, one at the north end and three on each side, forming three east-to-west cross-arches and one north-to-south longitudinal arch which joined the northern cross-arch to the north end of the kiln. The floor vents must have spanned *c.* 8" (20 cm) with gaps of 1'6" (45 cm) in the north corners. There was no evidence of any central or other support. The height of the oven floor would have been about level with the top of the OGS. The north rib springer was fired black throughout. It was 10" (25 cm) thick and survived *c.* 5" (12 cm) long. The cross-section at its broken end showed that it had been constructed around a centering of withies. The north rib springer and the withies projected upwards towards the kiln centre at an angle of 40 – 45 degrees. The withies measured variously ¾" (18 mm, three examples), 1" (25 mm, three examples), and 1¼"(31 mm, one example), in diameter and were placed in a roughly horizontal line in the centre of the rib. The springer on the west side at the north end consisted of irregular patches of red and yellow clay throughout its thickness.

The filling of the kiln beneath the level of the cross-arches (*c.* 1'3" (38 cm) maximum depth) comprised four layers, (d) – (g), of dark brown sandy soil of which two, (e) and (g), were charcoal-stained and one, (d), contained isolated patches of charcoal. Above this level, the kiln was filled with two layers of black-brown sooty soil with many pieces of collapsed kiln structure of red and yellow clay (b) and (c). Layer (a) above this was not drawn. There is no evidence of the dome material, if any existed, as there are no appropriately-shaped pieces among the burnt clay fragments from this kiln. Surviving fragments of the rib-arches retrieved from layer (b) measured a maximum of 9" (22 cm) wide by 5" (12 cm) high. The withies seem to have continued across the arches, and some of the burnt clay pieces show evidence of grass filler.

There must have been a stokehole for this kiln on the south side, obliterated by later features. To be completely masked by pit N19 F6, it must not have exceeded 6'6" (1.98 m) north-to-south by 7'6" (2.28 m) east-to-west. N19 F48 may have been the edge of the stokehole but it was nearly all cut away by Period IV pit N19 F6 so only 1'4" (40 cm) depth of side-wall remained, and some black sandy soil filling. There was no pottery and no mention of charcoal or ash in the filling, and it also seems to have been rather far to the north-east side to have been the stokehole. The surrounding natural gravel was 'dirty' in the neighbourhood of the kiln.

Dating. Dating for this kiln comes from the pottery found within it. Pottery from layer (a) and unstratified material are not included in the statistics, although inclusion of layer (a) would have made little difference. The kiln contained 2 SN, 1 IW, and 5779 TH (and some animal bone and shell). There were no eleventh-century sherds or objects, and only some TH in the soil outside the kiln in the kiln construction pit. Crucial to the dating of the kiln was the date of pit N19 F5, cut by the kiln. However, this pit is unphased as the only finds from it came from the top slumped layer (a) which was not cut by the kiln (Fig.70). The relationship of the kiln N19 F7 to other features suggests that it was respected by, and therefore related to, Period III gullies, particularly N19 F17/O18 F23 (gullies III G2) as N19 F1 contained many (eighty-five) TH sherds derived from the kiln. There were also kiln sherds in pit N19 F31, but these were only in the top.

The kiln stokehole was cut away by two Period IV pits, N19 F6 and possibly N19 F37, which also cut N19 F48 and a shallow linear feature which was possibly a continuation of gully M18 F66/M19 F14. Gully N19 F1 was cut by late eleventh-century Period IV pit N19 F4.

All this suggests that kiln N19 F7 belongs to Period III. It was most unlikely to have been in use after the beginning of the eleventh century, and was probably in production in the second half of the tenth century.

Drying ovens

Seventeen ovens or drying kilns were found on the site, ranging in date from the twelfth to sixteenth centuries (Periods Early V – VII). These would most likely have been used for drying grain, probably for malting and brewing. They can be classified by shape into six different types of roughly chronological order, and one uncertain example.

Type I Four examples (J25 F50, J25 F52, L21 F19, K27 F54). Figure-of-eight shape, in south and south-east part of site. They were cut from 9" (22 cm) to 2' (61 cm) into the subsoil, and L21 F19 sloped from south to north in the southern end. One, L21 F19, had a short flue. J25 F52 was lined throughout with mortared chalk blocks with pronounced jambs and J25 F50 had mortared chalk in the south end only: the other two had no lining. As L21 F19 had traces of burning on the sides of the flue it must have been fired in an unlined state: K27 F54 had a layer of chalk and clay debris beneath the clay floor and may have been lined initially. L21 F19 apparently had no floor lining, two had clay floors, and one, J25 F50, had a mortar floor.

Three of the ovens showed signs of burning, one in the flue only, and two in the flue and extending into the north end: there was no ash or burning in J25 F50. Fillings of three of these ovens are mentioned in the site records and range from 'dark earth and domestic rubbish' (J25 F50) 'chalk rubble and mortar debris' (J25 F52), and 'layers of burnt earth, charcoal, and dark soil with some stones' (L21 F19). J25 F50 had eight late twelfth to thirteenth-century sherds in its filling (with 2 GMT, 13 EM (Fabrics A and B), and 16 LS) and this must date the end of its use to *c.* 1200 or soon after. J25 F52 and L21 F19 each had EM (Fabric A) (with LS), and K27 F54 had no finds. These ovens are probably early Period V.

Type II Nine examples plus one ?Type II (L23 F135, L22 F101, K26 F9, K23 F26, L28 F4, L27 F44, N20 F31B, N20 F31C, O20 F30, and ?L25 F13). Except for three in N20 and O20, these occurred in the eastern half of the site in the area of grid lines K and L. They consisted of one round or oval end and one square or rectangular end. Separate flues were only present in two (N20 F31B and N20 F31C) and were both very short (6", 15 cm). They were cut from 9" (22 cm) to 3' (91 cm) into the subsoil (L28 F4 was not bottomed) except for L25 F13 which had a floor level with the subsoil and walls set into the subsoil to a maximum depth of 8" (20 cm). Oven K26 F9 had a ramp at the west end, possibly an entrance to the ?stokehole.

These ovens were lined with chalk blocks which were mortared together in six examples; L22 F101 had jambs of limestone. Two, N20 F31B and N20 F31C, were made of chalk blocks (and some ashlar) set in a crushed chalk matrix. O20 F3 apparently had chalk blocks in the rectangular end only (mortar is not mentioned). L25 F13 was made mainly of mortar with some chalk and flints, and had a mortar lining. Four ovens of this type had clay floors (L22 F101, K26 F9, L27 F44, L23 F135), two had mortar floors (K23 F26, L25 F13), and one (O20 F30) had traces of a chalk floor. In three cases the nature of the floor was unknown (L28 F4) or is not stated in the records (N20 F31B and N20 F31C).

Burning in this type of oven occurred on the jambs and/or in the rounded end. The round end of L22 F101 is described as 'smoke blacken-

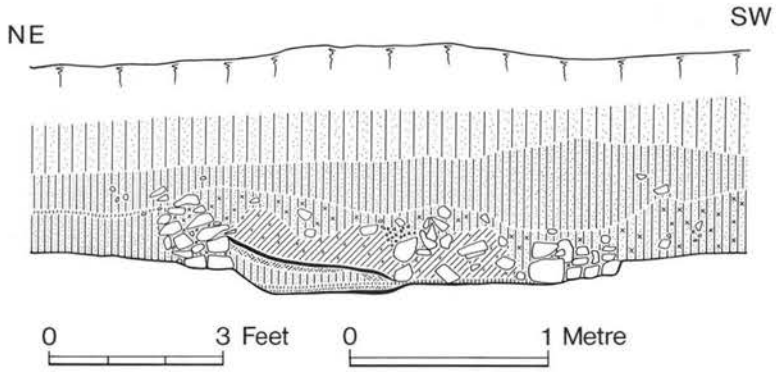


Figure 84 Brandon Road. Section drying oven L22 F101 (V). Scale 1:40.

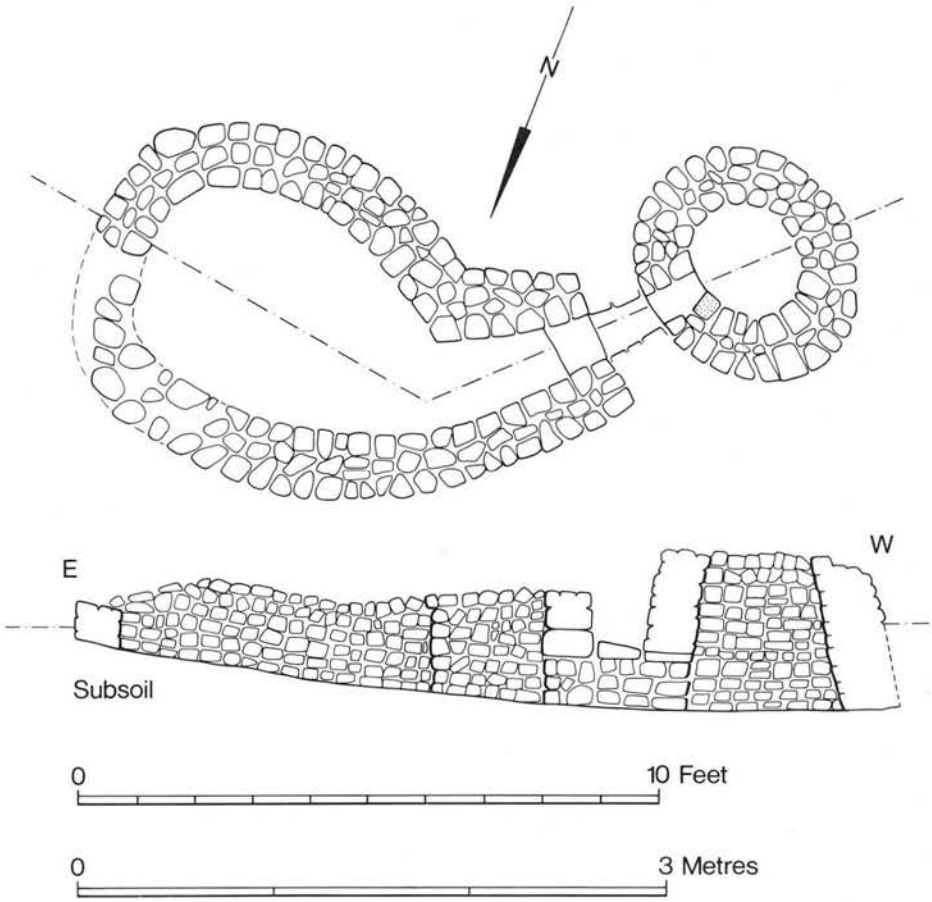


Figure 85 Brandon Road. Plan and elevation drying kiln L22 F38 (VI–VII). Scale 1:40.

ed' and the jambs had been cracked by the heat. K23 F26 had 'little signs of burning anywhere' as did O20 F30, and burning is not mentioned in the description of L23 F135 although it may have been present.

The filling of five ovens in this class was mainly chalk and mortar rubble with some soil. L27 F44 also contained some charcoal. N20 F31B and N20 F31C and O20 F30 were filled with dark sandy soil with chalk debris in the top 1' (30 cm). L22 F101 had a dark soil layer on the floor and the rest of the filling was unfired yellow chalky clay.

Two ovens of this type had potsherds built into their structure: K26 F9 had a number of potsherds in the mortar, the latest of which is one late thirteenth to fourteenth-century sherd from Grimston (a jug with scale decoration), and L22 F101 had a piece of late thirteenth to fourteenth-century Grimston face-jug beneath the latest of several clay floors in the round end. Four (L23 F135, L28 F4, N20 F31B, L25 F13) produced no finds even in the filling and O20 F30 contained an EM (fabric A) as the latest sherd, but these ovens were probably the same date as the others of this type. The other ovens all produced thirteenth to fourteenth-century pottery from their fillings, that from N20 F31C including one LM sherd which is at least fourteenth (and possibly fifteenth) century in date. Terminal dates were suggested in two instances: K23 F26 was beneath wall A in K23 and L25 F13 was sealed by some brown soil which ran underneath the chalk walls nearby.

Type III One example (K26 F26). This had a sub-square north-west end and tapered towards the south-east. It was cut 10" (25 cm) into the subsoil. It was made of chalk blocks with mortar lining. The floor was made of clay one end and mortar the other, but the site records are not clear as to which end. There seems to have been some burning in the centre, or flue, area. It was filled with mortar and rubble. A sherd of thirteenth to fourteenth-century Hedingham ware was found in the mortar (Period V).

Type IV One example (K24 F12). This resembles Type II ovens, but was considerably wider in the flue area with well-pronounced chalk jambs. It was cut 10" (25 cm) into the subsoil. It was made of chalk blocks and mortar, with a clay floor. The floor was burnt in the rounded north-east end. The two parts had different fillings, with that in the north-east end being grey sandy soil and that in the square south-west end being rubble. A LM/EPM sherd (probably late fifteenth, or perhaps early sixteenth century) was found below the unfired floor in the square end (Period VI–VII).

Type V One example (L22 F38) (Fig.85). This feature had a round south-west end connected by a roofed flue to an elongated oval chamber bent towards the south. The round south-west end tapered inwards, having an internal diameter of 2'9" (83 cm) at the bottom and 1'9" (53 cm) at the height to which it survived. The oven cut the subsoil at a slope from a few inches at the east end to 3' (91 cm) in the centre and west end: the floor of the round chamber was level. The round end was built into a round working pit about 2' (61 cm) wider than its external diameter. The walls were made of small chalk blocks faced at the edges, and a few flints: there is no mention of mortar in the site records. The flue had a roof of small individual stones with large lintels at either end, one of which was made of chalk and the other was 'flint like'. The flue had a floor of stone blocks, but there was no other flooring in the feature. There was no heat reddening or charcoal. The filling contained a little chalky clay. The only associated pottery was one LM (probably fifteenth-century ?late Grimston) in the filling. The nature of this structure would suggest that it was at least fifteenth century or later (Period VI–VII).

Type VI One example (K28 'oven'). This feature consisted of a round south end with a parallel-sided flue running north-north-east from it. The flue was at least 5'6" (1.67 m) long with foundation trenches continuing beyond the surviving structure. It cut a thick spread of mortar which was possibly an earlier feature but this is not certain. The plan (Fig.17) shows a possible robbed wall on the north-west side and it may be that this feature was inside, or associated with, a building. The round end was made of mortar with some chalk admixture, and the flue was made of chalk and mortar with some red bricks at the south end. The floor was clay and is described as red throughout. The round chamber was filled with mortar and soil, and the flue with one layer of soil and two of mortar. Finds in the filling comprised one seventeenth-century PM (GRE, post-1675), two LM/EPM (including one LMT), one M sherd, and a fragment of brick or tile. This feature was certainly later than well L28 F114/F115 which was dug in the fourteenth century (late Period V) and filled in the late fifteenth to early sixteenth century (Period VII). This stratigraphical relationship, as well as the bricks in the construction and the PM material in the filling, show that this oven was in use in the sixteenth century and was one of the latest features on the site (Period VII or later). It may have continued in use beyond the life of the other features in the excavated area or else well L28 F114/F115 may have been filled in before the site was abandoned. It seems most likely that its period of use was post-1540 when the site was abandoned, ending after the late seventeenth century.

Uncertain One other feature, N21 F206, may be the remains of a drying oven. This was an irregularly-shaped pit, cut a maximum of 11" (27 cm) into the subsoil. It had an edging of one course of mortared chalk blocks on a north-to-south line on the west side, and was filled with charcoal at the bottom and two layers of unburnt clay separated by stony soil. There were no finds.

Burials

An isolated inhumation was found in N18 (F1) and four (or five) graves were found in M25. Of these, three, M25 F18, M25 F25, M25 F33, lay close together side by side and one, M25 F41, lay to the east. Feature M25 F42 to the south-east may also have been a grave from which the bones were missing or had completely decayed in the acidic soil. All the skeletons found lay extended with their heads to the west in shallow graves cut 3" to 1' (7–30 cm) into the natural. There were no grave goods but M25 F25 had five (originally six?) L-shaped iron coffin brackets at the head, pelvis and feet (see Part V, Iron Objects and Fig.130). There were no finds in any of the graves, and their date is not clear. The coffin may indicate a Period V–VII date, but they do not seem to have been within a churchyard. The position of heads to the west would suggest that they were Christian and as human bones were found in Late Saxon pits they may have been of that date, buried at the back of 'Structure' Q and 'Property' U. Isolated burials of uncertain dates are a feature of excavations in Thetford (Rogerson and Dallas 1984, 198). However, a Roman date is also possible if the alignment has no Christian significance.

Gillian Stroud reports on the bone from these burials and from the pits (see Part VI, Human Skeletal Material).

Periods III – VII: Discussion

Discussion of features

Although there may have been a break or lull in occupation on this site in the middle of the twelfth century (see Period IV/V below), Periods III–VII are considered continuous because the roads, and some of the boundaries, continued in use throughout.

Period III

(Fig.7)

After the Early Saxon activity, this area remained unoccupied until the second half of the tenth century when kiln N19 F7 or gullies G5 (or both) were established.

The earliest gullies must be the three parallel gullies G5 which ran beneath the roads in area L/M 17/19. M18 F66/M19 F14 ran southwards from a persistent gap in the main north-west to south-east gully line G1–G3 and these all seem likely to have been part of the same system. Most of these boundaries seem to have been recut. The details of these divisions are difficult to interpret in the absence of clear stratigraphy and several problems remain.

The track defined by L18 F2, F3, and F4 swings westwards, and may have enclosed an area on the north; O18 F1, O18 F33 and O18 F11 (G38) were possibly their counterparts on the north. The north-to-south gullies (G39) in M/N/O 17 may not have been related as M17 F15/N17 F3/O17 F25 (Figs 18 and 29) cut a twelfth-century pit, and N17 F1/O17 F32 was different in character; there was no dating evidence for N17 F2/O17 F28.

The relationship of G38 (O18 F1, F33, F11) to the main G1–G3 gully line is not clear. They were probably associated since O18 F17 appeared to turn westwards as O18 F11.

G4 (O18 F34). The relationship of this gully to O18 F11 was not clear, and it seems unlikely to have been contemporary with O18 F33. It is also unlikely that the southern portion of O18 F34 was contemporary with O18 F23 and O18 F17.

Therefore these systems (G1–G7) are open to more than one interpretation. They are enclosures recut at least twice. The main north-west to south-east gully line ran for over 200' (60 m) with a possible northern return in P19 F8 and P20 F61 (although this was not recut or replaced until Period IV) which possibly continued eastwards as P19 F8 and P20 F61 (Figs 33, 37 and 38).

The lack of Period III features north of this line would seem to be genuine, and may indicate open ground in the tenth century. Which of the structures and features were associated with the possible enclosure is not very clear. O19 F2 and P19 F32 may represent a structure, and Building S may have been enclosed by the boundaries, but there are few demonstrably Period III pits.

The gaps in this (G1–G3) gully system were

presumably entrances. Pottery kiln N19 F7 appears, rather curiously, in one of these gaps. Its use was possibly associated with gully N19 F1 and therefore with N19 F17/O18 F23; if so, it backed on to a contemporary boundary. The absence of demonstrably associated features (*e.g.* pits containing 'wasters' *etc.*) suggests that this kiln may not have been in use for very long, and was perhaps early Period III.

The possible small building T (Fig.20) fits neatly into the angle between the main north-west to south-east G1 – G3 gully line and M19 F13A, and may have been contemporary with this gully system.

The area L/M 17 – 19 was heavily occupied in late Period III and IV, and may have undergone subdivisions and changes of layout, perhaps representing properties like K, Q and R. At a stage which post-dated at least G5, the area was divided transversely by G6; this was perhaps contemporary with Building D (?late Period III or IV) which seems stratified between the main G1 – G3 gullies and later pit digging. 'Property' V and, to some extent, U, did not contain Period III or IV pits and it is noticeable that most of the pits cluster around the edges of the area, presumably as buildings stood near the road. Pits M17 F36 and M18 F5 may have been cesspits. The features ended fairly consistently on the north side of the area at the junction of grid squares M and N. The western limit of early pits seems to be the centre of grid M17. This area continued in intensive use in Period IV and by the late eleventh century was bounded on the south side by gullies parallel to the road (G31, M18 F68/M19 F65 *etc.*), perhaps built to enclose B/C/D. G5 may have been an early version of G31, laid out on a different line but also leaving a gap (entrance?) at the south end of D.

Two possible enclosures (G8 – G9 and G10) are assigned to Period III, although there is no dating evidence, as they make little sense with the Period IV gully systems. G9 contained Period IV Building E, but was on a different alignment. G8 was clearly not contemporary with Building E, and its line continued southwards towards a gap in the early G1 – G3 gully system. Further east, the east-to-west line of gullies G10 continued as a possible fence-line to the west (and the end of N21 F29). Triple post-holes O21 F64 (Fig.33) and M21 F58 (Fig.22) both occurred in potential corner areas in these putative enclosures. A large cluster of pits in the south-western quadrant of G10, and 'Structure' P (in an area without pits) may have been contemporary, although this is not certain (and a Period IV date is also possible).

Access-pit (L22 F10) and a possible well (M21 F99) may also have been within this enclosure.

The fence in N21 (Fig.33) to the north of the enclosures seems likely to have belonged to Period III as was overlain by many Period IV gullies. Fenced yards are likely in other parts of the excavated area, but are difficult to detect amongst the numerous post-holes and later features. Building X seems centrally placed within a yard, 'Structure' N (to the north) probably belonged to the same Period: 'Structure' N was earlier than Period IV curving gully G12 (which overlapped O22 F27).

Building F lay between the two possible Period III enclosures G9 and G10 and next to Period IV gully G20 and seems to have been associated with either of them. Building H to the east was cut by pits which seem to have been eleventh century, and therefore probably belonged to late Period III; a gap in gully G2 may represent an entrance.

The main transverse G1 – G3 gully system ends south of Building H (with K22 F26 or K23 F34). This coincided with the back line of 'properties' on the west side of the north-to-south road, and perhaps this laying out indicates contemporaneity or that the layout in Period III influenced the roads and the connected properties. 'Building' K and 'Structure' Q, delineated by lines and groups of pits, lay on the west side of the north-to-south road, laid out *c.* 1000, in late Period III K and Q were both some 50′ (15.00 m) wide by 75′ (23.00 m) long, assuming that the back ended on a north-to-south line west of N25 F70, M24 F38 (which may have been a well), and L24 F22. There is room for two more 'properties' this size between K and the junction of the roads, but no pit patterns or boundaries are visible. Buildings may also be postulated in areas where pits were absent, as in the area east of Building H, in grid L23 and the southern half of L24.

On the east side of the north-to-south road, 'Structure' R resembled K and Q, with bands of pits marking an area of similar size; R was situated exactly opposite Q: early pits were sparse south of this, perhaps indicating some functional change.

Cellared Building J would seem by its associated finds to have belonged to Period III. The back line of 'Structure' R projected southwards passes very close to Building J, which was also not aligned with any of the other boundaries. The entrance to the cellar of J seems to have lain to the south-east, facing away from the north-to-south road and some distance from the east-to-west road. Early pits are absent in the area north and east of J (some possibly early pits lay to the south) but there are many small post-holes. This part of the excavated settlement may have had a different character as the use of Building J involved little pit digging (as might perhaps be expected in a domestic context); similar gaps may have occurred elsewhere on the site (*e.g.* west of K and Q) but this seems the largest such area seen. At the extreme east end of the excavated area, boundary gullies and pits reoccur (in grids K/L 28 – 29).

Period IV
(Fig.8)

As mentioned above, the L/M 17 – 19 area remained occupied in Period IV; amongst the features were many with a high percentage of St Neot's-type ware (SN). The pits cluster roughly in two groups. The western group lies roughly in a line from M17 into N18, and the other group, which has much SN, lies mainly in M19 and N19. This might suggest two 'properties' here in the eleventh century. Gully M18 F54 may have been structural or a property division. Late eleventh-century pit N19 F4 to the north may have been a well. It seems probable that Building B/C/D this period, and any associated buildings are likely to have been situated in the area not occupied by pits, in 'Properties' V, W and to some extent, U.

Generally, the Period IV pits seem not to have formed lines, and were either tightly grouped, or randomly situated (as they were in the western part of the site).

In the northern part of the site were many Period IV gullies (G11G17): these were possibly the backs of properties lying along the south side of Brandon Road. They mostly ended at the same point: P19 F5/P20 F58 and P19 F13 (which replaced P19 F8 and P20 F61 of Period III),

P20 F59/P21 F12/O21 F14, P21 F28, O22 F5, O22 F7, curving gully N23 F6 *etc.*, N24 F17, N24 F18, N24 F19, and N24 F58. This must have been a major boundary, although there is no archaeological trace of a transverse east-to-west line.

The northernmost part of the site contained a series of two boundary lines with wide ?entrance gaps. The earliest G11, was aligned with Building A. Pit P20 F3 was possibly a well. The later gullies G14, were aligned with P21 F7: these features contained close-set posts of palisade construction. The slight change of alignment in these gullies is reflected by the late eleventh-century gullies in L/M 17–20.

Curving enclosure G12 may have been contemporary with the earlier of the P19–P21 gullies mentioned above (G11) as it would intersect with P21 F18; it makes little sense next to the main north-to-south gullies in M21/N21/O21/O22 (G18–G33), and it was cut by N24 F18 and F19 (G16) which were on the later (more north-to-south) alignment.

M23 F2/N23 F11 (G13) would seem to have been associated with the curved enclosure G12, although the junction is obscure. M23 F2/N23 F11 lies in a similar distance west of N24 F17 as N24 F58 does east, but the N24 gullies are on a slightly different alignment (although of similar length).

The major gully system in Period IV was the long north-to-south boundary in M20/M21/N21/O21/O22 (G18–G33), which was recut twice along its length as well as undergoing shorter repairs in O21/O22 (O21 F85) and M20/M21 (M21 F6b). That these recuts could shift as much as 5′ (1.50 m) to possibly 24′ (7.50 m) indicates that the boundary position was not rigidly fixed. These gullies turned westwards, at first in area M20 (G26G27), and then 30′ (9.00 m) further south in grids L/M 18–20 (G31). Late eleventh-century pit M20 F111 seems to have intervened at the south-east corner, but the boundary corner was recut and possibly migrated slightly eastwards in L21 F47/F4: L21 F48 possibly continued the line eastwards but this is not certain as the twelfth-century features associated with drying oven L21 F19 were on the older north-east to south-west alignment (G45 Fig.22). The main north-to-south boundary ran between the Period III ?enclosures in N20/N21 and M21/N21/N22/M23 (G9 and G10) and on the east side of Building F, which may have been enclosed by it. If building B/C/D still stood, it may have been connected with this enclosure, whose southern arm runs west to D. A later southward extension of this gully to the road and westwards along it may also be associated with B/C/D. The south end of D fits neatly across a gap in this gully, and a line of post-holes may represent a later blocking.

Further east, there may have been a group of Period IV pits succeeding Building H in the area of grid L23, and scattered pits along the west side of the north-to-south road in grid K23. It seems probable that 'properties' here (see K and Q Period III) continued to be occupied in the eleventh century, but the boundary positions are not demonstrable.

East of the north-to-south road no property boundaries are visible but the 'property' containing R may have continued in use into the eleventh century. A group of Period IV pits in grids K25/K26/L26, which included hearth K25 F17, may have been associated with cellared Building L nearby. Building J had possibly burnt down, and been replaced by Building L but it is more likely that some time elapsed between them. The two buildings were built with different techniques; eleventh-century pottery occurred beneath the flint floor of Building L but not in the filling of Building J and Building L probably reused pit J26 F14 which was eleventh century. The lower filling of pit J26 F14 and some other pits in the area, such as J25 F60, contained a high percentage of SN, but there are no clues as to the function of Building L.

If Building L did belong to a later phase of Period IV, it may have been associated with a small enclosed yard in J25 (G37). This post-dated Road B and was in use late in Period IV or early in Period V; if the latter, it may have enclosed drying ovens J25 F50 and J25 F52 (the former was filled in about the same time as Building L). Building L seems to have been deliberately filled in *c.* 1200, but the surrounding stake-holes suggest that it may have been a fenced-in ruin before that date.

A few scattered Period IV pits occurred in the eastern part of the excavated area, and the pits and boundaries in K/L 28–29 may also have existed in Period IV.

Period IV/V

(Figs 8 and 9)

Features containing groups of twelfth-century material are rare on this site, but as finds in general were sparse this does not preclude occupation continuing, albeit in a much reduced state, throughout the twelfth century. Ceramically, late eleventh-century wares continued into the twelfth century (such as GMT and EM Fabric (C)), and pottery types began in the second half of the twelfth century which continued into the thirteenth century (some EM rim forms, larger EM jars, and probably EM Fabric (B)). Precise dating is therefore difficult. Features which contained 'late eleventh-century' pottery, or which seem stratigraphically to have been of that date, have been stippled on Fig.8 and features which seem to have pre-dated *c.* 1200 are shown black on Fig.9. A 'gap' some time in the twelfth century seems likely as so few features contained 'late eleventh-century' patterns. If this was so, there was also a flurry of renewed activity late in the twelfth century. The only convincing group of twelfth-century pottery is attributed to pit N17 F72, and several large pits in this area were probably contemporary – all pre-dating the 'Structure' G tentering frames. Gully G46 (M17 F15/N17 F3/O17 F25) (Figs 18 and 29) appeared to cut pit N17 F72 although no other gullies on the site were likely to have been of this date.

Further to the east lay 'figure-of-eight' drying oven L21 F19. This was possibly enclosed by a small yard (G45) or a building, with two small yards on the south end.

Post-holes containing twelfth-century potsherds indicate timber buildings near the roads east of oven L21 F19. Pits of this date were scattered around the site, and hearths and ovens indicate industrial activity. Hearth complex K25 F32 was of this date, and K26 F3 had a hearth of burnt clay beneath a mass of mortar and chalk on which lay broken twelfth-century potsherds from one vessel and several iron objects.

Two drying ovens (J25 F50 and F52) occurred in the eastern angle of the road junction; oven J25 F50 contained a group of late twelfth to early thirteenth-century pottery and must have been filled in *c.* 1200, about the period the cellar of Building L was finally filled in. These ovens may have been enclosed by the small yard of G37 gullies as these were at least late eleventh century, but hearth

J25 F53 was associated with a late twelfth-century potsherd and overlay the filled-in gullies J25 F41 and F42. As the hearth may have been associated with the ovens, it is possible that the gully system was out of use by this stage, although this is not certain. Another oven of this type, K27 F54, lay further east but no associated enclosure seems to have existed.

Period V
(Fig.9)
The industrial activity of the late twelfth century continued throughout the thirteenth and fourteenth centuries. 'Structure' G at the west end of the excavated area has been interpreted as tentering frames for drying dyed cloth and this activity dates to the end of the twelfth or early thirteenth century. No other features are demonstrably of this date in the vicinity, but any associated features could lie beyond the excavation. Gully N18 F2 produced a late thirteenth to fourteenth-century potsherd and seems unlikely to have been associated. The only other Period V features in this part of the trench were drying ovens O20 F30 and N20 F31 A–C. The former produced only Saxo-Norman pottery but its form suggests it belonged to Period V as did other ovens of this type (see above, Drying ovens).

The main north-to-south boundary (in M21, N21, O22 *etc.*) seems to have continued into Period V as Medieval pottery was found at several points in the same gully line (in M21 F33, N21 F189 and post-holes N21 F174 G51).

East of this boundary, there was quite intensive Period V activity along the roads. Property boundaries and buildings are not evident but probably existed. Deep chalk-lined wells with large construction pits were cut: L22 F48, M27 F14 and L28 F114 produced Period V dating evidence, and K26 F7 and L27 F41 are likely to have been dug in Period V (see above, Wells). Two wells had no visible construction pits (L24 F66 and K26 F33); the latter was filled in Late Period V. K26 F16 has been classed as a pit as it was shallow.

Several Period V drying ovens were found: L22 F101, L23 F135 and K23 F26 lay between well L22 F48 and the road junction. L25 F13 was probably the remnants of a similar feature to the north. On the east side of the north-to-south road, K26 F26, K26 F9 and L27 F44 lay near wells K26 F7 and L27 F41. The nature of this industrial activity seems likely to have been malting and brewing. The presence of so many drying ovens and wells suggests that this must have been done on a commercial scale, and this activity continued into Periods VI and VII.

Periods VI–VII
(Fig.9)
Periods VI and VII were continuous and few features can certainly be attributed to Period VI. As the quantity of Period VII material is enhanced by a group of pits in grids M/N 23–24 and by the deliberate filling of many of the wells, the occupation throughout Periods VI and VII is likely to have been of similar intensity.

At the west side of the excavated area, the Structure G tentering frames had gone out of use in Periods VI–VII, and the area was divided by small ditches. Although some pits in the area may belong to Periods VI–VII, it seems more likely that this part of the site was no longer occupied after the late fourteenth to early fifteenth centuries when the drying ovens in the area had probably ceased to be used. Gully G50 (O20 F10/O21 F10) may have belonged to Period V, but Ditch A (O18 F10/O19 F15/O20) and, by probable association, M19 F20A/N18 F12/N17 F45 (G49) seem to have been part of Period VI or VI–VII. This perhaps represents the division of the land into paddocks or small fields.

The chalk wall-footings on the site belonged to Periods VI–VII. These are narrow foundations for buildings of cob walling, clay lump, or half-timbered wattle and daub panelling: late fifteenth-century ceramic roof tiles found in the excavations may have derived from them. Two or three building phases are clear in grids K22/K23 and M24/L25. The complete details of these phases are not known, as little survived of the wall-footings in some areas. The fragments in P19/P20 and M27 provide information. The main area of walling in the centre of the excavation may represent ranges of buildings around rectangular central yards. Associated features within the yards are difficult to demonstrate, as the phases of walling are obscure and some features are difficult to interpret and date. For example, well K24 F37 cannot have been contemporary with the wall-footings in K24, and as it seems to have been filled-in at the end of Period VII, it was probably dug after those walls had gone out of use. A conspicuous Period VI complex is well L24 F47/F48, chalk-lined tank L24 F68, and drying oven K24 F12 which would seem to have been fifteenth century; perhaps these were within the K24 enclosure (if this was also Period VI). Enigmatic drying oven L22 F38 (Fig.85) could have lain inside the western enclosure, but it was at least fifteenth century and its unusual shape indicates a later date.

Some Period VI pits and water tanks occurred in the north-east part of the site, and pit-digging west of the north-to-south road in grid M25/26 area began in this period, continuing into Period VII. Culvert L26 F103 was found *beneath* Road B surface, which functioned as Road C in this area. The features cut into the road-line probably belong to Periods VI and VII, indicating the narrower width of Roads C and D at that time.

In Period VII pits were dug in this area, as well as in M/N 23–24, and many Period VI features were still in use or rebuilt.

The end of the activity on site in the first half of the sixteenth century, probably *c.* 1540 after the Dissolution (see Part VII, Documentary Evidence), involved the filling or levelling-up of at least six of the Period V–VII wells. The only feature on the site later than this date was the oven (K29 oven) which was associated with mortar (?flooring) which overran the Period VII filling of Period V well L28 F114/F115. This oven also had brick used in its structure (construction material found nowhere else on the site), and finds from its filling included a sherd of late seventeenth-century pottery. This oven was therefore the latest feature on the site possibly later than Period VII, perhaps a resumption of activity after a period of abandonment as the presence of well L28 F115 may possibly have been unknown when the oven complex was built above it.

The road continued in use after the occupation on the site ended, and Road D was probably laid down in post-medieval times: its use continued into the nineteenth century (Fig.179) as the road to Lakenheath.

Periods III–VII: Evidence of livelihood

There was no major industrial activity in Periods III and IV but there are hints of some industrial practices nearby, although evidence is somewhat equivocal about industries which might be expected in the Saxo-Norman period.

1) Metalworking (see also Examination of Technological Material, below). Discarded iron smithing slag was found in an area west of the north-to-south road, in small quantities in pits K25 F8, F14 and F3 (which last has a Medieval potsherd attributed to it (possibly a surface find)). These pits may all have belonged to one Period III 'property'; K25 F8 also contained discarded mould fragments from the casting of a copper alloy bell. Another discarded copper alloy mould (of undefinable form) may also have been from K25 F8 (rather than J26 F31 as labelled because the context has become muddled since the excavation). The metalworking debris in K25 F8 was found associated with misfired Thetford Ware and although it was in the top of the pit, seems likely to have been late tenth-century in date. Some copper alloy waste was found in the bottom of gully K25 F31, but this seems to have been a late eleventh-century feature.

Iron slag occurred occasionally elsewhere on the site (*e.g.* in O20 F2, F3 and F4) but the quantities are so small as to be insignificant. Clay hearths found on the site were not heated to sufficient intensity for metalworking. The only used crucible was found with the other debris (missing) in the top of pit K25 F8 but other crucible fragments were found in pits J26 F14, and the top of O20 F2(a) (Fig.115, No.11). If any metalworking took place within the excavated area, it seems likely to have been only along the southern part of the north-to-south road.

2) Pottery production. The large Saxo-Norman Thetford ware pottery industry was represented within the area excavated by one late tenth-century kiln N19 F7. This made a small range of 'cooking pots' and bowls, and may not have been in existence for very long.

In four other places, misfired Thetford Ware was discarded. These vessels were misfired but were not wasters, and they cannot be top (cooking pots and pitchers, rim forms AB7/AB14?, AB9, AB14 and AE11); L27 F4, L27 F5 and L27 F7 at the back of 'structure' containing R (storage jars AG). This last group was associated with over a hundred fragments of burnt clay. Some pieces were up to 6 cm thick and have flat or concave surfaces with wattle marks on the back; none are diagnostic kiln fragments rather than hearth or daub fragments but this is possible.

3) Bone and antler-working. Except for some dubious chips on top of pit M20 F111, the only evidence of bone-working occurred in the Period IV pits grouped on the east side of the north-to-south roads. A split rib of sheep/goat was found in pit K25 F16, as well as a cattle scapula with a hole made from both sides, and a few bones with cut marks come from pits K25 F12 and K25 F19. A probable roughout for a bone skate was found in pit L26 F58 (Period III–early IV?) to the north of this group. Only the sawn rib was clearly bone-working waste, and this is hardly sufficient to suggest that this industry existed here, although it is possible.

4) Leatherworking. This industry leaves little trace, but one leatherworking awl each was found in pits in Period III 'Structures' Q or K (M24 F38) and 'Structure' R (M27 F12) on either side of the north-west road. Period III pits containing an unusual amount of cattle skull and foot bones (O21 F46, F47, F48 and O19 F28, see below, Animal bone) on the north-west part of the site may represent butchery or tanning.

5) Wool industry. This might be expected at Thetford, but also leaves little archaeological trace. An unusually large number of iron wool comb spikes were found, some twenty-five of which were in Period III or IV contexts, in roughly equal quantities. They were found over all of the excavated trench, and not in any particular area.

6) Merchants and importers. Foreign imports included many fragments of Rhineland lava quern (Niedermendig) from all contexts, some 34% in Periods III and IV, and honestones, the few extant examples of which have been identified as Norwegian ragstone (see Stone objects, below).

A few red-painted potsherds were found in the excavations, in Period IV contexts where stratified, and some of these may be from one vessel. Except for one possible Northern French sherd, the pots seem to have been Rhenish in origin (Fig.139). Insular 'imports' included pottery.

A notable characteristic of this site is that many features contained unusually high quantities of St Neots-type ware (SN) (over 50% in the groups of over ten sherds). These features mostly cluster in certain areas. The most obvious group is the Period IV pits in grid M19, which contained unused SN vessels of similar forms (M19 F23, M19 F19A, M19 F19B, M19 F1, M19 F38, M19 F20C, M19 F58). Some of the more scattered Period IV pits to the north also contained SN (*e.g.* O20 F2–F4, N19 F16/O19 F32) and some Period III and IV features in the area of ?enclosure G10 (*e.g.* pits N21 F202/N22 F78, N22 F77, N22 F123, N22 F98), and probably gullies N22 F92 and N22 F99 in the north, as well as pits M21 F61 and M21 F95 in the south. One pit in 'Structure' Q (M26 F6) and several in 'Building' K (L24 F60, L24 F62, L25 F178) come into this category. Another group seems to have occurred east of the road junction (J25 F60, J26 F14 and J26 F41).

As some of these pits seem to date to Period III and some to Period IV, the import of SN clearly continued after the introduction of EM pottery in the early eleventh century; this precludes any suggestion that Thetford Ware may not have been available at the time. That settlers from west of the Fens moved into the area, bringing their possessions with them is possible, but would not explain why the vessels seem unused.

The most likely explanation for so much SN at Thetford in the Saxo-Norman period is regular trade; the vessels might have been containers, but different forms occur and anyway, most foodstuffs must have been available locally (*Domesday Book* even mentions Thetford as exporting honey). It seems probable that the SN pottery (and Stamford Ware) may have been imported for their own particular properties; the SN vessels are more porous than Thetford Ware and may have been more efficient at cooling liquids: they would also not have created as much gritty sand residue as TH must have done in cooking processes such as stirring and boiling. This may have made them a worthwhile commodity; SN is usually up to 10% of most domestic assemblages in Thetford.

IX. General Discussion and Conclusions

The site has produced evidence of occupation of the mid-first century and the sixth to seventh centuries, possibly representing the eastern fringes of settlements lying to the north and west, near the ford across the river in the Red Castle area.

Late Saxon activity here began possibly with the kiln N19 F5 at sometime *c.* AD 950 (early Period III), perhaps within an associated yard. Activity continued a little later in the tenth century with the division of the area by boundary gullies (with the now disused kiln as part of the boundary) into a large enclosure which contained fenced yards and slight buildings. Occupation was possibly scanty and rural in character. The first version of the boundary had possible small gaps at several places, either exits into a track or open land, or entrances for buildings S, F and H just inside the boundary. A ditched droveway entered the site from the south-west and turned to meet the main enclosure at one of the minor entrances. This droveway may indicate that stock was brought into this enclosure, essentially a large paddock. At the north of the site, fenced yards (one is N, another contains a slight building, X) and lengths of gully may hint at the division of this paddock into pens and yards. There is a hint in the distribution of post-holes and areas free of post-holes that a long north-to-south path ran down the site from P21 to M20, a line perhaps perpetuated by gullies G23–5 in Period IV. The casual and rural nature of activity here, with scanty occupation, is consistent with the almost complete absence of features below the roads, which suggests the general absence of occupation here, or that the roads formalised an existing track, running along the outside of the long boundary. The absence of features from below the north-to-south road suggests that occupation was slight. Towards the east end of the site in the late tenth/early eleventh century, cellared building J stood, either in isolation in Period III, or as part of occupation along the north-to-south road a little later.

Plate I Brandon Road. General view of excavations.

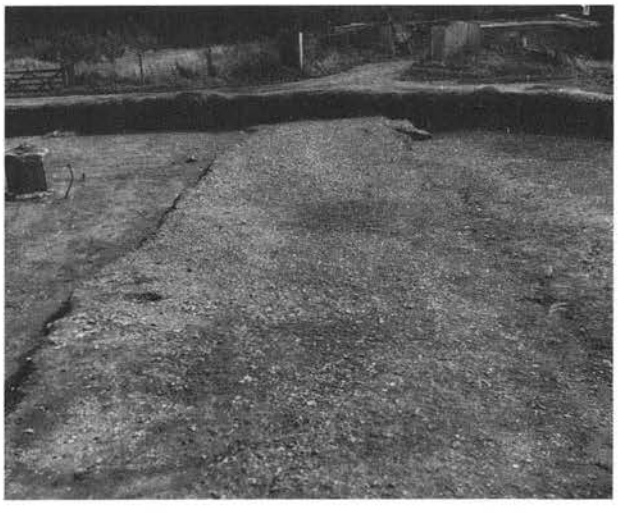


Plate II Brandon Road. Surface of Road B, looking east in L21.

The existence of the Brandon road, or any occupation along it, is speculative but may be important in understanding the activity in the excavated area, which lies immediately south of that road. It is possible that the main enclosure and its yards related to occupation just to the north, along the Brandon road, and that changes in the excavated area should be seen in this light.

Towards the end of Period III (in its late phase) a massive reorganisation took place which saw the laying of the road, both the east-to-west and north-to-south parts. The alignment of the main street seems to mirror that of the present Brandon Road, some 20 m north of the excavation area and suggest that it was contemporary. The excavated east-to-west road must be that shown as going to Lakenheath on a surveyor's map of 1805, copied from an earlier map (see Fig.176 and the Topography of Thetford, Part VII).

The Saxo-Norman features in the excavated area are mostly aligned with the new road in its eastern part and north-to-south stretch. How the land was allocated and divided is unknown, but plots along the crowded street frontages may have been more clearly defined than areas away from the roads. Single-post fences existed, and the use of gullies for boundaries rather than drainage (mostly unnecessary in this soil) may imply wooden fencing. Some gullies contained post-holes and perhaps hedges too.

Perhaps Buildings F, H and possibly S belong in Period III with the long boundary, whose earlier phase had possible entrances near these buildings. This long boundary continued in use for some time, with one recut.

The disorderly and loose arrangement of early Period III may have become more regulated after the laying of the road system (in late Period III), with properties then following the road alignments. Regular plots may have existed along the west (and east?) side of the north-to-south road, whose owners or occupiers dug their pits systematically around the perimeters of the property. A similar pattern probably existed along the east-to-west road, with the street frontages heavily reused, particularly at the west end of the excavation. The massive complex Building B/C/D may belong to the road-laying episode in late Period III or a little later, in Period IV, but this is not clear. The relationship of the three parts of this building to each other is likewise not certain, although it could be of one build. When it was built, the long gully had gone out of use and so had (possibly) Building S. The vast building, over 40 m long, may have been enclosed by north-to-south gully G23–5 (recut several times) and its later southward extension G31. In late Period IV Building B/C/D was gone and Building E was raised, on an east-to-west alignment, still within gully G23–5. Building F could belong in this Period. To the north of Building E, possibly enclosed by gully G11, Building A may represent occupation along the Brandon road. Along the road, a possible blocking of an entrance on Gully 31 (by a line of posts) may reflect the removal of Building B/C/D.

Other changes of layout seem to have occurred in the eleventh century, with a system of boundary gullies ranged along the northern edge of the area excavated, probably the backs of 'properties' along the south side of Brandon Road. Those all end at roughly the same point southwards, and do not extend eastwards beyond the rear boundaries of the properties along the north-to-south road.

In Period IV most of the late Period III structures and plots continued in use, ranged along the north-to-south road in particular, possibly connected with occupation along the Brandon road (although this is not certain) and possibly industrial in character. It may be that the laying of the roads and dense occupation along them reflects a change from a landscape of paddocks and enclosures in Period III on the edge of the town to a suburban 'townscape' with close-set buildings in small plots, with rubbish pits and cesspits attesting to an increase in population here.

East of the north-to-south road, one small 'property' containing R is identifiable (of the late Period III–IV), but no boundaries are evident in this area except for tenth or eleventh-century gullies and pits at the extreme east end of the trench. The intervening area appears to have contained no tenth-century, and few eleventh-century pits, although there are many post-holes, and scattered slight buildings probably existed at various times. Two cellared buildings were found in this area. Building J was

the earlier of the two (?late Period III). It had burnt down and was filled in (with no EM pottery in the fill) presumably before the early eleventh century. Building L was constructed in the eleventh century, possibly in the second half (Period IV). It was not filled in until *c.* 1200, but may have gone out of use before then.

Industrial evidence is scanty, and seems confined to the roadside, particularly in the smaller properties of Period IV on the north-to-south road. Some evidence was found here for the working of iron and copper alloy, bone, and possibly leather. Misfired Thetford Ware pottery was found discarded in several pits (some way from the kiln) but no other kilns were found. The presence of unusual amounts of St Neots-type ware in several places, mostly along the roads, suggests that this was being imported. This trade may have been water-borne; the Great Ouse into which the Little Ouse flows from Thetford did not originally reach the sea at King's Lynn (a channel for this was cut in the thirteenth century) (Clarke and Carter 1977, 413–15, fig.187) but in the Saxo-Norman period flowed into the River Nene, and then into the Wash at Wisbech (Darby 1974, fig.15). Thetford would therefore have been well placed as a port for Fenland and East Midland products. Probably, some aspects of the wool trade may also have been established there.

Features datable to the mid-twelfth century are scarce, at best, and a decline in occupation may have occurred, although the roads and some boundaries continued. There is certainly some decline in this period, perhaps during the Anarchy. The site was, however, continuously occupied in some way from the late twelfth to the early or mid-sixteenth century (Periods V–VIII).

The nature of this medieval occupation seems to have been essentially industrial. The dyeing of cloth seems to have taken place on the west of the site in the late twelfth to thirteenth centuries, and that area later reverted to open ground, divided by ditches, perhaps as paddocks or agricultural areas.

Several drying ovens of the late twelfth to sixteenth centuries were found, with a number of wells and, later, mortared tanks. The number of these features must indicate commercial use. Malting, and perhaps brewing, seems most likely, particularly as malt was one of the products exported from King's Lynn in the thirteenth century (Carus-Wilson 1962–3, 185). Thetford was connected to King's Lynn by water in the thirteenth century, but the consumption of these products may have been local; it is not known if this activity was confined to this part of the town or was more extensive.

The decline of the town on the south bank is only evidenced on this site by a possible lull in the mid-twelfth century, and this patch of ground was not abandoned until the middle of the sixteenth century. It lay in the district known as Westwick between two major roads (see below, Part VII). Documentary evidence shows tenements along Brandon Road in the medieval period and two ecclesiastical settlements nearby—the Priory of the Canons of the Holy Sepulchre (founded mid-twelfth century) on the north of Brandon Road, and 'St John's' on the south side of the excavated east-to-west road, 'Lakenheath Way'. The dedication to St John is in some doubt but architectural fragments found in these excavations indicate some rebuilding in the early thirteenth century. Thus this part of Thetford, although not necessarily prosperous, continued in full occupation into the early sixteenth century. The area seems likely to have been acquired by Sir Richard Fulmerston who bought many tracts of land on the south bank after the Dissolution, and the site was abandoned at this point, except for one industrial oven which may have existed in the seventeenth century. The filling of all open wells on the site may indicate a planned removal and clearance of the site upon this change. The excavated road continued in use and was probably resurfaced in the post-medieval period, only finally going out of use in the nineteenth century.

Part III
The Kilnyard 1966

I. Summary

The area excavation of six Late Saxon Thetford Ware kilns and part of the associated yard provided material for a study of kiln products and potters' methods. The kilns were possibly in use during the life of one potter during the last quarter of the tenth century; the site was then abandoned.

Overall, the kilns produced a wide range of types, in different proportions between each kiln.

II. Introduction

The excavation of the kiln site was part of the same programme as the main site (Part II) and had the same objective, to recover a general plan of a large area, and this determined the course of excavation. The same grid system and County Site Number (5756) were used for this trench, at TL 8652 8250, some 100 m to the south of the main excavations.

The pre-excavation survey of the area revealed a scatter of iron slag and pottery just within the Late Saxon town defences; it did not continue towards the north-east. Pottery kilns were indicated by geomagnetic survey and by a dense pottery scatter on the ploughed surface of the field. Wasters were visible (in grid square E16) but no structural fragments of kilns; the trench was carefully sited to reveal the kilns suggested by the survey and scatter of pottery.

III. Geology

This site lay on the same glacial sand and gravel (Freckenham series) as the main site 100 m to the north. The 'natural' ground here was mostly yellow sand at least 2 m deep, often with brown stains. Pebbles and flint nodules occurred in grid squares C16 and D16, and areas of gravel in D16 and E16. The overburden (from 1′ – 1′6″ (30 – 45 cm) in depth) had been cultivated to an average depth of 1′ (30 cm), therefore the OGS rarely survived here to its full depth of 6″ (15 cm) beneath the ploughed topsoil. There were some root holes in C16, but the features showed clearly.

IV. Aims and Methods of Excavation

A trench measuring a maximum of 96′ (29.00 m) north-to-south by 84′ (26.00 m) east-to-west was opened within grid squares C – E, 15 – 17. Excavation took place over four weeks in April – May 1966.

The overburden was removed by JCB mechanical excavator except over the area of the kilns which partly protruded from the top of the remaining OGS (except for D16 F115). Hand-cleaning revealed black deposits of soil in the area of the kilns: this was planned at a depth of 1′6″ – 1′8″ (45 – 50 cm) and removed by hand. The kilns were examined in quadrants and sections drawn at 1:12. The grid squares were planned at 1:24, with 1:12 plans and sections of the kilns (except for D16 F137, section only). The gullies in the north-east corner of E17 were also drawn in section. There are site notebooks and finds cards as on the main site, and feature cards for the pits and gullies. Features and soil deposits were given 'F' numbers beginning with F1 in each grid square. The finds were allocated bag numbers (in a rectangle) in the main site number sequence. The abbreviation K has been used here for the kilns, dealt with in chronological order (see below). A list of abbreviations and pottery types can be found at the beginning.

V. The Kilns: General Summary of Structural Evidence

Six kilns were found (Fig.85); the evidence suggests that their sequence was: D16 F61 (K61), D16 F97 (K97), D16 F115 (K115), D16 F137 (K137), E16 F33 (K33), D16 F46 (K46). The kilns were all single-flue updraught kilns (Musty Type Ib), set in steep-sided pits dug into the natural sand and gravel. Size ranged from 6′ (1.80 m) by 3′9″ (1.15 m) (K97) to 9′ (2.75 m) by 5′4″ (1.60 m) (K46), and depths into the natural ground were between 2′3″ (70 cm) (in K137, K61 and K97) and 4′6″ (1.38 m) (K33). The kilns were all of similar plan, with three or four transverse arches and one longitudinal arch at the rounded end: there was no evidence of any other supports.

The clay lining of the kiln walls was usually left with a very rough surface, and in K97 had been put on in rough lumps. Some kilns (K61, K97, K115) showed evidence of patching, and in K33 the north-east transverse and longitudinal arches had been replaced twice (perhaps necessitated by the larger size of this kiln). The clay oven-pit floor, *c.* 3″ (7 cm) thick, survived in kilns K115 and K46, but in K137 and K33 it had been destroyed in antiquity, probably by the repeated raking out of the ash. Kiln K97 (and probably K61) never had a clay-lined floor. In these two kilns, the bottom level had been lowered by raking away the natural sand beneath, and in K97 the level had been made up to the original height, perhaps during the use of the kiln. The kiln wall thicknesses ranged from 2″ to 9″ (5 – 22 cm), with an average of 4″ to 6″ (10 – 15 cm). In K33 and K46, some reinforcing by horizontal withies was found in the kiln lining, although they only covered part of the kiln wall area.

In all kilns except K33 (and K137 where little walling survived), there was a change of angle (usually outward-flaring) in the kiln walls above the arches of the firing floor. In at least four cases (K61, K97, K33, and K46) evidence survived to show that the arches had been placed in prepared ledges or slots, but not whether the arches had been prefabricated, or were made *in situ*. They consisted of clay applied to transverse withies which normally did not penetrate the kiln walls. The withies,

about 1" (25 mm) in diameter, averaged five in number, except for K46 and K33 which had eight or nine in the portions which survived. In K33 and K46 the clay was merely placed on top of the withies, but in the other kilns (K115 had insufficient evidence) it totally encased them.

In kiln K33, large flattish sherds of broken storage jars had been built into the surfaces of both stages of repair to the fire-arches, which also had round impressions of pot rims fired into the clay. Pot rim impressions were also found on at least one fire-arch in K97 (Fig.95).

In these kilns the fire-arch nearest the flue was possibly more heavily reinforced than the others, probably to help support the superstructure: in kilns K97 and K115 withies were found going down into the sides of the kiln as extra support for the arch nearest the kiln mouth. The only evidence for the nature of the flue arch area was a small slot in the centre of the mouth of K115; however, the kiln mouth was intact in only three instances (K97, K115, and K46).

Evidence for clay 'superstructure' was found in four kilns – K61, K115, K45, and K33. This consisted of a mass of clay lying on top of all other kiln layers, including collapsed fire-arches and kiln structural fragments. No shaped pieces were seen or recovered, but in K33 the colour zoning showed that this clay had been heated from beneath with a change from red to yellow in the less well fired upper part. This material may represent remnants of a 'dome', or more likely, a floor.

Evidence of burning in these kilns consisted of a sequence of grey for the highest temperatures, through red, to yellow for the least burnt areas. Except for the fire-arch nearest the flue in K46 which was grey throughout and very hard, the clay structure of these kilns displayed these zones of burning.

Little ash and charcoal seems to have been found inside these kilns (or in their stokeholes), and K61 was the only kiln to have a layer of pure ash (a few inches) in the bottom, with soil containing ash and/or charcoal (or 'soot') accounting for all other layers of fillings in the kilns. Kilns K33 and K46 (and to some extent K115) had soil piled up in the kiln mouth and spilling out into the stokehole in a number of layers.

No stokeholes survived in K61 or (probably) K137 (see below). The large stokehole associated with K115 seems to have been shared by K97, and K46 and K33 clearly had individual stokeholes of similar size and shape to each other. In kilns K46 and K33, the floors of the stokeholes were slightly raised where they were connected to the kiln, but the stokehole associated with K115 and K97 had a floor lower than those of the kilns. These four kilns appeared to project *c.* 1' (30 cm) into their stokeholes. There is no record of the fillings, but these stokeholes seem to have been filled with layers of dark sandy soil with high charcoal and ash content (rather than pure ash) which continued into the lower layers of filling in the kiln mouths.

All kilns except K137 had collapsed kiln structure in their filling, usually broken fire-arches lying on layers of charcoaly and/or sooty soil, except K61 whose transverse arch at the north end was lying on layers later than those which contained the other broken fire-arches (perhaps reflecting a gradual collapse).

At least three kilns (K61, K46 and K33) may have gradually collapsed rather than have been deliberately demolished; this also seems true of K97 and K115.

The sequence of the kilns is not entirely clear; K137 seems to have been cut through the zone of trampled earth around K115, whilst K115 was certainly in use later than K61, and may have shared the same stokehole as K97. However, this stokehole is not well aligned (Fig.87) and in its final form may belong to kiln K115 alone. The sequence between these kilns and those to the north cannot be determined by stratigraphy; to the north K46 cut K33.

Kilns K46 and K33 shared a number of features absent, or less marked, in the other kilns. Both were large and deep kilns with kiln walls *c.* 6" (15 cm) thick partly reinforced with horizontal withies. Their fire-arches did not seem to have been any broader than in the other kilns, but they had a greater number of withies in the reinforcing to strengthen the wider span. In both kilns the clay of the fire-arches did not completely encase the supporting withies, and they had similar ledges for the fire-arches.

It therefore seems likely that these two kilns may have been close in date (possibly built by the same potter(s)). K97 and K115, as well as sharing a stokehole, were the only two kilns to have extra reinforcing for the fire-arch nearest the kiln mouth. Kilns K61 and K97 were similar in their absence of clay-lined floors.

VI. Detailed Structural Descriptions
(microfiche)

VII. The Kilnyard
(Figs 86–99)

Trampled zones
At the time of excavation it was noticed that the natural sand and gravel around the kilns was stained and mixed with dark soil to a depth of between 3" and 1' (7–30 cm) (deepest north of K137) but averaging *c.* 6" (15 cm); probably it was churned up by the activity around the kilns, during loading and unloading (particularly if it was raining and muddy), and attending to the fires in the flues. This zone of trampling was contiguous to the kilns K46, K97 and K137 but not K115, K61 or K33. This difference may relate to the kiln sequence, *i.e.* some kilns (without a clean zone surrounding them) were cut into existing areas of trample. As other evidence shows that K46 was later at least than K33, and K97 was probably later than K61, this seems possible and it may be suggested that K137 was later than K115.

Gullies and ditches
Several gullies and ditches were associated wih the kilnyard; a dark stain (D15 F1) a few inches deep may have been significant as its alignment was similar to other gullies. E15/E16 F1 was also shallow (9", 22 cm) and contained no finds. D17 F4/E17 F11 and E17 F8–F10 were filled with grey soil and reached a maximum depth of 1'10" (55 cm). D17 F4/E17 F11 contained some Thetford Ware including a kiln product, a dish fragment (BA). The ditches E17 F1–F5 (Fig.99) were much deeper, ranging from 2' to 3' (61–91 cm). E17 F4 had an unusual clayey filling, the rest were sandy. A few sherds of St Neots Ware and Thetford Ware were found in E17 F5 but they cannot be shown to relate to the kilns.

Pits

Eighteen 'pit like' features were found, mostly in C16 and D15. C16 F6 and C16 F8 were conical at the bottom. All pits except C16 F7 had steep or vertical sides. The purpose of the large shallow features (such as C16 F2 and C16 F10 (and possibly C16 F11) and D15 F8 and D15 F11) is obscure. Except for E15 F3 (no finds), C16 F7 (iron prick spur SF298), pits C16 F1, C16 F2, C16 F5 and C16 F6 whose pottery seems to have been mainly in the top and is included with C16 in general, the pits contained much discarded kiln products but no evidence of domestic refuse. The kiln sherds come from unused pots and many are misfired: the percentage of accidentally oxidised sherds is greater than amongst those found inside the kilns. Sherds are often large but estimates of vessel numbers are fairly high, with C16 F10 and C16 F11 being the lowest (629 sherds to approx. 484 vessels, and 377 sherds to approx. 311 vessels respectively): E16 F23 was full of sherds which were nearly all from different vessels.

Pit fillings were all essentially grey soil (probably humified sand) with sand lenses, some charcoal flecks or burnt clay, and occasionally flints or clay fragments. Pit D16 F6 was shallower than any of the others (10", 25 cm) and had been lined with flint, chalk and burnt clay, and some eight sherds of eleventh-century pottery (probably all from different vessels) may indicate it was filled at that time. Pit C16 F8 also contained two eleventh-century sherds and may have been of this date. If so, pit C16 F7 was eleventh-century (by stratigraphy) and perhaps the whole line of pits in C16 were later than K137 (pits C16 F1, C16 F2, C16 F5, C16 F6, C16 F7, C16 F8). Pits C16 F10 and C16 F11 were full of pottery which seems to have been made in K33 and/or D46 (or possibly K137?). The pottery in E16 F23 would also seem to have come from K33 and K46 and may have been contemporary. The pottery in area D15 does not so clearly belong to any kiln and pits here may be earlier than those in E16 and C16.

Post-holes and slots

Post-holes here suggest the presence of buildings, but no plans were obvious. The post-holes in E16 (and F12 in C16) contained much pottery. Slot E16 F22 also contained pottery although very shallow (4", 10 cm). These features were filled with grey or black soil, sometimes with fragments of burnt clay. D17 F15 was a post-ghost about 1' (30 cm) square and 1'6" (45 cm) deep set in a sand-filled post-pit, the edges of which were indistinct. A pivot for a potter's wheel may have been represented by post-in-a-pit D15 F9. This contained a post 8" (20 cm) square and 1'2" (35 cm) deep, set in a hole 2'4" (71 cm) by 2'6" (76 cm) by 1'9" (53 cm) deep: the post-pit was packed with flints and burnt clay set in heavy unburnt clay, and the pit edges were lined with flints and packed in the bottom with large flints. It contained some Thetford Ware bodysherds (from different vessels) which cannot be attributed to any particular kiln.

Discussion

The kilnyard was probably enclosed by the boundary gullies on the northeast and probably north-west. The north-east boundary would seem to have shifted some 4 m (unless this was a subdivided entrance) but the dating is uncertain (a sherd which certainly derived from the kilns was found in the shallow inner gullies (in D17 F4/E17 F11)). The nature of the boundary is unknown (fence, hedge or open gully) but the shifting recuts (*cf.* the main settlement site to the north) suggest the gullies were maintained throughout the period of occupation. The alignments of the kilns, some other features (*e.g.* slot E16 F22), and the gullies were similar.

These kilns were probably in use one, or at most two, at a time (see Musty below). The yard must also have contained clay storage pits and sheds for throwing, drying and storing the pottery. A fuel supply was needed, probably also under cover and this is likely to have occupied apparently blank areas near (*i.e.* possibly east of) the kilns. None of the post-holes on the site formed structures, but light sheds aligned with the boundary gullies may be postulated in E16, D17 and C16 around the kilns. In E16 post-holes F16, F8/F9, F5, may have formed a rectangular structure with either E16 F21, F17, F19 or slot E16 F22, but this is not clear. Packed post D16 F9 probably represents the base of a throwing wheel, presumably inside a shed or shelter. Large storage jar D16 F80 (Fig.151, No.163) was set into the ground nearby, and may have contained a water supply (Davison 1967, 193) since wells were not found in the excavated area. The wheel itself was likely, in an area without stone quarries, to have been made of wood or perhaps pre-fired clay. Part of the potting-shed is likely to have contained the three small stone cylinders (Fig.134, Nos 10, 11 and 12): one was in pit C16 F11 and two were in the bottom of K46, possibly the latest kiln in the series. There is no evidence that these possible pivot-stones represent three wheels in use at the same time, but it is possible as stone was rare at Thetford and the pieces still look serviceable; moreover, if K46 was the last kiln their abandonment may represent dismantling of the premises.

Several pits on the site in area D15 and C16 (see above, Pits) were of suitable depth (some 1'6" – 2', 45 – 61 cm) for the storage of clay, which benefits from exposure and requires some puddling and kneading before use: the coarseness of some of the fabrics suggests that filler was probably added. Although none of these pits was of regular shape or had evidence of lining, some were located near the pivot base in D15, and some in C16 (where C16 F11 was perhaps another post-hole for a wheel with all packing removed).

It is clear from the pattern of the zones of 'trampling' that most of the activity relating to these six kilns took place towards the south-west of them, with people frequently walking behind or around kilns K33, K61, K115 but not often beyond them to the north or east towards the gully systems which border the area. Except for C16 F5 and F6, the pits in the area respect the kilns and their zones of activity. This trample, towards the south-west, ends at the (?pivot) post-hole D15 F9, and the large sunken storage jar D16 F80. The depth of 'churning' of the soil is extraordinary and the use of carts in these procedures seems a possibility.

No domestic occupation was found in the area excavated, with very little animal bone and only two vessels (from the trample) with probably domestic sooting. Therefore living quarters probably lay beyond the excavation, perhaps to the south. It is in this area of the trench that the latest (early eleventh century) activity seems to have occurred, although occupation may have continued nearby.

THETFORD 1964-6 KILN SITE

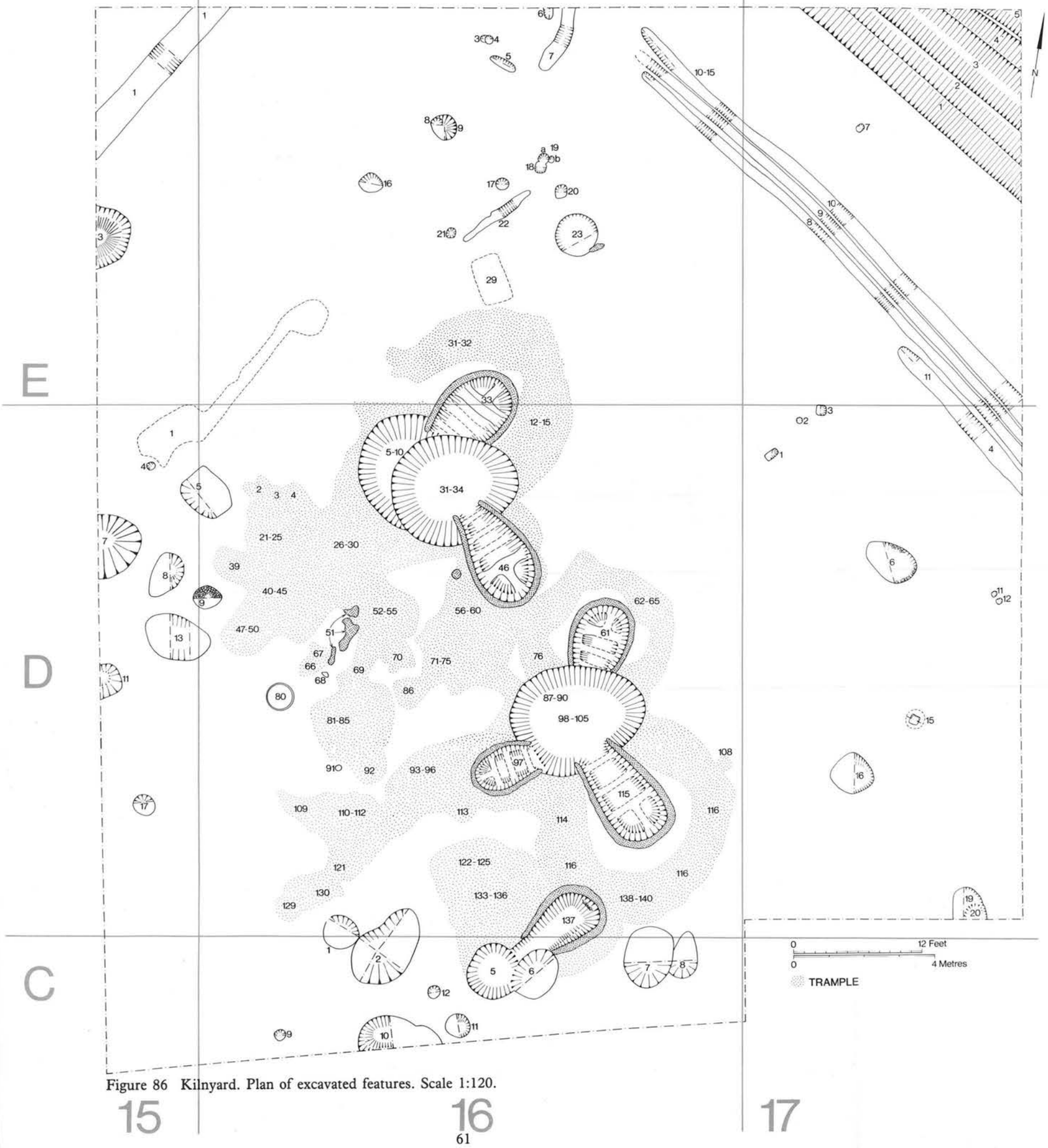


Figure 86 Kilnyard. Plan of excavated features. Scale 1:120.

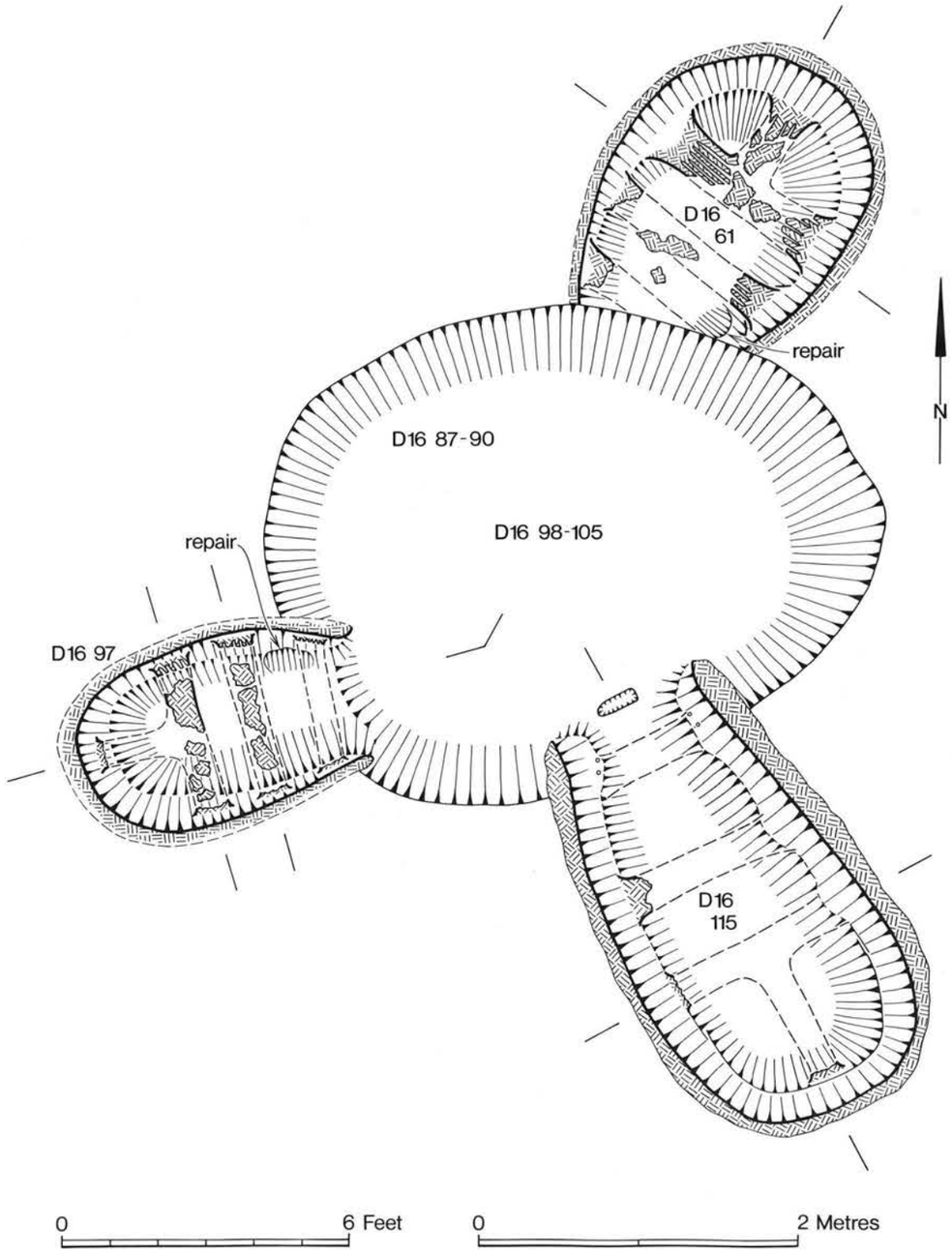


Figure 87 Kilnyard. Plan of kilns D16 F61, D16 F97, D16 F115 and stokehole. Scale 1:40.

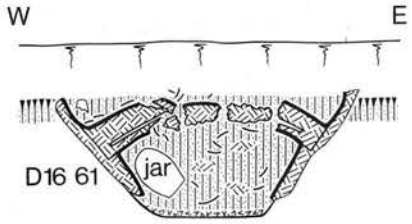
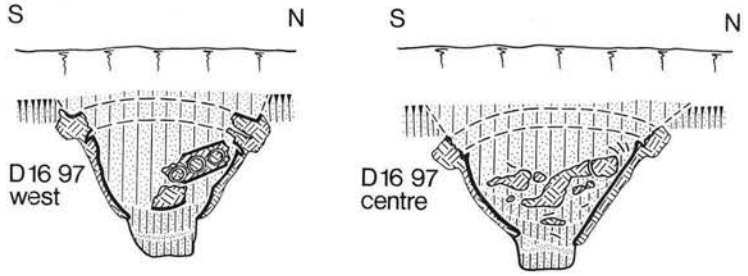


Figure 88 Kilnyard. Transverse section kiln D16 F61. Scale 1:40.



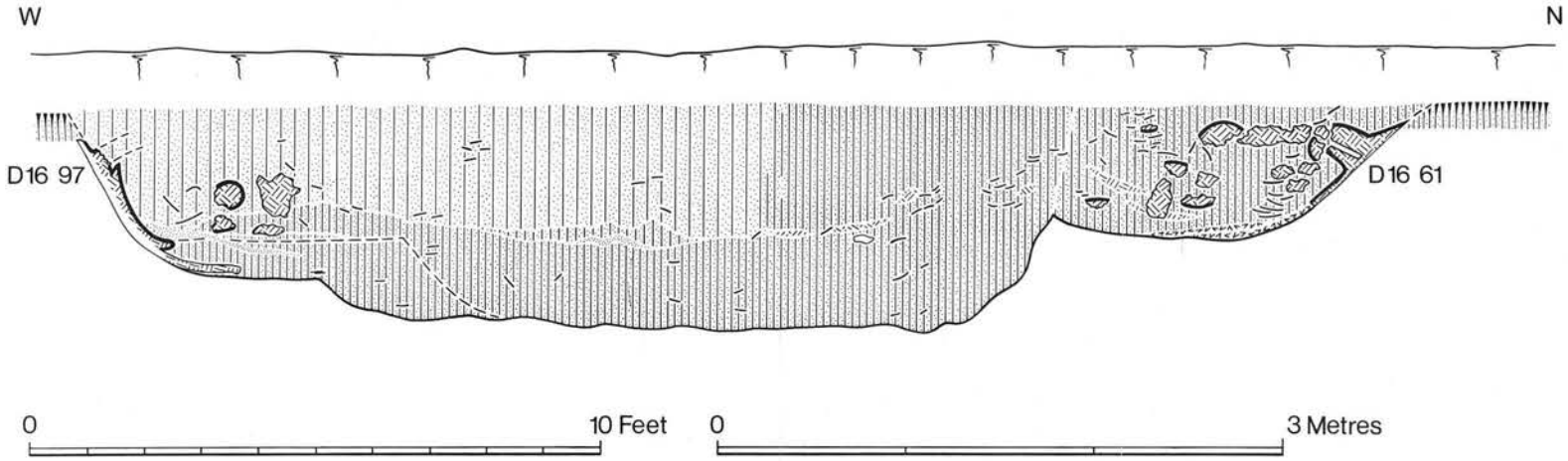


Figure 89 Kilnyard. Transverse section kiln D16 F97 west. Transverse section kiln D16 F97 centre. Longitudinal section kilns D16 F97, D16 F61 and stokehole. Scale 1:40.

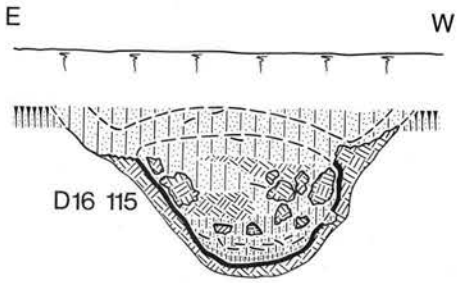


Figure 90 Kilnyard. Transverse section kiln D16 F115. Scale 1:40.

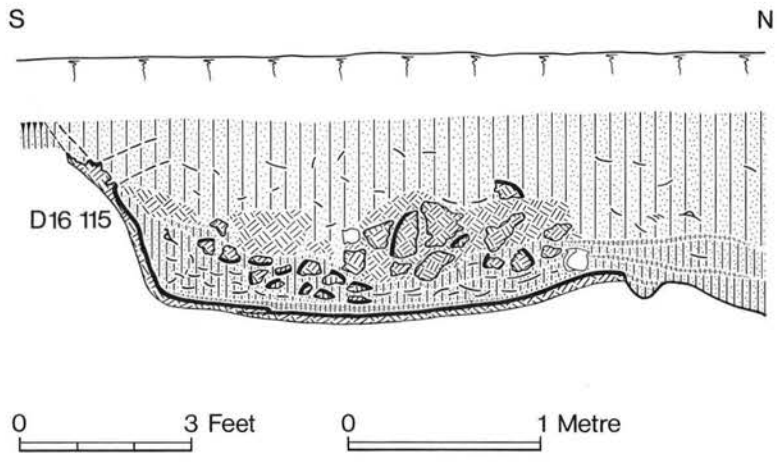


Figure 91 Kilnyard. Longitudinal section kiln D16 F115. Scale 1:40.

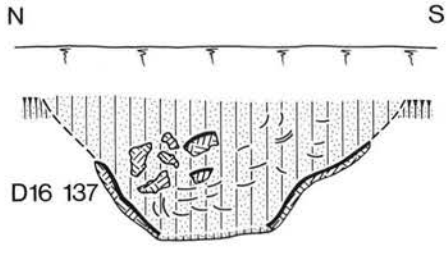


Figure 92 Kilnyard. Transverse section kiln D16 F137. Scale 1:40.

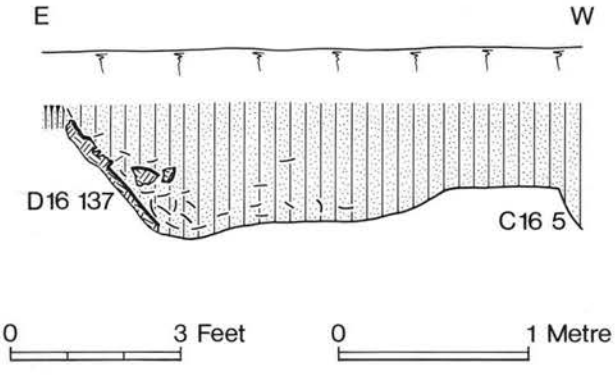


Figure 93 Kilnyard. Longitudinal section kiln D16 F137. Scale 1:40.

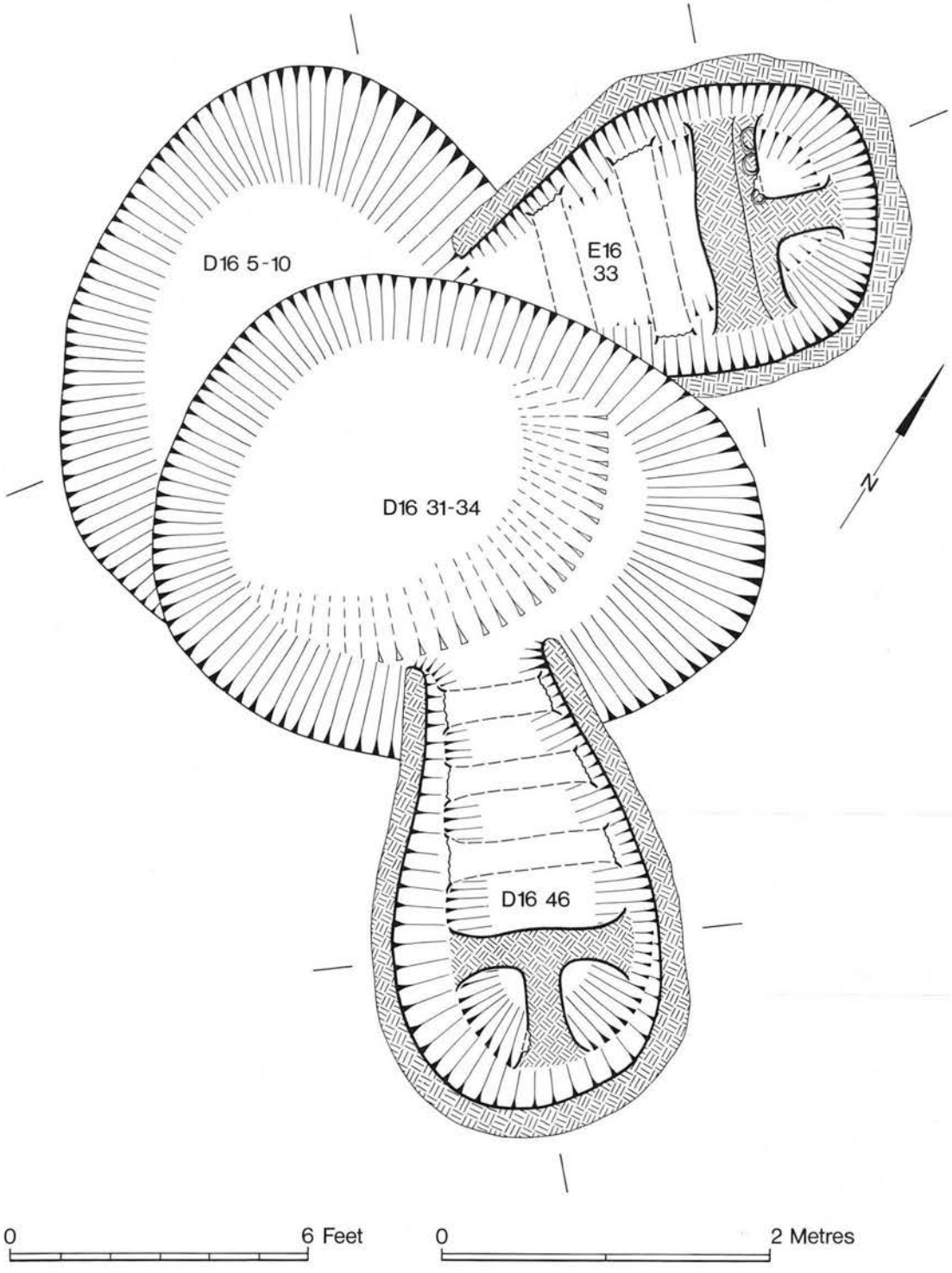


Figure 94 Kilnyard. Plans of kilns D16 F46 and E16 F33 and stokehole. Scale 1:40.

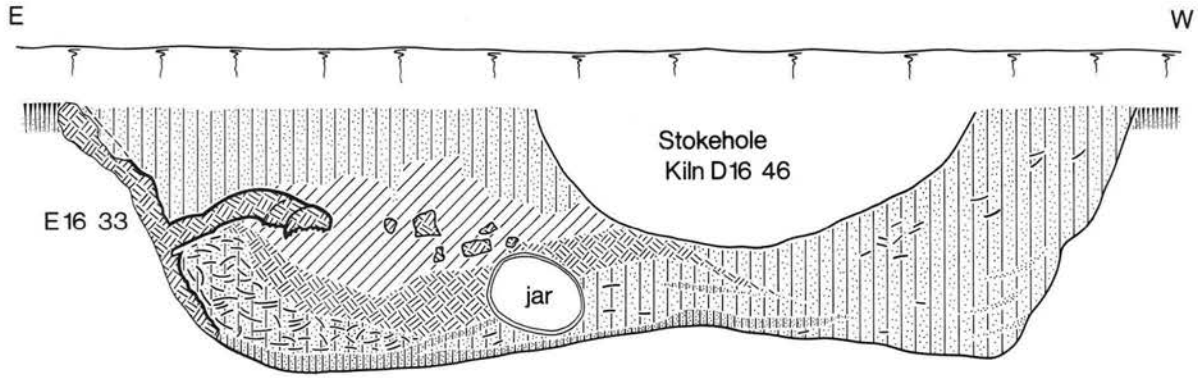


Figure 95 Kilnyard. Longitudinal section of kiln E16 F33 and stokehole. Scale 1:40.

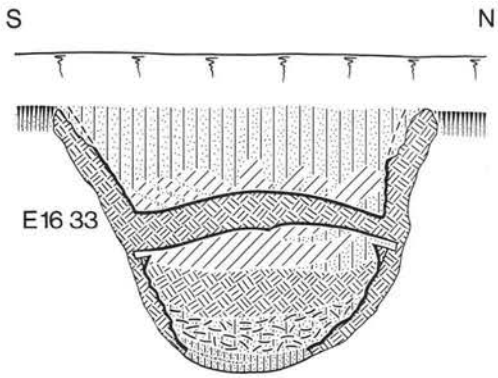


Figure 96 Kilnyard. Transverse section kiln E16 F33. Scale 1:40.

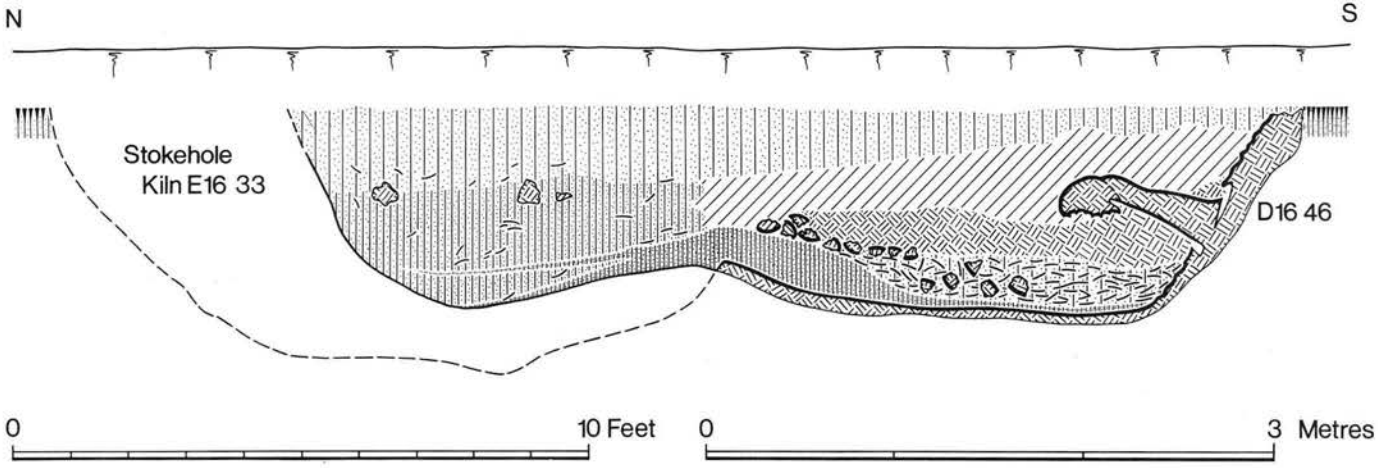


Figure 97 Kilnyard. Longitudinal section of kiln D16 F46 and stokehole. Scale 1:40.

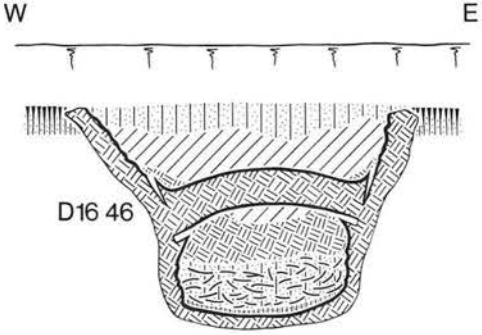


Figure 98 Kilnyard. Transverse section of kiln D16 F46. Scale 1:40.

VIII. The Kiln Products

The kilns produced a range of Thetford Ware (TH) vessels, discussed in detail in Part V of the report. Only some general comments are offered here.

Introduction

Thetford Ware is a hard, wheelmade ware of a quality often comparable to Roman pottery, and these plain wheel-thrown vessels have no obvious characteristics by which the hands of individual potters may be reasonably identified. However, individual potters may possibly be identified by differences in techniques or finish in a few instances.

a) Methods of applying spouts, handles and thumbed strips. The basic method is the same but constant repetition by each potter may reinforce individual habits and thus differences in some details. For example, costrel necks are all so similar that the one or two 'untidy' necks may represent 'apprentice' or hasty work. 'Untidiness' also distinguishes a number of vessels in K137, K33 and K46, all storage jars (AG and some AG/AB) (spouts in only one or two instances). Perhaps apprentice(s) were allowed to finish off the vessels by adding the handles and thumbed strips and only occasionally making the entire pot. An example of a storage jar (AG) made too thinly and reinforced with double body wall is illustrated in Fig.151, No.172 and this also has rather untidy decoration (cf. Nos 173, 174) and a textile impression (see below, Pottery). An extra support of clay below the top of the storage jar handles in these untidy vessels possibly represents a repeated error by at least one apprentice (Fig.150, Nos 165, 168).

b) Some bases were reinforced or added in a uniform way (see Part V, Pottery). The trimmed flat bases in K33 would all seem to have been made by one person.

c) Surface treatment seems the best distinguishing characteristic and may point to the work of an individual potter. Of note is a tendency to score short vertical, or slightly diagonal, lines inside (usually inside the neck of) jars (AB), pitchers (AD) and sometimes bowls (BB) or large non-handled storage jars (AF) (*e.g.* Fig.144, No.114, Fig.146, No.143). Although unnecessary in well made wheel-thrown pottery, these lines scored across the wheel lines may be intended to 'bind' the vessel. A reason could be to bind on an added rim, but no evidence for this can be seen on the vessels concerned. Although not common, pots with this treatment were found in all kilns. The smoothing of vessel interiors is often distinctive and some pots suggest the work of a single hand; vessels with the same methods of treatment occur throughout the site. Many vessels have been trimmed or heavily scraped internally, particularly in their lower halves, sometimes leaving a sharp edge at the top of the scraping, *e.g.* Fig.147, No.156, Fig.152, No.188. The large coil-made storage jars (AG) have consistently been scraped upwards on the interior towards the right side (indicating a right-handed person) with a rough tool leaving drag-lines of grit. The use of broken potsherds for such smoothing seems likely, as well as iron knives, wood and bone (see Part V, Pottery). On applied strips, the plain areas between thumb-prints are occasionally filed transversely, for unknown reasons. On some of the untidy vessels, the same area has been trimmed longitudinally on three sides to form a sharp-angled strip with a section resembling a truncated triangle. Some AB jars have areas of burnishing on their exterior – a surface treatment most unusual on Thetford Wares.

Failure rate

(Tables 7 and 9, in microfiche)

The pottery found in the various pits on the site includes more misfired sherds (usually coloured orange or red, suggesting the firing was not completed) than the material found in the kilns. This indicates that failed vessels were usually cleared out of the kiln and dumped elsewhere (compare Groups 1 and 2 in Table 7).

The pottery in the kilns and stokeholes usually appears in satisfactory condition but, as the sections of the kilns show (Figs 87–98), the debris in the bottom of kilns and stokeholes was not cleared out after each firing. This, and the fact that most of the material was found in the bottom layers, suggests that the pottery in the kilns and stokeholes are products of them. Moreover, sherds were often lying beneath fallen kiln structure which was interspersed among the layers, and sherds from the same vessels were found in different layers.

It was thought that the partially burnt clay above some kilns was collapsed dome (Davison 1967, 193) although kiln floor is more likely (see Musty, below); analysis of the pottery shows that no collapse occurred while the kilns were loaded. Vessel estimates within the kilns are high (the lowest being K97) and the ratio of sherds to vessels is approximately:
K61 1601:1248, K97 848:532, K115 944:800, K137 616:442, K33 1960:1656, K46 1472:1291.

The vessel estimates may be too high as not all bodysherds were compared in detail, but it could be seen that completely reconstructable vessels were very rare. Few whole pots were found intact, the exceptions being Nos 51, 52, 53, 169 and 192 (Figs 141, 151 and 153). If the kiln load had been abandoned, shattered inside the kiln, many complete vessels should be reconstructable. However, this is not the case. Table A shows an analysis by rim sherd of K33 and K46 and it can be seen that the sherd count and the vessel estimate are well matched. Moreover, even short, or small sherds of rim were recovered and an explanation must be found for missing parts. Although some vessels can be related to certain kilns, complete kiln loads are not reconstructable and kiln structure collapse during firing therefore seems unlikely.

When accidental oxidisation occurred those pots were usually cleared out. Those sherds misfired to a greenish colour (Munsell 5Y 6/2 or 5Y 5/2) were perhaps the result of underfired reduction, the colour being determined by the clay source. This is noticeable in K115, K33 and K46 but rare elsewhere.

Underfired sherds, waster sherds and sherds overfired to the point of vitrification were rare (Tables 7 and 9). Possibly, underfiring and, to some extent, overfiring were, in any case, rare events. Some sherds are overfired twisted and warped or flaking as the temper has been made friable by overheating.

The most common faults found in the pottery are cracking and spalling, often to a degree that has caused vessels to split and shatter, probably because the temperature was raised too quickly during the early stages

of firing, from too rapid cooling, or from vessels being insufficiently or unevenly dried before firing. Air pockets formed around large particles in the tempering can also be detrimental in this respect.

Table 3 (in microfiche) and Table 7 show that spoiled sherds are only a small percentage of the pottery found in each kiln, possibly because in any exploded vessel, only some sherds will be spalled, and vessels broken during kiln unloading or firing were removed in subsequent firings and kiln raking. Some sherds show reburning from being in the kilns and stokeholes during later firings.

Evidence of potters' tools

Obvious potters' tools such as fragments of stamps were not found (*cf.* 1969 Site A, Fig.162, No.18). However, specially designed tools have rarely been discovered and it has been concluded that potters mostly used whatever everyday objects came to hand for trimming, smoothing and finishing off the vessels (Moorhouse 1981, 106).

Iron knives must have been used to trim sagging bases as this was sometimes done when the vessel was dry, almost too dry.

If specially-formed wooden tools existed, they have not survived. Some vessels seem to have longitudinal wood grain impressions, suggesting that barkless pieces of wood (*i.e.* unsmoothed, stave-like material rather than twigs) some 1 – 2 cm wide may have been roughly squared and used to scrape the inside of the larger vessels. Some pots with external burnishing suggest the use of smoother wood (or bone) implements. Impressions of twigs, leaves, grass, straw and reeds are probably accidental and acquired when the vessels were removed from the wheel for drying.

No shaped bone tools were found but two worn cattle ribs from the site may have been used for smoothing the pottery, particularly the coil-made vessels, being 'ideal for this purpose' (Hodges 1964, 27). About fourteen broken Thetford Ware potsherds were observed to have one edge smoother than the others and this would seem in at least half of the examples to be wear caused by friction, perhaps by the potter(s) using broken potsherds to smooth new vessels when still wet. Rough scraping leaving drag-lines of grit (particularly noticeable inside the large coil-made storage jars (AG)), could well have been made in this way. Such sherds were found throughout the site, including K61, K115 and associated stokehole, the stokehole of K33, the trampled area, and pits filled with kiln pottery (E16 F23, D15 F11, and C16 F11).

Cloth (and possibly leather) may have been moistened and used to smooth vessels, or to protect damp freshly-made pots from finger marks when handled but the textile impressions on vessels seem more often to have been made during the finishing process by the potter(s) clothing (see below, Part V.XV Textile Impressions).

General discussion

Dating evidence

Archaeomagnetic dating of samples of kiln-structure, taken during the excavation, has been of little value, because of the broad date range *c.* AD 900 – 1100 (Aitken and Hawley 1966, table 1). A recalibration of the available data (P. Linford pers. comm.) resulted in date ranges for the kilns well into the eleventh century and even into the twelfth (at a 95% confidence level). This is contrary to the archaeological dating and probably reflects inadequacies in the original data.

Archaeological features are usually dated by their associated pottery and external dating; here, the kilns are dated by pottery associated with them, presumably their own products, and related with its use, and rarely any other pottery. However, if the kilns had been in operation during the eleventh century then more Early Medieval (EM) sherds should have been found.

No eleventh-century EM sherds were found inside the filled-in kilns or stokeholes although some were found above them (Group 3, Table 5), and only two EM sherds were found lying around the kilns. There is little evidence that the yard was used far into the eleventh century. EM sherds were associated with pits C16 F10, D17 F6, D17 F7 and E16 F23 (no recorded depth), and the two last pits included LM tile and a modern sherd, indicating contamination. More helpful are D17 F6 (eight EM sherds) and C16 F8 (see below, Pottery). The contents of C16 F8 were only half kiln pottery, in contrast to the other pits. C16 F7 would have also been eleventh-century on stratigraphic grounds, and it is possible that the line of pits C16 F1, F2, F5 and F6 (cutting K137) were also of this date.

The pottery within the kilns would seem to be all of tenth-century date except for some vessels (AB1) in K33 and K46 which have rim forms analogous to the earliest EM jars and to some early eleventh-century TH in Norwich. It is possible that the kiln activity continues into the early years of the eleventh century, but it is likely to be mainly late tenth century in date. Activity here ceased soon after this.

Clay sources

As mentioned above, although the local clays fire grey, minor colour variations within the assemblage usually relate to the difference of fabric which in turn is related to the origin of the clay. The extensive Late Saxon pottery industry at Thetford indicates clay sources close at hand and the Croxton series clay beds (Corbett 1973, 71 – 2) about 1.6 km (1 mile) to the north-west of the present north bank town seems a likely source. Water-retaining gravels near Thetford Warren Lodge west of the town indicate clay formations there, and mica-bearing clays exist in the Shadwell area east of Thetford (inf. W. Corbett). Documentary research by Alan Davison shows that the brickmaking industry, located just north-west of the present railway station (and probably using the Croxton series clay beds) and which continued into the early years of this century, probably began in the Late Medieval period. Similarly the placename 'Potter's Cross' on the north bank near Inselford (Fig.175) (at approximately TL 862 835) can be found in late fourteenth-century documents (see below, Documentary Evidence); this must refer to a crossroads, or perhaps the river crossing. This placename, and the Croxton series deposits, are 1.6 or 3.2 km (1 or 2 miles) from the kilns, and suggest that the clay could have been brought by cart across Inselford or through the town.

Fuel supply

Analysis of charcoal samples from inside the kilns and their stokeholes suggests that the fuel used was mostly heather and broom with possibly some gorse, although

some hazel, oak and ash were present (see Murphy, this volume). This was probably gathered from the heath on the south side of the river, as well as from local woodland.

Water supply

As mentioned above (Kilnyard), there is no certain evidence for wells within the excavated area, although water is essential for pottery production. Large storage jar D16 F80 (Fig.149, No.163) was set into the ground, probably for this purpose, and perhaps storage jars standing above ground and wooden water-butts may have been used.

Organisation of the kilnyard

The details of the kilnyard are discussed above. It seems probable that the gullies found in the excavations define the kilnyard, and that buildings within the yard are likely to have been aligned on the linear boundaries, but little of them survives. Perhaps the kilns had a clayworking area to the west, fuel storage areas to the east, and drying or storage sheds to the north with the domestic areas to the south of the excavated trench. However, the evidence is slight and only admits the possibility of pottery-throwing taking place on the west (and also perhaps southern) part of the site.

The kilns were all of the same basic type with slight variations in size and some structural details. They and their stokeholes had been dug down into the natural sand and gravel, and the kiln structures were formed of rough clay supported on withies (of hazel where identifiable; see Murphy, this volume). The kilns had superstructures, probably of wattle frames covered in clay; this is evident from their production of reduced wares. The superstructure must have been asymmetrical in plan, following the kiln walls, and was probably highest at the end opposite the kiln mouth.

There is very little evidence for the stacking procedure; one unusual pottery object may perhaps have been a kiln prop (Fig.153, No.205) but there is no evidence of fire-bars. Rough patches on the highest point of some rims, nearly always on storage jars (AG) and sometimes on pitchers (AD), may indicate that vessels were stacked upside-down, as might be expected (Moorhouse 1981, 99–100). However, as the clay must have been compressed while wet this is more likely to have occurred either when the pot was being made (the marks could be impressions of crushed textile from the potters' clothing, pers. comm. E. Crowfoot) or when the pot was set to dry. Although the excavated evidence together could suggest that these kilns were a temporal sequence, used one (or at most two) at a time, other interpretations are possible which involve the kilns, or some of them, being used in a battery, with perhaps only one or two being fired at any time, whilst loading went on in another. In the northern group, stratification may suggest that K33 was earlier than K46, whilst in the central group of three kilns the sequence seems to have been K61 (and K97?) before K115. K137 appears to cut the trample around K115 and thus was later.

The pottery within each kiln, mostly the product of that kiln, may also hint at a temporal sequence, although this may have been short, and is not certain. All kilns contain pitchers and costrels and the unusual form AE/AG (Fig.146, Nos 139–142), and have vessels with the distinguishing characteristics such as unnecessary vertical gouge lines inside the vessel neck and the treatment of thumbed strips; however, the untidy vessels and coarser fabrics occur in kilns K137, K33 and to some extent in K46 but not in the K61/K97/K115 group (the products of K115 being particularly fine, small and neat). Stamped sherds were only found in K46 and in no other kiln.

Products resembling those in the central group were found in the other kilns, yet products of the central kilns were not found in the other kilns. This may suggest that the central group was earlier than K137 (which contained the latest vessels, by form), although unknown working practices between potters may account for some of these variations and admit the possibility that the use of the kilns was not long.

If these kilns were fired mainly in the summer months, say four or five times a year, then a likely use of up to twenty-five firings would have given each kiln a life of some five years (Bryant 1977, 120).

The Thetford pottery industry

The manufacture of good quality wheelmade grey wares at Thetford seems likely to have begun in the late ninth or early tenth century and to have continued until the end of the eleventh century. The full extent of this pottery industry is not yet known in detail but kiln structures have been found at the following (see Fig.2):

TL 8631 8300 Excavations by Brian Davison on south side of Brandon Road, 1964, N19 F7 (Site 5756), published here.

TL 8625 8293 Building of Redcastle Furze housing estate, 1965. Kiln structure and wasters observed by Keith Wade in builders' trenches at corner of St John's Way and Canons Walk.

TL 8629 8285 centre. Excavation of six kilns and part of kilnyard by Brian Davison, 1966: D16 F61, D16 F97, D16 F115, D16 F137, E16 F33, D16 F46 (part of Site 5756), published here.

TL 8652 8266 Excavations in the Newtown area north of Icknield Way by Group-Captain Guy Knocker 1948–9, Site 2 North Kilns 1, 2 and 3 (Rogerson and Dallas 1984, 33–6, figs 60–3).

Wasters, and sufficient groups of misfired kiln pottery to suggest that pottery production may have taken place close to the find spots, have been found at:

TL 8652 8272 Garden of No.7 Newtown (Rogerson and Dallas 1984, 53).

TL 8652 8265 Excavations by Group-Captain Knocker 1948–9, Site 2 North hut H17/18 (Rogerson and Dallas 1984, 27).

TL 8654 8262 Excavations by Group-Captain Knocker 1948–9, Site 2 South, above hut H6 (Rogerson and Dallas 1984, 16).

TL 8653 8250 Excavations by Group-Captain Knocker 1948, Site 3 (Rogerson and Dallas 1984, 42).

TL 8691 8230 Excavations by Brian Davison 1969, Trench 1/Site A, (County Site 5759), published here.

Little is known of the overall organisation of industry or the location of all kilnyards. The absence of kiln evidence in the central and waterfront areas of the Late Saxon town on the south bank reflects the limits of archaeological examination, and it cannot be assumed that kilnyards did not exist in these areas. However, to find kilnyards mostly on the fringes of the town would not be surprising since (as well as causing unpleasant amounts of smoke) the pottery industry required a considerable amount of space and seems unlikely to have been tolerated in congested areas or desirable properties along the main roads or waterfront.

Kilnyards might be expected to cluster together so that assets such as carts might have been shared: they may also have been associated with other industrial activity for similar reasons. Observation of the area in which the kilns excavated in 1966 lay revealed surface scatters of wasters and iron slag lying in a broad band within the defences but not continuing further north-east (B. Davison pers. comm.). This suggests that, in this area of Thetford at least, such industrial activity was mostly confined to a peripheral zone (Davison 1967, 194) although it is not yet clear whether this was typical of the layout of the rest of the Late Saxon town or not.

IX. The Thetford pottery kilns: an appraisal and overview

by John Musty

Origins of the Thetford pottery industry

It is generally recognised that eastern England (notably East Anglia and Lincolnshire) was probably the heartland for the revival of a post-Roman pottery industry making wheel-thrown vessels (including glazed wares) and using technically-evolved kilns similar to those previously employed in the Roman period. As Hurst has demonstrated (Hurst 1976a, 314), this revival may have started in Middle Saxon Ipswich and further developed in Late Saxon times at Torksey, Stamford, Norwich and Thetford. Although at first the evidence was seen as suggesting virtually a monopoly in technically-evolved potting at these places, compared with elsewhere in England, subsequently other potential centres (but not the kiln sites) for the production of pre-Conquest wheel-thrown pottery have been defined from wares found in other regions. These are listed by Hurst and are mainly north of the Thames, but with some southerly outliers including Michelmersh, Hampshire, where a kiln was found. Also, the supposed fourteenth-century Exeter (Bedford Garage) kiln has recently been re-dated and is now also thought to be Late Saxon (Allan 1984, 27).

A common feature of known pre-Conquest kilns is that all are Type 1 in my classification of medieval pottery kilns (Musty 1974, 42): *i.e.* single-flue type without (Type 1a) or with (Type 1b) internal structure. All the Thetford kilns are Type 1b and what remains an open question (which space does not permit an attempt to answer here) is whether the reintroduction of the technically-evolved kiln was the result of (a) native re-invention or (b) the transmission of technical know-how from the continent (Rhineland or northern France), possibly associated with the arrival of immigrant potters not necessarily all from the same area.

Indeed if additional criteria are applied to the classification of the East Anglian and Lincolnshire kilns, notably the shape of the ground plan and size of kiln, and not just the number of flues, it becomes apparent that these Saxo-Norman kilns divide into two distinct groups suggesting different origins. These are (i) the Thetford-Langhale-Grimston-Bircham group which have horseshoe-shaped oven plans and very similar internal structures and (ii) the Ipswich-Stamford/Wharf Road-Torksey group which have circular ovens and a variety of internal structures or none at all. Curiously, the thirteenth-century Stamford/School kiln is of somewhat similar shape to kilns of the Thetford group although larger. Yet, as we have seen, the Saxo-Norman Stamford/Wharf Road and Thetford kilns, although broadly contemporary, are dissimilar in plan.

Consequently, although the plans of the Stamford/Wharf Road (Mahany *et al.* 1982, 93) and Torksey (Barley 1964, 175) kilns are possibly derivative from Ipswich (Smedley and Owles 1963, 310), there is a marked dissimilarity from those of the Thetford group. This group is also markedly homogeneous in all the various kiln features to such an extent that a close relationship clearly exists, and it is likely that Langhale (Wade 1976, 101), Grimston (Clarke 1970, 79) and Bircham (Rogerson and Adams 1978, 43) originated as satellite industries of that based at Thetford. Indeed, the fact that all produced Thetford-type ware is a further confirmation of this relationship. However, the pottery evidence also shows a product link with Ipswich, despite the dissimilarity in kiln plans. On present evidence, too, it has been suggested that Thetford-type pottery was being made at Ipswich before the Thetford-based industry got underway – although, in my view, the evidence is not unequivocal on this point.

Thus, possibly one should still look to the continent for the origins at least of the technology that underlies the Thetford industry. Whether this implies looking to the primary Rhenish industries or to the expanded area of these (for example, along the Meuse in Dutch Limbourg) remains uncertain, although it is noteworthy that the same horseshoe plan (although a different internal layout) is exhibited by Kiln 2 at Brunssum in Limbourg (Bruijn 1957–9, 182). In order to resolve the matter satisfactorily there is a need for more kilns to be discovered and for these to be dated with greater precision than has been possible hitherto. Also the involvement of actual immigrant potters in setting up the Thetford industry remains highly probable, because of the sophistication of its kilns and the lack of evidence so far of less sophisticated precursors belonging to an experimental phase. That such potters should be attracted to Thetford would not be surprising as it was one of the six largest towns in the kingdom.

This conclusion need not detract from the concept that the technically-evolved kiln idea was first introduced at Ipswich, an introduction which may have fathered others in its regional group (*i.e.* those with round ovens) although the Middle Saxon date for its introduction may be in question. Further, the origins of the Ipswich kilns need not necessarily be sought in the same continental region as those for the Thetford kilns. Indeed, the source might be the Rhineland in contrast to the Meuse valley for Thetford. Equally, the idea for the unique trench-like Castle site kiln at Stamford may have come from a third source, in this case Northern France as proposed by Kilmurry (Kilmurry 1980, 187) on the basis of its product (red-painted pottery).

Siting of the industry

The eleven Thetford kilns so far discovered lie in an area some 500 m long (and possibly 200 m wide) running approximately parallel to the line of the town defences on the western side at a distance of 100–200 m from it. As the kilns are spread out with some concentration towards north-west and south-west corners of this area it cannot be assumed that the potters occupied a continuous belt of land and presumably there were a number of separate potters' holdings. However, approximately

one-third of this belt is occupied by playing fields and the finding of kilns there in 1966 suggests that others may await discovery. Thus the full extent of the industry is unknown.

This siting indicates a deliberate granting of land on the extremities of the town on its western side to potters and possibly a decision to confine pottery manufacturing (and maybe other industrial activities) to an area considered to offer less fire risks and environmental pollution to the rest of the town. It would be convenient, too, if the nearby modern plantation of Redcastle Furze, and any earlier southerly extension of it, also represented the site of ancient woodland or thicket. In which case a potential source of brushwood for kiln fuel would have been available just outside the western defences and almost adjacent to the kilns. A deliberate management of this by coppicing would have prevented its exhaustion and provided the faggot type timber most suitable for kiln firing. However, the *Domesday* survey makes no reference to woodland at Thetford and the Breckland areas are generally considered as never having been more than lightly wooded. Failing a local supply, coppiced faggots would have been brought in by cart or river, possibly from an area east of Thetford.

The kilns at the north-west end of the 'kiln belt' are possibly as near to the Little Ouse River (the nearest within 150 m) as was practicable, bearing in mind the wide marshy flood plain. At the southwest end the river is further away (500 m). Evidently, the need to maintain a zoning of the industrial area was paramount. This may not have presented too great a problem as the potters' water supplies could be obtained from wells, and the deep pit (N71) within 10 m of Knocker's kilns may have been for this purpose. It was not bottomed by Knocker but excavated to a depth of at least 5 m, half of which was in solid chalk.

The river would also have provided a means of transport (of clay, pots and timber) and whatever the distance between the kilns and the river a short haul with carts would be needed anyway.

If suitable potting clay was not available in the immediate area, it should have been possible to locate deposits reasonably close (say within 16 km (10 miles)) as Roman potters worked at Wattisfield and West Stow: indeed a Roman kiln was found near Thetford (Two Mile Bottom). However, there may have been usable clay deposits even nearer (within 1.6 km (1 mile)) as there were clay pits for post-medieval/modern brickmaking on the north side of the river (see above).

It is to be noted that all the kilns in the north-west group lie close to the line of the modern approach to the footbridge across the Little Ouse which was in the vicinity of an ancient ford (see below, Documentary Evidence). However, the northernmost Davison site lies abreast the line of this approach and no evidence for a Saxon road in a corresponding position to the modern track was located in the excavated area.

Kiln structure

The Thetford kilns are remarkable for two distinct features in addition to their overall sophistication. These are the uniformity of their plans and the close proximity of the kilns to each other – either to form batteries around a common stokepit or leading to superpositioning, at least of the stokepits.

Thus although Knocker's Kiln 1 is the largest Thetford kiln, and at first sight looks a distinct sub-type, its basic design still involves the common feature of the others, a framework of several (three or four) arches across the width and a short longitudinal arch at the back end of the oven pit. The addition of the so-called 'dome' (a misleading term applied by Knocker to what was in effect the floor) has narrowed the spacing between these arches to four vents (instead of wide slots) thus disguising the similarity of Knocker Kiln 1 to the others. Presumably the aim was to extend the floor area to provide more support for stacked vessels although this would, at the same time, have hampered the actual stacking operation if the kiln was permanently roofed. Two other Knocker kilns only survived in part, but their size and shape suggest that these also resembled the Davison kilns.

The close marshalling of the kilns may have been forced on the potters because of space limitations on their plots, although the arrangement of the kilns in batteries on the Davison site possibly had a logistic basis. That is, to concentrate the kilns near the wood stacks and workshops: the general direction of the latter can be inferred from the dirty trampled areas around the kilns which spread out in irregular tongues in a south-west direction from the kilns suggesting pathways to the workshops. Kilns D16 F61, D16 F97 and D16 F115 provide a true battery of kilns of which F97 and F115 may have been in use together. This is not to say that more than one kiln was fired at the same time, because the heat in the stokepit would have been almost unbearable from one alone. It would be possible, however, to load a second kiln while another was cooling and start its firing once the other was unstacked. Such a procedure would be desirable because firing would be weather (but not wind) dependent, and the possible flooding of stokepits must have presented problems. Thus it would be necessary to take advantage of fine spells and one assumes that stocks of green pots were prepared pending suitable weather conditions for firing them.

It is to be noted that kiln batteries are not common (indeed, Thetford is probably unique for Saxon/medieval England in this respect) and implies the presence of potters accustomed to operating a well-organised industry. However, a few examples are known from Roman Britain as Corder was able to list ten in his standard article on Roman kilns (Corder 1964, 25). The most noteworthy is that found by Sir Christopher Wren under St Paul's Cathedral in 1672 and Corder includes Wren's drawing which shows four single-flue kilns arranged in a cruciform pattern around a stokepit.

In addition to the weather, another hazard would have been the structural instability associated with Type 1b kilns. Kilns, like pots, shrink on firing and the particular weak point of Type 1b kilns was the raised oven floor if, as at Thetford, there was no central support. This is well illustrated by the evidence for possible collapsed superstructures in several of the Thetford kilns (including the reinforcement of an arch in kiln E16 F33) assuming this occurred during use and not as a result of demolition. The potters at Langhale also seem to have experienced the same problem, as the excavator claims that an oak beam was inserted longitudinally to support the arches (Wade 1976, 105). A good practical demonstration of it was provided in the Leeds kiln experiments involving a replica Thetford kiln (Mayes 1967), as emergency supports had to be inserted to support the sagging floor

under the load. As will be discussed later, this suggests that the Thetford kilns must have had an initial pre-firing before being fired with a proper load when a kiln was first built – or prefabricated fired clay bars were used to construct the floor. The advantage of a raised floor is that it provides the opportunity to push the burning fuel beyond the flue arch fire-place area to a position below the pots. It also avoids flames licking directly on to the pots which can occur in kilns without a raised floor (Types 1a, 2 and 3). However, once the kiln is 'pulling' the fire need not extend beyond the flue arch and can even be just outside it in the stokepit.

Returning to the method of construction of the raised floor in the Thetford kilns, the 'arches' (essentially curved fire-bars) were constructed from clay wrapped around bundles of hazel rods – a common practice of kiln builders at this time. As these appear to have been laid in slots in the oven wall there is a strong possibility that prefabricated bars of *fired* clay were used. Supporting evidence comes from the observation of the deep impressions of rims in one or two examples. Although these impressions could be used as evidence that pot load was included in the first firing of any newly constructed kiln, a more compelling explanation is that the impressions represent the use of waster pots as kiln props to support the clay bars when these were being fired, like pots, as part of the load of another kiln (possibly on the floor of the oven pit).

It is to be noted, however, that the flue arch (*i.e.* that nearest the stokepit) could not normally have been prefabricated as evidence from several kilns shows that the withy centering extended into the oven wall. Thus this arch was made *in situ* by plastering clay around a withy core previously fixed in an arched position.

As for the rest of the superstructure, the oven walls of the Thetford kilns had the feature common with most excavated kilns of being neatly truncated at the level of the old ground surface, just above the tops of the arches, effectively removing all *in situ* evidence for the nature of the superstructure. Consequently, it is impossible to say at what height the oven walls were turned in (if indeed they were) to form the roof. There is in fact a change of angle in the kiln walls at this point but, strangely, it is an outward rather than inward splay as if the superstructure had a profile similar to that of a hot-air balloon rather than a dome. Although one can see the advantage of this in providing as much headroom as possible for stacking purposes, at the same time it is difficult to visualise how a stable superstructure could have been so constructed. However, some modelling of the profile may have been possible using supple hazel rods or withies and there was evidence for the use of hazel rods to reinforce the clay linings of oven pits.

Apart from the outward splay of the kiln wall above the oven floor, the elongated-horseshoe plans of the Thetford kilns must also have made roofing difficult. Clearly, a circular oven is the easiest to deal with as it can be capped with a simple dome-like construction with an exhaust vent at the apex. Such a structure could either be moulded from clay plastered on to a wattle framework (or built igloo-fashion from clay blocks) or take the form of a variety of temporary structures approaching that of a clamp kiln. In contrast, a clay 'dome' placed on the most elongated of the Thetford kilns would have resembled an up-turned boat.

The remains of what were interpreted by the excavator as collapsed clay 'domes' were recorded from four kilns (D16 F46, D16 F61, D16 F115 and E16 F33). He observed that the dome material had wattle impressions burnt into it but otherwise it was a homogeneous mass without any shaped pieces. Consequently, it is possibly idle to speculate as to the precise form of the superstructure because all the evidence tells us is that the roof possibly had a wattle framework with clay plastered on to it. Similar evidence was obtained from the kiln excavated at Langhale but its upper layers also included a mass of unfired clay.

The difficulties in determining the nature of the superstructure are compounded when kiln loading is taken into account. A permanent dome would have made this difficult and time consuming unless a rudimentary wicket or loading door was inserted into the above-ground structure. This could easily be achieved by having a removable panel which was plastered over with clay at the completion of loading. However, the best method would be one in which a temporary roof was built after loading the kiln.

A further difficulty is encountered when one considers how vessels were stacked in the kiln as there was no evidence for fire-bars or other devices which could be used to bridge the space between the arches. It might be argued that broken pots were used for this purpose. However, these would need to have been more than 18″ (45 cm) high to bridge some of the gaps and thus require the use of whole pots laid on their sides. It seems hardly feasible. It is of course possible that whatever was used to span the gaps was removed for reuse when kilns were abandoned, but in those kilns with collapsed domes one might have expected to have found some examples under the collapsed mass – unless the kilns had not collapsed but had been demolished. The obvious solution, adopted in Knocker's kilns, was to narrow the spacing between the arches by applying a clay skin and one wonders why it was not adopted in the other kilns, including satellites such as Langhale. One can only conclude that the gaps between the arches did not present the potters with any difficulty.

It is to be noted that Davison's estimate (Davison 1967, 193) of twenty-five to fifty vessels (arranged in three layers) for the size of a kiln load suggests the possibility that a very open setting of the pot stack was used. However, such a small load for kilns as large as those at Thetford seems hardly cost-effective and would have resulted in an expensive product. Keith Wade arrived at the higher figure of 100–120 vessels for his Langhale kiln, based on the number of pots recovered from a kiln with a possible collapsed dome. He includes the *caveat* that his estimate depends on the correctness of his interpretation that he really was dealing with a collapsed dome (which included unfired clay) and therefore that the pottery from the kiln was a closed group.

On balance, and despite lack of direct evidence for it, there seems every reason why the potters should have used some kind of portable floor sections resting on the arches. This could take the form of large rectangular plates of fired clay so positioned as to leave vents in the floor. Possibly, one needs to consider whether the supposed collapsed domes found in several of the kilns might equally include the decayed remnants of such floors. Considering the absence of roof material in the generality of excavated medieval kilns it is, to say the least, remarkable that half of the Thetford kilns, and that from

Langhale, should have produced evidence for collapsed 'domes'. Further, if collapses occurred in use it is equally remarkable that the potters accepted this design weakness and took no steps to overcome it. Evidently in the Knocker kilns a modification has been used whereby the stacking problem was overcome by increasing the floor area by bridging the arches with a permanent floor. Significantly, no 'collapsed dome' material was found in the Knocker excavations as far as I am aware although some pieces of 'burnt clay' were found on the oven floor which might have been from the kiln roof.

Other pot-making features

In addition to examining the kiln structures, it is important to look at the archaeological evidence for any other features of the pot-making process as these are frequently missing from the excavation record of pottery producing centres. Basically, these comprise the pot-throwing area, water supplies, clay preparation pits, fuel storage areas, pot stores (both for green and fired pots) and some form of short-term or permanent living on-site accommodation for the potters bearing in mind that a kiln firing probably occupied a twenty-four hour period. Some of these features can be identified in the areas excavated by Davison and Knocker, the evidence being complementary.

Thus on the main Davison kiln site a post-hole was found with substantial stone packing which may have carried the support for the pivot of a potter's wheel set-up (D15 F9) and, some 4 m from it, a large storage jar had been sunk into the ground to serve as a refillable source of water (D16 F80, Fig.149, No.163). Evidently, the pot-throwing area lay to the west of the kilns on this site and any associated buildings must have been further west still – unfortunately outside the excavated area. Additional confirmation for this layout is provided by the pattern of trampled ground which is mainly west of the kilns. This pattern, too, may serve to indicate the sites of fuel stacks as these would be less trodden and therefore possibly indicated by the 'white' areas on the plan, notably immediately east of kiln D16 F46.

In contrast, the areas adjacent to Knocker's kilns contained a confusion of pits and possible buildings. Although it has been claimed that these buildings may have included potters' workshops (Rahtz 1976b, 442), specific evidence (such as the sites of potters' wheels) is lacking and it is even difficult to establish proper building plans from many of the features identified as such by Knocker, as Rogerson and Dallas point out (1984, 26). The only certain building near Knocker's kilns is B.21, a structure *c.* 15′ (4.6 m) by 9′ (2.7 m). This is within 10 m of Knocker's Kilns 1–3 and is a possible candidate for a workshop although the only industrial artefact found in it was a stone mould suggesting a metalworking connection.

However, the most interesting feature must be the post-hole D15 F9 possibly associated with a potter's wheel set-up. A possible reconstruction can be proposed using ethnographical parallels, in contrast to historical ones which are normally quoted. Thus ideas of what a medieval potter's wheel looked like have depended heavily on the sixteenth-century engraving of a kick-wheel as figured by Hartley and Elliot (1925, 87). However, it is possible that Saxon potters' wheels were more primitive and took the form of a wheel with a bearing let into its undersurface which spun on a pivot made from a pointed piece of wood (or metal), the spin being initiated by a vigorous winding-up action using a stick inserted into a hole near the rim on the wheel's upper surface.

Although this may seem to be, potentially, an unstable and impracticable system it is used successfully by some Indian potters today (Miller 1985, 207). The Indian practice is to set the wooden pivot into a stone base and insert a stone bearing in the undersurface of the wheel made of sun-baked clay with a wooden centre. The bottom stone and the wheel are then placed in a shallow pit of slightly larger diameter than the wheel's diameter. As a consequence the potter has to squat when throwing a pot, although larger pots are thrown from a standing position. Throughout, care is taken to lubricate the pivot/bearing interface.

The possibility that this method was used at Thetford is suggested by the finding of three small lathe-turned stone cylinders (Fig.134, Nos 10, 11, 12) with drilled hollows in one end. These were evidently associated with the kiln phase as two were found in the bottom of kiln D16 F46. The stone cylinders could have been bearings for letting into the undersurface of wheels set up in a similar fashion to those now used in India – although the pivot would have been set into a wooden post stub, rather than a stone. It is of interest to note that Peacock has suggested (Peacock 1982, 57–8) that Roman potters' wheels were also operated on a similar, simple pivot basis and he illustrates two stone bearings from Lavoye, Argonne.

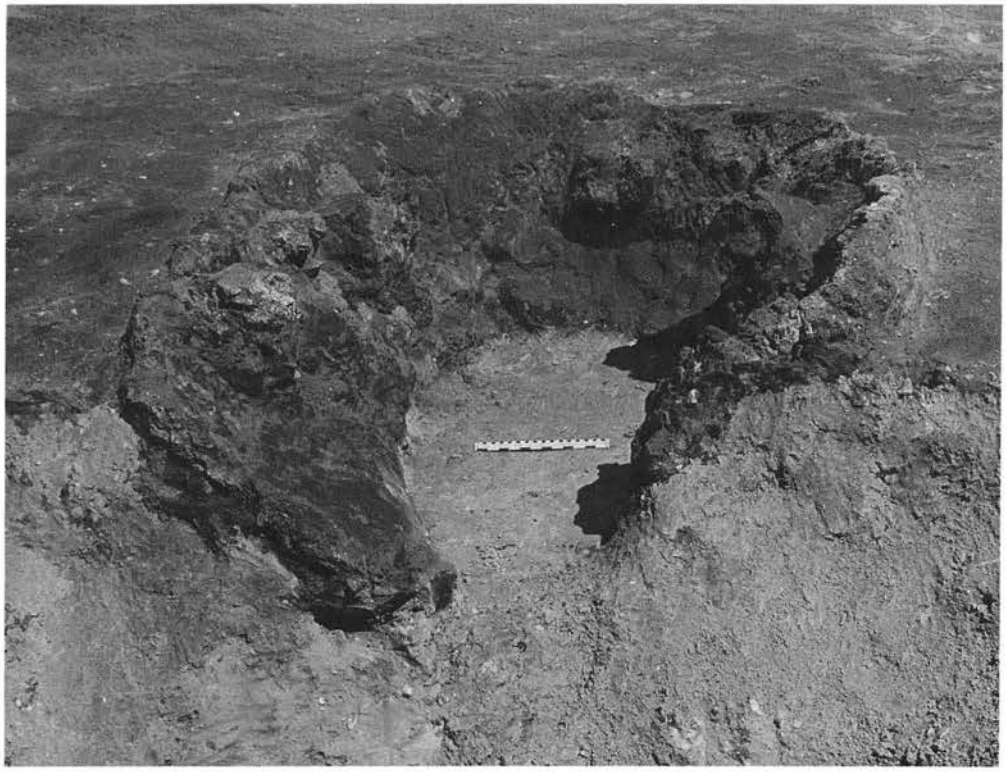


Plate III Kilnyard. Kiln D16 F61 from the south.

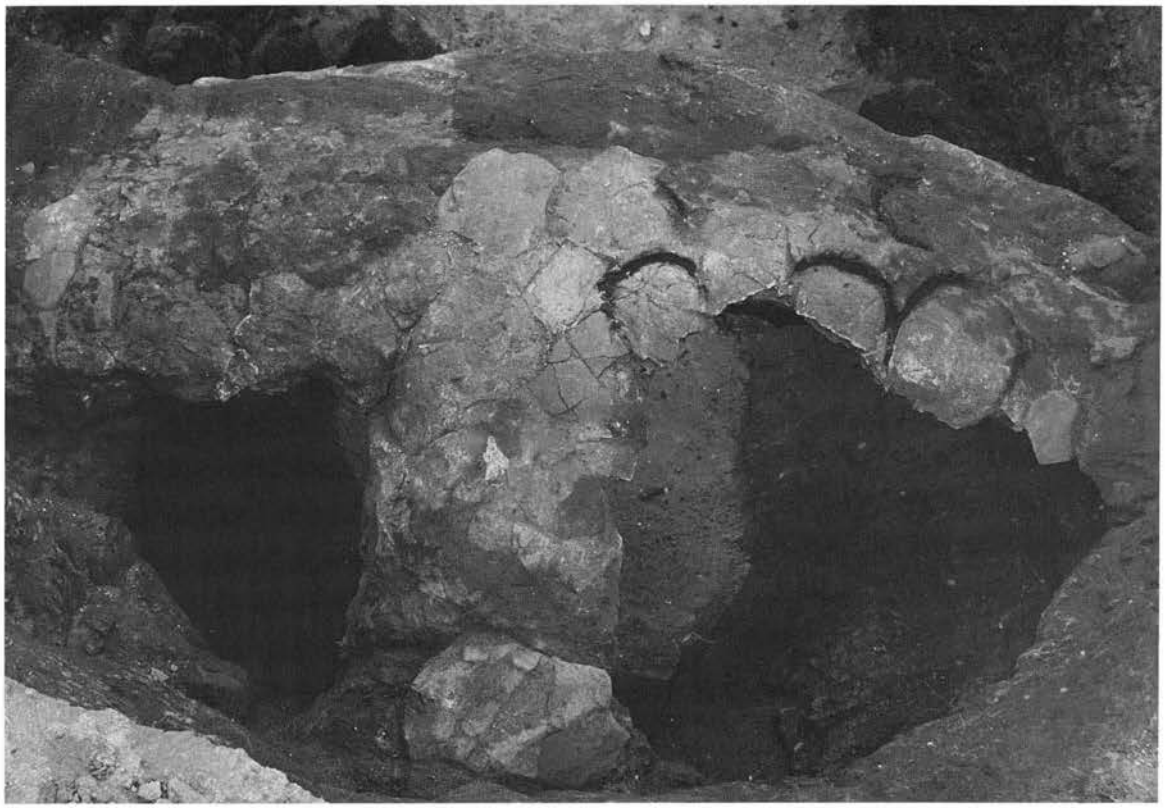


Plate IV Kilnyard. Kiln E16 F33 from the north-east, showing pot-rim impressions and potsherds on fire-arches *in situ*.

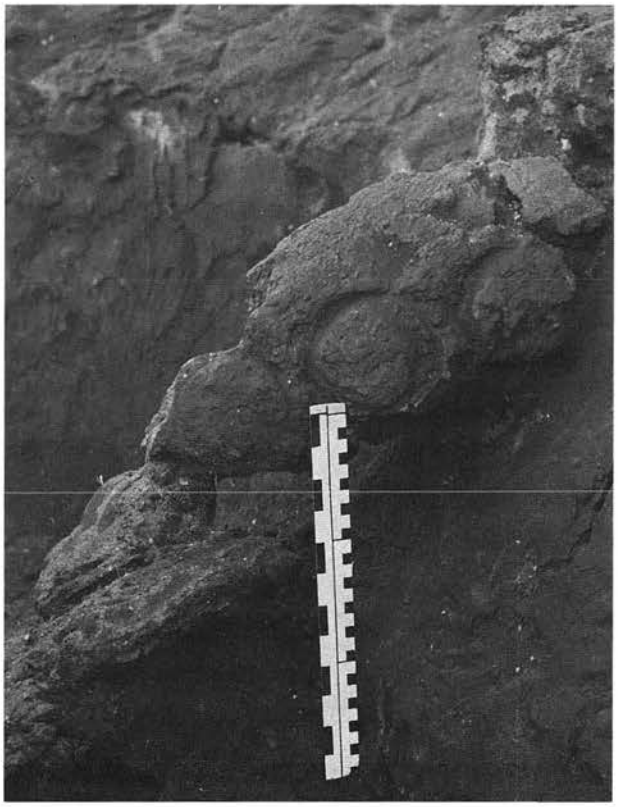


Plate V Kilnyard. Kiln D16 F97, collapsed arch with pot-rim impressions.

Plate VI Kilnyard. Kiln D16 F33 from the south-west, at the level of the chamber bottom.

Part IV
The 1969–70 Excavations: Site 5759

I. Summary

Four trenches (1–4) were dug in 1969–70 to investigate the line of the Late Saxon town defences, and to examine a church whose remains were discovered by accident in 1912 and thought to be St Michael's, although this dedication now seems unlikely. The Saxon town ditch was not found. Trench 1 produced dense Saxo-Norman occupation with evidence for pottery production and metalworking. Trench 2 uncovered the remains of the church. This consisted of an eleventh-century timber church succeeded by two phases of eleventh to twelfth-century stone church. The abandoned church building underwent at least three phases of later secular use. Part of the cemetery was excavated and there were some pits, ditches and post-holes on the site, perhaps representing pre-church activity. Excavations revealed no ancient features in Trench 3 and a few pits of uncertain date in Trench 4.

II. Introduction

It became known in 1967 that the Thetford Borough Council and Norfolk County Council intended to develop an area north of St Barnabas Hospital, some 150 m by 150 m and then used as allotment gardens. It was thought that the pre-Conquest town ditch may have passed through this area (it has since been found further south: Rogerson and Dallas 1984, 55–60) and evidence of an early church, thought to be St Michael's, had been found during sewer trench digging in 1912 (Whittingham 1967, 129; and see below).

A geophysical survey was carried out by the Ancient Monuments Laboratory using a proton magnetometer in January 1968 and a square-array resistivity apparatus in May 1968. Large-scale excavations were envisaged for 1968, but arrangements proved difficult, and a reduced programme was carried out in 1969. The excavations (County Site 5759) were on the south edge of the town and just east of the present Bury Road. Four trenches were dug, their positions based on the results of the geophysical survey: Trenches 1 (TL 869 823) and 4 (TL 870 824) were cut across a large magnetic anomaly curving north-east to south-west across the area, which it was hoped might have been the town ditch; Trench 2 (TL 870 824) (the church) was dug in an area of high resistance near a sewer which was probably that laid in 1912; Trench 3 was dug east of Trench 2 over a concentration of high resistance which it was thought may have been a road.

The work was carried out in July and August 1969 but there was not time to complete Trench 2 and work on this was resumed at Easter 1970.

III. Geology

The natural ground surface lay at *c.* 13 m OD and comprised well-drained yellow sands and gravels, with some ?iron staining, overlying the chalk. In trenches 1 and 2 the surface sloped from south-west to north-east towards the Little Ouse and was probably part of the third river terrace. In trenches 1 and 2 purplish sand occurred which could have been part of a humus podzol profile, perhaps of the Redlodge series (Corbett 1973, 69). Soils of this type are often associated with lowland heath (Limbrey 1975, 149). Sand (possibly windblown) also occurred, both below and over archaeological features.

IV. Trench 1

(Figs 2, 100–3)

Method of excavation

Trench 1 was dug in 1969 at TL 8691 8230 on the west side of the site near Bury Road, across the west end of the linear magnetic anomaly which it was thought might have been the pre-Conquest town ditch. A sample trench 30 m long was dug by the back-actor of a JCB mechanical excavator to a depth of *c.* 1 m into the natural subsoil, and both section faces were drawn at a scale of 1:20. The width of the trench was increased to 2 m for a distance of 23.75 m from the north end, and this area was excavated by hand. A further 1 m width was also dug by hand in the central position of the west side, after the original machine-dug west section face had collapsed (Figs 100 and 101).

An Old Ground Surface of weathered sand (7) lay beneath a sequence of deposits and all features; over this OGS a layer of sand (5), (15), (21), possibly windblown, had accumulated, some 10–20 cm in thickness. Further layers of possibly windblown sand, (40) and (42), lie above this, and other sandy deposits. F14 was possibly a sunken-hut (cut by ditch 12) and contained two hearths (47) and (49). Floors may be represented by mortar layers (28) and (19). Filled ditch 12 was overlain by layers with hearths and floors.

(A full description remains in the site archive.)

Discussion

Trench I revealed an area of intense, mostly industrial, activity which dates to the tenth and eleventh centuries. Thetford Ware (TH) was found at all levels, including the earliest layer (5) (15) (21) and sandy layers (40)–(42), and no occupation earlier than the tenth century was found. Pottery datable to the eleventh century (EM) occurred at a fairly consistent horizon in layers (3), (19) and (31) (as well as in F1, (8), and pits F22 and F23). All layers

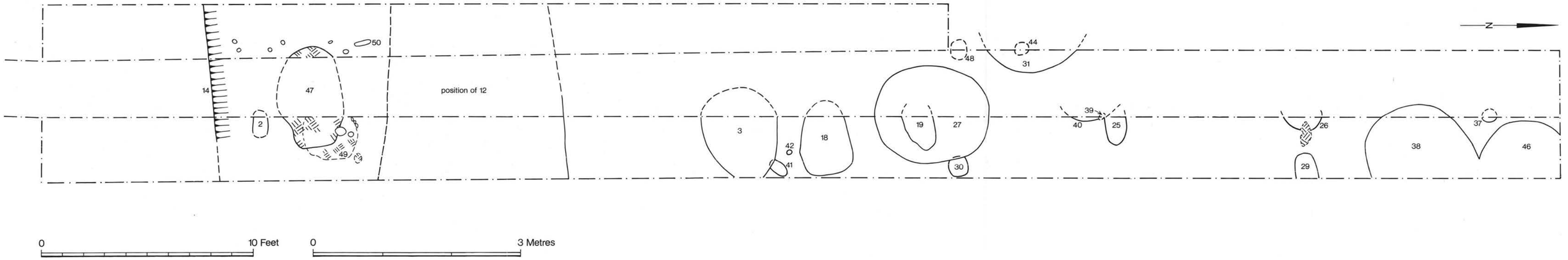


Figure 100 Site 5759, Trench 1: plan of some earlier features.

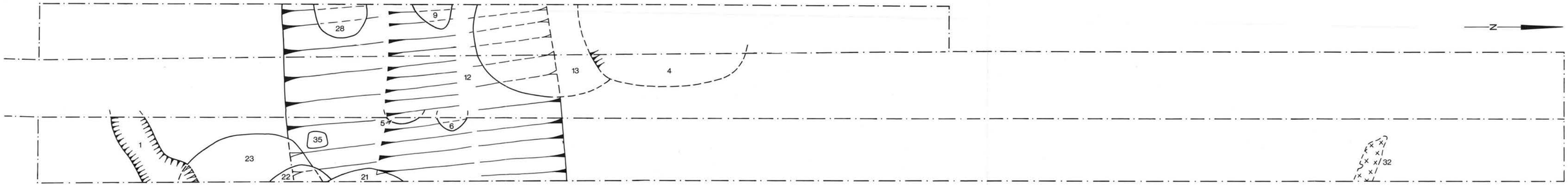


Figure 101 Site 5759, Trench 1: plan of some later features.

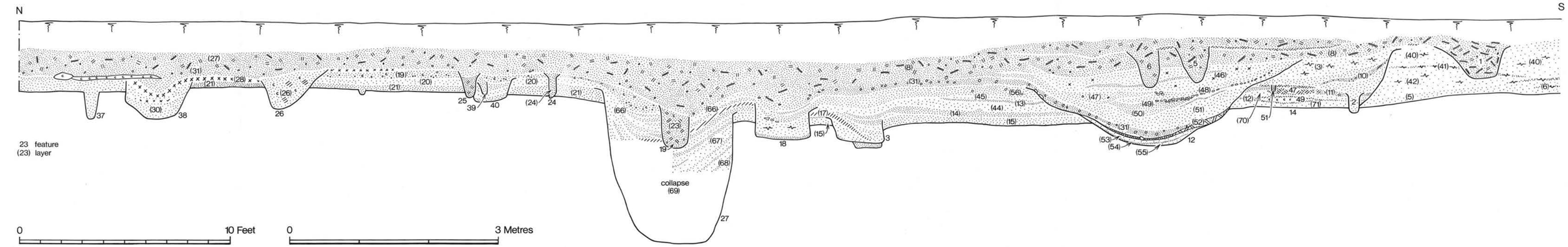


Figure 102 Site 5759, Trench 1: east section face.

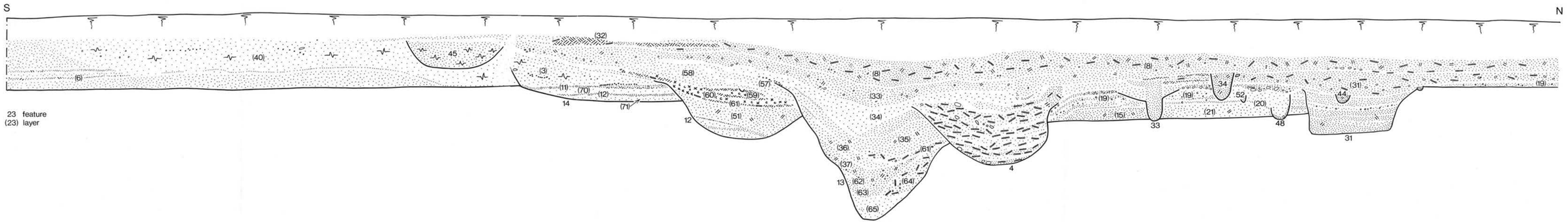


Figure 103 Site 5759, Trench 1: west section face.

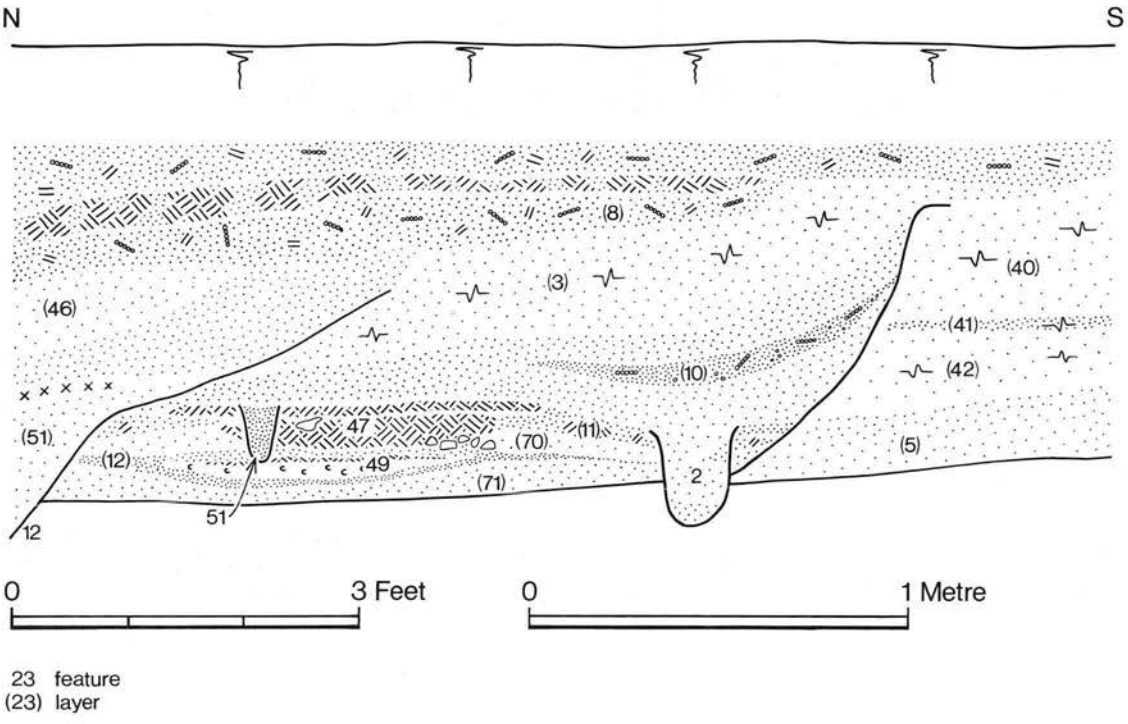


Figure 104 Site 5759, Trench 1: section of F14. Scale 1:20.

and features above this horizon, including ditch F12, were thus probably eleventh century. Three twelfth-century sherds were found but the pottery assemblages are not consistent with such a date, and occupation into the twelfth century cannot be postulated.

Small pits and post-holes were evident at all levels, but the narrow width of the trench hinders interpretation. Activity was less in the southern part of the trench where fewer features were found. This area remained slightly higher ground, and a tenth-century feature (possibly a sunken-floored hut or cellared building) was found (F14) cut down to the natural ground surface from the top of deposits (40)–(42). Two phases of hearth (F49 and F47, possibly domestic), were found in the bottom indicating that this was the floor surface. Some of the early pits to the north of F14 may have been associated with it (Fig.100) but this is not clear. The sandy filling above the hearths in F14 may indicate that this building was dismantled and left open. The north side of F14 was cut away by the east-to-west ditch F12 (perhaps a boundary) which was overlain by a series of hearths and floors. Activity in the eleventh century seems to have intensified with more pits and post-holes, and areas of clay, chalk and mortar flooring.

The date of this would seem to be tenth century, as two possible waster fragments were found in early layer (21) and three in pit F27. This last also contained a worked bone object which may have been a pot stamp (Fig.162, No.18) although no such stamped sherds were found.

Three crucible fragments and quantities of iron slag were found in this trench. A few pieces of slag occurred at all depths, but the quantity increased greatly in the eleventh century levels above ditch F12, and this seems to be the period of most metalworking activity.

This small trench has produced evidence of Saxo-Norman occupation, possibly changing character after a lull in the early eleventh century, when ditch 12 was dug. The evidence from this trench accords well with other archaeological work in this part of Thetford. Knocker's Site 6 T.T. 3 (Rogerson and Dallas 1984, 47) some 20 m to the west produced much iron slag, and excavations at St Barnabas Hospital (Rogerson and Dallas 1984, 55, Site 1092) about 75 m to the south found evidence of eleventh-century metalworking and bone and horn-working, as well as a change of site layout in this period. The bone from Site A gives no indication of the manufacture of artefacts, but a high proportion of pig bones suggests pig-raising or butchering nearby.

V. Trench 2 The church

(Figs 2, 105–14)

Introduction

The report on the church has been divided so that features and layers which cannot be satisfactorily phased are considered apart from the building sequence but are referred to where possible, particularly in the interpretation and discussion which have been kept separate from the factual descriptions. Therefore, the report on Trench 2 contains:

Original discovery 1912
Method of excavation
The site sequence
Soil layers (unphased)
Post-holes, pits and ditches (unphased)
Periods I–VIII feature descriptions
Periods I–VIII discussion and interpretation
A note on the timber church by M. Millett and S. James
The dedication of the church
Interpretation

Original discovery: the 1912 sewer trench

An account is given of the initial discovery of this church in the *Thetford and Watton Times* for 25 May 1912 (inf. A. Davison). In placing a new sewer 'A pit was sunk in the field north of the workhouse' (St Barnabas Hospital), 'about fifty yards from the boundary of Weavers' Close' (Nunsgate) and near the Nunnery end of the field. This disclosed part of the foundations of a building made of rubble, with mortar almost as hard as cement, fragments of worked chalk and of Barnack stone. The wall was 3 ft thick. 'The soil was 'made' to a depth of 4 ft beneath which was undisturbed sand, black in places with what was apparently iron oxide. A number of skeletons were disinterred, all buried in the eastward position, and not now showing any signs of coffins or grave furniture . . . These remains were all re-interred on the spot. They were lying between 3ft and 4ft from the surface . . . There seems no doubt that the foundations disclosed were those of a church and with no further walls to the eastward, the portion uncovered was probably the chancel. Some of the Barnack stone and worked chalk was discoloured as though by fire, and it may have been that the church was thus destroyed'. The article then goes on to discuss the possible dedication of this church, concluding incorrectly that it was perhaps St Michael's.

Method of excavation

Trench 2 was dug at TL 8705 8231 to relocate and examine the church found in 1912. An area 20 m north to south by 14 m east to west was opened in 1969 around an area of high resistance found in the geophysical survey. The topsoil and some post-medieval windblown sand were removed by JCB mechanical excavator, and the rest of the excavation proceeded by hand. It became apparent after two to three weeks work that there were no major structures within the excavated area and mortar floors were found running north under the edge of the trench. The trench was then extended 35 m north and a structure of church-like plan was uncovered. There was not sufficient time left in that season to excavate the building properly, so it was cleaned and planned in the main part of its latest form and work concentrated on the cemetery area to north and south.

At Easter 1970 work was resumed under difficult conditions; the weather was bad and the builders had begun work on a housing estate. A new road had been laid along the north and east part of the site, damaging the east end of the latest structure. Work concentrated on elucidating the church sequence and the trench was extended to the west to examine the full extent of the final phase. An area at the south-west end of the church on which work had begun in 1969 was also finished.

The site was recorded in a metric grid aligned on the 1968 survey with point of origin to the south-west. Plans were drawn at 1:20 and sections of central baulks left north to south and east to west were drawn at 1:10. Stray finds were recorded by excavation grid references, and the rest related to appropriate features. Features were given F numbers and described on cards, and layers were allocated lower case letters in a circle. Skeletons were given F numbers, cleaned and photographed: the photographs were used to aid planning the skeletons at 1:10 and 1:20. An osteologist was present on site to advise on the treatment of human bone. Finds were given bag numbers in rectangles and small-find numbers with triangles. There was not time to excavate some features found and these, particularly pits and skeletons, sometimes have no numbers. Some feature cards have been lost since the excavation and the details of some layers and features also lost. The church sequence was phased at the time of excavation (interim note Wilson and Moorhouse 1971, 130, fig.46), but has been rephased here.

The site sequence

The report has been divided between the features in the area of, or associated with, the church structures which can be putatively phased (Periods I–VIII), and those which cannot be phased, as information has not survived (soil layers) or was not complete (post-holes, pits and ditches). The phasing of Periods I–VIII is not certain in date, or even the sequence of some details, as there is little dating evidence for Periods V–VIII. The evidence of finds and stratigraphy can be summarised as follows.

Period I. Nine sherds of eleventh-century pottery (Fig.154, No.214) were found in soil layers beneath the timber church, and any pre-church activity would seem to have been tenth to early eleventh century in date.

Period II. Timber church. Although no dating evidence (*e.g.* EM sherds) was found in the foundation trenches, this wooden church probably belongs to the middle quarters of the eleventh century. An eleventh-century EM sherd was found in burial F347 beneath the Period III stone chancel.

Periods III and IV. Stone church, extended westwards in Period IV. The plan of this church would suit a date in the mid to late eleventh century (N. Batcock pers. comm.) which fits the evidence from finds. Two eleventh-century EM sherds were found, one each in F211 and F215. The Norman scalloped capital (Fig.157, No.4) reused in Period V F284 dates to *c.* 1100 and may have been derived from the Period IV church.

Period V. The features attributed to this period cut through the Period III/IV floor over which some fine soil had accumulated. They were sealed by the floor of the Period VII temporary structure, except for some postholes and F284 which is associated with F285 by inference. Late eleventh to twelfth-century pottery was found in F284 and F285, and they could be late twelfth century or later.

Period VI. Wall F219 post-dated the Period IV church extension and preceded chalk platform F378 (of Period VIII?). It probably continued westwards as a boundary rather than a structure, but possibly formed the south side of the western annexe (Period VIII).

Period VII. Two short walls and a floor were set over the Period V features, and were sealed beneath the floor of Period VIII. Eleventh to twelfth-century sherds were found in this temporary structure.

Period VIII. This laying of a new floor and a revised ground plan indicate that the entire church building was reused in this final period. Structures and debris over the cemetery outside the building, particularly to the south, would seem to have belonged to this phase of activity. A fragment of thirteenth to fourteenth-century glazed jug handle was found in layer (m) beneath F50, a floor possibly associated with wall F113 in the south-east part of the trench. A fragment of medieval vessel glass (Fig.135, No.3) is attributed to floor F223 (although contamination could have occurred from modern pits in the area). Late eleventh to late twelfth-century pottery was found below floor F223 in F296, the northern annexe, and the western annexe. This final period was at least fourteenth-century and the number of previous periods, the nature of the structures, and a scattering of unstratified seventeenth-century pottery, suggest that it may have been some while later.

Soil layers, not in the building sequences

Little record survives of these, but there was an old soil of soft dark loamy sand 10-15 cm thick beneath the features, layer (g). This filled most of the graves, and contained some eleventh-century EM as well as TH, SN and animal bone (*cf.* Period I).

Other layers on site, such as (j) and (m), seem to have separated the structural features which were later than the churchyard and lay south of the church. Post-medieval windblown sand (d), lay over all features.

Post-holes, pits and ditches
(Fig.106)
A number of post-holes, pits and ditches on the site were different in character from the church features and seem unlikely to have been associated with them.

At least twenty soil-filled post-holes were observed, four of which were in the vicinity of the church and may have been associated with it or its construction; a further six post-holes beneath the first stone church (stippled on Fig.105) included mortar in their filling. All the post-holes north of the church were filled with dark soil and one, F106, had a flint in the bottom. They had rounded profiles and depths ranged from 3 cm (F123) to 30 cm (F111, F155), but most were either 8-12 cm in depth or 25-30 cm in depth. The only possible line ran south-west to north-east on the same alignment as ditch F176: F121, F124, F126, F144, F143. Post-holes F111 and F127 (30 and 29 cm in depth respectively) may also have been associated with ditches F176 and F154.

Many of the pits here, particularly in the southern part of the site, were not excavated. Some of the others produced no dating evidence, but stratigraphy shows that pits may have belonged to different periods, *viz*: F40 was cut into Period VIII post-setting F94; F168 was cut into grave F194; four unnumbered pits were sealed beneath the Period VIII north annexe (one was cut into grave F161); F330 was below west annexe of Period VIII?; one unnumbered pit at 102/205 was cut by Period VIII F203; one pit (no number) was below Period IV church west extension F212; pits F167 and F131 were cut by grave F185.

Therefore, pits pre-date and post-date graves, before Period IV and before and after Period VIII. Pit F330 produced one possibly eleventh-century sherd, as well as some TH and tenth-century ST: the others had no finds.

There were four pits in the north-east corner of the site of which two (F167 and F131 above) were cut by grave 185. F148 was 1.15 m deep but the rest, especially F167, were shallow; they were all filled with brown, usually sandy, soil and a few flints. Finds were TH, SN, ST and animal bone.

Excavation revealed two sets of ditches F176 and F154 and a linear feature F305 with a similar alignment; this may have been a natural stain. F176 and F154 ran south-west to north-east across the north-west corner of the trench with an entrance 1.30 m wide. Two post-holes F111 and F127 may relate to this entrance. F154 was only partly in the trench but matched F176 in character. F176 had steep/vertical sides and a flattish bottom and sloped from 65 cm deep at its south-west butt end to 95 cm deep where it ran under the north baulk. These ditches were filled with dark soil and lenses of clean sand whose subsidence had been levelled up with rubble (F164); this was mostly flint although there was some mortar and chalk in the packing above the butt end of F176 (F158) (Fig.105). The butt ends of the ditches may have contained large timbers, as F154 had a deeper section which was thought to be an earlier pit, and the filling of the south-west end of F176 is described as a separate feature, F156. This was a circular pit-like area *c.* 1.25 m in diameter with steep vertical sides and a flat bottom some 45–50 cm deep (cut to 15–20 cm above the subsoil). F156 was filled with dark brown sand, and the subsided top was packed with rubble of flint, chalk and mortar on which rested disturbed human bones F86 and F87. The only find from these ditches was a TH cooking pot rim from F154.

In the south of the trench, two linear features ran north-west to south-east across the western part: F204 and F205. Their relationship was not clear. F204 (on the north side of F205) ran for over 8 m and it had a square profile with vertical sides and a flat bottom, 1.20 m deep. It was filled with homogeneous dark soil and the top was widened by erosion. F205 was U-shaped with vertical sides, a rounded bottom and was 85 cm deep. The north lip was rounded, possibly from erosion of F204. F205 was filled with dark soil containing some flint. The only find from these ditches was a coin of Aethelred II dated *c.* 991–7 (SF875, Pl.XX) from an unrecorded depth in F205.

Periods I-VIII: feature descriptions (in microfiche)

Periods I – VIII Discussion and interpretation

Period I
Although some of the pits, post-holes and ditches may have belonged to other periods, the probability of tenth to early eleventh-century occupation preceding the church is strong. The first church cut into two layers of Period I soils, F283 (Figs 108, 109) and F252, both containing eleventh-century pottery. Many pits were not excavated and at least three (dashed on Fig.106) seem to have belonged to post-church phases. However, some of the pits grouped in the northern part of the trench produced only a few sherds of TH and could represent Period I domestic occupation, particularly as pits seem unlikely in a cemetery.

The ditches on the site (Fig.106) are problematical as F204 and F205 differ in character from F154 and F176 and it is not clear whether they were related to each other or not. They may have formed the boundary of the churchyard but this cannot be demonstrated: moreover, another burial was seen in the builders' trenches to the west, although its association with this cemetery cannot be proven. As these ditches were not aligned with the church, they may belong to another period. A date later than the church is not impossible, but it seems unlikely as (a) the subsidence of the filling of F154 and F176 was levelled up with rubble which included mortar, so that this make-up must belong to Periods III–VIII rather than earlier: the activity of Periods VII and VIII seems the most likely time for this; (b) the only finds associated with the ditches were one TH rim from F154 and a late tenth-century coin from F205; and (c) F176 and F154 seem to align with post-holes to the east: large post-pits may have existed in F176 and F154 either side of the entrance gap and post-holes F127 and F111 were deeper than the other post-holes in the area and were possibly part of the entrance arrangements. It would seem therefore that these ditches were early in the site sequence, either preceding the churches (Period I) or associated with them (Periods II–IV). F204 may have held a palisade as the bottom part of the feature had retained a squared shape in section, but no evidence was found of posts (or sill beams). The lack of erosion at the bottom of the feature may have been the result of immediate backfilling for some unknown

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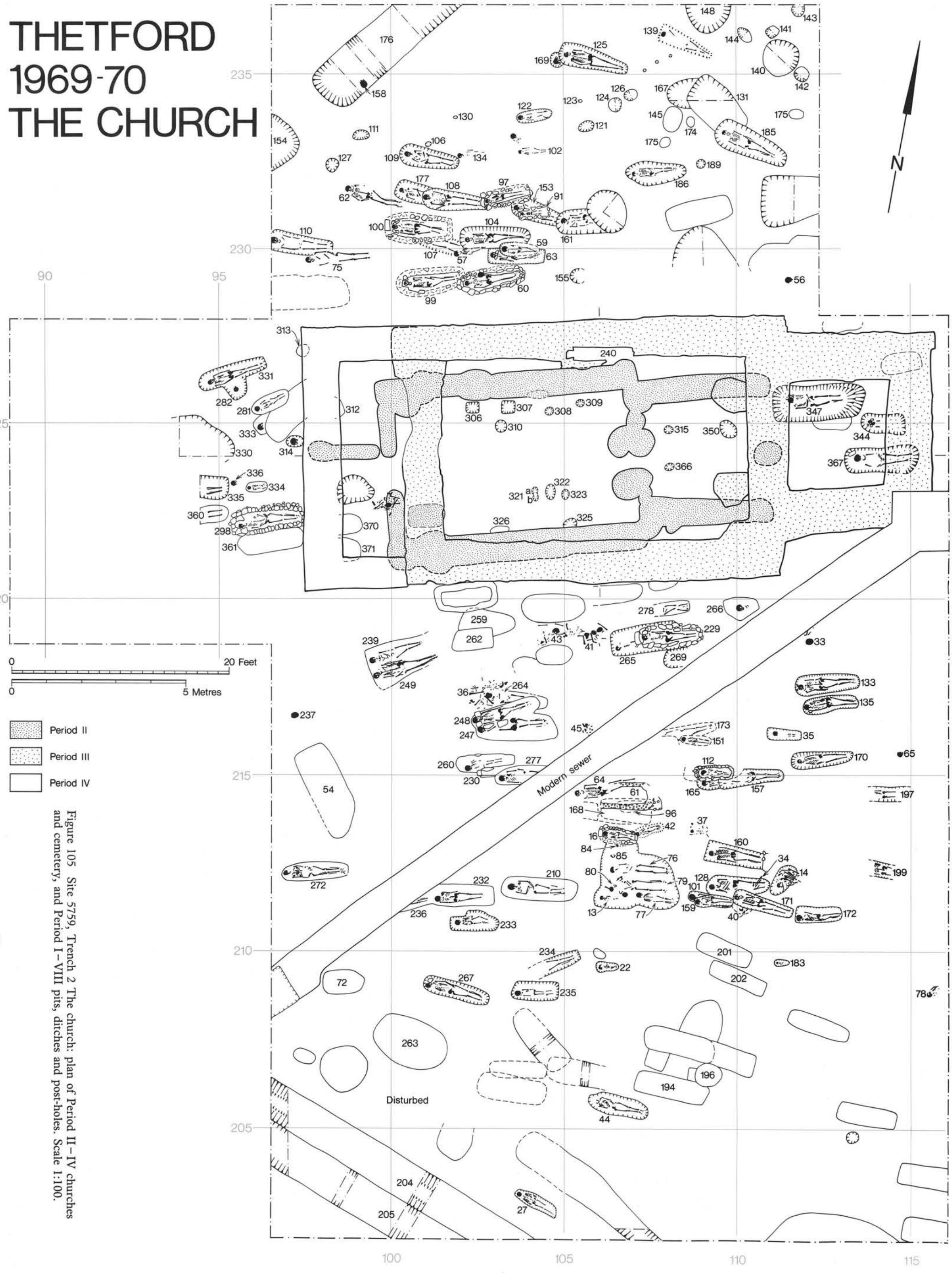

Figure 105 Site 5759, Trench 2 The church: plan of Period II–IV churches and cemetery, and Period I–VIII pits, ditches and post-holes. Scale 1:100.

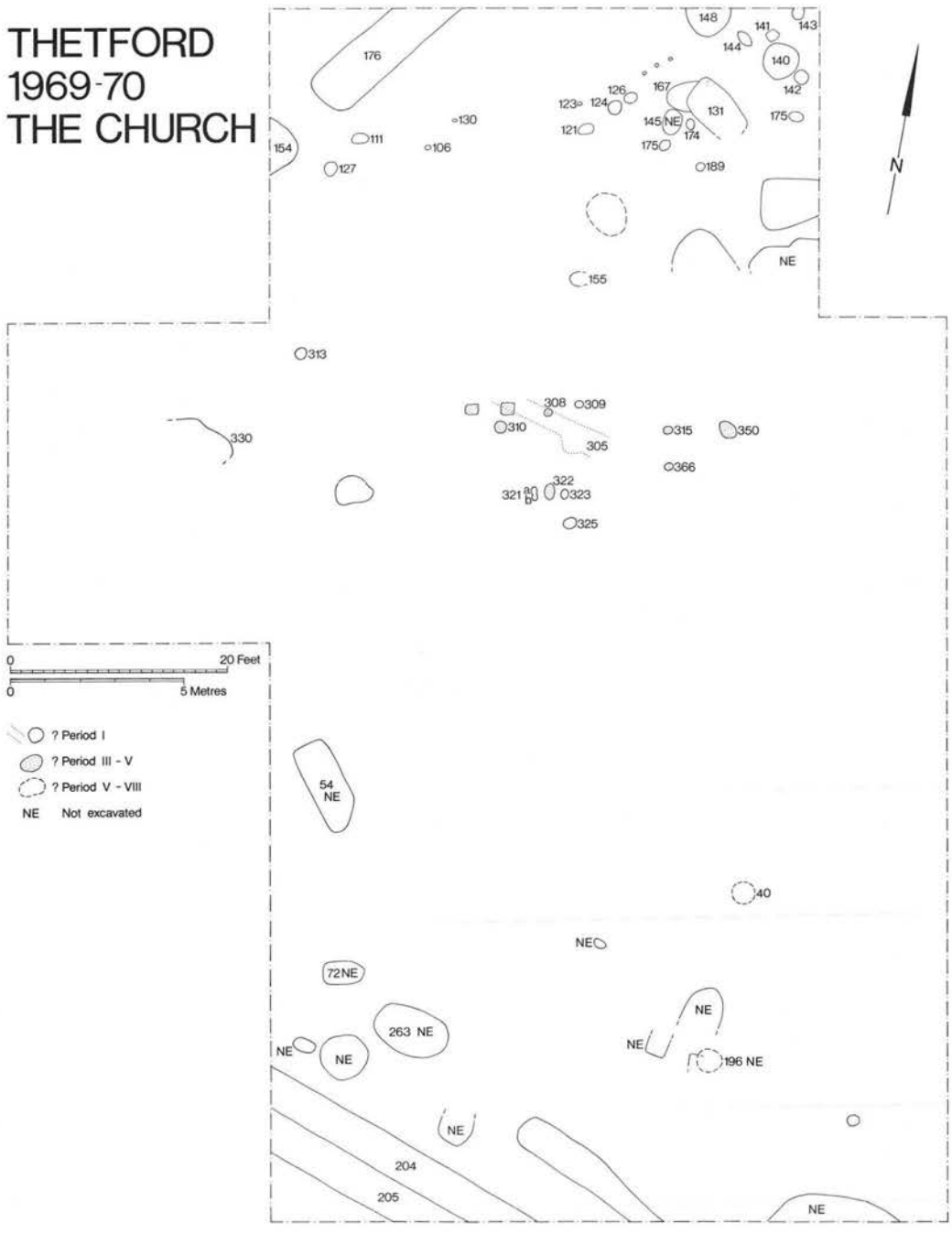

Figure 106 Site 5759, Trench 2 The church: plan of pits, ditches and post-holes. Scale 1:200.

reason. F204 and F205 may suggest a replacement, but the differing profiles may indicate that F205 was a small ditch in front of a (?palisade) fence F204.

All, except two, of the small soil-filled post-holes were found in the northern half of the site. Post-holes within the church have previously been regarded as evidence of church fitments (Wilson and Moorhouse 1971, 130; Taylor and Taylor 1978, 1076; Rodwell 1986, 90) but this seems unlikely here (see below). The six post-holes in the area of the church which had mortar fragments in their fillings could be scaffolding posts for the construction of the stone church, and those in the area of the metalworking furnaces may have been associated with them, although mortar floor F254 did not survive in that area to demonstrate the stratigraphical sequence. The other (at least five) post-holes in the church area may represent an earlier building, although there are not enough post-holes surviving to suggest a plan. The post-holes also seem rather slight for a specialised structure preceding or directly linked to the timber church.

The burnt layer (F252, Period Iii) beneath the timber church could represent the demise of a building, perhaps even an earlier timber church, but this would not explain the post-holes to the north. Some of these are among the pits and this suggests changes of layout over a greater period of time than the few remaining features (or the finds) might suggest. As noted above, post-holes F121, F124, F126, F144 and F143 possibly form a line on the same axis as ditches F176 and F154: no east-to-west lines can be suggested. It would seem probable, however, that

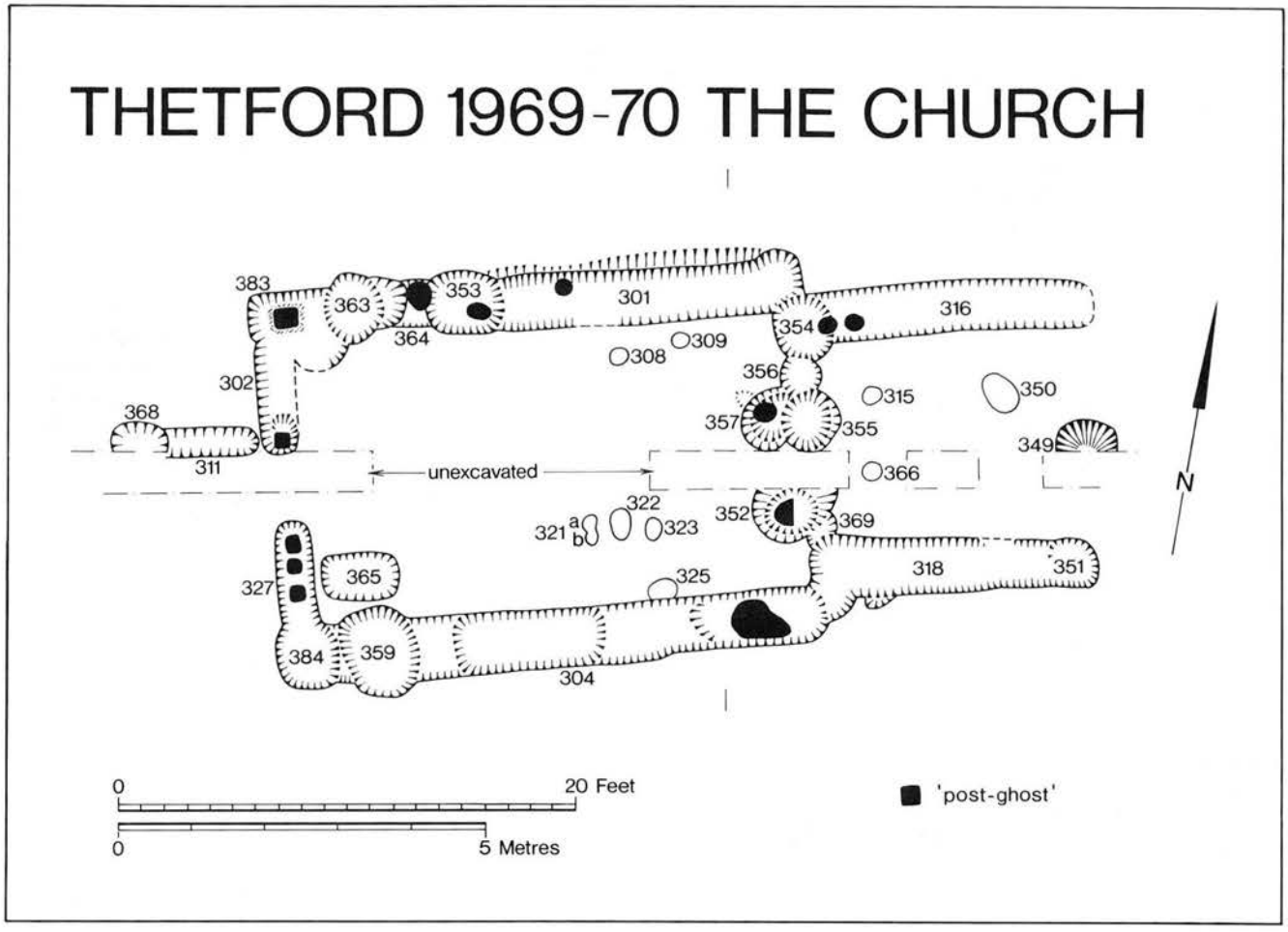

Figure 107 Site 5759, Trench 2 The church: plan of Period II timber church. Scale 1:100.

these features represent activity pre-dating the earliest church.

Period II The timber church
(Figs 107, 114)
The status of the church is uncertain because of the absence of historical records, but it clearly had the right of burial and possibly baptism (see below). A previously unknown church of similar size, plan and date has been found at Norwich (Ayers 1985). Timber churches otherwise remain rare discoveries in this country, other examples being Potterne, Wiltshire (Davey 1964), Wharram Percy (Yorkshire) (Hurst 1976b), Rivenhall (Essex), Nazeingbury (Essex) (Huggins 1978) as well as Greensted (Essex) which still stands, although the timbers have been renewed in recent times (Taylor and Taylor 1965).

The excavated evidence for the timber church wall indicates a nave measuring 7.0 m by 4.60 m and a chancel approximately 3.60 m long by 3.20 m wide. The northern side is wider than the southern side in relation to the 'central' axis, with an extra 30–40 cm on the northern side of both nave and chancel.

An incomplete reconstructed plan has been suggested (Fig.114) based on the surviving evidence for the size and position of posts. The west end consisted of squared posts; the north-west corner of the nave F383 had been squared above ground but left oval at the bottom of the post-pit. Therefore, the rounded post shapes noted elsewhere in the nave and chancel would probably also have been squared off above ground.

Pit F365 was filled with flints and was possibly a font soakaway (*cf.* Ayers 1985, 24), unless the flint filling was the result of activity in Period III when the west nave wall F211 was built across this feature (see below); there seems also to have been another feature in the north-west corner (Fig.107, no number) whose position does not correspond well with F365, although this was mostly cut away by pit F285 so that its nature is not clear.

At the west end, F311 and F368 were overlain by, but deeper than, the Period IV western extension. If any corresponding western or southern elements existed, they were shallower and do not survive. The presence of a pit in this area (Fig.105, no number) could have obscured any features here.

The walls of the chancel would seem by the evidence of two 'postghosts' on the north side to have consisted of lines of posts of a size similar to the main nave walls (*c.* 18–20 cm square). The slight splay of the trench layout could have been corrected by the alignment of the walls to give a chancel internally square (3.20 m). The nature of the east wall is obscure. The chancel should be lower than the nave; certainly the east ends of the chancel side walls were shallower than any other church features, and F349 than any other post-pit.

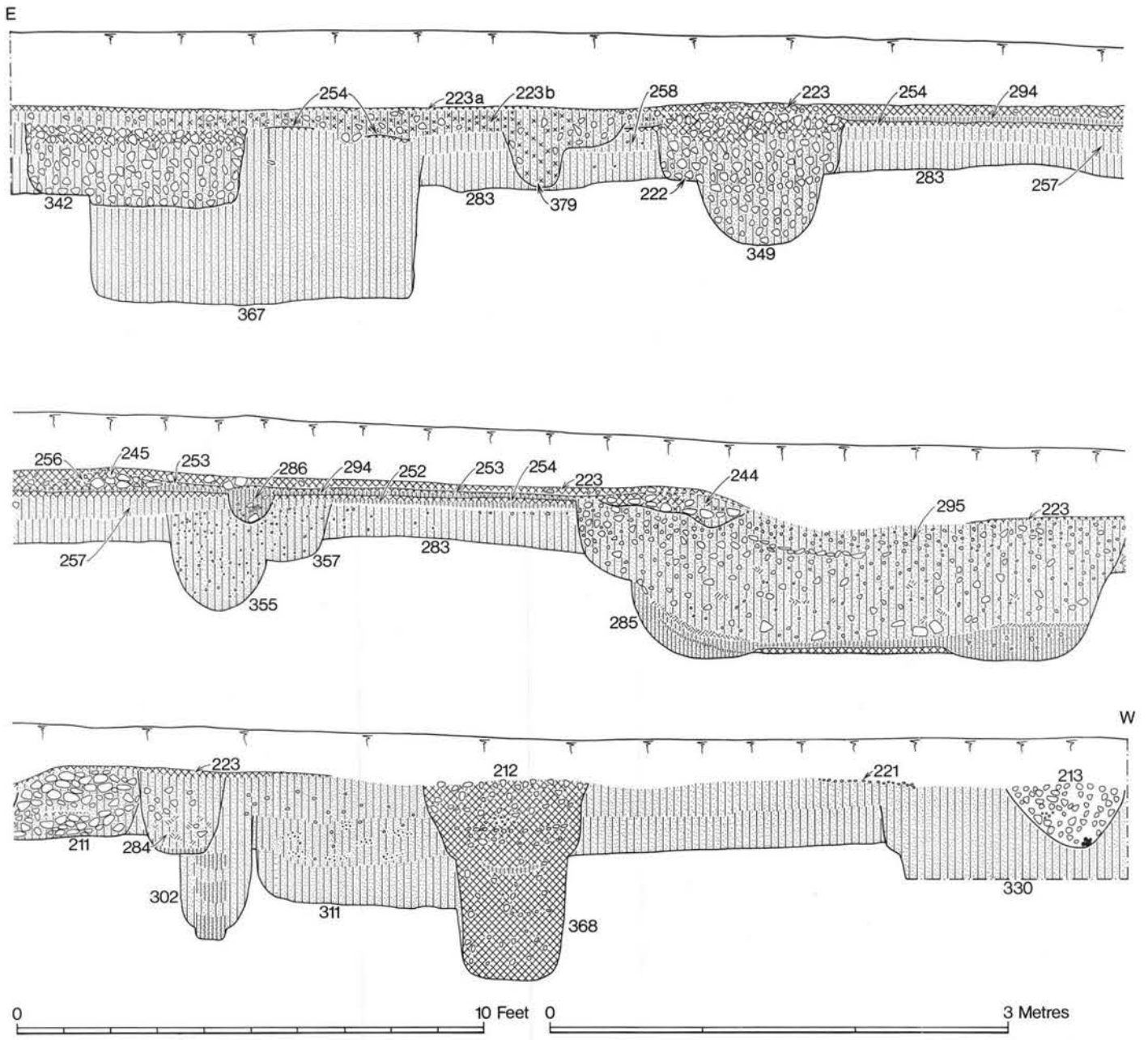

Figure 108 Site 5759, Trench 2 The church: longitudinal section of church. Scale 1:40.

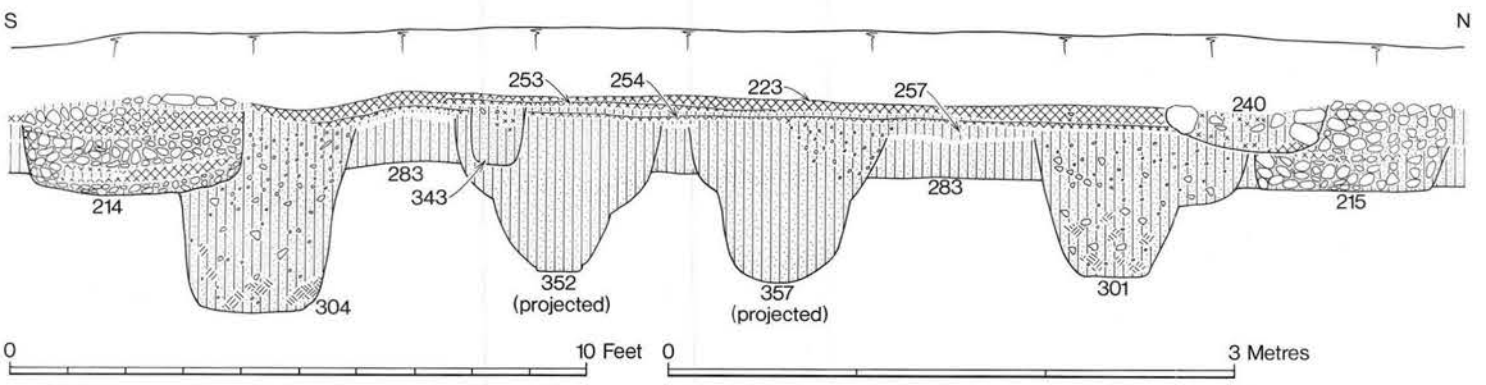

Figure 109 Site 5759, Trench 2 The church: transverse section of church. Scale 1:40.

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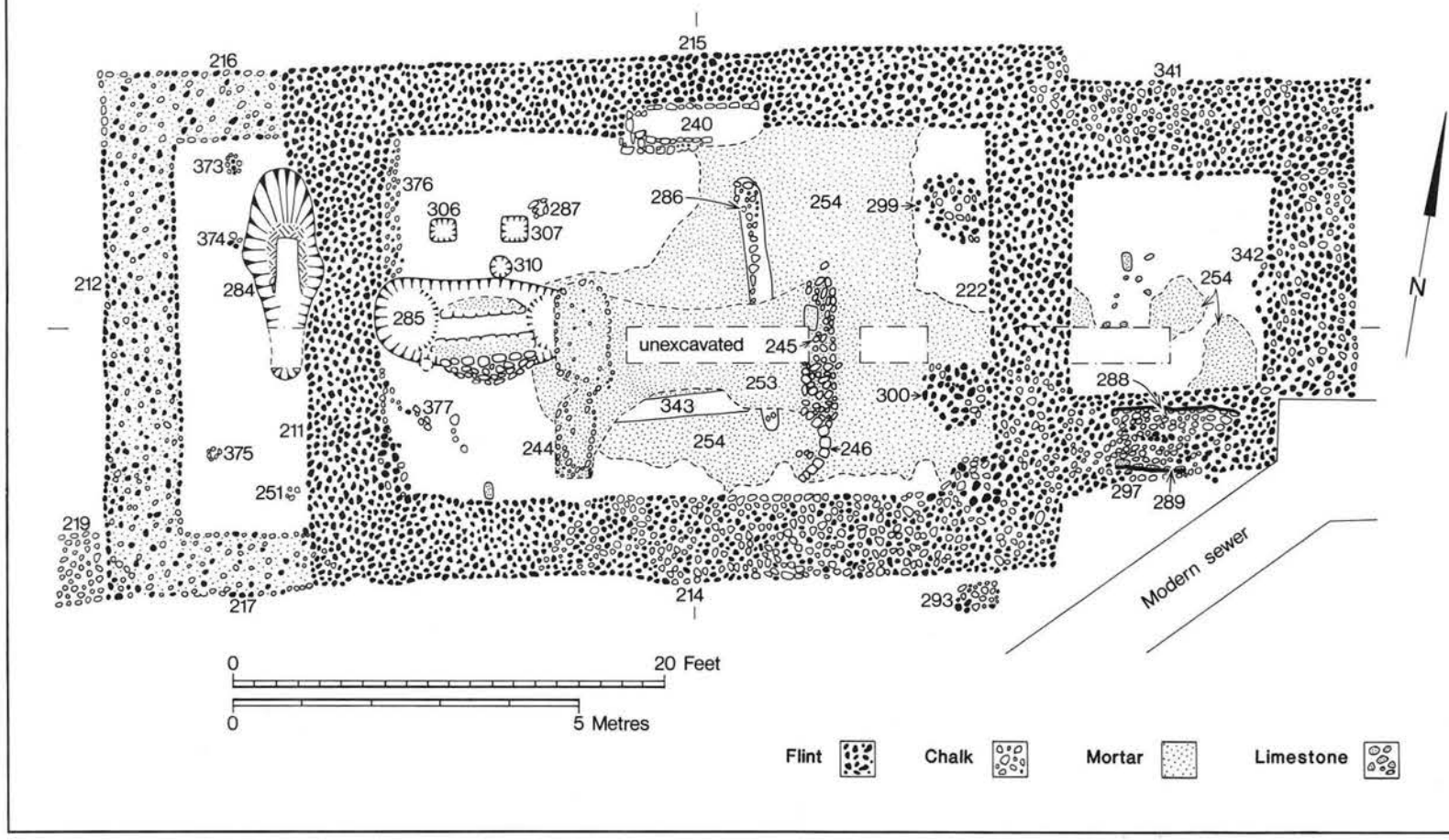

Figure 110 Site 5759, Trench 2 The church: plan of Period III–IV church, and Period V–VII features. Scale 1:100.

On the reconstructed plan (Fig.114) the extra width of the north side would be some 20 cm in both nave and chancel, and this is reflected in the extra distance between F354 and F355—or rather, in the shortened distance on the south side.

A screen between the nave and chancel is possible, represented by three posts in a line each side, on the north F354, F356, F355, on the south, west end of F318, F369 and another. F356 and F369 are small and correspond; F318 (end) matches F354 in depth.

The appearance of the walls of the timber church is unknown. The presence of burnt clay fragments around the F383 post-ghost and in some features (*e.g.* F301 Fig.107) could suggest that the walls may have been daubed, but, as there was no clear evidence of burning in this church, the burnt clay may have derived from the Period Iii burnt horizon (see above).

Martin Millett and Simon James comment on the timber church as follows:

The timber church

It is assumed that this is one build although it is not clear whether this is necessarily so: the variations in the wall trenches perhaps suggest alteration to the building.

The general structure of the building is clear with the roof-load carried by the side walls which are held in wall-trenches (in contrast with the Brandon Road buildings). The cross-walls are not load bearing, and the axial doorways emphasise this. It should be noted that the absence of doorways in the long walls, consistent with the proposed function, contrasts with the known repertoire of earlier buildings and especially those claimed as churches (James *et al.* 1984, fig.4, 190).

A ridge is suggested by F349 in the east wall. This is offset *c.* 10 cm to the south of the axis, even allowing for the proposed wall positions within the annexe. Other ridge supports are missing, although the pairs of posts F352/F357, F356/F369 and the door posts at the west end allow a structure with a lintel supporting a king-post for the ridge (James *et al.* 1984, figs 7 and 8). The asymmetry for these pairs within the plan is unimportant, as the king-posts can be aligned with ease on the lintels: the layout of the floor plan of the building is presumably the determinant.

If we assume that the ridge of the nave was central, the offsetting of the ridge post in the chancel (represented by F349) is explained by the necessity for tucking the secondary ridge to the side of the primary one. The positioning of F352/F357 within the nave, and F356/F369 in the party wall is likely to result from the desire to keep the chancel clear of obstruction.

There are too few timber ghosts surviving in the walls to distinguish between alternative hypotheses concerning the form of the walls. (i) The idea of a gallery does not seem to match the proposed timbering and there is no adequate reason for suggesting double timbers in the nave. (ii) These deepenings cannot be resolved in terms of any rationale relating to a bay structure or roofing unless they represent secondary alterations. (iii) The evidence for inset corners does not seem wholly satisfactory, especially at the north-east of the nave where the wall-trench swells to the north. (iv) We cannot see how the projection (F311/F368) to the west can be structural in the absence of any mirroring structure to the south.

Periods III and IV

The stone church of Period III/IV is likely to have had a square chancel in both phases; the surviving walling on the south side (F288 and F289) may have belonged to Period IV rebuilding rather than III although it is not clear if this rebuilding took place elsewhere than at the west end. As limestone facing seems most unlikely in Norfolk where all such stone is imported, F289 must be a plinth and the true width of the wall is therefore less than 90 cm. The extra stones at the north-east external corner of the chancel and F293 near the east end of the south nave wall may represent shallow buttresses, perhaps only of rubble. Why mortar floor F254 does not overlap any of the foundations is not clear, unless the walls of the nave were of similar width to their foundations. However, this does not explain the gap between F288 and floor F254 in the chancel. This floor must have been associated with the stone church over the timber church and was clearly cut by the next period (Period V). Levelling operations and refurbishing of the walls in later periods (*i.e.* Period VIII) may account for this. The re-laying of the floor twice (F254 (b) and (c)) could belong to Period III or Period IV. The east-to-west section (Fig.108) suggests that the sleeper wall for the chancel arch F222 was wall foundation at that point so that the entrance to the chancel lay within the area of the pier bases and cannot have been more than 1.80 m wide. The foundation of the pier bases F299 and F300 correspond to posts F357 and F352 in the earlier timber church and may indicate a similar internal arrangement – perhaps a rood loft? No parallels for this have been found.

There is no evidence in this phase of a western gallery at Thetford. A western entrance is possible, but the presence of north and south entrances in Period VIII may reflect earlier doorways. This remains unclear. The stone patches (F376 and F377) and post-holes in the western part of the nave may have been associated with the metalworking activity of Period V, particularly as the mortar floor is missing in this area, indicating damage by later activity.

The outline plan of this phase (except for the piers in the nave) is similar to other eleventh-century churches (see Taylor and Taylor 1965 and 1978) with over fifty examples known, including some dated examples such as Odda's chapel, Deerhurst, Gloucestershire (inscription of AD 1056) and Kirkdale, Yorkshire (inscription *c.* AD 1055–1065). Locally, the plan is similar to Norfolk churches at West Barsham and Cringleford, and to some extent St Julian in Norwich although this has a west tower. The church examined at Red Castle in Thetford (Knocker 1967) may also have been similar but it was only excavated in part. It would seem to have been contemporary with this church as an eleventh-century date is indicated by the plan (inf. N. Batcock) and also by its position in the site sequence, having most likely been in existence after the Late Saxon town ditch had silted up (*cf.* St Barnabas, Site 1092, Rogerson and Dallas 1984) and before the Norman ringwork was made.

Period V

(and see below, Part V.IV Examination of Technological Material)

Two metalworking features, F284 and F285, cut the floor of the Period III/IV church, which would seem by the buildup of soil over the floor to have been disused at this time. Bell-casting is indicated by bell mould fragments in F285. Slots F286 and F343 were in the same position in the stratigraphic sequence as the metalworking features, and may have been screens to shelter the bell-casting activity although this is not clear. It was suggested at the time of excavation that various post-holes (see above) were associated with this phase but this is not certain and their functions remain obscure.

Period VI

The precise position of wall F219 in the sequence is ambiguous. It certainly post-dated the western church extension of Period IV and preceded chalk 'platform' F378. That wall F219 could have pre-dated the Period V metalworking seems unlikely as this would push

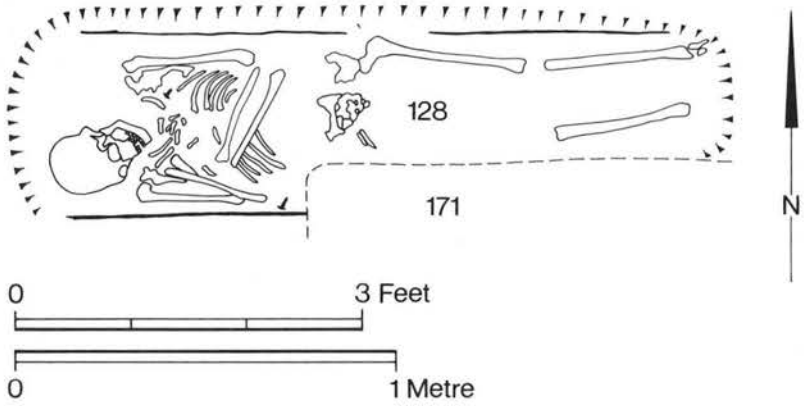

Figure 111 Site 5759, Trench 2 The church: plan of grave F128. Scale 1:20.

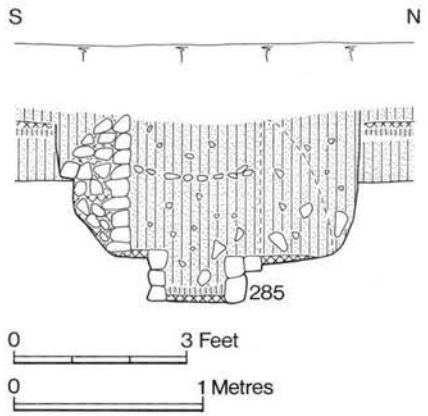

Figure 112 Site 5759, Trench 2 The church: Transverse section of F285. Scale 1:40.

Periods V, VII and VIII much later, and the bell-metal found is of Saxon/medieval type and not later (P. Wilthew pers. comm.). The wall might have been later than Period VIII and post-date all activity on the site, but this would not explain F378 or the appearance of the western extension (see above), since it seemed to form the south side of the Period VIII western extension, indicating that it was still then in use. It may have been constructed earlier as the building of a (?)boundary wall in this position is not likely to be contemporary with the use of the two opposing doorways of Period VIII. Therefore this wall, although it might have belonged to any stage of Periods V–VIII, has been assigned to Period VI, after the metalworking activity and before the temporary structure F244/F245/F246.

Period VII

The smaller walls F244 and F245 may have been built up against F214. The curved portion F246 may indicate industrial activity (possibly an oven, although there is no record of any burning).

Period VIII

The final form of the building was assumed at the time of the excavation to have been a final phase of the church, but this now seems unlikely since

a) if a church, the plan is unparalleled (inf. N. Batcock) particularly with regard to the east end (which had no proper structural foundations) and the presence of the annexes;
b) the north annexe is too early to represent a vestry, the position of F382 makes little sense as tomb or altar, and the annexe had no mortar floor when it was open/connected to the main part of the building;
c) the west annexe seems of too flimsy a construction to have formed a new west end and appears to have had an entrance on the south-west corner;
d) (?)boundary wall F219 divides the churchyard, and cannot have been associated with the use of the cemetery: the west annexe appears to have been constructed after F219;
e) the north and south doorways were too wide and irregular in position and width;
f) floor F223 filled the north and south doorways and must have been associated with them, so any possibility of the east end (which was on top of floor F223) having been an apse or F296 (which connected with F223) having been a south porch floor is invalidated.

The north annexe, although not floored by F223, seems to have been integral with this phase as floor F223 apparently overlay the north wall foundation so that the entire length of the north annexe was connected to the main room. Path F149 would seem to have been associated with the north annexe, and some mortar and chalk on the east side (F91) was also possibly associated (Fig.113). The west annexe is different in character but may also have belonged to Period VIII. The south wall of the west annexe is represented by wall F219 which was earlier than chalk platform F378 and it seems likely that this wall was in position before those represented by foundations F213 and F218. Access to the west annexe from the main building is uncertain, particularly as floor F223 ends evenly within the west end of the main building perhaps representing some internal fittings in this area, such as cupboards or storage bins.

The new east end of the structure had no foundation trenches and must have been slight. The probable arcs suggest an industrial purpose involving ovens; this may have been a bakery or possibly a malting and brewhouse. No burning is recorded, but the remains were very fragmentary. The wide and irregular north and south

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Figure 113 Site 5759, Trench 2 The church: plan Period VIII features. Scale 1:100.

entrances are rather barn-like and the southern one in particular may have been wide enough to take a cart.

The mortar was extended outside the south entrance to form an external firm area and this must have been the main, more frequently used, entrance.

This fits well with the probability that this activity was contemporary with the buildings and mortar to the south, and post-dating the churchyard (Fig.113). The structures in the south-eastern part of the site were dated by a medieval potsherd sealed beneath chalk flooring F50 and they must be fourteenth century or later. They could be late medieval in character as the narrow chalk footings and flint foundations, often unmortared, would have only supported flimsy superstructures, such as timber or half-timber with wattle and daub panels. A small scattering of seventeenth-century pottery on the site suggests activity of this date, and it may be this period to which this occupation belongs as there are no other medieval finds except for two unstratified potsherds.

Several buildings may have existed in the south-east part of the trench. Flint wall foundation F3 would seem to have formed a gable wall for chalk footings F11 and F113, possibly with an entrance in the southwest corner. The interior of this structure may have had chalk flooring (F11, F50) and a possible internal partition, represented by F51. F3 seemed to cut F11 at its northern end and may have been a replacement for an earlier foundation or contemporary. About 1 m south was chalk foundation F18 forming a north-west corner for another structure. This had a door gap on the north side (continued as F182) and seemed to run southwards as patches of chalk and mortar. No trace of internal flooring was evident except for a few scattered chalk fragments. The gap between the two structures, too narrow for wheeled vehicles, may have been surfaced with chalk near the building entrances although F114 seemed to have been only rubble.

Other, less substantial, structures may have lain to the west of these. Slots F203, F206 and F26 perhaps represented light structures, and possible return walls are evidenced by post-pads, chalk footings and mortar patches to the north. Perhaps two phases of shed existed in this area, presumably associated with the structures to the east. A chalk platform (F378) was the only other feature in the yard within the trench.

The later mortar spreads (F10, F17, F20 as well as F4 and F9) were noted at the time of excavation to have had smooth upper surfaces suggesting flooring. The presence of mortar spreads over wall foundations F3 and F18 suggests that the possible structures to the west (between F206, F26 and F97, F93 *etc.*) may have been later than these: the trampled mortar does seem to lie around this western area and not over it, and it may have been laid to consolidate the yard in this phase, particularly if carts were using the south door gap in the reused church (see above).

The dedication of the church

The dedication of this church, wrongly said to be 'St Michael' (Whittingham 1967), based on the 1912 discovery needs discussion. Documentary evidence (see below) shows that St Michael's church was still in use in 1368, and perhaps in 1428 as the parish was still in existence, but the archaeological evidence cannot support such a late date for the church here. Similar evidence rules out several other dedications of uncertain location: these are All Saints, St Edmund, St John and St Lawrence. Moreover, the references to St Michael do not define the position of the church with any precision. Several other early churches or burials are known in the area; one with burials, found at the Gasworks site and thought to be St Edmund's (Knocker Site 7, Rogerson and Dallas 1984, 52), burials on Knocker Site 5 (ibid, 45–7), in the Queensway area (ibid, 53) and others in Knocker Site 3 (ibid, 42–3) (see Fig.2).

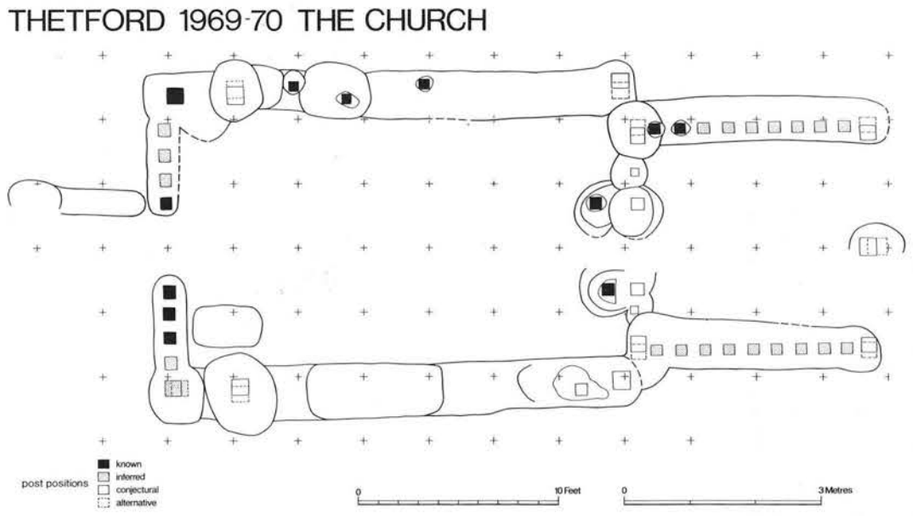


Figure 114 Site 5759, Trench 2 The church: conjectural reconstructed plan of Period II timber church. Scale 1:100.

The following possibilities remain:
a) This may have been a church whose dedication has gone unrecorded.
b) This may have been St Martin's, recorded in *Domesday Book* but of which no other evidence survives.
c) This may have been St Benet's (or St Benedict's). This is likely to have been a pre-Conquest dedication and the church was possibly situated in this vicinity as the only record of its existence shows that it was a parish church given to the nearby Benedictine nunnery of St George in the late twelfth century *c.* 1160 or *c.* 1176. St Benet's disappears from the documentary sources after *c.* 1176 which fits the archaeological evidence on this site (see below, Documentary Evidence).

Interpretation
The nature of pre-church activity is not clear, particularly as the function of the ditches remain unknown. It is possible that they defined the churchyard (*cf.* Rivenhall, Rodwell 1986, fig.87E), but another burial was observed in builders' trenches to the west. They may represent an earlier enclosure, perhaps with a defensive or 'monumental' entrance. Excavations and observations to the east of this area have produced little or no archaeological evidence (*cf.* Trench 3 in these excavations).

The timber church excavated in 1969–70 can be shown by other excavations in the area to have stood in a crowded artisans quarter. At the St Barnabas Hospital site to the south (Site 1092 on Fig.2, Rogerson and Dallas 1984, 55–60) the Late Saxon town ditch had silted up completely and was overlain by eleventh-century occupation expanding southwards. This included bone-working activity but there was no evidence to indicate that the occupation here continued beyond the end of the eleventh century. The 1969 Site A (above) showed dense occupation of the tenth to eleventh century with some slight evidence for pottery production and metalworking. This last seems likely to be the origin of pieces of iron slag built into the foundations of the eleventh to twelfth-century churches. Both of these two sites (St Barnabas Hospital Site 1092, and Site A) seemed to have undergone a change of layout in the early eleventh century and this is probably connected to the building of the Period II timber church.

The population in this area perhaps dwindled by the twelfth century (archaeological evidence of this date was not found in other excavations) but the stone church was extended (westwards) at the end of the eleventh century (Period IV). The decline in ecclesiastical activity after *c.* 1200 may reflect a lack of parishioners or a change of

Plate VII Site 5759, Trench 2 1969–70, The church. Period II timber church from the east.

ownership if this church had been St Benet's. The probable construction of a new nunnery church of St George (see below, Documentary Evidence), and the acquisition of the parish church of All Saints by the same charter as that involving St Benet's, must have made St Benet's redundant. All Saints' continued in existence until 1368, although it may have ceased to be a parish church by that date. St Benet's, however, does not appear in the surviving documentary records again, and this fits with the archaeological evidence of this church. Any ecclesiastical rebuilding would have included medieval building materials and some changes of layout: no medieval floor tiles, peg roof tiles or bricks were found on the site.

In its final form the church building was in some disrepair, with a damaged and dirty floor, and seems to have been used to shelter metalworking activities.

As the small, possibly temporary, Period VII structure above the furnaces was quite different in character, an interval of time culminating in a change of use might be suggested. The boundary wall F219 appended to the south-west corner of the final phase of the church may well belong to this period (Period VI) particularly as it was probably earlier than the post-church activity to the south. A subdivision of the property, either for rent or sale, would accord well with the impression given by the documents that the nunnery was in difficult times after the Black Death. Extensive sheep pasture in the area by the fourteenth century could account for the building being left unused for a time, perhaps as a standing ruin (for St Michael's church standing alone in an area of pasture by 1338, see below, Documentary Evidence).

The final phase of activity in Period VIII clearly involves the entire building with several structural changes. The curved feature in the preceding small structure (F246 Period VII) suggests this might be an earlier version of a building used for the same purpose (it resembles the curved east end of the Period VIII building) and therefore these two periods may be directly sequential. The curved features were possibly ovens, or to do with malting or brewing; in any case, some industrial activity seems likely. If this had taken place in the medieval period, it is most surprising that there is almost no medieval pottery from the site, instead, the presence of a small quantity of Late Medieval (late fifteenth century to seventeenth century) roofing tile and some twenty late sixteenth to seventeenth-century potsherds indicates activity of this date. As the property of the nunnery was bought by Sir Richard Fulmerston after the Dissolution, the property may then have reverted to one unit, the subdividing boundary wall becoming obsolete. The standing ruin could then have been refurbished and used in conjunction with new buildings to the south. As Sir Richard Fulmerston adopted the redundant nunnery as his home (Blomefield 1805, II, 93) some 250 m to the south, this property may have been either reused or sub-let. The church of St George in the nunnery, some parts of which may still survive (Pevsner 1962, 345), was itself converted into a barn at this time (Blomefield 1805, II, 94).

Plate VIII Site 5759, Trench 2 1969–70, The church. Period II timber church from the west.

VI. Trench 3
(not on plans)

The geophysical survey showed a linear concentration of high resistance anomalies parallel to the eastern boundary of the area, which it was thought might be a roadline. Two 1 m wide machine trenches were dug at right angles to this line. Both were dug to a depth of 60 cm and deeper where pits were found cut into the subsoil.

In the north trench, 3(a), the old soil was *c.* 15 cm deep, merging into the sand subsoil. Over this was 25 cm of cultivated soil from the modern allotments. The south trench, 3(b), had the same sequence except for a layer of ?modern cinders on top of the windblown sand.

No archaeological features were found in either trench, but there were several modern pits, probably late nineteenth to early twentieth-century in date, and these accounted for the resistivity anomalies. There were no finds.

VII. Trench 4
(Fig.2)

This was dug at the northern end of the site, at a point convenient for the modern building contractors, in order to check the linear anomaly which may have represented the Late Saxon town ditch.

A trench, 4(a), 23.75 m long was dug by JCB mechanical excavator at right angles to the linear magnetic anomaly. The natural subsoil was a sandy gravel *c.* 20 cm thick over yellow sand. Above this lay 60–70 cm of dark unstratified overburden in which the OGS was visually not distinguishable. Into the gravel subsoil were cut two features: a pit *c.* 2 m wide by at least 1 m deep with vertical (unlined) sides; and what appeared to be a ditch *c.* 5 m wide by 1 m deep with sides sloping at 45 degrees. This was larger than ditch F12 in Trench 1 (Site A), but could have been the same ditch. Both section faces of this trench collapsed after heavy rain, and another trench, 4(b), was dug by machine to the south to check the ditch line. The only feature found in Trench 4(b) was a deep vertical-sided pit and the ditch must have turned or formed an entrance gap. There were no finds from Trench 4.

Plate IX Site 5759, Trench 2 1969–70, The church. Period III–IV church, wall F219 (Period VI?), west annexe (Period VIII?) and grave F298, from the west.

Plate X Site 5759, Trench 2 1969–70, The church. Period III–IV church, detail of chancel and south-east corner of nave, from the east.

Part V
The Finds

I. Coins and Jettons
(Pls XI–XVI)
by Dr D.M. Metcalf

Brandon Road
(Part II, above)

1. Roman, Valentinian or Gratian, 364–78, Securitas Rei Publicae. Worn. 1.74 g.
   SF509 (3076) unstratified.
2. (Pl.XI) Norway, Olaf Kyrre, 1067–93. According to Malmer's classification (1961, 260–1, 363) into 'Primary', 'Secondary', and 'Independent' obverse designs, this specimen is of her 'Independent' design class 2, which she dates to the 1070s (Period IIc).
   Obv. Head left, with spiky hair. In place of the bust drapery, there is a single curve. No sceptre.
   Rev. Traces of circular legend. Obscure.
   0.56 g, base silver.
   SF2 Q17 unstratified, in topsoil 3″ (7 cm) down.
3. (Pl.XII) William II, Cross pattée and fleury type, BMC type iv, *c.* 1095–8. Rev. weakly struck and very obscure, but possibly P...DION(AN (Winedi? (Winedaeg) Canterbury?). 1.28 g ??
   SF8 O18 F13(a), spit A west end (top of Period IV slot).
4. (Pl.XIII) Edward IV, first reign 1461–70, light coinage (1464–70), halfpenny, London, trefoils by neck. 0.34 g.
   SF508 (3082) K29, in chalk and mortar debris (Period VII).

Kilnyard
(Part III, above)

5. (Pl.XIV) Anglo-Saxon sceat, second quarter of eighth century. Series L, *BMC* type 18 var., with *obv.*, cross on stand before face. The obverse is in the distinctive 'Hwiccian' style, and tends to cast doubt on the regional attribution of that style, although London issues are also unexpected in the currency of East Anglia. The die is extremely close in style to *BMC* 95 (enlarged illustration in *Numismatic Chronicle* 1976, pl.12, 11, and *cf.* also pl.12, 1 and 2). The reverse is, again, very distinctively in the 'Hwiccian' style, *cf. ibid.*, pl.12, 9, but is of the 'bird' variety *BMC* type 18, *cf.* pl.12, 7.
   0.90 g ??, base silver. Very fresh condition.
   SF455 (1482) D16, in 'trample' at level of top of subsoil, west of kiln D16 F97.
6. (Pl.XV) Aethelred II, Crux type *c.* 991–7, Lincoln mint, Stignbit (Steinbitr). Apparently from the same dies as Mossop 16 (dies Fi), of which three specimens are known in Scandinavia. 1.41 g.
   SF510 (1445) C16, above pit F7, *c.* 3″ (7 cm) above level of top of subsoil.

1969 – 70 Trench 2 The church
(Part IV, above)

7. (Pl.XVI) Aethelred II, Crux type, ca. 991–7, Lincoln mint, Garfin (Geirfinnr). Apparently from the same or very similar obverse die to Mossop 31–2 (E). Rev. ends LINCO (NC not ligate). 1.48 g. The obverse die appears to be in a worn state, but the coin itself is little worn.
   SF875 (1600) F205 ditch.
8. Illegible fragment, possibly (not certainly) a cut halfpenny of the eleventh century, much worn and leached. The alloy appears to be rather coppery, and this is perhaps an argument against the object's being a coin.
   SF876 (901), east of F2 at 114.1/207.2.
9. Jetton of the Hans Krawinckel design (Barnard 1916, pl.33, 84–7) but with meaningless legends.
   (lis)BVVSV8–BVVBVO (lis) BVVOV
   BVEVOOBVEVBOBV . . .
   Sixteenth century?
   SF882 (101), unstratified, south of church at 106.3/215.1.

II. Non-ferrous Metal Objects
by Alison R. Goodall

Brandon Road 1964 – 6
(Part II, above)

Of the non-ferrous metal finds, Nos 1–12 can be dated either typologically or stratigraphically to the Late Saxon period and should therefore probably be associated with the Saxon settlement site. The disc (No.1), brooch (No.2) and strap-end (No.6) have decoration which can be paralleled on other Late Saxon objects, and penannular rings, like Nos 3–5, which could have been used either as ear-rings or finger-rings, are commonly found on Late Saxon and early post-Conquest sites.

Nos 13–29 probably all post-date the Saxon settlement and may be associated with the later activities on the site (Periods V–VII).

Fig.115

1. Copper alloy **disc**, perhaps a **brooch** or **pin-head**, without any obvious sign of attachment. It is decorated on one face with a cross with interlace between the arms. The surface is worn in places. A similar design is found on a circular pin-head from Kegworth, Leicestershire (Wilson 1964, 57–8, pl.III(a)).
   SF3 N19, unstratified in topsoil.
2. Fragments of lead **disc brooch** with remains of pin and catch plate. The decoration consists of concentric rows of cells containing one or two pellets. It may be compared with other disc brooches found at Thetford (Goodall, A.R. 1984, 18, fig.109.1 and 6).
   SF571 (771), under road C?

3–5. Penannular copper alloy **rings**, probably ear- or finger-rings. The ends of No.4 are twisted around each other.
   No.3, SF559 (828) N21 F202/M21 F78, depth 3′11″ (119 cm), Period III pit with later top; No.4, SF561 (1276) L20 F20, Period III (or IV?) pit; No.5, SF566 (3075), unstratified.

6. Pewter (lead/tin) tongue-shaped **strap-end** with interlace decoration. The elongated attachment holes are secondary and the original upper end, which would have been split to take the end of the strap, is missing.
   SF10 O18, unstratified.
7. Fragment of curved copper alloy **strip** with scroll decoration and a perforation.
   SF555 (250) N19 F4 layer (c), Period IV pit, late eleventh century.
8. Fragment of copper **sheet**, mercury-gilded and with decoration of raised dots.
   SF557 (293) N19 F37 layer (b), Period IV pit.
9. Copper alloy **strip**, decorated with repoussé bosses and small punched rings-and-dots; riveted at one end.
   SF329 (2277) L26 F86, Period IV pit.
10. Perforated lead **weight**.
    SF338 (2810) K25 F8, Period III pit.
11. Lead fragment with sooty appearance on outer face, smooth and black inside.
    SF452 (510) N17 F27 layers (a) and (b), top 2′ (61 cm) of Late Period IV/Early Period V pit.
12. Copper alloy **plate** or **patch** with perforations around edge.
    SF556 (281) N19 F4 layer (a), top of Period IV pit (late eleventh century).
13. Copper alloy **strap-end** with blackened surface. It has decoration on both faces consisting of repoussé scrolls and *fleurs de lys* and traced zig-zag lines. A group of similar belt fittings at various stages of manufacture were found at Cheapside, London (Museum of London, Acc. no.21111) and have been dated to the late fifteenth-early sixteenth century; other fittings of this kind are shown in portraits of that period (Fingerlin 1971, 374, pl.428 and 421, pl.494) and formed part of women's costume.
    SF567 (3077) K24 F37, Period V–VII well, filled-in in Period VII.
14. Copper alloy **hooked fastener** with an ornamental openwork plate and a rectangular loop on the head.
    SF569 (3080) L27, built into wall, Period VI–VII.

Scale 1:1 XI XII XIII

XIV XV XVI

Plate XI Coin of Olaf Kyrre, Norway (SF2).
Plate XII Coin of William II (SF8).
Plate XIII Coin of Edward IV (SF508).
Plate XIV Anglo-Saxon *sceat* (SF455).
Plate XV Coin of Aethelred II (SF510).
Plate XVI Coin of Aethelred II (SF875).

(ni) Lace end of rolled copper alloy sheet with a single rivet hole. Length 27 mm.
SF570 (3080) L27, built into wall, Period VI–VII.

15. Copper alloy **lobed suspension loop**, for hanging a purse, for instance, from a belt.
SF554 (147) O21, unstratified.

Fig.116

16. Copper alloy **scabbard chape** with openwork decoration; incomplete. A Late Saxon chape was found in York (Roesdahl *et al.* 1981, 108, YD40 and p.120) but the Thetford example has closer affinities with the medieval chapes illustrated in the London Museum Catalogue (London Museum 1954, 280–8, fig.86, 3 (dated 1277), fig.88.1 and 7, pl.LXXX.7) and probably dates from after the abandonment of the Saxon settlement on this site.
SF339 (2456) K25 F14, top 6" (15 cm) of Period III pit.

17. Leaf-shaped copper **pendant** with gilded surface and faint traced decoration. No mercury was identified, so gilding was not by the more usual mercury technique. The decoration does not seem to represent a specific heraldic device.
SF564 (3073) M27, unstratified.

(ni) Fragments from a **barrel padlock case** of copper alloy sheet over iron; there are remains of one longitudinal rib. The larger fragment is 80 mm long.
SF563 (3071) L26 F70, unphased.

18. Copper alloy **balance arm**. The incomplete end has been subjected to heat so that the rivet which would have held the balance in its suspension stirrup has been fused onto the beam.
SF7 O18 F10 layer (a), top of ditch, Period V–VII.

19. U-sectioned copper alloy binding strip with incised decoration and one perforation.
SF9 N18, unstratified.

(ni) Copper alloy **pins**. SF324 and SF565 are lacking their heads and SF324 has an almost square section. SF558 has a flat head made from a fine coil of wire. Lengths, 69 mm, 72 mm, 41 mm.
SF324 (2890) L23 F133, Period III pit with later top?
SF565 (3074) K26 F7, Period V–VII well, filled-in in Period VII.
SF558 (636) N24 F29 layer (a), top of Period VII pit.

(ni) Rim fragment from a **plate** or **bowl** of copper alloy sheet. Length 64 mm, width of rim 14 mm.
SF560 (701) N23 F89/F90, Period VII pits.

20–21. Probably patches of copper alloy **sheet** with rivets also made from sheet metal. Lengths 77 mm and 40 mm.
No.20, SF568 (3078) L26, on Road B; No.21, SF312 (2462) L27 F54, tank, Period VI–VII.

(ni) Fragment of irregular copper alloy **sheet** with a wavy edge. Length 83 mm.
SF454 (1987) J25 F15, context unclear, bag Period VI–VII.

(ni) Fragments of thin lead **sheeting**.
SF453 (2278) L28 F53, Period VI pit.

Kilnyard 1966

No finds of non-ferrous metal came from the kilnyard.

1969 – 70 Trench 2 The church

(Part IV, above)

Fig.116

22. **Trefoil brooch** of copper alloy with remains of hinge and (?)iron pin. The decoration is stylised foliage. Trefoil shaped brooches were probably worn singly, as part of a Viking woman's dress, to hold a shawl in place: the forms are derived from Frankish fashions (Graham-Campbell and Kydd 1980, 102, pls 15b and 52). Trefoil brooches were in fashion from the late ninth century to the second half of the tenth century.
SF881 (1694), unstratified.

Fig.117

23. Copper alloy **strap-end** of common ninth-century form, broken where the upper end splits to take the end of the strap. It has an animal-head terminal in low relief and there is a panel of niello, with inlaid silver wire scrolls.
SF880 (900), in soil south of churches at 109.3/208.4.

24. Copper alloy **key** with T-shaped bit and a pear-shaped, looped bow with a ring for suspension. The bow is a pre-Conquest form which continued into the Early Medieval period (London Museum 1954, 134, pl.XXIX.1–4).
SF879 (1693), unstratified.

(ni) Copper alloy **button** with four stitch holes: probably nineteenth or twentieth century. Diameter 17 mm.
SF877 (1691), unstratified.

(ni) Piece of copper alloy **sheet** with slightly dished shape and one curved edge. Length 99 mm.
SF878 (114), in soil south of church at 114.1/213.2.

(ni) Irregular piece of lead **sheet** with a nailhole; possibly from roofing.
SF802 (99), in soil south of church at 102.7/215.4.

(ni) Thick, almost square **plate** with incurved edges, probably of leaded copper alloy: on one face is an area of solder-like material. Possibly a stud head or a mount. Sides 17 mm.
SF939 (68), over wall F18 at 114.6/209.3.

III. Iron Objects

by Ian H. Goodall and Patrick Ottaway

Brandon Road

(Part II, above)

Bar Iron

(Fig.118)

Pieces of bar iron. Three other examples from Thetford are published by Goodall, I.H. (1984, 77, fig.115, 1–3).

(ni) Rectangular cross-section, tapers. L.59, W.17, T.6 mm.
SF400 (2859) K25 F35, Period IV.

1. Curved over and flattened slightly at one end. L.345, W.10, T.5 mm.

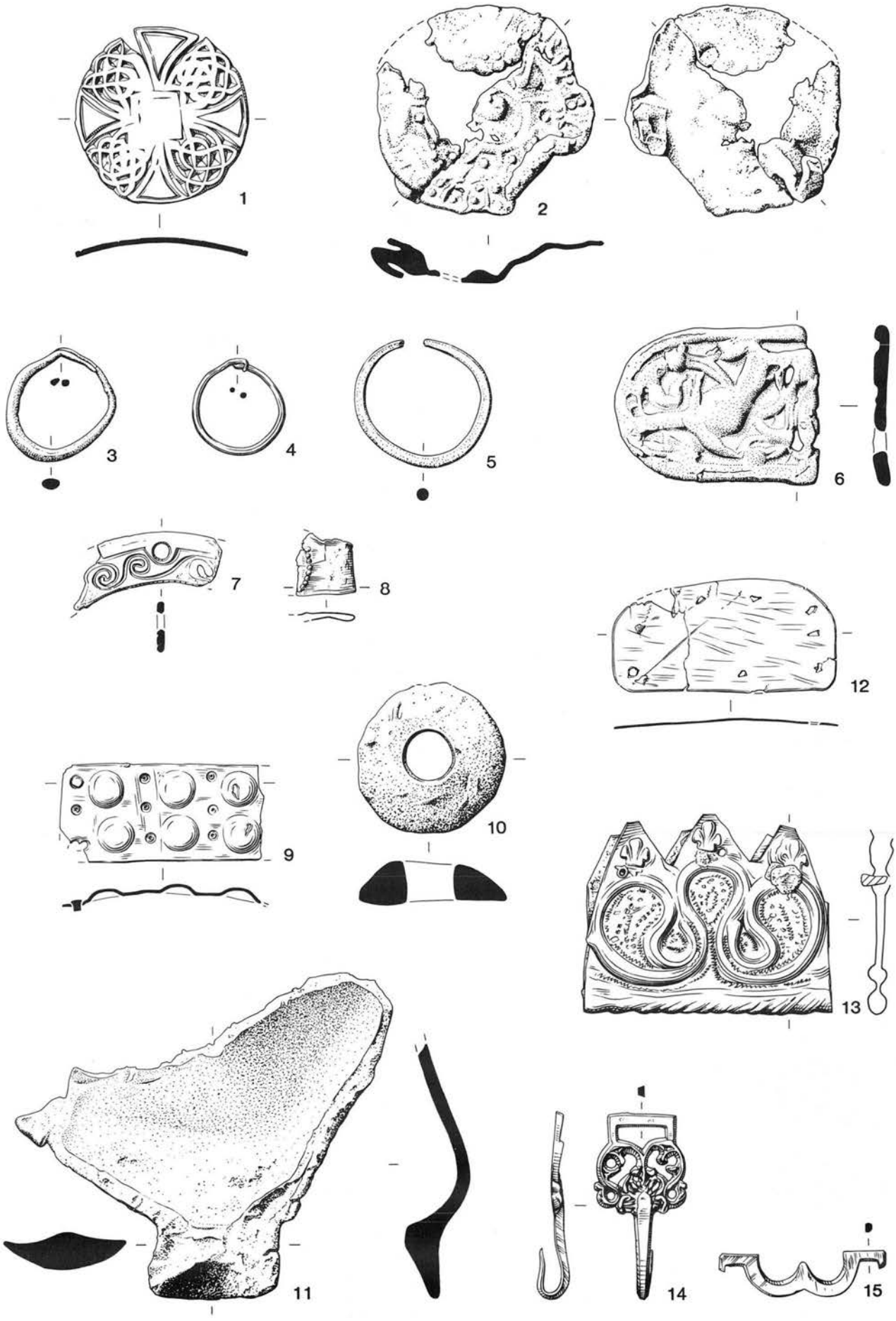


Figure 115 Brandon Road. Non-ferrous metal objects Nos 1–15. Scale 1:1.

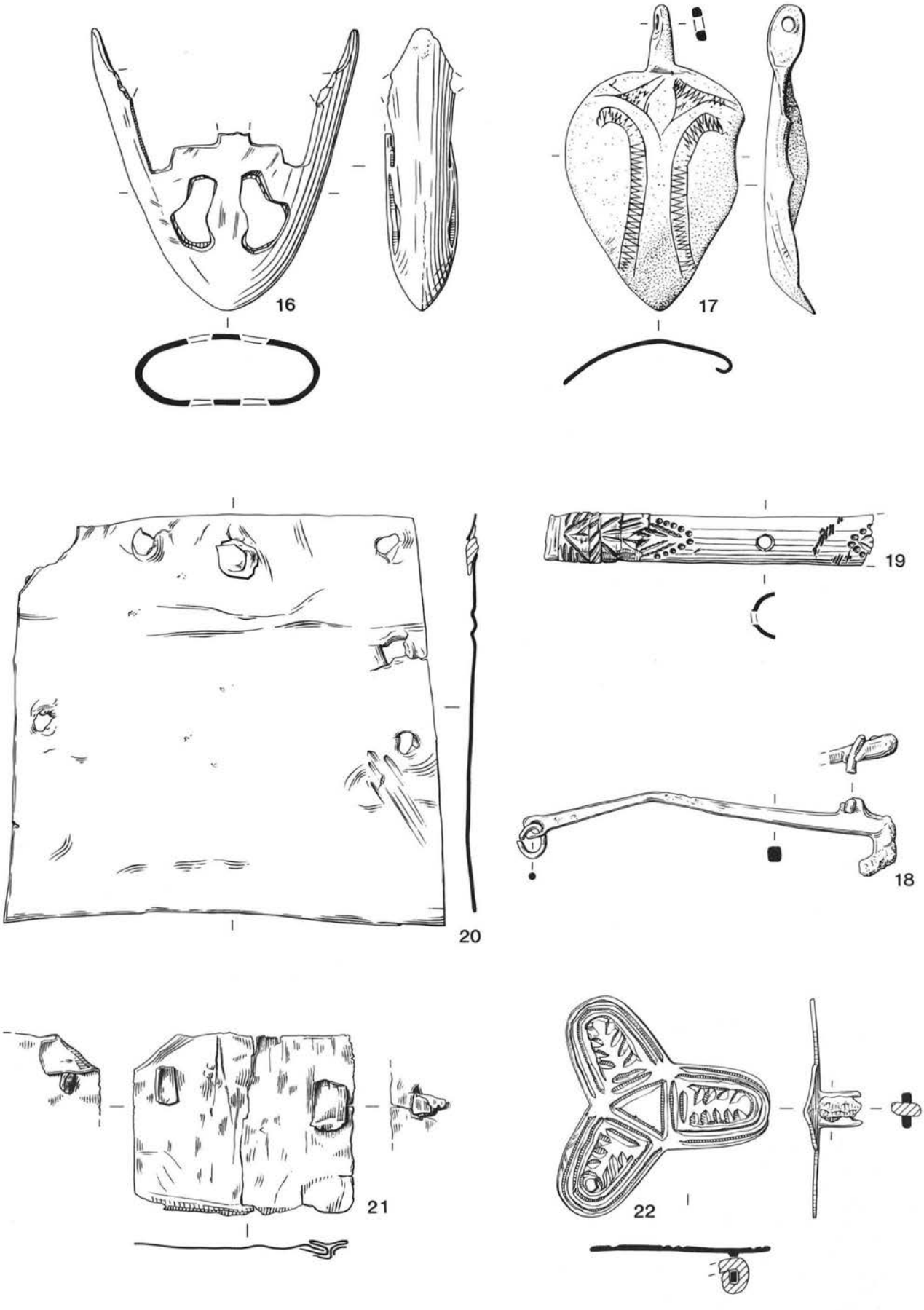


Figure 116 Brandon Road and Site 5759, Trench 2 The church. Non-ferrous metal objects Nos 16–22. Scale 1:1.

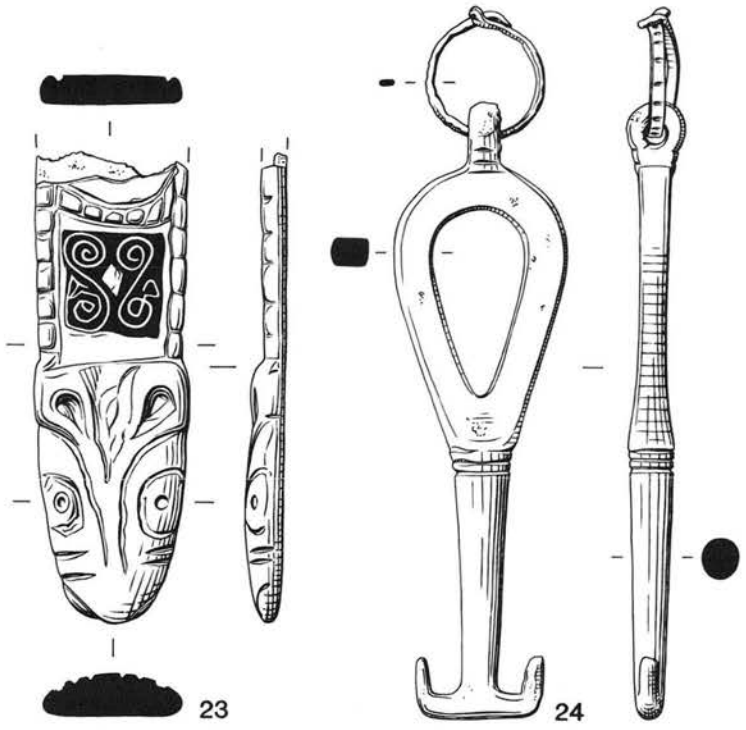


Figure 117 Site 5759, Trench 2 The church. Non-ferrous metal objects No.23 2:1, No.24 1:1.

SF191 (1080) M22 F248, Period V, top 6″ (15 cm) of Period III/IV pit.

2. Curved over and flattened slightly at one end. L.125, W.22, T.10 mm.
SF410 (2094) J26 F16, Period V pit, depth below 1′6″ (45 cm).

Incomplete forging

3. Probably an **incomplete blacksmith's product**, possibly a knife. L.68, W.21 mm.
SF167 (596) 022 F32, Period IV pit, depth 1′–2′ (30–61 cm).

Metalworking tools

4. **Smith's punch** with a slightly burred head. L.69, W.(below head) 19, T.17 mm.
SF327 (50) P21 F18, Period IV gully.

5. **Chisel** with a burred head, the faces widening slightly towards the cutting edge. It was probably used to cut hot iron and is closely comparable to another chisel from Thetford (Goodall, I.H. 1984, 77, fig.115, 6). Chisels of the tenth to eleventh century are otherwise most uncommon. L.107, W.(below head) 16, T.13 mm.
SF336 (1914) N25 F1, post-hole in Period IV gully N25 F2.

Woodworking tools

6. The tip of an **axe** blade, probably from a T-shaped axe, a type common in the Late Saxon period (Wilson 1968, 144, fig.1h) as well as after the Conquest (L.M.M.C. 1967, 58).
SF259B (1426), between Roads B and C Period IV–VI.

7. **Spoon bit** with lanceolate terminal and slightly damaged blade.
SF81 (636) N24 F29(a), top of Period VII pit.

(ni) Slender **chisel blade** with parallel sides and symmetrical taper to blade in side view. Head and upper part of shaft lost. L153 mm; max. T.17 by 9 mm.
SF103, unstratified in N23.

(ni) Dividers with T-shaped, intersecting hinge. L.94 mm, W. of head 13 mm.
SF113, unstratified in N18.

Textile tools

Comb teeth (Fig.119). The group Nos 8–19 are from Period III–V contexts and the group No.20 to SF409 are from post-Conquest contexts. They are probably from wool combs, or possibly flax-heckles, and correspond in terms of size and form to those found *in situ* in a wool comb, identified on the basis of associated wool fibres, from 16–22 Coppergate, York (sf10756, Ottaway forthcoming). Both rectangular and rounded crosssections occur and a characteristic feature is the stepped or 'bearded' head, often created when the spike was cut off the strip from which it was forged. The complete examples from Periods III and IV are between 50 and 101 mm long while those from post-Conquest contexts are between 89 and 164 mm.

A wool comb consisted of a head, which was a flat block of wood, and a handle, probably made in one piece with the head. The head was sometimes bound with an iron sheet and projecting from one face were one or two rows of some twelve to twenty spikes. The combs themselves are rare (for a review of the evidence see Ottaway forthcoming) but teeth are common on sites of both Late Saxon and medieval date. There is, for example, another group of 117, of which nine are illustrated, from Thetford itself (Goodall, I.H. 1984, 79, fig.119, 22–30).

(All are complete except where stated)

8. Bearded head. L.116 mm.
SF120 (1072) M21 F99, Period III pit, bottom 2′ (61 cm).

9. Rectangular cross-section, bearded head, tip missing. L.100 mm.
SF121 (1072) M21 F99, Period III pit.

(ni) Rectangular cross-section. L.70 mm.
SF243 (422) M19 junction of F13 and F21 (Period III–IV), top.

10. Rectangular cross-section, bearded head, tip missing. L.88 mm.
SF264 (470) M19 F58, top 1′ (30 cm) Period III–IV pit.

11. Rectangular cross-section. L.98 mm.
SF297 (3086) M24 F38, Period III pit.

(ni) Incomplete, rectangular cross-section. L.54 mm.
SF303 (131) P21 F27, Period IV pit.

(ni) Rectangular cross-section, tip missing. L.77 mm.
SF316 (625) N22 F48, Period III pit.

12. Incomplete, rounded cross-section. L.63 mm.
SF352 (2938) K25 F8, Period III pit, top 6″ (15 cm).

(ni) Rounded cross-section. L.96 mm.
SF356 (954), context uncertain, probably Period III.

(ni) Rectangular cross-section, head missing. L.97 mm.
SF388 (2970) K25 F16, Period III–IV pit, below 2′ (61 cm).

(ni) Rounded cross-section, head missing. L.103 mm.
SF398 (1916) M24 F38, Period III pit.

(ni) Rectangular cross-section. L.101 mm.
SF477 (1288) L22 F10, Period III pit, bottom levels.

(ni) Rounded cross-section, bearded head. L.65 mm.
SF34 (1252) L20 F13, Period III pit with IV top.

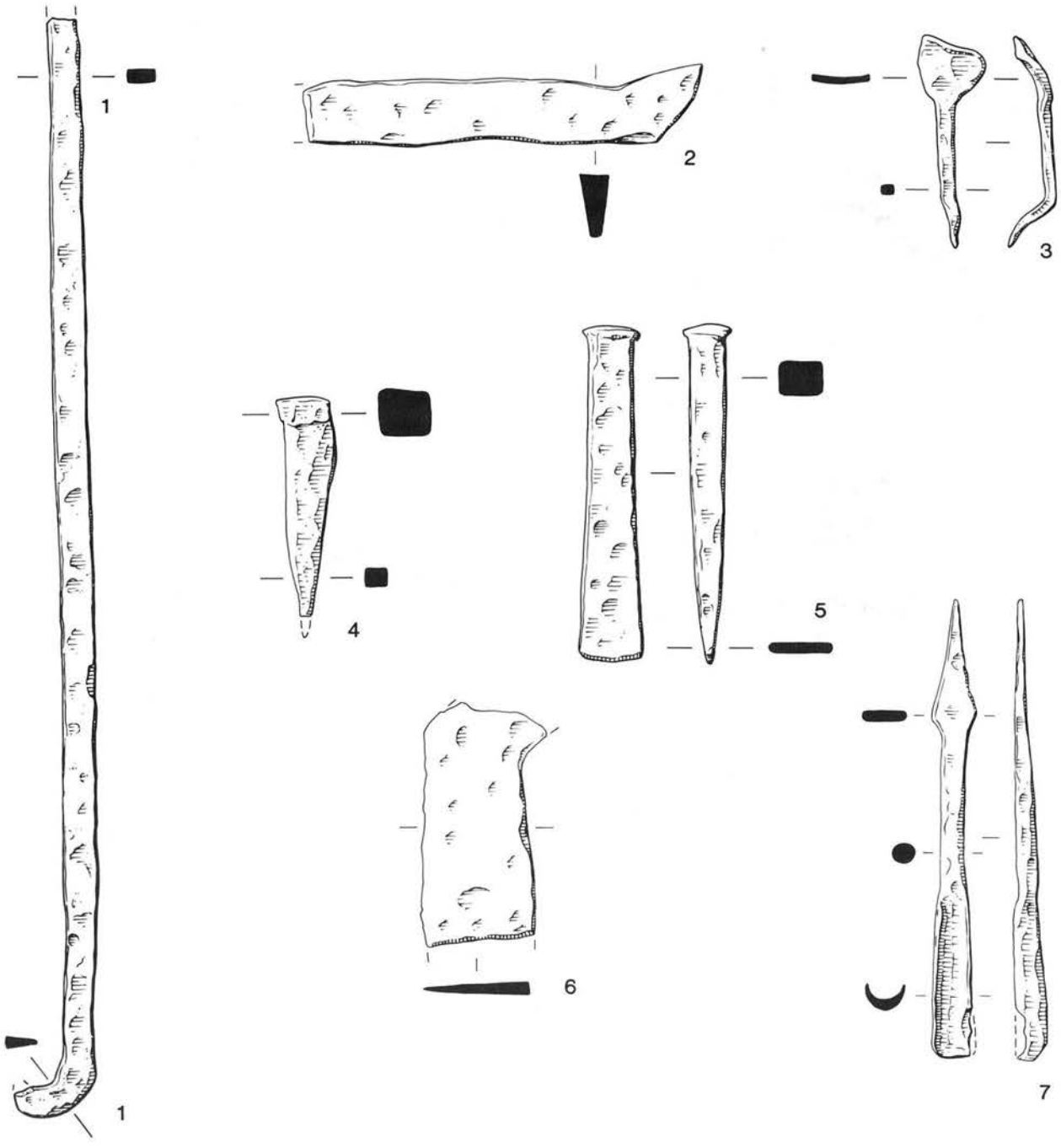


Figure 118 Brandon Road. Iron objects. Bar iron, metalworking and woodworking tools. Scale 1:2.

(ni) Rectangular cross-section. L.75 mm.
SF395 (2494) L25 F76 (?), Period III–IV.

13. Rounded cross-section, bearded head. L.90 mm.
SF5 N19 F4(a), top of Period IV pit.

(ni) Incomplete, rounded cross-section, bearded head. L.43 mm.
SF79 (952) M20 F116, Period IV (late eleventh century) pit, depth 1′–2′ (30–61 cm).

(ni) Rounded cross-section, head and tip missing. L.89 mm.
SF109 (909) M20 F111, top of Period IV pit.

14. Rounded cross-section, bearded head. L.84 mm.
SF171 (453) M19 F29, top of Period IV pit.

(ni) Incomplete, rectangular cross-section. L.59 mm.
SF172 (453) M19 F29, top of Period IV pit.

15. Rectangular cross-section. L.118 mm.
SF180 (1031) M21 F99, top 1′3″ (38 cm) of Period III–IV pit.

16. Rectangular cross-section. L.75 mm.
SF304 (131) P21 F27, Period IV pit.

17. Rectangular cross-section. L.92 mm.
SF305 (1184) L22 F78, Period IV pit.

(ni) Incomplete. L.61 mm.
SF370 (2484) K25 F16, Period IV pit, top 'in and around F17'.

(ni) Rectangular cross-section. L.50 mm.
SF371 (1946) L25 F1, top 6″ (15 cm) Late Period IV or Early V pit.

(ni) Incomplete, rounded cross-section. L.32 mm.
SF385 (454) M19 F29, Period IV pit, third spit.

18. Rounded cross-section, bearded head. L.97 mm.
SF421 (2412) J26 F11, Period IV pit.

(ni) Incomplete, rectangular cross-section. L.33 mm.
SF450 (3062) M26 F100, Period V–VII?

(ni) Rectangular cross-section. L.93 mm.
SF476 (1256) L21 F108, Period IV or later pit.

19. Rounded cross-section, head and tip missing. L.79 mm.
SF168 (1402) L20 F40, Period VI–VII?

20. Rounded section, bearded head. Complete. L.114 mm.
SF238 (505) N17 F8, Period Late IV or Early V pit, top 1′ (30 cm).

(ni) Rectangular section. Head missing. L.64 mm.
SF 321 (2828) L26 in road sequence, Period late IV–VII or later.

21. Rounded section, pinched head. Tip missing. L.87 mm.

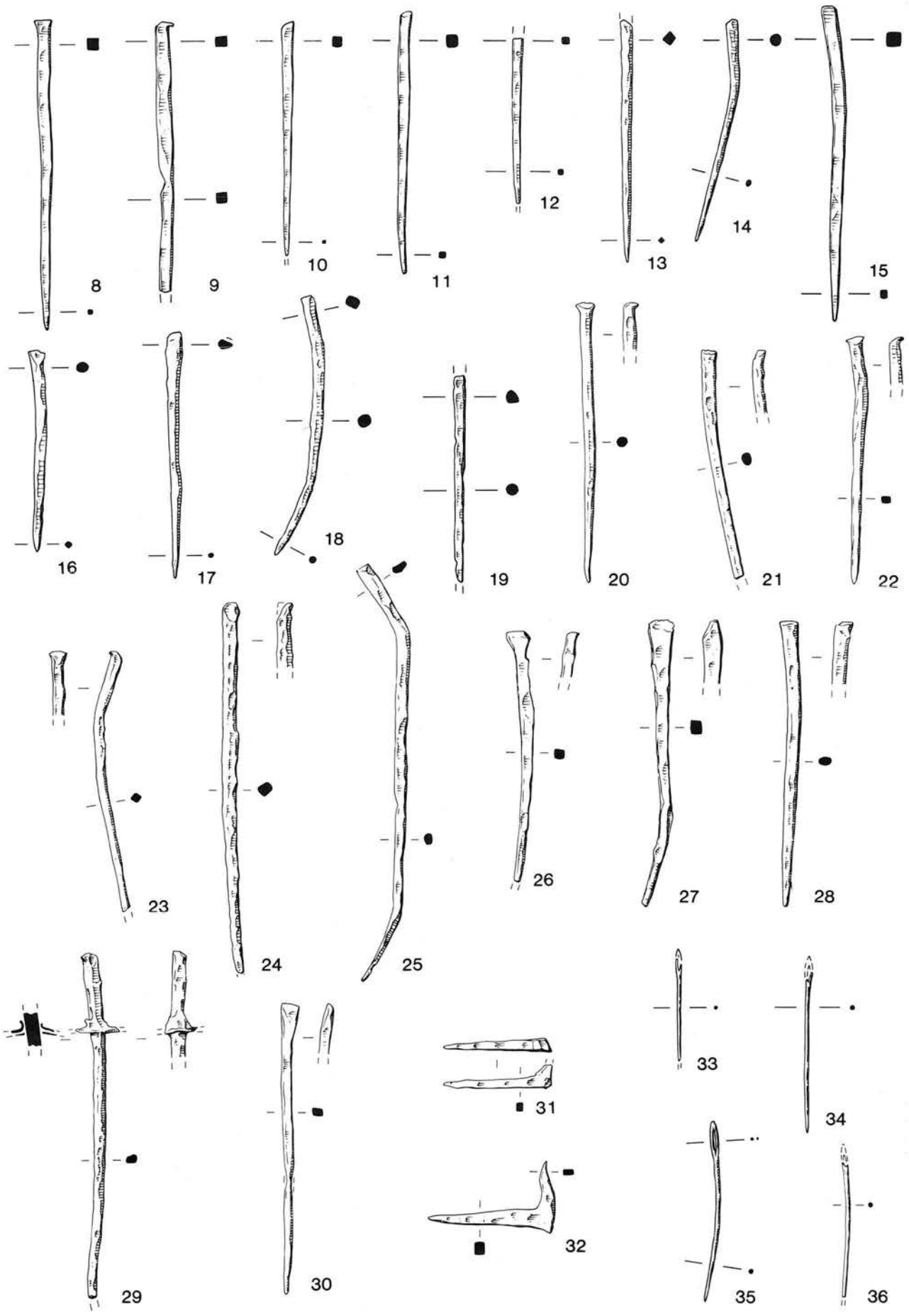


Figure 119 Brandon Road. Iron objects. Textile tools. Scale 1:2.

SF164 (1218) L22 F10, top 1' (30 cm) Period III pit, later top.

(ni) Rectangular section. Complete. L.97 mm.
SF213 (1056) M22 F47, F48 Period V.

(ni) Rectangular section, head and tip lost. L.61 mm.
SF358 (1127) L21 F3, Period V.

22. Rectangular section, bearded head. Complete. L.92 mm.
SF416 (3060) top of filling J26 F14/F6 cellared Building L, Early Period V or later.

(ni) Rectangular section. Complete. L.89 mm.
SF426 (2075) J26 F6(b) filling of cellared Building L, Early Period V.

23. Rectangular section, bearded head, tip missing. L.98 mm.
SF430 (2085) J26 F9, Period V pit, depth below 5' (1.52 m).

(ni) Rectangular section, tip missing. L.106 mm.
SF402 (2879) L24 F56, Period VI pit?, depth 2' – 6' (61 cm – 1.82 m).

(ni) Uncertain section, head missing. L.95 mm.
SF225 (301) O21 F34(b), Period VI(?) pit.

(ni) Rounded section, bearded head, tip missing. L.89 mm.
SF80 (636) N24 F29(a), top of Period VII pit.

24. Rectangular section, bearded head, tip lost. L.139 mm.
SF272 (3072) probably M26 F79, Period VII pit.

(ni) Rectangular section, head missing. L.86 mm.
SF417 (3044) K24 F37, well filled Period VII.

25. Rectangular section. Complete. L.164 mm.
SF418 (3044) K24 F37, well filled Period VII.

(ni) Rectangular section, head missing. L.73 mm.
SF480 (529) M18 F26, Period VII? pit.

(ni) Rectangular section, head mising. L.94 mm.
SF33 between Roads C and D, Period VI to nineteenth century.

(ni) Rounded section, head missing. L.71 mm.
SF39 between Roads C and D, Period VI to nineteenth century.

(ni) Rectangular section, head and tip missing. L.82 mm.
SF43 between Roads C and D, Period VI to nineteenth century.

(ni) Rounded section, head and tip missing. L.84 mm.
SF152 between Roads C and D?, Period VI to nineteenth century.

26. Rounded section, expanded head, tip missing. L.93 mm.
SF153 between Roads C and D?, Period VI to nineteenth century.

27. Rectangular section, expanded head. L.111 mm.
SF99 (733) N23, unstratified.

(ni) Rectangular section, head and tip missing. L.111 mm.
SF130 (489) M17, unstratified.

28. Rounded section, expanded head. Complete. L.108 mm.
SF131 (489) M17, unstratified.

(ni) Rounded section, expanded head. Complete. L.107 mm.
SF132 (489) M17, unstratified.

(ni) Rectangular section, head missing. L.72 mm.
SF210 (1074) M22, unstratified.

29. Rectangular section, tip missing. Fragment of sheet iron binding 28 mm below head. L.128 mm.
SF220 (3069) K25, unstratified on natural ground surface.

(ni) Rectangular section, head missing. L.72 mm.
SF322 (2087) J26, unstratified.

(ni) Rectangular section, head missing. L.7 mm.
SF357 (958) M21, unstratified.

(ni) Rounded section, tip missing. L.138 mm.
SF406 (2023) L23, unstratified.

(ni) Rounded section, head and tip missing. L.92 mm.
SF234 (666) N22 F69B, unphased.

(ni) Rectangular section, head and tip missing. L.84 mm.
SF135 (706), unprovenanced.

30. Rectangular section, expanded head. Complete. L.110 mm.
SF330 (967), context uncertain, probably Period VI – VII.

(ni) Rounded section, tip missing. L.85 mm.
SF409 (2992), unprovenanced.

Nos 31 and 32 are **tenter hooks**, No.31 with a broken hook.

31. SF116 (743) M23, in masonry wall, Period VI – VII.
32. SF441 (2243) K26 F7, well (filled in Period VII).

Nos 33 – 36 are four **needles** of the so-called Y-eyed form (Rollins 1981). The eye, usually elliptical in form, was made by splitting the head of the shank and welding the two sides back together at the top. Iron needle eyes may also be made by punching a hole in the end of the shank. Over forty iron needles, including both Y-eyed and punched-eyed examples, were found in medieval contexts at 16 – 22 Coppergate, York, but very few are known from other sites of the period (Ottaway forthcoming).

33. Incomplete. SF77 (1169) L21 F52, Early Period V pit (late twelfth century).
34. L.61 mm.
SF396 (2945) K25 F23, Period IV pit (late eleventh century), depth below 1'6" (45 cm).
35. L.67 mm.
SF435B (1299) K21 F13, Period IV pit.
36. SF233 (901) L23 F3, Period V? pit.

Shears
(Fig.120)

Nos 37 – 45 are **shears**. Nos 37 – 39 are from Period III or IV contexts but the others, although from later contexts, are probably late Saxon in origin. Their blades are slim, and narrow gently towards the tips, and the bows, except for 42, are slightly looped. They appear to correspond in form to large numbers of late ninth to eleventh-century shears from Britain and elsewhere in northern Europe. No.42 is unusual in having an M-shaped bow of which the central member has been roughly flattened. Similar shears are uncommon but those that are known date to the tenth to eleventh centuries. Another specimen has been found in Thetford (Goodall, I.H. 1984, 87, fig.126, 106). Others come from Trelleborg, Denmark (Nørlund 1948, 296, pl.XLIX) and Süderbrarup, Schleswig-Holstein (Aner 1952, 71, abb.9, 6). Shears were probably used for a variety of tasks in textile preparation although smaller pairs might also be for personal toilet.

37. Part of bow and incomplete stem only. L.69 mm.
SF173 (396) N18 F17, Period III pit.
38. In two pieces. L.114, blade: L.46, W.11 mm.
SF19/19A M17 F143 layer (e), Period IV pit.
39. Part of bow and incomplete stem only. L.61 mm.
SF384 (569) M17 F143 layer (e), Period IV pit.
40. Blade only. L.51 mm.
SF472 (2022) K25 F37A, Early Period V pit.
41. One stem and blade missing, surviving blade tip incomplete. L.122, bow: W.23 mm.
SF165 (18), O20 Ditch A layer (e), Period V – VII.
42. Blade tips missing. L.253, bow: W.53 mm.
SF190 (1263) L22 F17, Period V? pit.
43. One blade missing, other incomplete. L.122, bow: W.27 mm.
SF21 between Roads C and D?, Period VI to nineteenth century.
44. Bow largely missing, surviving blade incomplete. L.169 mm.
SF4 N18, unstratified.
45. Blade tips missing. L.210, bow: W.37 mm.
SF12 N17, unstratified.
46. Scissors with centrally-set finger loops.
SF222 (1440) K26 F3?, Early Period V (late twelfth century).

Leatherworking tools
(Fig.120)

Nos 47 – 50 are **awls** with arms of diamond-shaped cross-section. This characteristic form relates to their use for piercing leather (Attwater 1961). A number of closely comparable awls of tenth to eleventh century-date come from 16 – 22 Coppergate, York (Ottaway forthcoming).

47. L.62, T.7 mm.
SF397 (1916) M24 F38, Period III pit.
48. L.71, T.8 mm.
SF399 (2986) M27 F12, Period III? pit.
49. L.120, T.7 mm.
SF381 (2096) L23 F87, Period IV pit.
50. One arm only. L.45 mm.
SF451 (3062) M26 F100, Period V – VII?

Agricultural and horticultural tools
(Fig.121)

51. **Billhook** with partially open socket.
SF257 (1434) provenance not certain, probably K26 F3, Early Period V.

(ni) **Sickle blade** fragment with remains of a serrated edge. L.167, W.12 – 23 mm.
SF188 (871), in filling of drying oven L22 F38, Period VI – VII?

Fish hook
(Fig.122)

52. Fish hook with a punched eye. Similar hooks are known from 16 – 22 Coppergate, York (Ottaway forthcoming). L.63 mm.
SF175 (1248) L20 F1, Late Period IV gully.

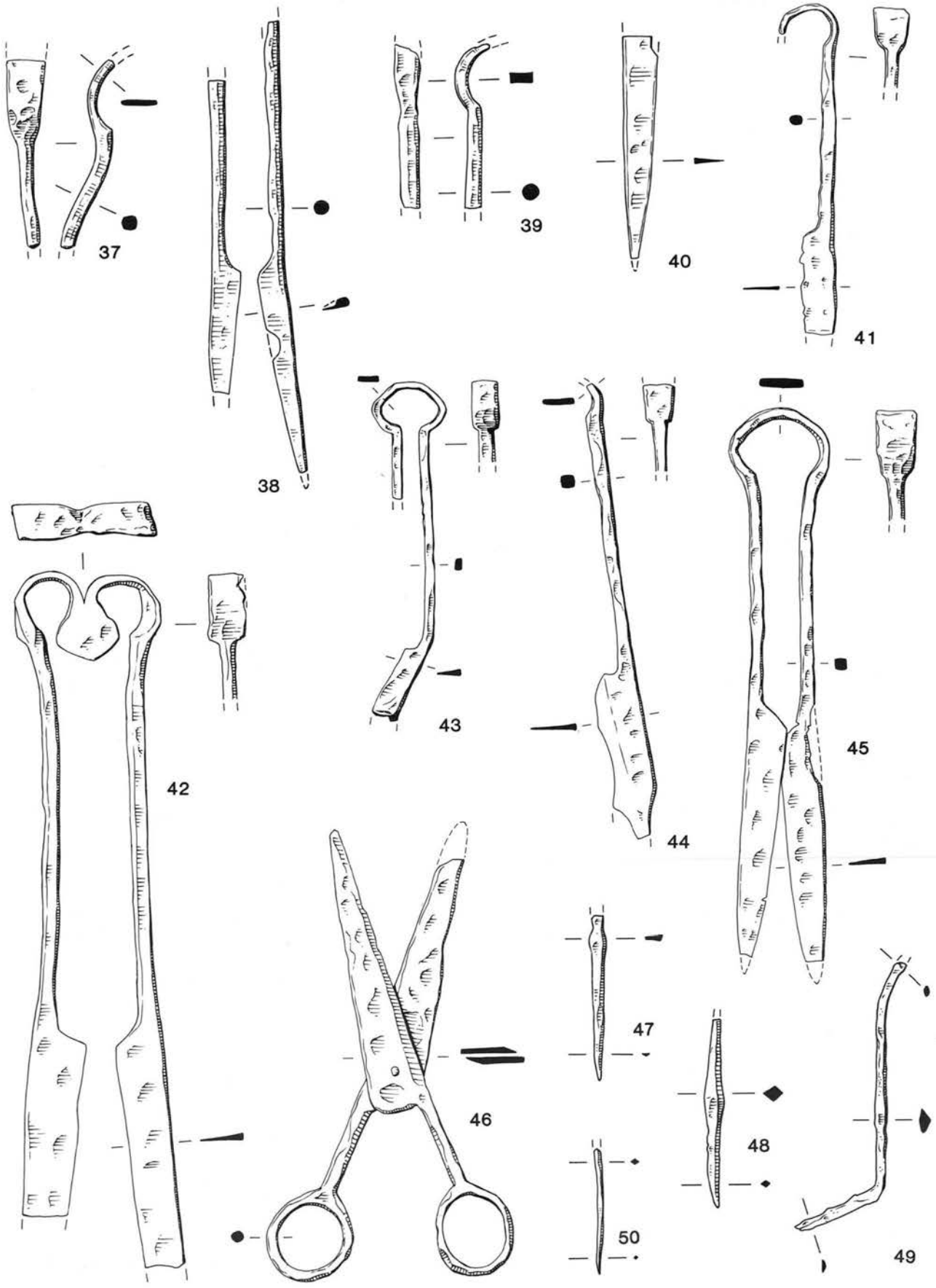


Figure 120 Brandon Road. Iron objects. Textile and leatherworking tools. Scale 1:2.

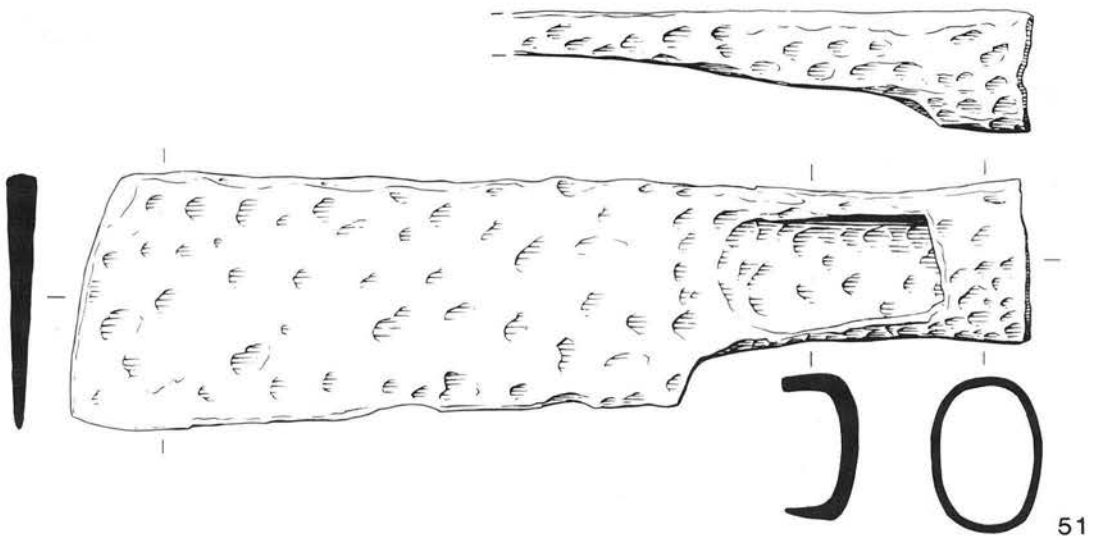


Figure 121 Brandon Road. Iron billhook. Scale 1:2.

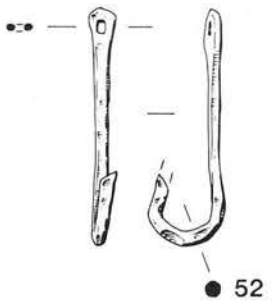


Figure 122 Brandon Road. Iron fish hook. Scale 1:2.

Knives
(Fig.123)

The group Nos 53–71 and SFs 427, 440, 259C and 91 are whittle tang knives which have been grouped by blade shape. The back shapes are unlikely to have changed, but some cutting edges have clearly been worn by use and sharpening to a characteristic elongated S-shape. The effect of this has to be borne in mind when considering these knives.

Five different blade shapes have been recognised. The blades of Nos 53–55 and SF268 have what is often known as an angled-back. The back of No.53 slopes up from the shoulder to a little beyond its mid-point before sloping down again to the tip. This form is usually characteristic of knives of mid-ninth to mid-eleventh-century date. A serrated weld line is clearly visible running along the centre of the blade faces which presumably marks the junction between an iron back and a steel cutting edge. The purpose of the serration was probably to improve the weld by increasing the area of the joined surfaces.

Nos 54 and 55 and SF268 have backs which are straight and horizontal before they slope down to the tip, and although they are from post-Conquest contexts, they also have an established pre-Conquest form already known on other knives from Thetford (Goodall, I.H. 1984, 81, 83, fig.123, 54–62).

No.56 has a back which is straight and horizontal before becoming slightly concave towards the tip. This unusual feature can be paralleled on two other knives of similar size, one from Thetford (Goodall, I.H. 1984, 81, fig.125, 103) and one from 16–22 Coppergate, York (sf9892, Ottaway forthcoming) which is from an early tenth-century context.

The group Nos 57–64 to SF300 have backs and cutting edges which are, or originally were, straight and parallel before both curve towards the tip. The cutting edges of several are now S-shaped. This blade shape is the most common at Thetford and has been found among other knives from the town (Goodall, I.H. 1984, 81, 83, fig.123, 54–62). SF334 in this group is particularly distinctive because there are two pairs of transverse notches cut into the back. Similar notches occur on a small number of other knives of late ninth to eleventh-century date including a group of nine from 16–22 Coppergate, York (Ottaway forthcoming) and a knife from a possible eleventh-century context on the church site below (Fig.129, No.162). These notches may be purely decorative features but it may also be suggested that they indicate the work of an individual craftsman or workshop and correspond to the punched cutler's marks sometimes found on knives of later medieval date. The group Nos 65–67 to SF301 have backs and cutting edges which taper from their junction with the tang. No.65 has a quite pronounced S-shaped cutting edge indicating heavy wear. Knives of this form are less numerous than the previous group, but have a wide date range and are again known from elsewhere in the town (Goodall, I.H. 1984, 82, 83, fig.125, 93–102).

The rest, Nos 68–71 and SF293 to SF301, have incomplete blades of indeterminate form.

53. L.150, blade: L.115, W.22 mm.
SF236 (706), provenance unclear.
(ni) SF268 (828) N21 F202/N22 F78, Period V top of Period III pit.
54. SF434 (2402) J26 F6/F14, top filling of cellared Building L, Early Period V.
55. SF307 (1218) L22 F10, Period VI top of Period III pit, top 1' (30 cm).
56. L.97, blade: L.73, W.13 mm.
SF13 M19 F29, Period IV pit, second spit.
57. L.145, blade: L.63, W.12 mm. SF212 (1276) L20 F20, Period III pit.
58. L.130, blade: L.68, W.11 mm.
SF382 (1941) L24 F63, Period III pit.
59. L.80, blade: L.65, W.13 mm.
SF415 (2935) K25 F8, top 1' (30 cm) Period III pit.
60. L.87, blade: L.61, W.9 mm.
SF302 (21) 020 F6, Period IV (or later) post-hole.
61. L.82, blade: L.63, W.12 mm.
SF267 (828) N21 F202/N22 F78, Period III pit with Period V top.
(ni) SF334 (1282) L20 F1, Late Period IV gully.
(ni) SF94 (828) N21 F202/N22 F78, Period III pit with Period V top.
(ni) SF112 (225) provenance unclear, probably Early Period V.
62. SF231 (901) L23 F3?, Period V pit.

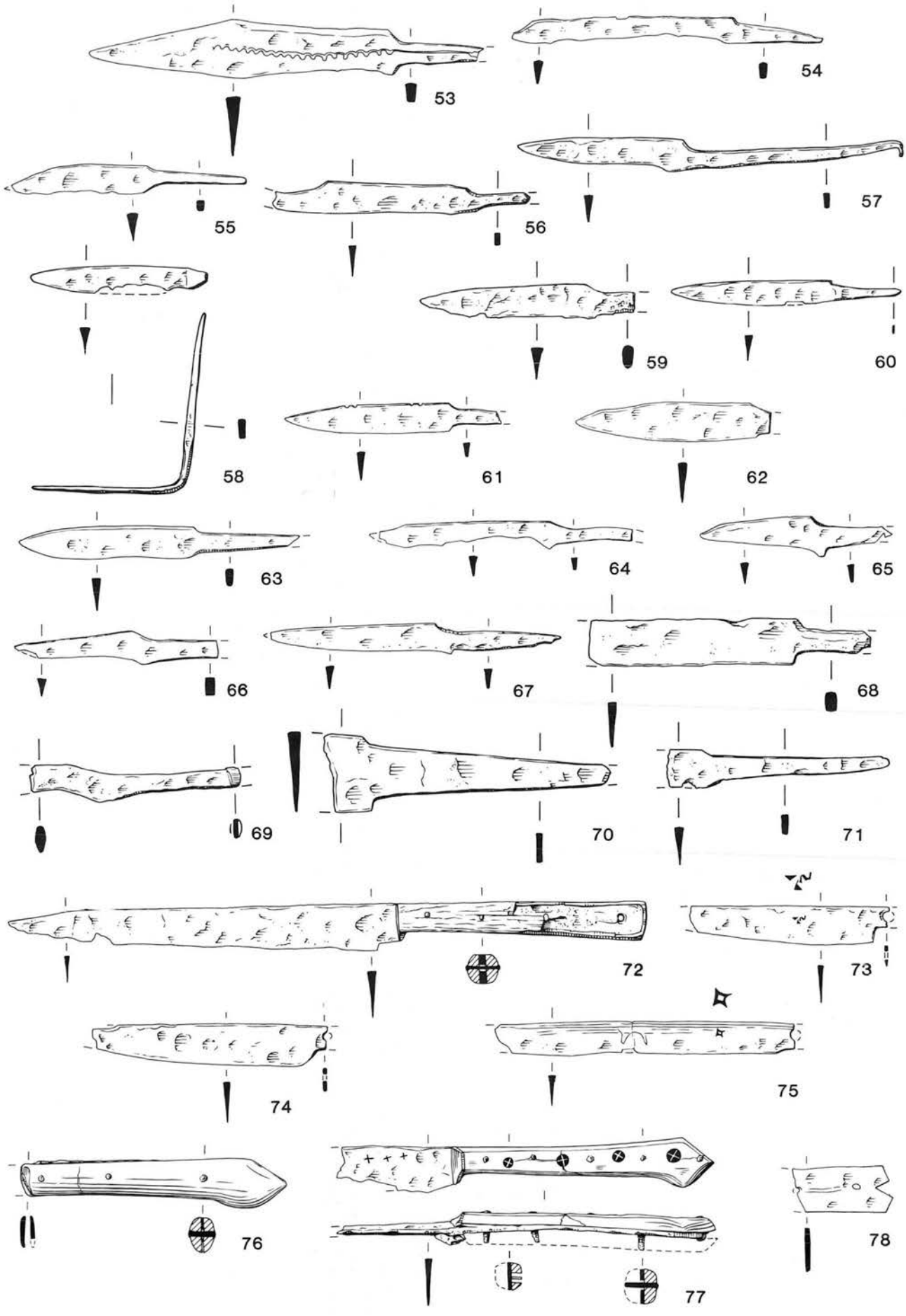


Figure 123 Brandon Road. Iron knives. Scale 1:2.

63. SF470 (2864) J26 F20, top of Period V pit.
64. SF62 between Roads B and C, Period IV–VI.
(ni) SF300 (3097), unstratified.
65. SF14 context not certain, probably top of N19 F37, Period IV pit.
66. Traces of horn handle. L.76, blade: L.46, W.15 mm.
SF474 (2447) K26 F6, Early Period V.
(ni) SF326 (2886) context uncertain, with Period V pottery.
(ni) SF151 between Roads C and D?, Period VI to nineteenth century.
67. SF296 (3099), unstratified.
(ni) SF301 (731) N23, unstratified over F96.
(ni) In three pieces, form indeterminate, remains of wooden handle.
SF293 (3084) M25 F38, Period III pit, depth 1'–3' (30–91 cm).
68. Blade incomplete. L.106, blade: L.78, W.18 mm.
SF311 (1928) L25 F1, Late Period IV, below 4' (1.21 m).
69. Wood remains survive on tang. L.79, blade: L.21 mm.
SF335 (2028) J24 F10, Period III pit.
70. Blade largely missing. L.109, blade: L.17 mm.
SF387 (2994) M26 F76, Period III pit.
(ni) Very corroded, form indeterminate.
SF376 (2460) K25 F23, Late Period IV pit, depth 1'–2'6" (30–76 cm).
71. Blade largely missing. L.84, blade: L.13 mm.
SF435A (1299) K21 F13, Period IV pit.
(ni) SF427 (2075)b J26 F6 layer (b), filling of cellared Building L Early Period V.
(ni) SF440 (2250) J26 F10, top, Period VI–VII?
(ni) SF259c (1426) between Roads B and C, Period IV–VI.
(ni) SF91 between Roads C and D, Period VI to nineteenth century.

Nos 72–78 and SF23 and SF290 are knives with scale tangs through which the handles were riveted.
72. SF260 (878) M23 F101, Period VII pit, under plaster.
73. SF263 (635) N23 F89 layer (c), Period VII pit.
(ni) SF240 (717) N23 F92, Period VII pit.
(ni) SF291 (3100), unstratified.
(ni) SF306 (733) N23, unstratified over F94, F96.
74. SF203 (1436) L27 F31, Period VII pit.
75. SF383 (1943) M24 F21, Period VII pit, below 3' (91 cm).
(ni) SF65 (717)B N23 F92, Period VII pit.
76. SF221 (3068) L24 F56 top, Period VI pit.
77. SF218 (1432) L26, unstratified.
78. SF64 (717)B N23 F92, Period VII pit.
(ni) SF23 between Roads B and C, Period Late IV–VI.
(ni) SF290 (3087) M24 F21, Period VII pit.

Knife blade fragments:
(ni) SF242 (654) context not certain, probably Period V top of Period III pit N21 F202/N22 F78.
(ni) SF215B (925) surface of M20 F111, Period IV pit.
(ni) SF244 (345) O18 F10, Period V–VII ditch.
(ni) SF439 (2250) J26 F10, Period V pit?
(ni) SF442 (2243) K26 F7, well filled in Period VII.
(ni) SF248 (1022) between Roads C and D, Period VI to nineteenth century.
(ni) SF253 (147) O21, unstratified.
(ni) SF504 (3121), unstratified.

Building ironwork and fittings
(Figs 124 and 125)

The group Nos 79–84 and SF575 to SF677 are nails from Period III and IV contexts. They all have shanks of rectangular cross-section and flat rounded, or roughly rounded, heads except for SF592 which has a domed head. Many of the shanks are curved or bent perhaps as a result of deliberate removal from timbers. Complete nails are 23–81 mm in length but the majority are 35–50 mm and most incomplete nails probably fell within this range. This is a comparable pattern to that found in over 2000 nails from Anglo-Scandinavian contexts at 16–22 Coppergate, York (Ottaway forthcoming) which, it is suggested, were primarily used on doors or for furniture such as chests.

A number of nails were found in post-Conquest contexts but have not been catalogued.

(Data on Period III–IV nails are presented in tabular form for easy reference.)
L. = length; W. = width of head; T. = thickness of shank
Not illustrated except for Fig.124, Nos 79–84:

		L.	W.	T.
(ni)	Complete length. SF575 (2404) K24 F31, Period III pit.	64	15	6
(ni)	Shank curved, tip missing. SF576 (950) M21 F10?, Period III gully.	65	17	5
(ni)	Shank tip missing. SF582 (2885) K23 F73, Period III–IV pit.	47	23	6
79.	Complete length. SF585 (623) N22 F11, Period III pit.	42	17	5
(ni)	Complete length, shank bent near head. SF588 (117) top of N19 F5, Period I–III pit.	53	18	4
(ni)	Shank incomplete. SF589 (2224) L27 F7, Period III pit.	53	23	7
(ni)	Tip missing, roughly domed head. SF592 M25 F38, 61 top of Period III pit.	27	8	
(ni)	Shank incomplete. SF594 (84) N19 F7, top of Period III kiln.	28	17	4
(ni)	Shank bent near head. SF596 (85) N19 F7, top of Period III kiln.	40	7	5
80.	Head a small block, shank incomplete. SF597 (81) N19 F7, top of Period III kiln.	32	11	5
(ni)	Complete length. SF599 (2935) K25 F8, top of Period III pit.	32	17	5
(ni)	Complete length, head incomplete. SF600 (2935) K25 F8, top of Period III pit.	47	12	5
81.	Complete length. SF601 (2935) K25 F8, top of Period III pit.	45	22	7
(ni)	Complete length, tip bent at 90 degrees. SF602 (2935) K25 F8, top of Period III pit.	51	20	4
(ni)	Shank tip missing. SF603 (2938) K25 F8, top of Period III pit.	46	22	7
(ni)	Shank incomplete. SF604 (2938) K25 F8, top of Period III pit.	37	22	6
82.	Complete length, shank bent at 90 degrees. SF605 (2938) K25 F8, top of Period III pit.	74	21	5
(ni)	Complete length, neatly rounded head. SF606 (2432) K25 F8, top of Period III pit.	44	22	5
(ni)	Shank incomplete. SF660 (807) N21 F115?, Period III post-hole.	35	24	5
(ni)	Complete length. SF718 (278) O18 F34 layer (a), top of Period III gully.	33	6	3
(ni)	Complete length. SF684 (944) M21 F26, Period III–IV post-hole (Building F).	51	6	3
(ni)	Complete length. SF685 (944) M21 F26, Period III–IV post-hole (Building F).	75	10	6
(ni)	Incomplete. SF574 (48) P21 F16 layer (a), top of Period IV pit.	27	18	6
(ni)	Shank incomplete. SF577 (923) M20 F113, Period IV? gully.	42	20	5
(ni)	Head and shank incomplete. SF578 (2916) J26 F14, Period IV pit.	50	9	4
(ni)	Complete length, head incomplete. SF579 (22) O19 F1 layer (a), top of Period IV pit.	23	10	3
83.	Complete length. SF580 (10) P20 F27, Period IV pit.	25	9	3
(ni)	Incomplete. SF581 (891) M20 F111, Period IV pit.	23	12	4
(ni)	Incomplete. SF583 (392) M19 F14, Period III–IV gully.	26	19	5
(ni)	Complete length, neatly rounded head. SF584 (1103) L21 F22 Early Period V gully.	38	10	4
(ni)	Shank curved and incomplete. SF586 (2079) J26 F41, Period IV pit.	47	22	6
84.	Complete length. SF587 (2429) J26 F41/F43, Period IV pits.	81	18	6
(ni)	Tip missing. SF590 (216) N19 F4 layer (d), Late Period IV pit.	23	9	4
(ni)	Shank incomplete. SF593 (595) O22 F32, Period IV pit.	37	16	6
(ni)	Shank incomplete. SF598 (1921) L25 F1, Late Period IV–Early Period V pit.	37	18	5
(ni)	Shank incomplete. SF656 (407) M19 F20C, Period III–IV pit, top.	40	14	7

(ni) Shank incomplete.
SF661 context not certain, probably Late Period IV. 24 12 4

(ni) Head and shank incomplete.
SF677 (2460) K25 F23, Late Period IV pit. 41 13 6

The group Nos 85–87 and SF498 are **studs**, the heads either rectangular in shape (Nos 85, 86 to SF161) or rounded (No.87, SF498). 85. SF82 (946) M21 F33, Period V gully.
86. SF494 between Roads B and C, Period IV–VI.
(ni) SF446 (2055) J25, unstratified.
(ni) SF161 between Roads D and C?, Period VI to nineteenth century.
87. SF169 between Roads C and D, Period VI to nineteenth century.
(ni) SF498 (612) N22, unstratified.

Nos 88–89 and SFs279b–f, SF282, SF283a–d, SF287, SF289b–c are **roves** from clench bolts, square or diamond-shaped, all raised in side view. No.88 retains part of the shank of the stud. All are from the same context.
88. SF279a (3070) L26 F26, Period VII pit.
89. SF289a (3070) L26 F26, Period VII pit.

Nos 90–95 **staples**. There are no U-shaped staples like others from Thetford (Goodall, I.H. 1984, 88, fig.127, 114–18). All except No.95 are rectangular, and were used to hold wood together. No.94 has an unusually wide head. Most have broken arms but SF419 retains a complete clenched arm.
90. In two pieces. W.76, L. of arm 17, W. of head 22 mm.
SF424 J26 (2855) context not certain, J26 F13?, Period III or IV?
91. Arms curved inwards. W.53, L. of arm 20 mm.
SF84 (1216) L22 F10, Period IV–V top of Period III pit.
92. Surviving arm tip curved inwards. W.43, L. of arm 20 mm.
SF176 (855) M20 F111, Period IV pit.
93. W.25, L. of arm 15 mm.
SF206A (1370) K21 F13, Period IV pit.
94. Twisted. W.75 mm.
SF206B (1370) K21 F13, Period IV pit.
(ni) SF419 (2882) context not certain, Period IV?
(ni) SF89 between Roads C and D, Period VI to nineteenth century.
(ni) SF154 between Roads C and D, Period VI to nineteenth century.
(ni) SF473 (2942) K26, unstratified.
95. SF414 (2935) K25 F8, top of Period III pit.

(ni) **Wallhook**, shank and hook broken. The hook rises before the end of the shank. L.57, H.27 mm.
SF473 (2942) K26, unstratified.

(ni) **Wall anchor**, the perforated head now distorted but originally set at right angles to the stem.
SF369 (983) M21 F61, Period III–IV pit.

The group Nos 96 and 97, SF101, SF445 are **hinge pivots**, all with tapering shanks suitable for driving into timber or into joints in masonry. SF101 is complete, 44 mm high, 81 mm long; SF445 is 56 mm high, the shank 72 mm long but broken.
96. SF375 (2868) M26 F18, Period V–VII gully.
97. SF102 (733) N23, unstratified.
(ni) SF101 (733) N23, unstratified.
(ni) SF445 (2055) J25, unstratified.

No.98, SF104, SF186 are **strap hinges** with nailed, U-shaped eyes, all broken.
98. SF209 (1435) context uncertain, probably K26 F3, Early Period V.
(ni) SF104 (733) N23, unstratified over F94, F96.
(ni) SF186 (801) L20, unstratified.

Group Nos 99–101 to SF390 are **strap fragments**, No.99 with a shaped terminal, the others mid-length fragments, No.100 of irregular shape, SF394, No.101, SF443, SF390 with parallel sides between 38 and 91 mm long, 15 and 25 mm wide.
99. SF204 (1437) L27 F31, top of Period VII pit.
100. SF318 (2286) L26 F56, Period V–VII tank.
(ni) SF394 (556) M17 F57, Early Period V pit.
101. SF433 (2402) J26 F6/F14, top 1' (30 cm) filling of cellared Building L, Early Period V.
(ni) SF443 (2243) K26 F7, well filled in Period VII.
(ni) SF390 (2012) J25 F15?, Period VII top of earlier pit.

Group Nos 102 and 103 to SF287 **strip fragments**, No.102 moulded and with traces of non-ferrous plating, No.103 shaped. The rest are plain.
102. SF479 (548) M17 F57, Early Period V pit.
103. SF106 (733) N23, unstratified over F94 F96.
(ni) SF277 (3072) M26 F79, Period VII pit.
(ni) SF280a–c (3070) L26 F26, Period VII pit.
(ni) SF200 between Roads C and D, Period VI to nineteenth century.
(ni) SF287 (3070) L26 F26, Period VII pit.

104. **Terminal from binding**? Non-ferrous plating. SF275 (3072) M26 F79, Period VII pit.

Group Nos 105, 106 and SF274 **corner brackets**. Nos 105 and 106 are probably simple corner brackets from a chest or box. Wood remains survive on their inner faces. SF274 is more slender.
105. L. arms: 35 and 17, W.32 mm. SF391 (1926) M25 F38, Period III pit, below 3' (91 cm).
106. One arm bent. L. arms: 50 and 26. SF423 (2020) J25 F60, Period IV pit.
Elisabeth Crowfoot comments on the textile impressions: 'An area *c.* 3.0 by 3.0 cm on the outside of the bracket, going around the rectangular corner, shows oxidised ?threads, mixed with ?reeds or small twigs; cut ends, *c.* 1.5 mm across, lying *c.* 4 on 1 cm, suggest perhaps reeds rather than textile threads for one system, the other being coarse Z or Z,S ply threads curving round and between. Perhaps the edges of matting, rushes held by twined or tabby-woven threads.'
(ni) L. arms 60 and 40 mm, W.6 by 2 mm. SF274 (3072) M26 F76, Period VII pit.

(ni) **Latch rest**, shank broken. SF133 (489) M17 unstratified.

The group Nos 107–109 to SF105 are **chain links**. No.107 is pear-shaped and No.108 is figure-of-eight-shaped.
107. L.69 mm.
SF179 (127) O20 F48, Period IV post-hole.
108. L.63 mm.
SF223 (1518) N25 F71, Period III–IV? pit.
109. SF284 (3070) L26 F26, Period VII pit.
(ni) SF90 between Roads C and D, Period VI to nineteenth century.
(ni) SF105 (733) N23, unstratified over F94, F96.

(ni) **Swivel ring**, 28 mm diameter. SF66 (717)B N23 F92, Period VII pit.

Group No.110 to SF25 **rings**.
110. SF448 (2013) J25 between Roads B and C at road junction, Period IV–VI.
(ni) SF49 between Roads B and C, Period IV–VI.
(ni) SF25 between Roads C and D, Period VI to nineteenth century.

Nos 111 and 112 **collars**. No.111 is a large circular collar. There are some small chain links corroded to it but they are not apparently associated. No.112 is a circular collar.
111. D.68, W.17 mm. SF393 (2892) context not certain, M26 F6? Period III pit.
112. SF235 (769) M23 F12, Period VII pit.

113. **Tube**; it may be the broken socket from an arrowhead or tool. L.85, D.15 mm.
SF119 (1072) M21 F99, Period III pit, bottom 2' (61 cm).

114. **Socketed candlestick** with side arm and broken, spirally twisted stem.
SF245 (744) M23 F11, Period VII pit, second spit.

Locks and keys

(ni) Fragment of **barrel padlock case** with remains of one longitudinal and two transverse straps.
SF563 (3071) L26 F70, unphased post-hole.
115. U-shaped **padlock bolt** with circular closing plate indicating that it was used with a barrel padlock. Shaped spine with an incomplete double leaf spring and two nibbs to add complexity and therefore security.
SF226 (114) O19 F28, Period III pit with Period V top?

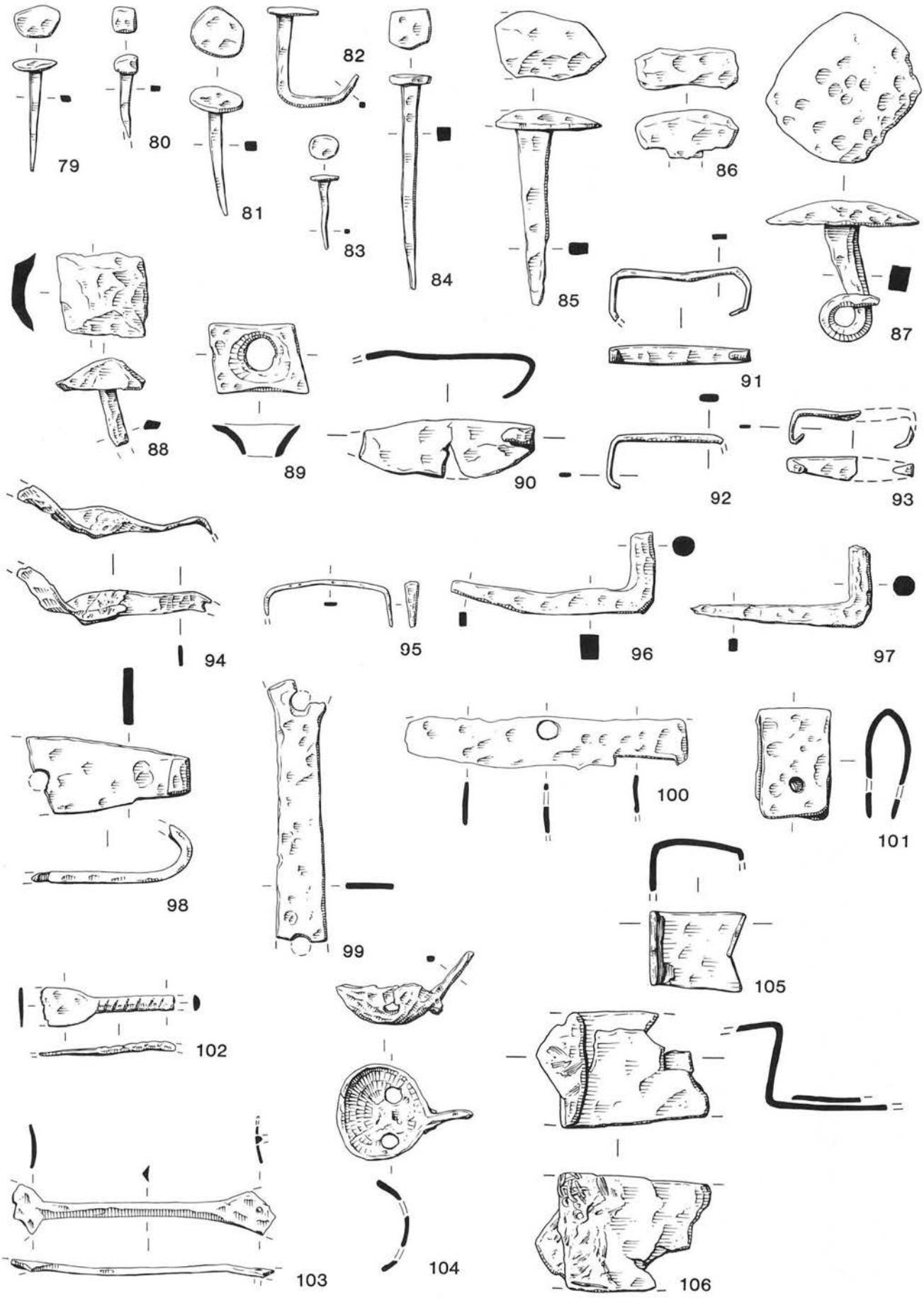


Figure 124 Brandon Road. Building ironwork and fittings. Scale 1:2.

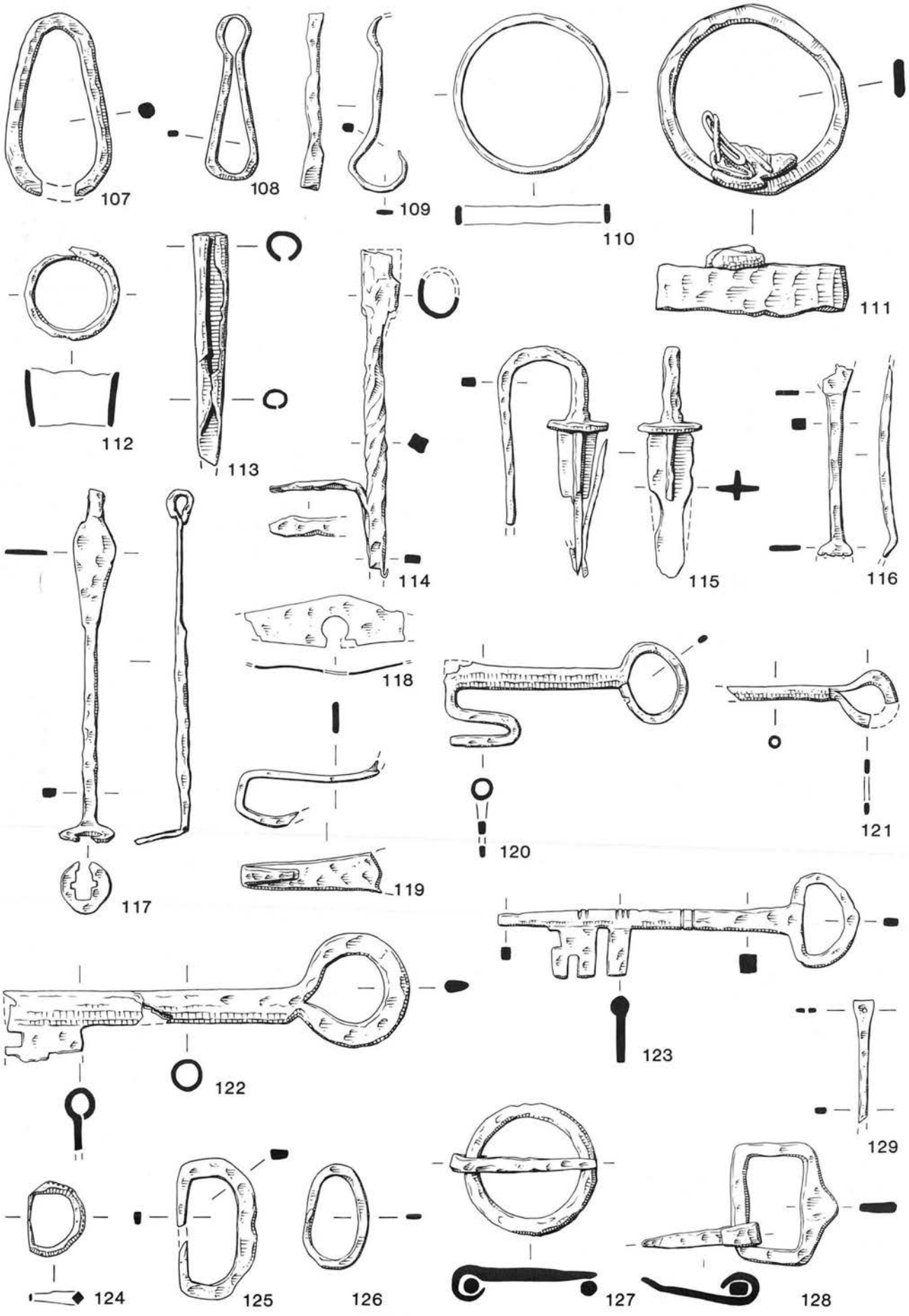


Figure 125 Brandon Road. Iron household items and fittings. Scale 1:2.

Group No.116 to SF211 **padlock keys**. SF93 broken but with stem and bit in line, like others from Thetford (Goodall, I.H. 1984, 95, fig.132, 179). The rest have laterally-set bits and stems with expanded heads.

(ni) SF93 between Roads C and D, Period VI to nineteenth century.
(ni) SF219 (3067) context uncertain, probably J26 F35, Period IV pit.
116. SF83 (946) M21 F33, Period V gully.
117. SF20 M17, unstratified.
(ni) SF211 (1433), unstratified.

118. **Ward plate** from lock. SF280d (3070) L26 F26, Period VII pit.

119. Incomplete **tumbler** from a sliding bolt lock. A complete Anglo-Scandinavian period example from 6–8 Pavement (Lloyds Bank), York (MacGregor 1982, 82–3, fig.43) shows how these locks operated. No.119 is smaller than most comparable bolts and probably comes from a box or small chest. L.51, W.24 mm.
SF314 (2432) K25 F8, top 6" (15 cm) of Period III pit.

Group Nos 120–123 **keys**. Nos 120 and 121 are keys of characteristic ninth to eleventh-century form. They were made from a single piece of iron and have hollow stems. No.120 has an oval bow and a bit formed into a C-shaped strip which is comparable to an Anglo-Scandinavian key bit from 16–22 Coppergate, York (Ottaway forthcoming, sf9017) and to another of the period from Norwich (Margeson and Williams 1985, fig.28, 6). No.121 has a pear-shaped bow, the bit is missing. No.122 and SF11 both have the bit rolled in one with the hollow stem; No.123 has a ring bow, SF11 a kidneyshaped bow. No.123 has a solid, moulded stem and D-shaped bow.

120. L.91, bow: W.30, bit: W.30 mm.
SF6 N19 F10 layer (a), top of Period III pit.
121. L.65 mm.
SF76 (1169) L21 F52, Early Period V pit.
122. SF495 M26, in road sequence.
(ni) SF11 M19, unstratified.
123. SF447 (2013) J25, between Roads B and C at road junction, Period IV–VI.

Buckles
(Fig.125)

Group Nos 124–128 and SF50 are **buckles**. Nos 124–126 are small D-shaped buckles, comparable to many others of pre- and post-Conquest medieval date from Britain and northern Europe. They may be from dress fittings or horse equipment.

124. Diamond-shaped cross-section. L.28, W.22 mm.
SF255 (423)A M19 F13 and F13A, Period III–IV gullies.
125. L.55, W.32 mm.
SF332 (2429) J26 F41 and F43, Period IV pits.
126. Scarf weld visible on the straight side. L.40, W.25 mm.
SF499 (36) P21 F12, Period IV gully.
127. SF205 (1438) context unclear, probably K26 F33, Period V well, top of filling Period VII.
(ni) SF124 (151) O20, unstratified.
128. SF266 (1117) L22 F13, Period V? pit.
(ni) SF50 between Roads B and C, Period IV–VI.

Dress fitting
(Fig.125)

129. Probably a simple **dress pin** with a flattened, pierced head. L.47 mm.
SF174 (1248) L20 F1, Late Period IV.

Riding and horse equipment
(Fig.126)

130. **Prick spur arm** with an incomplete terminal, probably pre-Conquest in origin. Plated with non-ferrous metal, probably tin or tin-lead alloy. L.113 mm.
SF500 (16) O20 F4 layer (a), top of Period V? pit.

Group Nos 131–135 are components of **bridle bits**. No.131 is a mouthpiece link, plated with non-ferrous metal, whose shank expands in the centre and is an unusual cross-shape in section. At one end there is a single eye and at the other there are two in planes at 90 degrees to each other. The inner eye was originally linked to a cheekpiece and the outer to a bridle attachment link such as No.135 (see below). This arrangement is known on another English bit of ninth to eleventh-century date from York (Waterman 1959, fig.8, 1). Scandinavian examples come from Norway (Petersen 1951, fig.14, 16, 18, 19), from Denmark, in the Ladby ship (Thorvildsen 1957, fig.42, 47, 51) and Sweden, from Birka (Arbman 1940, taf.26). The form of the link as a whole can be paralleled exactly by those making up one of the bits from Norway referred to by Petersen (1951, fig.14).

No.132 is a more conventional mouthpiece link of a form common both before and after the Conquest.

No.133 and No.134 are bit cheekpieces. No.133 is from Period III and No.134 is not closely stratified, but is also probably pre-Conquest. They are similar in that they both have two centrally placed holes into which a double-looped link would have fitted to join them to the mouthpiece links as on an example from Winchester (Waterman 1959, fig.8, 2). Both are unusual in being curved, No.133 in the centre and No.134 over its whole length. No.133 is decorated with transverse grooves which are now rather unclear. No.134 has a series of bosses with transverse grooves cut into them which recall those on a tenth-century spur from 16–22 Coppergate, York (sf5618, Ottaway forthcoming). Both are plated with non-ferrous metal.

Apart from the Winchester bit referred to above, the most closely comparable cheekpieces to these two come from Thetford itself (Goodall, I.H. 1984, 100, fig.138, 250). The lack of *comparanda* in either Britain, or elsewhere in northern Europe, for these two items may well reflect the existence of a distinct regional tradition in the manufacture of horse and riding equipment in the Thetford area in the tenth to eleventh century.

No.135 is probably a bridle attachment link from a snaffle bit. The rounded loop would have joined with the mouthpiece and the triangular link with a bridle strap. There are no closely comparable objects but as already noted above, other bits employing such links are known.

131. L.108, W.25 mm.
SF15 M17, unstratified.
132. SF144 between Roads C and D?, Period VI to nineteenth century.
133. L.213, W.18 mm.
SF189 (1072) M21 F99, Period III pit, bottom 2' (61 cm).
134. L.185 W.13 mm.
SF259A (1426) between Roads B and C, Period IV–VI.
135. L.61, W.41 mm.
SF405 (2981) K25 F8, Period III pit.

136. Looped strap-end fitting from a **strap distributor**. Plated with non-ferrous metal.
SF429 (2072) J26 F16, Period V pit.

137. **Strap-guide**
SF229 O20 Ditch A layer (c), Period V–VII.

The group Nos 138–141 to SF308 are **horseshoes** or horseshoe fragments, of which the group Nos 138–140 are of the earlier type with countersunk nailholes. Horseshoes with this basic form of nailhole are found from the ninth to the mid-fourteenth centuries but their detailed shape, as well as that of the whole horseshoe, are subject to changes. The earliest type has a relatively wide, but thin web, or cross-section. The outer edge is generally smooth or only slightly shaped by the punching of the nailholes which have a rounded hole in a rectangular countersinking. Horseshoes of this type, which appear to have a date range from the ninth to the mid- eleventh centuries, have been recognised on a number of sites, including London (Clark 1986), Winchester (Goodall 1990), and York (Ottaway forthcoming). Previous excavations at Thetford have also produced them (Goodall, I.H. 1984, 104, figs 142–3, 277–95), although their secure dating to the pre-Conquest period was rarely possible. The group Nos 138–140 inclusive are mainly arm fragments but SF422 and SF37 are at least half horseshoes, all with three nailholes in an arm. SF497 near circular in shape, is a surgical horseshoe forged to its particular shape to remedy a foot ailment.

The objects in group SF497 to SF308 are horseshoes with rectangular nailholes, No.141 worn but otherwise complete, SF308 an arm with three countersunk nailholes.

138. L.99, W.25, T.4 mm.
SF269 (373) N18 F4, Period III pit.
(ni) L.50, W.22, T.7 mm.
SF78 (952) M20 F116, Late Period IV pit, top 1'–2' (30–61 cm).
(ni) SF422 (2818) context uncertain, probably J25 F15, Period III? pit, 3'–5' (91 cm–1.52 m).
139. SF438 (2047) J25 between Roads B and C, Period IV–VI.
(ni) SF37 between Roads B and C, Period IV–VI.
(ni) SF22 between Roads B and C, Period IV–VI.
(ni) SF195 between Roads C and D, Period VI to nineteenth century.
(ni) SF256A–O between Roads C and D, Period VI to nineteenth century.
(ni) SF501 (372), unstratified.
(ni) SF505 (383) M19, unstratified.

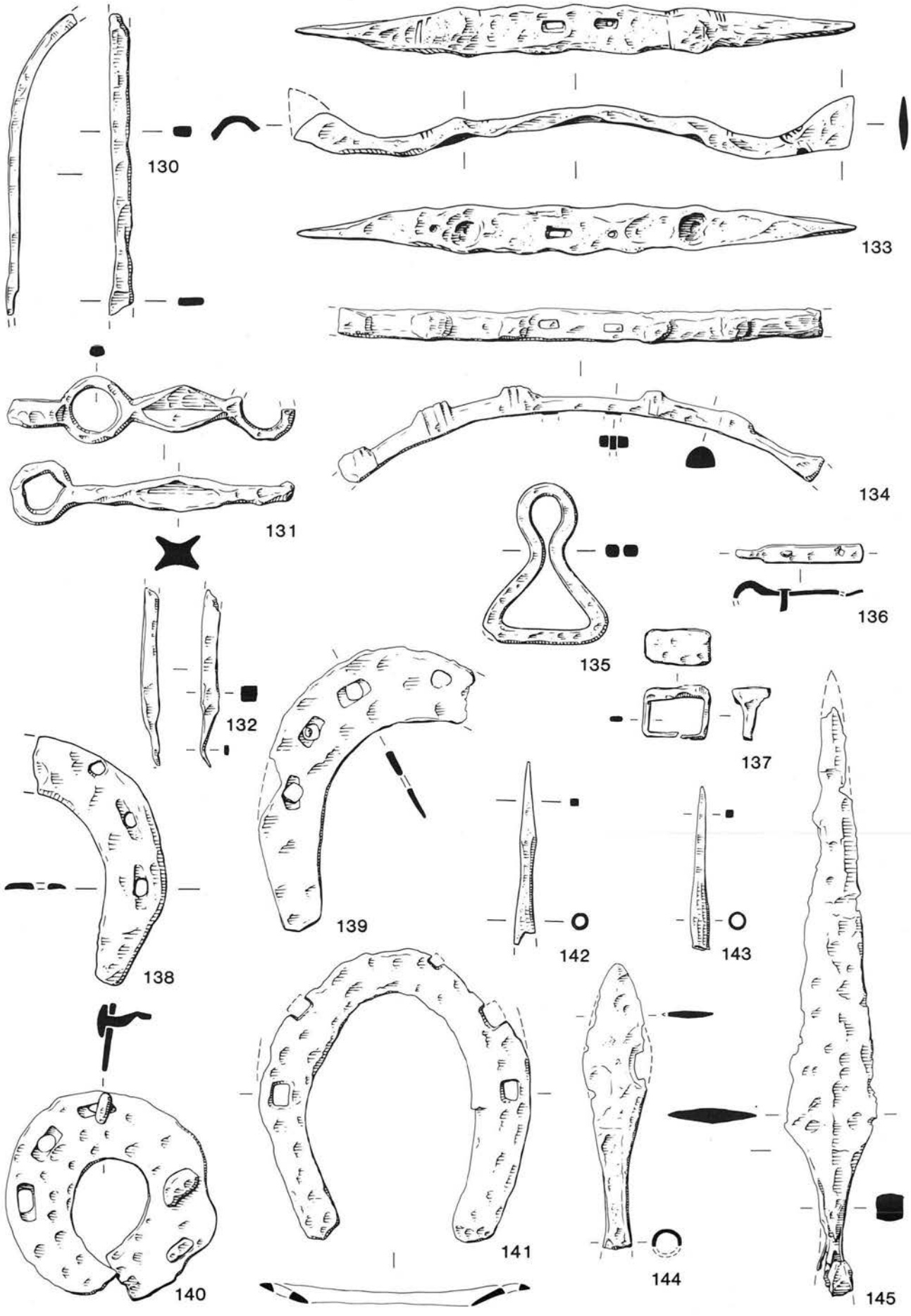


Figure 126 Brandon Road. Iron riding equipment and weapons. Scale 1:1.

140. SF292 (502) M19 F19B, Period IV pit with later top, from section trimming.
(ni) SF497 (1978) M24 F13, Period V pit.
(ni) SF309 (3079) provenance not clear, possibly Period VII.
141. SF449 (2013) J25 between Roads B and C at road junction, Period IV–VI.
(ni) SF308 (733) N23, unstratified.
(ni) Horseshoe nail. SF595 (83), unstratified above kiln N19 F7.

Weapons
(Fig.126)

Nos 142–145 are **weapons**. Nos 142 and 143 are small **socketed arrowheads** with a slim blade of rectangular cross-section. The most closely comparable specimens are from Anglo-Scandinavian contexts at 16–22 Coppergate, York (sf7586 and sf13921, Ottaway forthcoming).

No.144 is a **socketed arrowhead** or **small spearhead**. It was unstratified but is probably pre-Conquest since its lentoid blade form is virtually unknown after the later eleventh century. There is another arrowhead similar to No.143 from Thetford which is from a tenth or eleventh-century context (Goodall, I.H. 1984, 105, fig.144, 298). In the only substantial collection of arrowheads of late ninth to mid-eleventh-century date from Britain, found at 16–22 Coppergate, York (Ottaway forthcoming), the majority have lentoid blades. They are, however, usually tanged although a few are socketed. The blade of No.143 is also similar in size and form to that of a spearhead from Red Castle, Thetford (Knocker 1967, fig.13, 7).

142. L.70; blade: W.6 mm.
SF262 (280) N19 F6 layer (c), Period IV pit.
143. L.61; blade: W.5 mm.
SF420 (3059) J26 F6/F14, top filling of cellared Building L, Early Period V.
144. L106; blade: L.82, W.25 mm.
SF17 O17, unstratified.

145. (Pls XVII, XVIII) A small **socketed spearhead** (SF261) which, although not closely stratified, is likely to be pre-Conquest in origin. The blade has short concave shoulders before tapering to the tip. On X-radiograph it can be seen that the core is pattern-welded. (For details see below, Examination and Fig.131.)

Spearheads with blades of similar form to No.145 are particularly characteristic of the later ninth and tenth centuries. British examples, albeit somewhat larger than No.145, have been found in the Fens (Bjørn and Shetelig 1940, fig.35, 38) and in the River Cam (ibid., figs 33 and 41). Others come from well-dated contexts in Scandinavia including those from Trelleborg, Denmark (Nørlund 1948, 295, fig.XL, 1) and Birka, Sweden (Arbman 1940, taf.8–10). The pattern-welding of spearheads has only rarely been identified in Britain, probably because few have been X-rayed. It has, however, been found in two spearheads of ninth to tenth-century date examined by Gilmour (1986, 117–123) and one from near Malton, N. Yorkshire, in the Yorkshire Museum (Accession no.1986.27). The technique does not appear to be used for weapons much after the end of the tenth century although it continued, on occasions, to be used for knives. L.240; blade: L.200, W.34 mm.
SF261 (1428) between Roads C and D, Period VI to ninteenth century.

Corner brackets

180. SF775A–E Five **corner brackets** which are widest at the corner, the arms narrow outwards and are pierced at the ends, nail stubs survive in most cases. There are wood remains on their inner faces (Fig.130).
A. L. of arms 86 and 56, W.29 mm.
B. L. of arms 94 and 40, W.24 mm.
C. L. of arms 70 and 48, W.28 mm.
D. L. of arms 70 and 64, W.24 mm.
E. Arms incomplete. L. of arms: 51 and 26; W.26 mm.
(3053) in burial M25 F25, at head, feet and pelvis of skeleton, Period III?

Kilnyard 1966
(Part III, above)
(Fig.127)
by Patrick Ottaway

146. The blade of a **pivoting knife**, has a blade each side of an M-shaped indentation. The whole blade swivelled on a rivet which passed through the hole in this indentation and was bedded at each end in the now missing scales of the knife handle. An adjacent rivet acted as a stop when the blade was swivelled, exposing whichever blade was required. The shorter blade has an angled-back, and the larger a stepped, partly concave back and cutting edge. Pivoting knives are known from a number of sites and usually occur in ninth to tenth-century contexts including Thetford itself (Goodall, I.H. 1984, 81, fig.122, 48–9), Little Paxton, Cambridgeshire (Addyman 1969, 86, fig.16, 4), Canterbury (Graham-Campbell 1980, 135, pl.289, no.473), Northampton (Goodall 1979, 268, fig.118, 31), Winchester (Goodall 1990) and York (Ottaway forthcoming). The form of No.146 is the most common and it is of average size although smaller and much larger examples are known. The function of these knives is not certain but they were perhaps used for specialist purposes in a number of crafts. L.115 mm.
SF403 (1476) D16, over and around kiln D16 F61.

Nos 147, 148 and SF404 are whittle tang **knives**. Nos 147 and 148 have blade backs and cutting edges which are straight and parallel before tapering to the tip. They are comparable to the group Nos 57–64 to SF300 (above). SF404 has a blade back and cutting edge which tapers from junction with the tang. It is similar to the group Nos 65–67 to SF301 (above).

147. SF407 (1534) D16, in trample south-west of kiln D16 F46.
148. SF553 (1504) over pit C16 F2.
(ni) SF404 (1554) pit C16 F2.

(ni) **Nail**, shank incomplete. L.40; head: W.14; shank: T.4 mm.
SF658 (1602) C16 F11.

(ni) **Chain link**.
SF333 (1612) pit C16 F11.

149. Goad and back fragment from a **prick spur**. The goad is unusually long but is comparable to that of another spur from Thetford (Ellis 1984, 101, fig.140, 266). It is decorated towards the base with a slight spherical expansion between two groups of three encircling grooves. There are no exact parallels but similar decorated goads are known from Thetford itself (Ellis 1984, 101–2, figs 140 and 141) and York (Ottaway forthcoming). The X-radiograph shows that it is plated with non-ferrous metal, probably tin or tin-lead alloy. L.48 mm.
SF298 (3088) pit C16 F7, top 6" (15 cm).

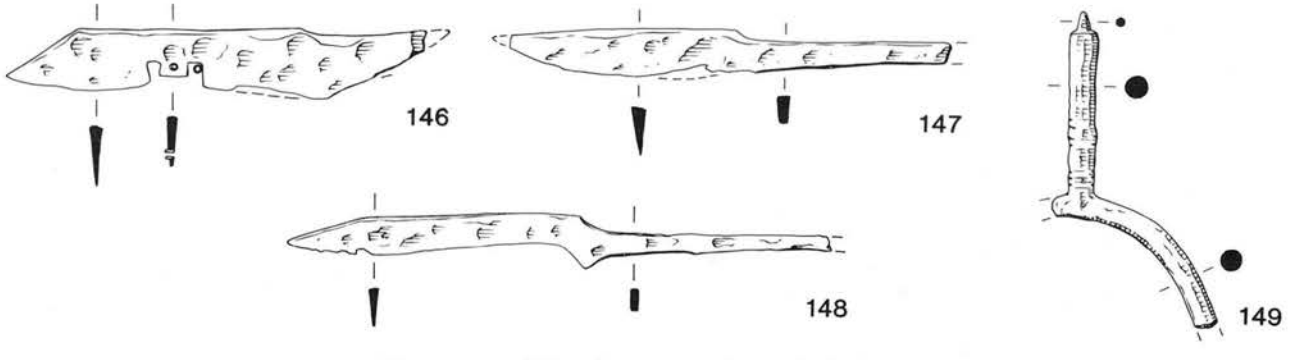


Figure 127 Kiln site. Iron objects. Scale 1:2.

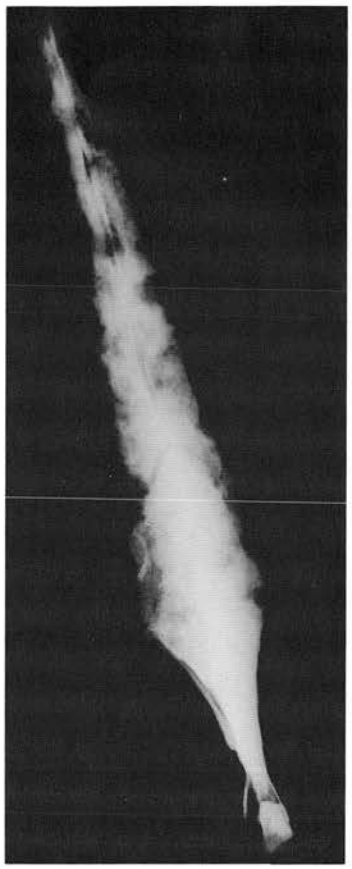


Plate XVII Iron spearhead (SF261): X-radiograph. Scale 1:1. (See Fig.126, No.145; Fig.131.)

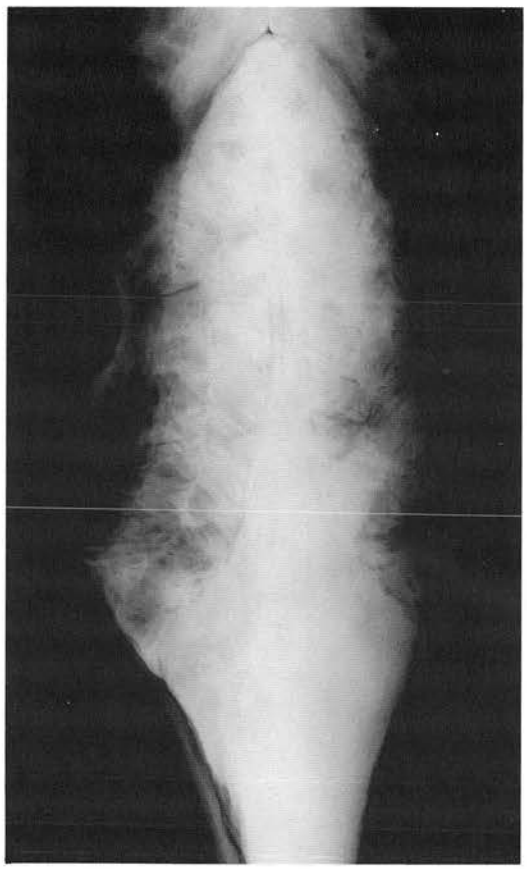


Plate XVIII Iron spearhead (SF261): detail of X-radiograph showing herringbone effect of pattern-welding.

1969 – 70 Trench 1

(Part IV, above)
(Fig.128)
by Patrick Ottaway

No.150 and SF1014. Pieces of **bar iron** which may be set alongside others of tenth to eleventh-century date from Thetford (Goodall, I.H. 1984, 77, fig.115, 1 – 3i), and Nos 1 and 2 and SF400 at Brandon Road.

150. L.76, W.20, T.10 mm. SF890 (750) F46.
(ni) L.85, W.35 mm. SF1014 (682) F22.

(ni) **Wool comb tooth**. Rectangular cross-section. L.113 mm. SF974 unstratified.

151. An **awl**, or **small punch**, which has two arms of rectangular cross-section. It may be compared with four other examples from Thetford (Goodall, I.H. 1984, 81, fig.120, 37 – 40). L.95 mm. SF1010 (560) F13 layer (36).

152. Probably a fragment of a **pivoting knife**. A note on this type of knife appears under No.146 above. L.70, W.15 mm. SF888 (801) layer (39).

SFs895, 887, 889. Whittle tang **knives**. SF895 has a back which is straight before curving down to the tip. It is comparable to the group Nos 57 – 64 to SF300 from Brandon Road (see above). SF887 and SF889 have blades with backs which are slightly convex and they appear to taper from the junction with the tang. SF887 has a pronounced S-shape cutting edge due to heavy wear. They are comparable in blade form to the group Nos 65 – 67 to SF301 from Brandon Road (see above). SF887 is unusual in having a tang which is both long in absolute terms and in excess of twice the length of the blade. This feature appears to be characteristic of late ninth to eleventh-century knives and rarely occurs on examples from earlier or later contexts (Goodall, I.H. 1984, 81; Ottaway forthcoming).

(ni) L.70; blade: L.47, W.11 mm. SF895 (617) F23.
(ni) L.172; blade: L.67, W.15 mm. SF887 (595) layer (58).
(ni) Blade incomplete. L.95; blade: L.54, W.13 mm. SF889 (620) F23.

Nails

(ni) Shank only L.65 mm. SF883 (701) layer (31).
(ni) Shank only L.70 mm. SF884 (870) layer (31).
(ni) Shank tip missing. L.43; head: W.20; shank: T.5 mm. SF885 (870) layer (31).
(ni) Not catalogued, SF1005 (577) F13 layer (36).
(ni) Not catalogued, SF1007 (562) top of F13 layer (34).
(ni) Complete length, slightly domed head. L.40; head: W.10; shank: T.3 mm. SF1011 (561) layer (8).
(ni) Complete length, shank tip bent. L.38; head: W.11; shank: T.4 mm. SF1012 (561) layer (8).
(ni) Shank tip missing. L.38; head: W.14; T.3 mm. SF1013 (561) layer (8).

(ni) **?Bolt**; very corroded. L.110; head: W.26; shank: T.12 mm. SF971 (700) layer (56).

(ni) Rectangular **staple**. SF1006 (577) F13 layer (36).

153. **Tube**, possibly a broken tool or spearhead socket. L.110, D.17 mm. SF1003 (580) layers (46) – (48).

(ni) **Horseshoe**. The arms have smooth outer edges, a feature more usually found on horseshoes of the tenth and early eleventh centuries. Late eleventh to thirteenth-century horseshoes usually have a wavy outer edge (Clark 1986). There are similar shoes from Brandon Road (see above) and The church site (see below). L.100, W.30 mm. SF894 (725) F23.

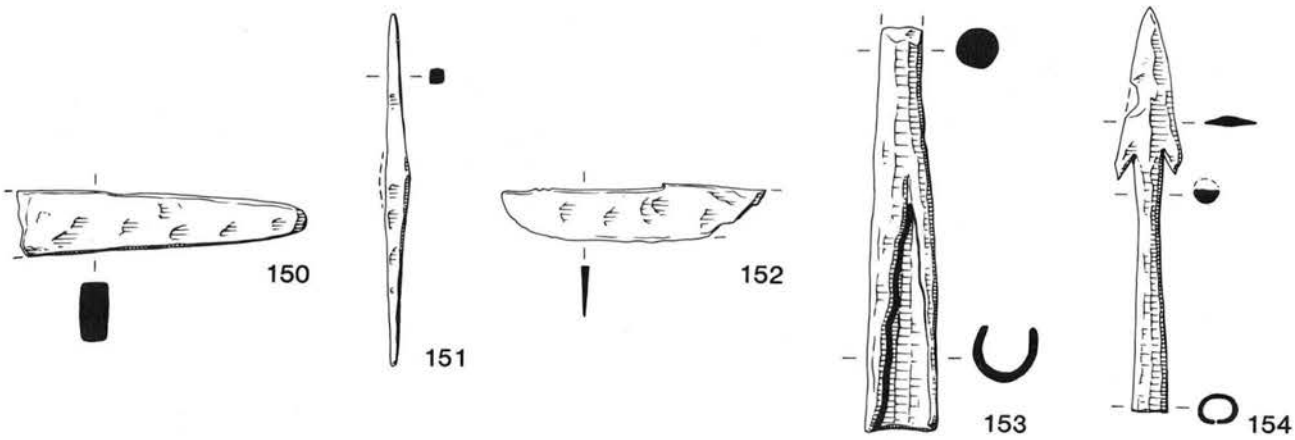


Figure 128 Site 5759, Trench 1. Iron objects. Scale 1:2.

154. **Arrowhead**, or **small spearhead**, with a barbed blade. Barbed arrowheads were developed in the twelfth or thirteenth century for use in hunting (L.M.M.C. 1940, 68). L.111 mm.
SF893 (618) F23.

(ni) ?**Arrowhead socket**. L.52, D.25 mm.
SF886 (870) layer (31).

Assorted scrap
(ni) Strip fragments.
(ni) SF1001 (566) layer (3).
(ni) SF1004 (537) unstratified in section collapse from F13.
(ni) SF1016 (536) unstratified in section collapse.

Plate fragments
(ni) L.42, W.8
SF891 (726) F23.
(ni) Two pieces: a) L.34, W.23; b) L.18, W.15
SF896 (728) F23.
(ni) Not catalogued.
SF1015 (528) layer '(2)'?

Fragments
(ni) SF1008 (560) F13 layer (36).
(ni) SF1009 (560) F13 layer (36).

1969 – 70 Trench 2 The church

(Part III, above)
(Fig.129)
by Patrick Ottaway

Pieces of bar iron
(ni) L.76, W.17, T.9 mm.
SF846 (1544) sealed beneath F238, unstratified pre-Period VIII.
(ni) SF921 (845) F52, modern.

Nos 155 and 156 **Tanged punches**. The tangs would originally have been set in bone or wooden handles. No.155 has a tang and working arm of roughly equal length whereas No.156 has a tang considerably shorter than the working arm and there is a shoulder between them. They may have been used in non-ferrous metalworking, perhaps for chasing or decorative work.
155. L.96, T.10 mm.
SF811 (844) unstratified, north of north annexe.
156. L.136, T.6 mm.
SF835 (1518) F249 grave.

No.157 and SF871 **Wool comb teeth** similar to those found elsewhere in Thetford (Goodall, I.H. 1984, 79, fig.119, 22 – 30, and see above).
157. Rounded cross-section. L.88 mm.
SF807 (1522) F252 Period I, burnt layer.
(ni) Incomplete. L.68 mm. SF871 (1657) Period III, built into F214, south wall of nave.

Leatherworker's awl with arms of characteristic diamond-shaped cross-section similar to the awls, Nos 47 – 50 from Brandon Road.
158. L.68, W.2 mm.
SF828 (145) unstratified, in south-east part of site.

159. **Pivoting knife**, one blade incomplete. This is a smaller version of No.146 above. L.47, W.9 mm.
SF863 (1638) Period III, built into F211 west wall of nave.

Nos 160 – 162 Whittle tang **knives**. No.160 is probably a weapon since it has a very substantial blade 234 mm long and 41 mm maximum width. The blade back slopes upwards and then becomes slightly, if irregularly, concave as it slopes down to the tip. This form is characteristic of blades of a wide range of sizes dating to the mid-ninth to mid-eleventh centuries.

Nos 161 and 162 are small domestic or craft knives. They have blade backs which are straight before curving down to the tip and are comparable to the group Nos 57 – 64 and SF300 from Brandon Road (see above). No.161 is comparable to SF887 from site A (see above) in having a tang over twice the length of the blade. Since this feature appears to be characteristic of knives of the later ninth to eleventh centuries, No.161 is probably residual in its context. No.162 is distinctive because at the point where the back begins to curve down to the tip there are two transverse notches cut into it. The possible significance of such notches is discussed in relation to SF334 from Brandon Road (see above).
160. L.234, blade: L.187, W.41, T.7 mm.
SF861 (1690) unstratified.
161. Blade tip missing L.173, blade: L.76, W.12 mm.
SF874 (619) F84, grave.
162. Blade only. L.75 mm.
SF817 (827) unstratified in layer (g), north-west of church.

163. **Bell clapper**. L.88 mm.
SF854 (1585) 'F226' layers west of west annexe.

Nos 164 and 165 to SF824 **Staples**. No.164 is U-shaped. No.165 has a straight head with incurving arms and SF824 is rectangular.
164. L.45, W.24 mm.
SF859 (1627) F283 Period I, pre-church soil.
165. W.62 mm.
SF852 (1620) Period II, in F304 bedding trench of south wall of nave.
(ni) SF824 unstratified in layer (g), south of church.

(ni) **Hinge pivot.**
SF826 (791) beneath north annexe, unstratified pre-Period VIII.
174. **Hinge** with U-shaped eye. L.65 mm. SF870A (1692) F283 Period I, pre-church soil.

Group No.175 to SF920 **Strap** fragments
175. Pierced, two nails *in situ*. L.70, W.21 mm.
SF870B (1692) F283 Period I, pre-church soil.
(ni) SF803 unstratified, over church.
(ni) SF830 (132) unstratified, south of church.
(ni) SF920 (845) F52, modern.

176. Probably a figure-of-8-shaped **hasp** curved at 90 degrees in the centre to fit a box with a flat lid. Attached to it is what appears to be a figure-of-8-shaped chain link.
Hasp: L. of arms 41 and 38 mm; chain link: L.50, W.24 mm.
SF872 (1657) Period III, built into F214 south wall of nave.

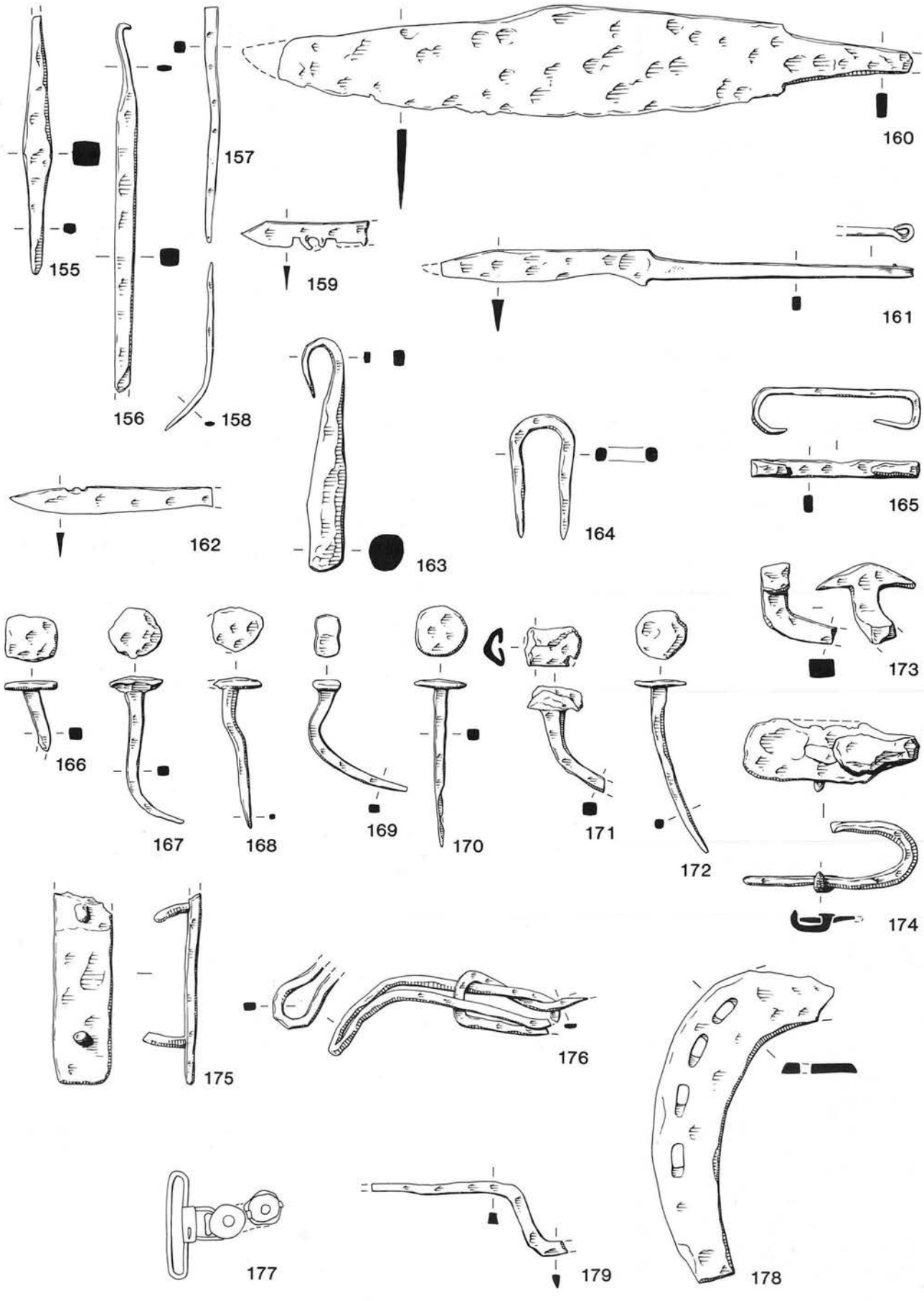


Figure 129 Site 5759, Trench 2 The church. Iron objects. Scale 1:2.

Rings. SF815 now incomplete, was found on the wrist of the skeleton in F92.

(ni) One-third survives. D.70, T.9 mm.
SF815 (835) F92, grave.

(ni) One half survives. D.67, T.7 mm.
SF929 (878) layer (g) (contaminated bag), unstratified.

(ni) **Tube** fragment. L.46, D.22 mm. SF930 (878) unstratified in layer (g) (contaminated bag).

177. Probably a post-medieval or modern belt-slide. It appears to consist of an oval loop attached to a strip of leather or textile.
SF810 unstratified.

(ni) Incomplete **boot plate**.
SF821 topsoil, over church.

Post-medieval **buttons**

(ni) SF834A unstratified, south of church.

(ni) SF834B unstratified, south of church.

178. **Horseshoes**. One arm with four oval countersunk holes and a smooth outer edge. L.106, W.30 mm.
SF816 (827) unstratified in layer (g), north-west of church. For a discussion of horseshoe form see Nos 138 – 141 Brandon Road, above.

Horseshoe nails

(ni) SF935 (878) layer (g) (contaminated bag), unstratified.

(ni) SF986 (841) layer (a), unstratified.

Assorted scrap

Plates

(ni) Tapers and slightly curved. L.48, T.9 mm.
SF804 (1527) F223, Period VIII floor.

(ni) Rectangular. L.50, W.34 mm.
SF822 topsoil.

(ni) Roughly rectangular. L.62, W.12 mm.
SF833 (107) unstratified, south of church.

(ni) One straight side, rest irregular. L.49, W.22 mm.
SF839 (1532) F229, grave.

(ni) In two pieces, two straight sides. L.32, W.23 mm.
SF866 (1641) F261, reburial.

Strips. All have rectangular cross-sections.

(ni) Curved towards one end. L.64, T.9 mm.
SF812 (841) layer (a), unstratified.

(ni) L-shaped. One arm tapers, the other wider and broken. Arms: L.45 and 16, T.14 mm.
SF813 (841) layer (a), unstratified.

(ni) Three fragments. SF820 topsoil.

179. Crank shaped. L.82, T.6 mm.
SF827 (747) F125, grave.

(ni) L.39, T.4 mm.
SF829 (134), unstratified south of church.

(ni) L-shaped. L.42, T.3 mm.
SF832 (115) unstratified, in south-east part of site.

(ni) L.44, T.12.
SF842 (1544) under F238, unstratified but pre-Period VIII.

(ni) Slightly curved. L.83 T.10 mm.
SF847 (1627) F283 Period I, pre-church soil.

(ni) Small lump.
SF806 (1522) F252 Period I burnt layer.

(ni) Fragment.
SF818 unstratified, in layer (a).

IV. Examination of Technological Material from Brandon Road, Metalworking Waste from 1969 – 70 Trench 1, and Evidence for Bell-Founding and other Technological Activities from 1969 – 70 Trench 2

by Paul Wilthew

Introduction

Technological material from the excavations was examined. Where appropriate the samples were analysed elementally using qualitative energy dispersive X-ray fluorescence analysis (XRF) and quantitative elemental analysis of selected samples of copper alloy casting waste was carried out by atomic absorption spectroscopy (AAS). The AAS method used was essentially that of Hughes *et al.* (1976). The XRF results are given in the discussion.

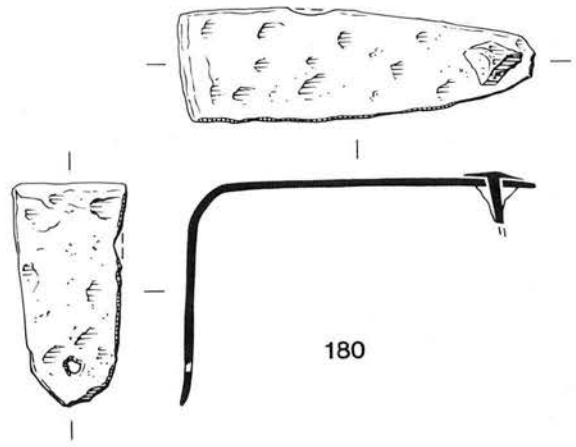


Figure 130 Brandon Road. Iron coffin bracket. Scale 1:2.

Brandon Road

(Tables 11 and 12, microfiche)

The vast majority of samples were from Periods III and IV and all the nonferrous metalworking material was from Period III, apart from two crucible fragments from Period IV.

Discussion

All the technologically significant material discussed below was found in contexts where it had clearly been dumped or reused. For this reason it was not possible to determine exactly where the activities described occurred but it is likely that they took place on or near the area excavated.

1) Ironworking

Small quantities (a few kilograms in total) of iron smithing slag and hearth bottoms, both of which are iron slags produced during blacksmithing, were present in the samples from Periods III, IV, V and VII and Areas J27, L23, K25, K28, M24, M26, L23, J27, N19, N24 and O20. In addition a few small pieces of iron slag which could not be positively identified as smithing slag were found. None of the iron slag was definitely produced during iron smelting (the production of metallic iron from iron ore) and it is almost certain that all the unidentified fragments were smithing slag.

Small amounts of iron smithing slag are found on most Iron Age or later occupation sites and therefore the presence of only a few kilograms of the material scattered widely over the site suggests that the excavated area did not include a blacksmith's forge, but that some blacksmithing took place in the vicinity of the site during Period III and/or later. Iron slags are very durable and can be found as residual or intrusive material in contexts of different date to when they were produced. It is not safe therefore to assume that iron smithing took place

throughout Periods III, IV, V and VII, even though iron slag was found in contexts from each of these periods.

Some of the other material examined may have been associated with ironworking, but could also have been produced during other high temperature processes. This material included the samples of hearth lining and the fuel ash slag, which is the result of a high temperature reaction between ash and silica-rich material such as sand or clay.

2) Non-ferrous metalworking

a) Period III

The major concentrations of copper alloy casting debris were found in J26 F31, and in K25 F8 (various layers), although it is possible, apparently, that the material from J26 was mislabelled and in fact also came from K25 F8.

The most significant find from J26 F31 was part of a casting of a thin curved copper alloy object still in place in a clay mould. The object resembled a shallow bowl but as the edges were missing it could have been part of any thin walled curved object such as a bowl or cauldron. The as-cast thickness of the object would have been 1 – 2 mm and it was at least 15 cm in diameter. The metal was almost completely corroded and an accurate quantitative analysis was therefore impossible but XRF indicated that the metal used was bronze (copper-tin alloy) containing a few percent or more of lead. The clay mould had a porous, coarse and not very refractory fabric which was reduced fired on the inside but oxidised fired on the outside. It resembled the mould used in the investment (lost wax, *cire perdue*) casting of bells (see below).

Evidence for bronze casting and bell founding was found in K25 F8, a large, deep pit. Small dribbles of bronze and substantial quantities of mould were found in the feature. Many of the larger fragments of mould clearly joined, including fragments from different layers. After assembling as much of the mould as possible it was apparent that most or even all of it came from a single bell mould. The majority of the fragments were from the core of the bell, but a few concave pieces may have come from the cope, although they were too small to confirm this. There was no positive evidence that more than one mould was represented, despite the fact that fragments were found in several layers of the feature. The rim of the mould was completely missing (it was probably left *in situ* in the casting pit) and it was not therefore possible to estimate the rim diameter of the bell accurately, but it was fairly small (probably about 30 cm). The mould was made from clay containing organic material which resulted in a porous fabric after firing. The clay was reduced fired and black. The mould was obviously not *in situ* in the bell pit and therefore the details of the casting operation are a matter of conjecture, but the bell was almost certainly cast by the investment method, using a procedure similar to that described by Theophilus (Hawthorne and Smith 1979) and Tylecote (1976). Similar moulds used to cast bells (Tylecote 1976; Duncan and Wrathmell 1986; Wilthew 1986a) and cauldrons (Wilthew 1986b) have been found on sites ranging in date from the tenth to the fifteenth centuries AD.

Three of the dribbles of metal were analysed using AAS and the results are given in Table 11. Sample 3 had a composition comparable to that of analysed examples of medieval bell metal (Tylecote 1986), and was probably from the same bell-founding operation as the mould described above. Samples 1 and 2, however, contained significantly lower levels of tin and would not have been suitable for use as bell metal. Their presence indicates that casting of bronze objects other than bells took place, but there was no indication of the types of object involved other than the mould from J26.

b) Period IV

The evidence for non-ferrous metalworking from this phase comprised two crucible fragments.

One (J26 F14) (bag 2916) was from a small crucible with a rim diameter of about 5 cm. It consisted of a reduced fired and fairly refractory inner layer surrounded by a less refractory, vitrified outer layer. The inner layer had a wall thickness of about 3 – 4 mm. It contained some corroded metal which was identified as brass (copper-zinc alloy) by XRF.

The second fragment (O20 F2(a)) (bag 34) had a reduced fired, fairly refractory fabric. High levels of zinc, moderate levels of copper and lead and traces of silver were detected by XRF on the vitrified inner surface of the fragment. The metal being melted was almost certainly silver, containing minor amounts of the other elements, as copper, lead and, particularly, zinc enter the vitrified layers inside crucibles to a much greater extent than silver.

3) Painted plaster

Three fragments of painted plaster from L27 F41 (bag 2086) (from a well, filled in Period VII) were examined. They included white and red fields, the red being on a white ground apparently the same as the white pigment. XRF of the white pigment/ground showed it to be calcium rich. A sample effervesced strongly in dilute hydrochloric acid. The white pigment was therefore almost certainly calcium carbonate. The red areas were rich in lead (detected by XRF) and the red pigment was presumably red lead.

4) Other material

There was no positive evidence to connect the remaining samples with any technological process. Although some of the burnt clay may have been from metalworking hearths it could also have come from any non-technological clay structure, and much of it was probably just burnt daub. Similar comments apply to the other burnt material.

Metalworking waste from 1969 – 70 Trench 1

Samples of possible technological significance from the excavations carried out at Site A (Site 5759), were examined. They included slag, hearth lining and one crucible.

Apart from the crucible, all the material examined either was or, in the case of the hearth lining, probably was, associated with ironworking. The material included iron smithing slag, hearth bottoms and tap slag. Both the iron smithing slag and the hearth bottoms are produced during iron smithing, whereas tap slag is slag which has been allowed to flow from an iron smelting furnace. Some samples, described as iron slag in the appendix, were too small for the process which produced them to be positively identified. The sample of probable blast furnace slag (F22) was almost certainly intrusive. The total quantity of material examined was only about 15 kg although a similar quantity of slag from the site in the form of small amounts from various contexts was not examined.

The samples of iron smithing slag came from both tenth and eleventh-century levels, whereas tap slag was only found in the eleventh-century material examined. However, considering the small quantities of slag involved, the only conclusion that can be drawn from this material is that iron smithing and iron smelting took place on or near the site at some time in the tenth and/or eleventh centuries AD, but probably only on a small scale. Small quantities of iron smithing slag and hearth bottoms are found on most Iron Age or later occupation sites.

The presence of the crucible (F22/23, bag 743) indicates that silver was being melted on or near the site during the eleventh century. XRF indicated that the silver contained copper, lead and zinc but it was not possible to determine at what concentrations. In the absence of additional evidence for silver working no further conclusions can be drawn.

Evidence for bell founding and other technological activities from 1969 – 70 Trench 2

(The church F285)

Introduction

Samples from a possible bell-casting pit and associated features were examined, together with a few finds from other features, most of which were fragments of corroded metal. The results are given in Table 12 below. Identifications of the samples and a discussion of the results are given below.

Discussion

1) Bell founding

The possible evidence for bell founding comprised pieces of mould and dribbles of metal from F285 (Figs 108, 110, 112) and smaller amounts of fired clay and corroded metal from F284, as well as some samples derived from these features in floor F223 and general cleaning called F228. Each of these features was from Period V (probably late twelfth century AD) which was 'defined by the casting of a bell, or bells' (site notes). The major features likely to have been directly associated with bell founding were F284 and F285, both cut inside the west end of the extended church of Period IV.

F284 was an irregular oval pit, 3.0 m in length and 1.15 m in width, orientated north to south. The north end of the pit was rounded; it tapered towards the south end (the stokehole end) and sloped downwards from both ends towards the middle where there was a flue made from limestone blocks. The clay of the structure had been fired to a higher temperature than that of F285. F285, an irregular oval pit, 3.50 m long and 1.60 m wide, orientated east to west was about 1 – 2 m from F284. It had circular possible stokeholes dug slightly deeper than the rest of the pit at each end and parallel 'cheeks' of mortared limestone blocks along each face with a gap of about 25 cm (estimated from the plan) between them. There was evidence of firing but only to low temperatures, compared with F284. Both F284 and F285 had been deliberately refilled. The former was originally interpreted as a furnace used to melt bell metal and the latter as the bell-casting pit, but it is more likely that both were bell pits, perhaps served by a single furnace above the contemporary ground surface (so no trace of it survived).

The material from F284 which was examined comprised fired but not vitrified clay and a dribble of corroded bronze (copper-tin alloy). XRF showed that the metal could have contained high levels of tin (as would be expected in bell metal) and some lead.

The samples from F285 included substantial amounts of fired clay, most of which was almost certainly mould, and several small dribbles of copper alloy casting waste. The total weight of material was about 22 kg. Three of the dribbles were analysed by AAS and the results (see Table 12) were consistent with them being from a single batch of metal. The average composition (normalised to 100%) was 73.66% copper, 19.88% tin and 6.38% lead (zinc was not detectable in any sample). This composition is comparable with that of other analysed medieval bell metal (Tylecote 1986). Almost all the fired clay had a coarse, not very refractory fabric originally containing organic material resulting in a porous structure after firing. Both oxidised fired and reduced fired fragments were present and some pieces had both reduced and oxidised layers. This material is very similar to bell and cauldron mould found on other medieval sites (Duncan and Wrathmell 1986; Wilthew 1986a and 1986b). Only a small proportion of the fragments had an original surface surviving and most of those that did came from the cope of the mould although a few core pieces were identified. XRF analysis of traces of copper alloy corrosion products on the mould showed that bronze containing some lead was being cast. Unfortunately, the corroded nature of the deposits prevented reliable quantitative analysis of them. The fragments with surfaces were not sufficient to allow the object being cast to be reconstructed but in the light of the dribbles of bell metal and the location of the feature in a church it is reasonable to assume that it was a bell. The size of the bell could not be determined accurately, but the curvature of some of the mould fragments suggested a fairly small bell perhaps with a rim diameter of 30 – 35 cm.

The structure of F285 strongly suggested a bell-casting pit. The casting method used was probably similar to that described by Theophilus (Hawthorne and Smith 1979: all references to Theophilus below are based on this edition) and Tylecote (1976). The dried but unfired mould containing the pattern of the bell in, perhaps, tallow would have been placed in the centre of the pit supported on the limestone 'cheeks'. A furnace would then have been built up around the mould and holes would have been made in the mould to allow the tallow to escape (these would have been blocked with clay once the tallow had all run out). Fires stoked from each end would have been started in the furnace and the channel below the mould to melt out the tallow and fire the clay. It is possible that the furnace was built up gradually during firing, as described by Theophilus, until it was above the top of the mould, although there was no direct evidence for this. If Theophilus's method was followed, immediately before casting the furnace would have been dismantled, and the casting pit filled with earth to support the mould during the casting operation. After casting, the bell would have been removed from the pit as rapidly as possible and the core of the mould broken away to minimise the chance of cracking due to shrinkage of the metal around the core during cooling.

Other contemporary features near F285 may have been associated with the bell founding or subsequent bell hanging but there was no direct evidence for this although fragments of mould were found in F223, the floor above and general cleaning ('F228').

V. Metallurgical Analysis of Spearhead SF261

(Fig.126, No.145 and Fig.131; Pls XVII and XVIII)
by J.G. McDonnell

Introduction

The spearhead is probably pre-Conquest (see Ottaway, above); it measured 220 mm in length and had a maximum width of 34 mm (Pl.XVII). X-radiographs had revealed that it was pattern-welded, and therefore a detailed analysis was required.

Methods of analysis

The spearhead was X-radiographed and photographed. It was fully encased in micro-crystalline wax (m.pt. approximately 70 degrees C) to stop the corroded surface breaking or flaking-off during sectioning. Two wedge-shaped sections were removed by cutting with a jeweller's piercing saw. The sections were mounted in conducting bakelite and prepared in the usual manner. The sections were examined in the unetched condition to determine slag inclusion distribution, and then etched in 2% Nital. The microstructures were examined and micro-hardness (200gmf) and Vickers Hardness (5Kgf) tests carried out. Chemical analyses of slag inclusions were obtained using an S.E.M. with an attached energy dispersive X-ray analysis system, and the phosphorus content of the metal by using an Electron Probe Micro-Analyser (EPMA). The metallurgical terms used are defined in Tylecote and Gilmour 1986.

X-radiography results

A series of radiographs of varying exposure were taken to determine the nature of the pattern-welding and to survey the extent of corrosion in order that the sections could be placed in the most informative position. During the cutting of the first section the cuts were monitored by X-radiography. The results (Pl.XVIII and Fig.131) show that the spearhead was manufactured from a number of different components. These could be divided into two units; first, the base of the spearhead which included the pattern-welding. This was welded to the second unit, the blade, which was formed from two strips welded together down the centre. The radiographs showed that the base of the spearhead was asymmetrical, the spine of the spearhead was not central, and there was more pattern-welding present on one side than the other. This was due to manufacture and wear rather than corrosion. The pattern-welding was interpreted as two strips of 'iron' plied together and welded onto the surface of the spearhead, thus giving a herringbone pattern on the X-radiograph. The methods of pattern-welding were discussed by Anstee and Biek (1961, 71–93) and Gilmour (in Tylecote and Gilmour 1986, 250). The base-to-blade weld was 'U-shaped' and was very distinct along its whole length. The weld line running the length of the blade appeared to divide into two weld lines, indicating that the blade was manufactured from three pieces rather than two. The corrosion patterns generated by the slag inclusions indicated that the iron was relatively clean, and there was an absence of long stringers. The circular pattern of corrosion on the blade is typical of steel rather than ferritic or phosphoric iron. In order to investigate the three major components of the spearhead two sections were removed.

Metallographic results

(Fig.131) (Table 13, microfiche)

Section 1

Section 1 (S1) included one side of the blade, the base-to-blade weld and the pattern-welded region of the base. In the unetched condition eight separate components could be distinguished. The major parts were the pattern-welded strips (1–4), the central core (5) and the central spine or second core (6), the heavily slagged base of the blade (7) and the clean cutting edge (8). Two of the pattern-weld strips and the central core were manufactured from piled iron, indicated by slag lines. The weld lines were apparent but not poorly formed, *i.e.* although containing many slag inclusions there were no voids. The exception was the interface between the slaggy base of the blade (7) and the cutting edge (8) where no weld line could be distinguished.

In the etched condition (Pl.XVIII) the base of the spearhead, components 1–6, was shown to be predominantly ferritic with some grain boundary pearlite nucleated on the slag inclusions. The piled strips and core showed some variation in pearlite content.

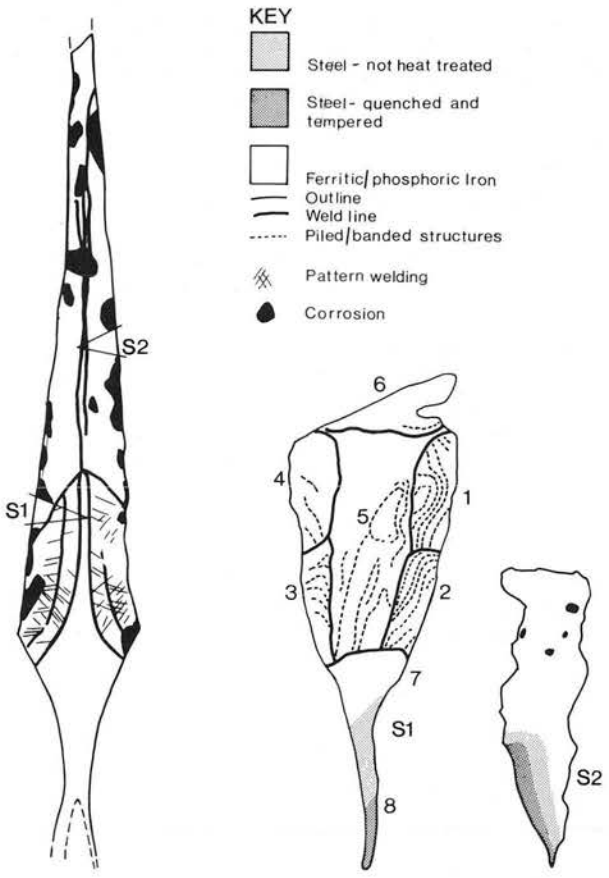


Figure 131 Brandon Road. Iron spearhead SF261 (Fig. 126, No.145). (a) Interpretation of X-radiographs and position of sections 1 and 2 (see Pls XVII, XVIII). (b) Interpretation of section 1 showing the light components, the piled structures (components 1, 3 and 5) and the carburised cutting edge (component 8). Not to scale. (c) Interpretation of section 2 showing carburised cutting edge. Not to scale.

The blade comprised two components. First, the very slaggy iron (component 7) which was predominantly ferritic with a fine carbide precipitate due to age hardening effect. Second, the cutting edge which was a slack quenched low carbon steel. The microstructure changed gradually from tempered martensite at the tip to ferrite and pearlite at the weld line. There was a decreasing carbon gradient from the tip towards the weld line, suggestive of either surface carburisation, or decarburisation of the joint area during welding. The latter is more probable. The presence of smooth rounded ferrite grain boundaries in the ferrite and pearlite region shows that the blade had not been fully austenitised in the last heat treatment cycle. The hardness results obtained from each component are given in Table 15. These low values show that the ferrite was generally free of phosphorus although the slag band at the weld between components 5 and 6 showed an increased hardness typical of increased phosphorus content. The piled structure in component 3 showed similar hardness values both in the ferritic clean band and in the slaggy band. The hardness of the cutting edge showed some decrease at the tip, possibly due to decarburisation.

Section 2

Section 2 (S2) was removed from the other side of the blade from which Section 1 was obtained (microfiche). In the unetched condition it displayed a structure broadly similar to that of the blade in Section 1, having an inner part of very slaggy iron. There were no distinct weld lines, only differences in the number of slag inclusions. In the etched condition the section displayed a similar overall structure to that of the blade of Section 1. The slaggy region was ferritic with varying grain size. Within this area there were two areas with few slag inclusions

present, both of which were large-grained ferrite. One side of the cutting edge in the clean area of the blade had been carburised giving a tempered martensite microstructure with some pro-eutectoid grain boundary ferrite present. The carbon content declined both across the blade and up the blade, the structure changing to low carbon martensites with Widmanstatten ferrite, and finally ferrite. The ferrite grain size was significantly smaller than that in the slaggy region. There was a gradual increase in grain size to that of the slaggy region. The hardness values are given in Table 16 (microfiche). They showed that there was no significant difference between the microhardness of the ferrite with different grain sizes, and that there was no substantial phosphorus content in these areas.

Slag inclusion analysis

The slag inclusions in archaeological iron were derived from two sources. First, those resulting from the smelting process, *i.e.* inclusions of smelting slag. Second, those formed on the surface of the iron during primary smithing (refining of the bloom) and secondary smithing (manufacture and repair of the artefact). The two inclusion types may have different morphology, chemical and mineral composition. Smelting slag inclusions in iron derived from different ore sources may have different compositions, as may smithing slag inclusions formed in different smithing operations. Therefore, in a complex artefact such as the spearhead a large variety of inclusions may be expected.

Slag inclusion morphology

There were two broad types of slag inclusion. First, inclusions which were usually single phase spheroidal and less than 10μm in diameter, although larger irregularly-shaped, multi-phase inclusions were sometimes present. Second, stringers in which the length was considerably greater than the width and two or three phases were present. Free iron oxide in the inclusions (as wustite or magnetite) will not be present in steel components due to the reducing effect of the carbon. The spheroidal inclusions are normally derived from the smelting process and the stringers from the smithing process.

Both types of inclusion were present in both sections of the spearhead, in particular the very slaggy component of the blade contained approximately equal numbers of spheroidal inclusions and stringers. The steel cutting edge contained very few inclusions. The piled or banded structures present in components 1–5 were defined by slag lines comprising stringers and spheroidal inclusions.

The chemical composition of the spheroidal slag inclusions and stringers

The chemical analyses of the inclusions were determined using an S.E.M. with an energy dispersive analytical system. The analysis of inclusions less than 4μm in diameter are inaccurate due to penetration of the electron beam through the inclusion into the metal matrix, thus giving a high iron content, and totals may exceed 100%. Inaccuracies also arise in the analyses of inclusions with a high percentage of low atomic number elements present.

The results from forty-three inclusions from Section 1 are given in Table 13. There were no significant differences between the compositions of the inclusions described as stringers and those as spheroidal inclusions. It is expected that inclusions with high manganese oxide contents would have been derived from the smelting process. Only one spheroidal inclusion and one of the stringers differed significantly (*i.e.* greater than two standard deviations) from the mean in manganese oxide content, although two other stringers were also high; two of these occurred in component 5 and two in component 6. No firm conclusion can be drawn from this, except that the majority of the iron was manufactured from low manganese ore. There were significant differences in the phosphorus content of the slag inclusions. In general the phosphorus level were high (mean = 9.4%, S.D. = 8.7%), but the percentages in the inclusions from components 6, 7 and 8 were low (mean values 1.4%, 1.6% and 0.6% respectively), as were the inclusions in the weld band between components 5 and 6 (mean value 1.6%). Therefore, the two components (7 and 8) that were selected to form the blade contained slag inclusions low in phosphorus.

The determination of phosphorus content of Section 1

Phosphorus has significant effects on the properties of iron and also inhibits carbon diffusion (*e.g.* see Tylecote and Gilmour 1986). It has a heterogeneous distribution in early iron and may range from 0% to greater than 0.5%. The hardness tests had indicated that the phosphorus content would be low, and there were no 'ghost phases' typical of highly phosphoric irons. The phosphorus content at 32 points was determined by the Electron Probe Micro-Analyser (the opportunity was taken to determine other elemental concentrations (Ni in 23 analyses, Cu and Cr in 19 analyses, Mn in 9 analyses and As and Co in 4 analyses)). The results are given in Table 14, the analysis position relates to the component number, *i.e.* 4.2 means a second location in component 4. Line concentration profiles were also recorded to determine the variation in phosphorus content. In general the results showed a very low phosphorus content, confirming the metallographic and hardness tests. The highest phosphorus contents (>0.2%) occur as isolated localised concentrations, the exception being the weld between component 5 and component 6. This band was consistently high in phosphorus and may therefore represent either a separate strip of iron being incorporated at the weld, or phosphorus enrichment during welding. The latter is more probable since the inclusions in the weld band were low in phosphorus, similar to the phosphorus levels in the inclusions in component 6, *i.e.* preferential oxidation (and removal) of the iron had occurred resulting in increased phosphorus content in the metal and of the number per unit volume of slag inclusions. There is a tendency for the clean ferritic bands in the piled structures of components 1, 4 and 5 to have a slightly higher phosphorus concentration than the intervening slag bands. The phosphorus contents of the two components (7 and 8) that form the cutting edge showed that they were manufactured from two different pieces of iron. The cutting edge itself (component 8) had an average phosphorus content of 0.07% (S.D. = 0.05%) which is close to the average of all analyses (mean = 0.1%, S.D. = 0.15%). This phosphorus has had no effect on the carbon diffusion, although the highest phosphorus reading occurred in the low carbon area at the tip (0.19% P). Metallographic analysis showed there to be a carbon concentration profile across and up the cutting edge, but phosphorus line concentration profile traces showed that there was no corresponding (inverse) phosphorus profile. The low concentration of phosphorus in components 6 and 8 correlates with low phosphorus contents of the inclusions in those areas. Similarly the inclusions in the slag band (component 7) were very low in phosphorus with two exceptions, but these were still low compared with the overall mean. There is therefore a general relationship between the phosphorus contents of the metal and that of the inclusions.

The analyses of the other elements (Cr, Mn, Co, Ni, Cu and As) showed no significant variations. Enrichment of certain elements, in particular As and Ni, does occur in ancient iron objects at weld lines due to preferential oxidation of the iron. Therefore, line concentration profiles were recorded across a number of weld lines and piled structures, *e.g.* in component 4, but no enrichment was detected except for that proposed for phosphorus above.

Conclusions

The spearhead was manufactured from at least ten separate pieces of low phosphorus iron. There were two broad divisions, the blade components and the base components. Each side of the blade comprised of two strips welded together, the inner strip being very slaggy. The blade had been manufactured from steel of varying carbon content or had been carburised. The carbon profile would suggest the latter. The two sides had been welded together in the centre of the blade utilising one or perhaps two intermediate thin ferritic strips (identified on the X-radiographs and on Section 2). The base components comprised the core piece to which four sets of plied iron strips had been welded to give a pattern-welded effect. The completed blade had been folded around the base giving a 'U-shaped' weld line. The blade had been slack quenched to harden the cutting edge.

The spearhead was manufactured to a high standard using all the skills of a smith. The materials had been carefully selected, avoiding phosphoric iron. The level of technology and skill accords with that observed in other iron artefacts (both domestic and military) of the Anglo-Saxon period.

VI. Stone Objects

Brandon Road

(Part II, above)

Hones

Seven **hones** have been misplaced since the excavations, and cannot be examined. The rest have been identified by D.T. Moore as Norwegian ragstone:

1. SF 488 (113) O19 F30, top of Period III pit.
2. SF 346 (3098), unstratified.
3. Irregular worn grooves both sides.
   SF 345 (2044) J24, unstratified on top of natural ground surface.

(ni) Small fragment.
SF487 (9) P21 F28(a), top of Period IV pit.

Querns

Not illustrated.

Over 120 fragments of Rhineland lava querns were found in the excavations. These occurred in all periods, but retained examples include twenty-six from Period III contexts and fifteen from Period IV. All are small fragments except for one unstratified piece originally *c.* 45 cm in diameter from the 1964 excavations.

Quern fragments of stone other than lava comprised: three coarse sandstone (one top of Q20 F1 (SFB2), one M26 F79 (Period VII), and one 'millstone grit' in Period III–IV pit K25 F15), and one quartz conglomerate (unphased post-hole N24 F51).

Miscellaneous stone objects

Stone types identified by D. Smith.

4. **Spindlewhorl**, mudstone.
   SF552 (987) M21 F57, Period IV gully.
5. **Spindlewhorl**, mudstone, smooth shiny surface.
   SF344, L20, between Roads B and C, Period IV–VI.
6. **Weight**, chalk, incomplete.
   SF347 (2903) J26 F38/F39, Period V.
7. **Gaming board**, chalk with fossilised *Inoceramus* valve. Disc 128 mm in diameter, 36 mm thick, with incised grooves up to 2 mm deep. Irregular round holes of various sizes up to *c.* 7 mm deep. A number of chalk gaming boards have been found at Castle Acre castle but none can be exactly paralleled here (Coad and Streeten 1982, 260–3, fig.51).
   SF349 provenance uncertain.
8. **Gaming board**? chalk, irregular lump, one surface incised parallel lines connected by shallower transverse lines.
   SF350 (1422) L22 F101, Period V drying oven, in lower clay floor.

Four examples of medieval **stone mortars** were found.

Fig.133

9. Fine oolitic limestone, white, worn interior.
   SF374 (3090) L24 F68, built into structure of L24 F68, Period VI–VII tank.

(ni) 'Purbeck marble' from Dorset (*viviperas*), smooth interior. Similar example from King's Lynn (Dunning 1977, fig.147, no.30).
SF463 (148) provenance uncertain.

(ni) Coarse oolitic limestone with much fossil shell, Barnack (Cambridgeshire) or Weldon (Lincolnshire) type. Base. *Cf.* Dunning 1977, fig.151, no.36.
SF467. L23, in Period VI–VII wall.

(ni) Oolitic shelly limestone (Northamptonshire/Lincolnshire type), vessel type uncertain.
SF468 unprovenanced.

Kilnyard

Fig.134

10, 11, 12. Three small **stone cylinders** of the same diameter with drilled holes in one end; 10 and 11 have holes the same size, but 12 is larger. The cylinders have smooth exterior surfaces but all show evidence of vertical tooling (struck chisel?); only No.10 seems complete as the base shows short tool marks at different angles. The white areas in the drawings represent finished surfaces (otherwise chipped). Two rough chalk lumps with similar holes previously found at Thetford (Rogerson and Dallas 1984, fig.149, nos 4 and 7) remain obscure in function. These specially-shaped cylinders are made of harder stone (10 mudstone, 11 and 12 siltstones) and a function in the potter's yard may be argued, particularly as two were found in the bottom of kiln D16 F46 and one in a pit to the south. They seem too small for door pivots, but would be suitable as part of a potter's wheel which would otherwise be constructed of wood and fired clay (*cf.* Whitehouse 1984). Rough limestone fragments with similar holes found in the medieval kilnyards at Lyveden, Northamptonshire, were thought by the excavators to have been pivot stones for potters' wheels (Bryant and Steane 1971, fig.23 a and c).

Nos 10 and 12. SF492, SF493 (1860) kiln D16 F46, north-east quadrant, in layer of pottery at bottom *c.* 3'3" (99 cm) down.

No.11. SF348 (1612) C16 F11, pit.

VII. Glass

No Anglo-Saxon vessel glass was found, and there were no early objects other than those below.

Brandon Road

(Part II, above)

Fig.135

1. **Finger-ring**, pale greenish-yellow glass. Similar rings found in tenth-century contexts at Lincoln were possibly made there (Graham-Campbell 1980, 134, *cf.* nos 465 and 466).
   SF18 N17 F8 Period III or Early V pit, depth 2' (61 cm).
2. **Bead**, opaque jade green glass. SF340 (3095) K25 F35, Period IV pit.

1969 – 70 Trench 2 The church

3. Medieval glass vessel rim, white, decayed.
   SF994 F223, Period VIII floor.

VIII. Pottery

Terms used here are those used in other Norfolk reports, particularly Rogerson and Dallas 1984 and, for later material, Jennings 1981. The main interest of the excavation was the Saxon-Norman period and Saxo-Norman wares have been given more attention (see Abbreviations, above).

Brandon Road

(Part II, above)

Over 17,000 sherds were found in the excavations, ranging in date from the mid-first to mid-sixteenth century AD in the phased sequence Periods I–VII (see above). Material which is unstratified or unprovenanced has not been included in the report or catalogued at Level III: in any case, it reflects the character of the pottery examined. The sherds have been divided by type and by occupation period below, omitting six sherds of Middle Saxon Ipswich-type ware as the site was not occupied in this period. Post-medieval material, beneath Road D and in the oven in K28, has not been included as a ceramic type as these features lie beyond the life of the general site occupation. Vessel estimates have not been done by pottery types as the sherds lay scattered in numerous features, but vessel estimates for each feature can be found in the fiche lists. The figures below represent sherd count unless stated otherwise. Pottery which was found residually in later contexts is included under the type headings, so that the totals are site totals unless stated otherwise.

Roman (Period I)

Five vessels (eighty-one sherds) were found in pits, three of which are illustrated Fig.136, Nos 1–3. Not illustrated are two sherds from pit M17 F13:

(ni) One bodysherd of a rilled jar, Claudio-Neronian or slightly later;

(ni) One sherd from shoulder of a carinated bowl broadly similar to Fig.136, No.1, Claudio-Neronian (inf. Tony Gregory).

About thirty sherds of first to fourth-century AD pottery were found scattered at random over the site, but have little relevance as no occupation of this period was found. The sherds are all residual in later

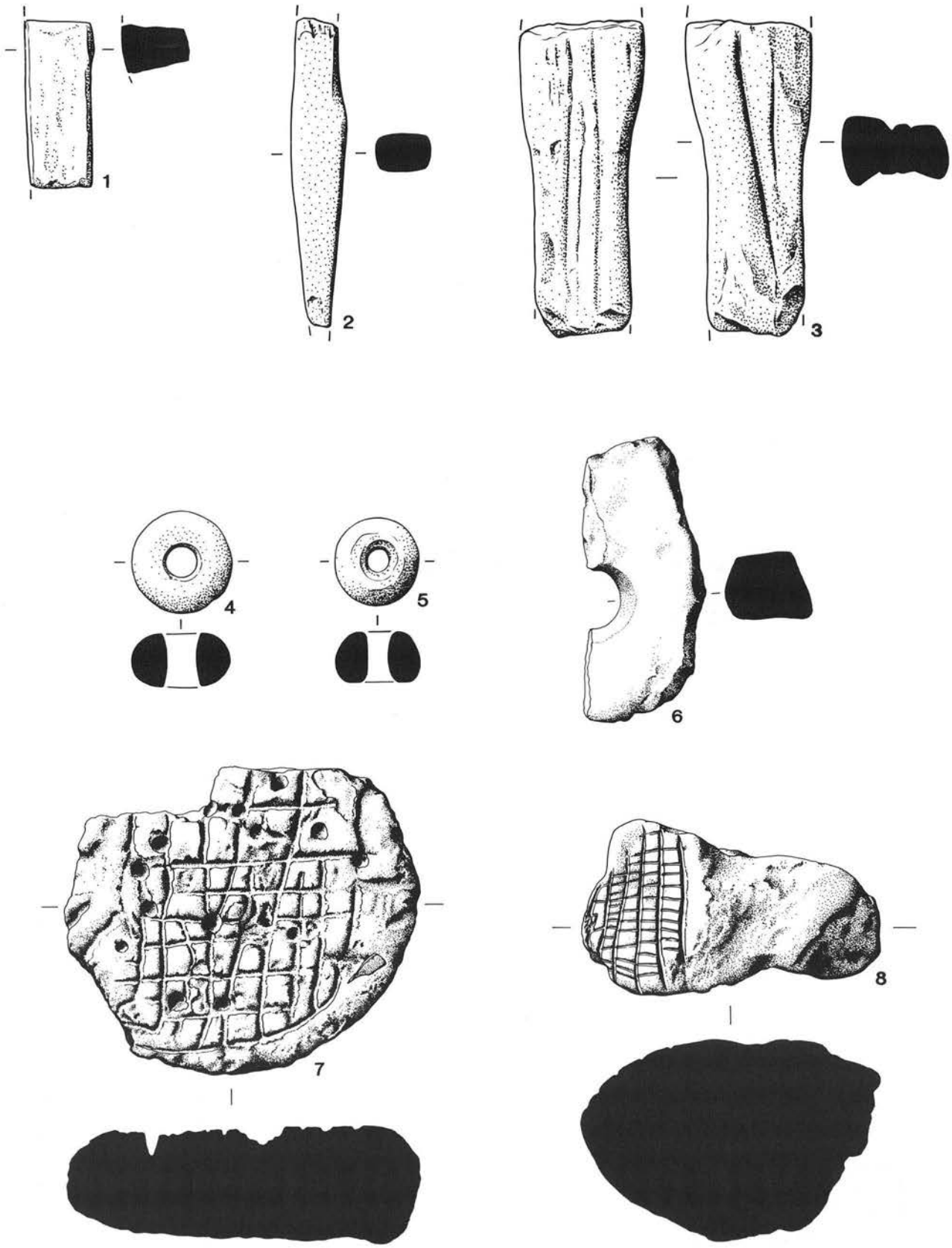


Figure 132 Brandon Road. Small stone objects Nos 1–8. Scale 1:2.

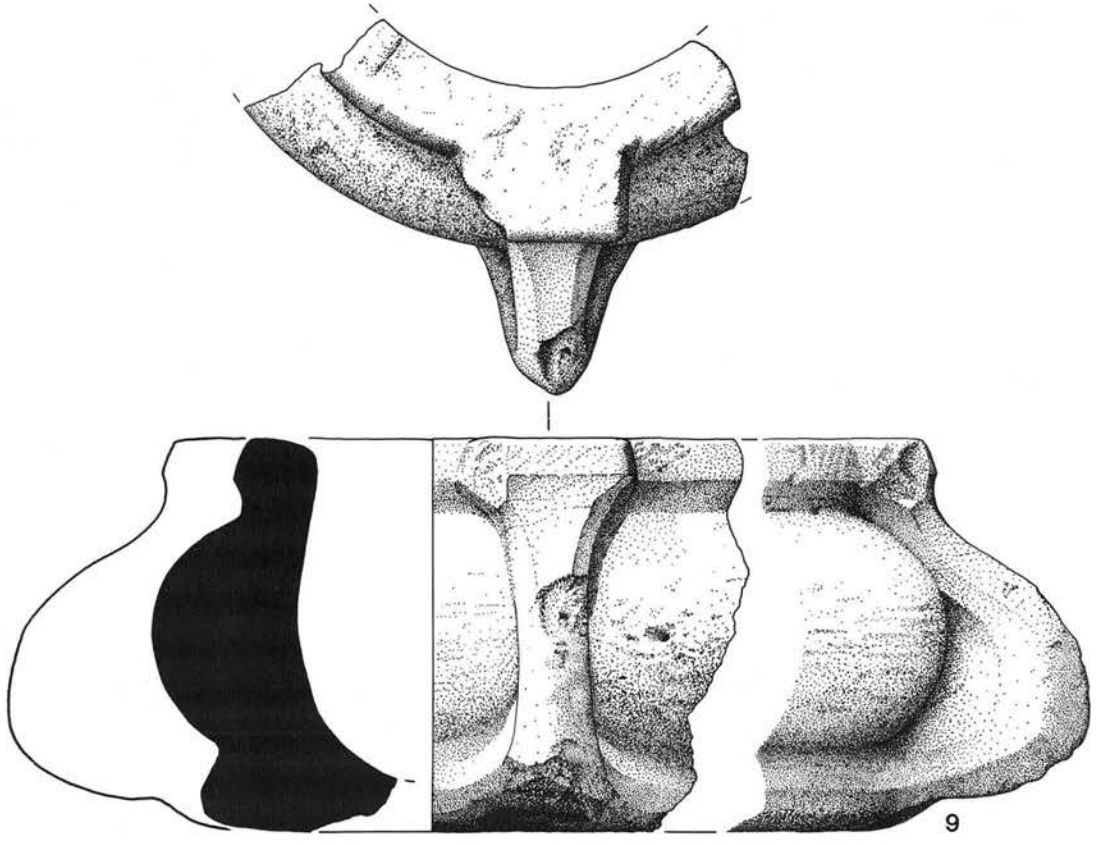


Figure 133 Brandon Road. Stone mortar No.9. Scale 1:3.

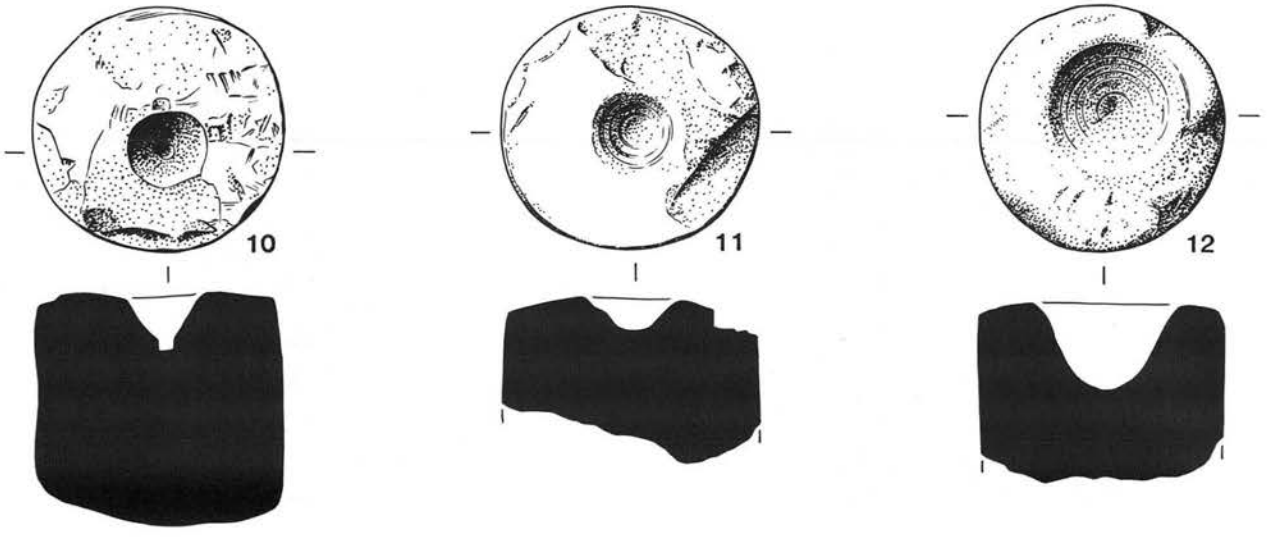


Figure 134 Kilnyard. Stone objects Nos 10–12. Scale 1:2.

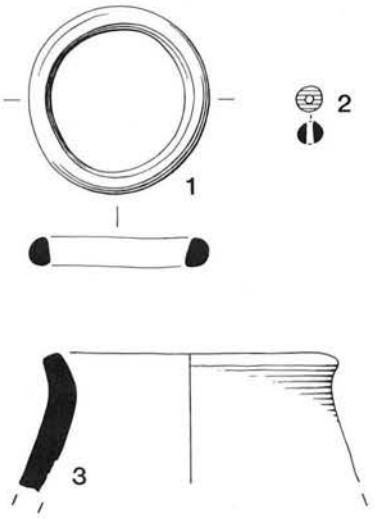


Figure 135 Glass objects. Nos 1 – 2 Brandon Road; No.3 Site 5759, Trench 2 The church. Scale 1:1

contexts with the one exception, M26 F41 (see Period I (Roman), above). These residual wares include one or two sherds of Much Hadham, black burnished, and colour-coated wares, and two probable amphorae sherds (bags 885 and 2991), but are mostly local wares from unknown kiln sites.

Handmade pottery (Periods I and II)

A total of 139 sherds were found, of which only twenty-five are stratified in *Grubenhäuser* (SFB1 – 4) and pits (Fig.136, Nos 4 – 7): a further twenty sherds were found on the top of such features, with later material. The remaining sherds are residual or unstratified. The total can be subdivided into the following fabric types:

(I) Sandy, tempered with quartz sand (sixty sherds, 43.2% of handmade)
(II) Fine sandy (nineteen sherds, 13.7%)
(III) Sandy with fine silver mica (eight sherds, 5.8%)
(IV) Coarse sandy/gritty, including white inclusions (eight sherds, 5.8%)
(V) Gritty, quartz inclusions (eighteen sherds, 12.9%)
(VI) Calcitic inclusions, often many voids (five sherds, 3.6%)
(VII) Organic tempered (fourteen sherds, 10.0%)
(VIII) Sandy with occasional organic particles (two sherds, 1.4%)
(IX) Flint gritted, probably Prehistoric (five sherds, 3.6%)

Most sherds are black, but some are partly brown, red, or orange. Many sherds are burnished externally.

There are twenty-one rims in the collection. Two seem to be bowls and the rest are small jars, usually with pulled-out rims although a few have upright or closed-in tops. The four bases are flat with rounded basal angles. Two vessels have scratched line decoration and may be Iron Age. One sherd is bossed and is clearly Anglo-Saxon.

Dating is difficult as it is still not possible to distinguish Early Saxon and Iron Age sherds, even by rim form, and both periods may be represented here. However, the stratigraphical position of the material suggests that it, or most of it, is Early Saxon, *viz*:

a) there is no handmade pottery in the two mid-first-century AD pits (O23 F14, M17 F13);
b) handmade pottery occurs in the *Grubenhäuser*;
c) the pits containing handmade pottery occur near the *Grubenhäuser*;
d) 'Grass-tempered' pottery (fabric VII above) seems unlikely to have been Iron Age.

No sherds are clearly fifth century, such as the carinated bowls and stamped sherds found at Red Castle (Knocker 1967) and it seems possible that this site is sixth or seventh century in date. As it seems likely to have been the eastern edge of the Red Castle settlement, a later date for features away from the ford and on the fringe of the settlement is perhaps to be expected.

Thetford Ware (TH) (Period III – IV)

Some 10,283 sherds of the phased site material (59.5%) are Thetford-type wares (including those in kiln N19 F7). Of the total, 94.5% would seem to have been made at Thetford in the tenth and eleventh centuries, with a small percentage of wares from other sources having been imported into Thetford in the later part of the eleventh century (fabrics (5) and (6) below). They can be divided into the fabrics and forms previously used for Thetford (Rogerson and Dallas 1984, 118 – 21).

Fabrics

(1) Smooth. This is a dense fabric so fine that inclusions are barely visible to the naked eye. It is light grey or light brown in colour. It was a product of Kiln 1 on Knocker's Site 2 North (Fig.2 GMK2) in the late eleventh century. Only one sherd was found on this site, in post-holes 020 F6.

(2) Fine. This fabric is tempered with fine quartz sand and is usually light grey or light brown. Some 215 sherds were found on this site (2.1% of TH), the rims being mostly 'cooking pots' of common types (AB5, AB6, AB7, AB8, AB11, AB13, AB14, AB16) but occasionally handled (AE7). This fabric was probably being made in kiln N19 F7 on this site (see below), but many other kilns in Thetford also produced such fabrics throughout the tenth and eleventh centuries.

(3) Medium. This is the usual Thetford fabric, with quartz sand tempering, including some some fine particles of iron ore, silver mica, and occasional calcite. Vessels are normally reduced grey. Although black, orange, pink, brown, red and white colours can also occur, any oxidised sherds tend to be kiln rejects. Some 9304 sherds on this site can be classed as fabric (3), 90.5% of the TH total. All forms were made in this fabric, throughout the tenth and eleventh centuries.

(4) Coarse. This also has quartz sand tempering, but the products are slightly larger and more numerous than in fabric (3). On this site, 172 sherds were found (1.7% of TH) and these are mostly from storage jars (AG). This fabric may have not been common early in the site sequence as only three sherds were stratified in Period III features, but thirty-five in Period IV (the rest were residual). Its origins are obscure, but it was probably a Thetford product.

(5) Coarse sandy. This is similar to fabric (4) but is slightly coarser and the sherds characteristically have red margins or core (often with a purplish tinge) and flaking surfaces. Some 122 sherds were found (1.2% of TH) but 110 of these belong to one vessel and the quantities on this site were small. Forms all seem to have been storage jars (AG). It seems likely that this fabric was not made at Thetford as it occurs more frequently on the eastern side of the county and has been found at Yarmouth (Mellor 1976, 172) and in Norwich (Jennings 1981, 22 – 3) (although there may have been more than one source). It would seem to date to the eleventh to early twelfth century.

(6) Grimston Thetford-type ware (GMT). This term has been retained in this report for a fabric resembling some of the wares found at Grimston in north-west Norfolk (Clarke 1970) but it is far from certain that this was the source of such vessels at Thetford. The fabric is coarse with quartz sand tempering and usually has distinctive small red inclusions (of ore?). Most sherds are a pinkish-brown colour, often with a light grey core. Some 443 sherds were found on this site (4.3% of TH). Most were storage jars (AG, fifteen rims), but seven jars or pitchers and two bowls are also recognisable. The Grimston kilns seem to have been in production by *c.* 1085 (Milligan 1982) and one of the Grimston kilns was dated archaeomagnetically to 1100 – 1150 (Aitken and Weaver 1963, 78), and this fabric seems to be late eleventh to twelfth century in date at Thetford. As not all Grimston forms are represented here, the source may have been an undiscovered kiln in a Greensand area nearer at hand. The nearest is an outcrop of Gault clay at Didlington some eight miles north-west of Thetford, and the Boulder Clay lies a few miles north of this (Corbett 1973, 85 – 6).

(7) High quartz content. This fabric has a tempering which predominantly consists of clear rounded quartz grains, and the body is usually light grey or whitish in colour. Twenty-six sherds were found (0.3% of TH) including one 'cooking pot' (AB11) rim. Nearly half of these were in Period III contexts, including kiln N19 F7 although it is unlikely to have been a product as the quantity is too small. This fabric was therefore present in the tenth century, possibly continuing into the eleventh century. Its source is unknown, but it could have been made at Thetford in kilns as yet undiscovered.

Forms

The most common vessel form is the jar A (Rogerson and Dallas 1984), which can be subdivided as follows:

AA small jar (9 – 11 cm diameter), sixty sherds (4.0% of TH rims).
AB medium jar or cooking pot (12 – 16 cm diameter), 1138 sherds (76.7% of TH rims).
AD pitchers, thirty-three sherds (2.2 % of TH rims).
AE handled jars, forty-one sherds (2.8% of TH rims).
AF large non-handled jars, thirteen sherds (0.9% of TH rims).
AG storage jars, sixty-five sherds (4.4% of TH rims).

Also identifiable are:

BB bowls, 109 sherds (7.4% of TH rims).
C costrels, nine sherds (0.6% of TH rims).
D lamps, fifteen, probably all baluster type (DB) (1% of TH rims).

Some rims are not readily classifiable, and it is difficult to distinguish between cooking pots (AB), pitchers (AD) and handled jars (AE) as the shapes of the rims are often the same. Bodysherds are rarely diagnostic with only decorated (*e.g.* AG) or unusually-shaped pieces (*e.g.* costrel necks) at all distinctive.

The largest number of TH rims in Period III were: AB1 (four), AB5 (seven), AB7 (twenty-six), AB8 (thirty-two), AB11 (seventeen), AB13 (seventy-three), AB14 (327 in kiln N19 F7, thirty-one other), AB15 (six), AB16 (twenty-seven), AB17 (eleven), AE11 (seven), AF2 (three), AG10 (eleven), AG11 (eight), BB12 (five), C (five), and DB (six).

The most common form at any time was the cooking pot with wedge-shaped rim AB13 (284 sherds account for 19.2% of TH rim total). Its variation AB14 was 111 sherds, 7.5%, not including the 327 rims in kiln N19 F7 (see below). The next most frequent types are AB8 (105 sherds, 7.0%), AB11 (91 sherds, 6.1%), AB7 (69 sherds, 4.7%); and types AB16 (thirty-five), AB17 (thirty-two) and AB15 (twenty-three) all have more than twenty examples. Other cooking pot rim forms are even less frequent and some previously found at Thetford such as AB3 and probably AB2 were not found at all.

At least one spiked lamp (DA) was found unstratified, but there are none in the phased material. There are no bottles, lids or ring vases evident in this collection.

Of the 951 bases, 884 (93%) are sagging and sixty-seven (7.0%) are flat. Both types occur at all levels, with the sagging variety always in the majority. Most are in fabric (3) although there are five sagging bases in fabric (2), three in fabric (4), two in fabric (7) and one in fabric (5). This last example is a rounded storage jar base with an applied horizontal frilled band. There are several of these on the site and they seem to be eleventh or twelfth century in date, possibly not made at Thetford as they occur in fabrics (5) and (6). There are sixty-six handles, all in fabric (3). Two are upright D-shaped handles from large bowls and the rest are strap from pitchers (AE) and storage jars (AG). Sixteen spout fragments were found, in addition to those attached to rims. There is no significance to the D, O, or U shape.

Both rouletted decoration (square, oblong or diamond patterns) and applied thumbed strips occur on many sherds, and some pots have incised wavy lines. The thumbed strips are confined to the large storage jars, both with and without handles (AG and AF); and rouletting mostly occurs on jars (AB), pitchers (AD) and handled jars (AE) and bowls (BB). There are no stamped sherds in the phased material.

The pottery consists of domestic assemblages in the main, with many sooted sherds. The groups mostly have high vessel counts and the sherds are often small and sometimes abraded.

As well as the material in kiln N19 F7 (see below) there were several features containing misfired TH, the source for which is obscure.

Products of kiln N19 F7 (Period III)

Some 5782 sherds were found inside the kiln (Fig.83, layer (b) – (g)), of which two were SN (in (d) and (e)), one IW (in (b)), and the rest were TH. No wasters were present but some sherds are slightly cracked, probably from too rapid shrinkage during firing. There were only twenty-one oxidised sherds, and sixty-six which were light grey but not truly misfired. This group of pottery would seem, however, to have been derived from the kiln products as the vessels are unused and the rim forms are very repetitive. To gauge details of vessel types produced is not possible, but the kiln was certainly being used to produce medium-sized jars or 'cooking pots' (AB) and bowls (BB) (Fig.137, Nos 8 – 24). Fabrics are 98.6% medium fabric (3), with 1.3% fine fabric (2) and 0.1% high quartz fabric (7). Fabric (7) seems unlikely to have been a kiln product; fabric (2) was, but occurs only in the cooking pots. Fabric (2) is invariably fired pale brown or light grey, a characteristic likely to be related to the origins of the clay (see Kilnyard, below). The fabric (3) colouration is the usual TH medium grey (Munsell 10 YR 5/1), with no colour differentiation between surfaces, margins or core.

The 'cooking pot' rims in this group (328 sherds, 85.0% of rims in kiln group) all conform to the AB size range and are mostly 14 – 15 cm in diameter except for one larger example in layer (b) which may have been a handled jar or pitcher (not necessarily a kiln product). The rim types are similar in 98% of jar examples, and it is not clear whether the different rims were kiln products or not. The rims are all everted with hollows to form a degenerate wedge shape (AB14). This can be more pronounced (AB13) and sometimes has rounded edges (AB16).

The bowl forms (thirty-seven examples, 9.6% of rims in kiln group) likely to have been produced in the kiln have straight sides with expanded tops (Fig.137, Nos 23 and 24, BB4, thirty-one sherds, diameter range 27 – 32 cm, 83.8% of bowls) or an out-turned lip and slight carination, Fig.137, Nos 20 – 23 (BB11/BB12) (five BB1, one BB12, diameter range 21 – 25 cm, 16.2% of bowls).

Also in the group of pottery found in the kiln are: four pitchers (AD, 0.5% of rims in kiln group), nine handled jars (AE, 2.3%), eight storage jars (AG, 2.1%), one costrel (*c.* 0.3%) and some unidentifiable rim fragments. These forms may also have been kiln products, but this is not clear in the absence of vessels which have clearly failed. The 324 bases found in the kiln were 91.7% sagging and 8.3% flat, including two sagging and one flat in fine fabric (2). There are two spout fragments, one 'O' and one 'D' shaped. The eight handles are all strap, two with midrib.

All cooking pots seem likely to have had a band of diamond rouletting on the shoulder and some also had rouletting on the rim top. It also occurs on the top of bowl rims in all but two examples (the BB12 vessel and one ?bowl fragment). It seems probable that two different roulette wheels were employed (Fig.137, Nos 25, 26) both 12 mm wide with a design some 55 mm long. They appear to have been used at random as regards form and fabric. Some 4.5% of the bodysherds found show rouletted bands, and a further 1.1% have applied thumbed strips and are from storage jars (AG).

This last includes many sherds from the same vessels. Vessel estimates have not been attempted: there are sherds present from the same pots although much of the pottery is broken into small pieces. The material seems the same from top to bottom of the kiln. The distribution of quantity is: (b) 893 sherds (15.4%), (c) 1261 sherds (21.8%), (d) 2470 sherds (42.7%), (e) 1015 sherds (17.6%), (f) 143 sherds (2.5%). It would seem that the derivation of the material was a haphazard accumulation of broken vessels in the unraked layers in the bottom of the kiln. There is no indication of the vessels in the upper layers representing collapsed load and this would seem to have been discarded material in the abandoned kiln. A further thirty sherds of TH were found outside the kiln lining in the kiln pit (layer (j)) and this includes rim forms of both jars and bowls of the types found in the kiln. These sherds are from different vessels and how they came to be outside the kiln lining is not apparent.

St Neots-type ware (SN) Period III – IV

This term refers to Saxo-Norman pottery with calcite inclusions, usually of fossilised shell, imported into Thetford from the west side of the Fens. The nearest, and most likely, source would be the Cambridgeshire/Huntingdonshire area, but such pottery was also made in Bedfordshire, Northamptonshire and Lincolnshire.

Although there is nearly three times as much Thetford ware, SN is the second most common pottery type on this site and was found in unusually large quantities. Some 3750 sherds were found, over 3000 of which occurred in Periods III and IV, particularly in the late tenth and early eleventh centuries. The most likely explanation for this quantity is that importers of SN pottery into Thetford were operating in this part of the town (see General discussion and conclusions). Pottery groups in grid M19 produced the largest percentages of SN in groups of over ten sherds, *e.g.* M19 F1 (70%), M19 F19A (81%), M19 F19B (70%), M19 F20C (57%), M19 F29 (40% but many from same vessels), M19 F38 (69%), M19 F58 (57%). The forms concerned are mostly jars in small to medium sizes ('cooking pots') with plain flaring rims (*cf.* Rogerson and Dallas 1984, fig.184, nos 443 – 4: a few rims have an internal hollow, *cf.* Rogerson and Dallas 1984, fig.184, no.445), and inturned bowls.

The SN vessels from this site, including M19, are most commonly jars of these types (460 jar rims, 72.9% of SN rim total) and bowls (166 rims, 26.3% of SN rim total): the remaining five rim sherds are too fragmentary to be classified. Of the bowls, 116 (69.9%) are inturned and fifty (30.1%) are straight-sided with turned-out rims (*cf.* Rogerson and Dallas 1984, fig.184, nos 452 – 454 and 499). Three flat shelly ware bases may be Roman, but 525 sagging bases are clearly Saxo-Norman. There are no pitchers, lids or decorated sherds.

Stamford ware (ST) Period III – V

(Tables 17 and 18, microfiche)

Some 556 sherds were found, excluding the unusual bowl Fig.138, No.27 or crucible Fig.139, No.28, whose places of manufacture are uncertain. The sherds were examined by Dr Kathy Kilmurry and the terminology

used here derives from her system (Kilmurry 1980).

The earliest Stamford ware fabrics E/F and H, rare (Kilmurry 1984, 127) or absent (Kilmurry 1984, 124) in other Thetford excavations, are similarly absent here. The sequence begins with Fabric D (*c.* 900 – 1020) and Fabric A with Glazes 4 and 5 which would probably pre-date *c.* 1020 (17% of site ST total). Material later than *c.* 1020 (Fabric G and Fabric A with Glaze 6) accounts for 40% of the site ST total. Sherds later than *c.* 1060 (Fabric B) comprise 12% of the ST total and include one B2, post *c.* 1100. Sherds post-dating *c.* 1140/1150 (B3, B6, C3) comprise 3% of the ST total. Some 28% (A0 and A1) cannot be classified. Therefore some 55% of the sherds are demonstrably eleventh to twelfth century, a higher percentage than on other excavated sites in Thetford. This reinforces the probability that this site did not decline much in population density until the mid-twelfth century.

The eighty-five rims found (from some seventy-three vessels) (Table 17) seem to include at least 72% eleventh-century types. The earliest vessels seem to be late tenth to early eleventh century (rather than earlier) and comprise eight vessels in Fabric D, and a storage jar V21, and a possible pedestalled vessel V10 in Fabric A5. In general, the group contains 45% cooking vessels (cooking pots and bowls), 30% table wares (pitchers, jugs, pedestalled vessels), and 25% miscellaneous vessels (crucibles, lamps, storage jars). Only 24% of the sherds are from glazed vessels, a similar percentage to that previously found at Thetford (Kilmurry 1984, 124).

The bases are all sagging, Kilmurry types 2 and 3 (Kilmurry 1980, 20). Only 5% of the sherds were decorated: fourteen with applied strips, one with three applied strips twisted into interlace pattern (Kilmurry M52), one with thumb impressions, two with diamond-pattern rouletting, five with rectangular-pattern rouletting, six with grooves.

Early Medieval wares (EM) Period IV – early V

These span the eleventh and twelfth centuries in date, and originate in Norfolk although production centres are not known for the wares found in Thetford. Some 1012 EM sherds were found in these excavations (5.9% of the phased site pottery). The material from this site has been divided into three basic fabric types as follows:

(A) Sandy, tempered with fine to medium particles of quartz sand (945 sherds, 93.4% of EM). The forms are jars, either 'cooking pots' (107 sherds, 89.9% of EM rims), close-mouthed 'ginger jars' (seven sherds, 5.9% of EM rims), and bowls (five sherds, 4.2% of EM rims). The earliest vessels are thin-walled, of small size, and often red and black in colour (*cf.* Rogerson and Dallas 1984, fig.185, nos 459 – 460). These wares probably continue into the twelfth century, becoming larger and thicker-walled. The twelfth-century wares are often brownish and by the late twelfth century the large jars have sharply everted rim forms (*cf.* Rogerson and Dallas 1984, fig.185, no.466). In this report vessels which clearly belong to the second half of the twelfth century have been designated EM/M (rims are five jars, four bowls), and fabric (A) can be taken to represent the eleventh to early twelfth century unless specified otherwise.

(B) This fabric resembles pimply Middle Saxon Ipswich-type ware as it contains many rounded quartz grains (usually clear) and is usually grey (42 sherds, 4.1% of EM). The forms encountered are all large jars of late EM/M forms (nine rims) and this fabric must be twelfth century becoming common in the mid to late twelfth century and possibly continuing into the early thirteenth century.

(C) This fabric also has some quartz sand tempering, but is distinguishable from (A) by the presence of calcitic particles, and occasional small particles of chalk (25 sherds, 2.5% of EM). Colours are usually red or brown. Rims on this site comprise five jars, three bowls, and one ginger jar. This fabric seems likely to begin in the second half, or late, eleventh century and continues into the twelfth century.

Medieval (M) Period V

There are 807 sherds which can be attributed to the thirteenth to fourteenth centuries. Of these, 65% are unglazed wares (large jar forms) of local origin from unknown kiln sources. The remaining 35% are glazed wares jugs), of which 177 sherds (21.9% of the Medieval pottery) come from the kilns at Grimston in north-west Norfolk (*cf.* Clarke and Carter 1977, 200 – 10). A further forty-seven sherds (5.8% of Medieval pottery) come from the kilns at Sible Hedingham in Essex. One sherd has many oolitic inclusions similar to Lyveden-type ware from Northamptonshire but as similar fabrics occur along the Fen edge (*cf.* roof tiles, below) the likely source of this vessel is west Norfolk (inf. A. Rogerson). At least fifty-seven sherds of other glazed wares were found which cannot be attributed to kiln sources, but they all seem unlikely to have come from any great distance. The only exception is one sherd in a sandy fabric with a slip beneath mottled green glaze which resembles pottery from Aardenburg in southern Holland (Jennings 1981, 31).

Late Medieval (LM) Period VI

Aside from one sherd on the surface of a Period V feature, these sherds are confined to Periods VI – VII. The total of 144 sherds includes twenty-seven rims (jars and jugs), twelve bases, 101 bodysherds and four handles. Nearly all of the sherds are from glazed vessels, and at least four pots are late products of the Grimston kilns. There is one Cambridge sgraffito ware bowl and one vessel from Bourne in Lincolnshire, but the other sherds seem to be local wares from unknown kiln sources.

Late Medieval/Early Post-Medieval (LM/EPM)

These sherds sometimes occurred in slumped layers in the top of pits, but otherwise the 255 sherds (1.5% of site total) are confined to Period VII. Most sherds are glazed and the nineteen rims include jars, pipkins and pancheons; there are nineteen bases and five handles. There are one, or two, Dutch sherds of the usual reddish-orange fabrics (Jennings 1981, 134), and nine sherds of German stonewares (of which four are from the same Raeren vessel and the rest are Langerwehe or Langerwehe/Raeren). There are two 'Tudor Green' type sherds, three Surrey White Ware type sherds, and one iron-glazed sherd. The rest of the material is of local Late Medieval Transitional (LMT) character (Jennings 1981, 61) and seems to have been of local origins. Only four sherds of Glazed Red Earthenware (GRE) were found, which probably began in the early to mid-sixteenth century but became more common after the late sixteenth century (Jennings 1981, 157ff). Except for a sherd in the oven in K28, the pottery sequence ends in the mid-sixteenth century.

Imports and oddities

One crucible of uncertain origin (ST?) is illustrated in Fig.139, No.28, and there may be some imported grey sherds lying undetected among the TH, but recognisable continental imports remain surprisingly few. Seven red-painted sherds were found, at least two of which may be from the same vessel (Fig.139, Nos 29 – 33). These seem likely to be Middle Rhenish in origin, although France is a possible source for one sherd. Where stratified, these occur in eleventh-century Period IV. Amongst these are three bodysherds from one vessel in a late eleventh to twelfth-century context on the top of pit M17 F143 (late IV). This has a dense fabric with many rounded quartz particles; it is buff in colour with a pink exterior surface (mostly chipped off). An origin in France seems most likely for this vessel, as the fabric resembles Normandy Gritty Ware but the context seems too early for this.

Unusual vessel Fig.139, No.27 would seem to be a Crowland bowl type of vessel (Hurst 1958, 54, pl.V), originating in Saxo-Norman England from an unknown source.

Medieval and later continental imports have been noted above (one thirteenth-century Aardenburg, some Dutch sherds, and German stoneware).

Discussion

This site is ceramically unremarkable at all periods, with small quantities of pottery nearly all derived from local sources. A domestic context is assumed throughout, except for pottery kiln N19 F7 whose filling accounted for over half of the TH found on the site. Its products were not distinctive and are not readily recognisable in other features on the site. This phenomenon is also apparent in the other Thetford kilns excavated. N19 F7 seems to have been making a limited range of cooking pots and bowls in the second half of the tenth century, and may not have been in existence for very long.

Another notable aspect of this site is the unusually high percentage of SN, mostly clustered in certain areas on the site (see above). This may indicate probable areas of SN importers in the early eleventh century, possibly selling pottery from shops on the street frontages.

More continental sherds have been found on this site (on sherd ratio basis) than in other excavations in Thetford doubtless because of the large area involved. The lack of imported wares may be accounted for by (a) the nature of occupation and activity here, for which archaeological

evidence has its limitations, (b) the high standard of local pottery which may have made expensive imported wares unnecessary, (c) the position of the archaeological trenches away from the river frontage where any warehouses or continental import businesses might be expected to have been situated.

Such stratigraphy as there is on this site supports all previous theories regarding the temporal relationship of the Thetford-type wares and details of rim forms, and the following points may be suggested:

i) Fabrics TH (5) and (6) are late eleventh century and continue into the twelfth century: they are unlikely to have been made at Thetford, which confirms that the Thetford pottery industry ended by the end of the eleventh century.

ii) Most of the pottery found at Thetford was made there, and seems to have been marketed widely throughout the town.

(iii) Small, neat, vessels in standard grey colours, and frequent rouletted decoration, are characteristically early. By the second half of the eleventh century, Thetford ceramic groups become less standardised and contain greater varieties of fabrics and colouration.

iv) Certain common rim forms had a long existence, *e.g.* AB11, AB13 and AB14. Forms AB7, AB8 and AB16 occurred in the tenth century and seem more frequent in the earlier contexts. More upright rims, such as AB2 and AB9 occur less often and may be eleventh-century developments although this is not certain. AB1 rims which can be paralleled in EM jars are likely to be eleventh century, although the general type may have begun earlier.

The size of the TH vessels and perhaps details of the rims must have related to their functions. Internal hollows may be lid seating over which upturned bowls or other jars would form suitable covers; flatter, more everted, rims would be suitable for wooden lids, and upright rims or elongated necks would enable cloth covers to have been tied on more easily. Buyers of pottery in Saxo-Norman Thetford had a wide choice of good quality ceramics, and could arrange the details of their domestic utensils to suit their own needs.

Pottery Catalogue

Nos 1 – 33 Brandon Road
(Part II, above)

Nos 1–3 Roman (Period I) All mid-first century AD (Claudio-Neronian)
Fig.135

1. Carinated bowl. Hard medium fine fabric with common rounded quartz grains and rare mica, light grey core and interior, exterior burnished to dark grey, identical to fabric GW2 at Fison Way (inf. Tony Gregory). (587) O23 F14 layer (a) lower, Period I pit.
2. Barrel-shaped butt beaker. Soft fine fabric with dense mica and rare tiny rounded quartz, core red-grey, interior mid grey, exterior burnished dark grey, irregular facetted burnished, identical to fabric MGW1 at Fison Way (inf. Tony Gregory). (588) O23 F14 (a), Period I pit.
3. Barrel-shaped butt beaker with moulded base. Fine soft fabric with common mica and small sub-rounded quartz, core mid grey, interior mid grey on buff, exterior mottled buff/mid grey/dark grey, interior of rim and exterior of body, apart from decorated zone, horizontally burnished, oblique burnished lines in zone above girth between two cordons (inf. Tony Gregory). (540) M17 F13, Period I pit.

Nos 4–7 Handmade (Early Saxon?)
Fig.136

4. Fabric VII, organic inclusions probably chaff, black core, patchy orangish-brown/grey surfaces, burnished exterior. (7) Q20 F1 (a), top of SFB3.
5. Fabric III, black, well-smoothed exterior. (135) O19 F7, Period II pit, depth 6″ – 1′ (15 – 30 cm).
6. Fabric III, medium grey, orange exterior margin rim top, some external burnishing, some soot on exterior and interior. (55) O19 F16, top of Period II pit.
7. Fabric III, black, soot patches interior and exterior, scraped vertically on exterior, horizontally on rim top. (506) N17 F6, SFB4.

Nos 8–26 Thetford-type ware from kiln N19 F7 (Period III)
All medium grey, fabric (3) unless stated otherwise.
Fig.137
Nos 8–19 Jars

8. (169), layer (e).
9. Dark. (186), layer (e).
10. Light, roulette decoration No.25. (159), layer (c).
11. Light, roulette decoration No.26. (166), layer (d).
12. Dark. (188), layer (e).
13. (186), layer (e).
14. Dark. (186), layer (e).
15. Dull red core, rather fine, warped. (159), layer (c).
16. Light, rather fine. (162), layer (d).
17. (212), layer (d).
18. (187), layer (d).
19. Fairly fine. (171), layer (d).

Nos 20–24 Bowls (and Nos 25 and 26)

20. Black. (166), layer (d).
21. Dark. (171), layer (d).
22. Fine fabric (2). (166), layer (d).
23. Reddish-brown margins, knife trimming at base well smoothed, (166), layer (d).
24. Black core, orange surfaces. (182), layer (b).

25 – 26. Diamond-pattern roulettes from kiln N19 F7, 25 from no.10, 26 from no.11.

Nos 27–33 Oddities and imports
Figs 138 and 139

27. Base and rim of bowl, possibly one vessel but different colours (drawn amalgamated). Fabric has many rounded sand particles (clear, white, red, black, grey, brown) average 0.5 mm or less, occasionally up to 1 mm. Rare, small white granular particles (possibly calcite, reacts with dilute hydrochloric acid). Very rare, small particles of silver mica. Occasional ?grass impressions on interior.

    Rim sherd light yellowish-brown with one (or two?) small external patches of dark brown glaze: at × 10 magnification this is seen to be thicker at the edges and has bubbled. The base sherd has a dark grey core and light reddish-brown surfaces. Abraded and rather soft.

    This bowl seems unlikely to be Arabic, and would seem to be related to the 'Crowland bowl' type of Saxo-Norman pottery. Similar decorative ideas occur in Winchester-type ware (Hurst 1976a, fig.7.25) and at Stamford (Kilmurry 1984). Glazed sherds previously found at Thetford seem likely to have come from the Stamford source (Kilmurry 1984, 124) but this vessel, with a rather ordinary quartz sand tempering, does not closely resemble any of the Stamford fabrics and its source remains obscure at present. An eleventh-century date seems most likely by analogy with Stamford. Unstratified.
28. Rim of crucible? Fine quartz sand inclusions, up to 0.5 mm. Core pink/buff, surfaces medium grey except for brownish area inside top of rim (probably the result of usage, but not encrusted). Date (Period III – IV?) and source not certain.
    (150) 019 unstratified.
29. Rim of pitcher. Fabric dense, quantity of fine regularly-sized rounded quartz grains (mostly clear), occasional soft dull red inclusions up to 1 mm, one hard subangular white particle *c.* 4 mm. Light yellow with pale blue margins and centre of core at rim. Uneven brownish red paint. Middle Rhenish 'Pingsdorf-type'.
    (41) O20 F2 (a), with late eleventh-century pottery on top of Period IV pit.
30. Similar to No.29.
    (10), P20 F27, Period IV pit.

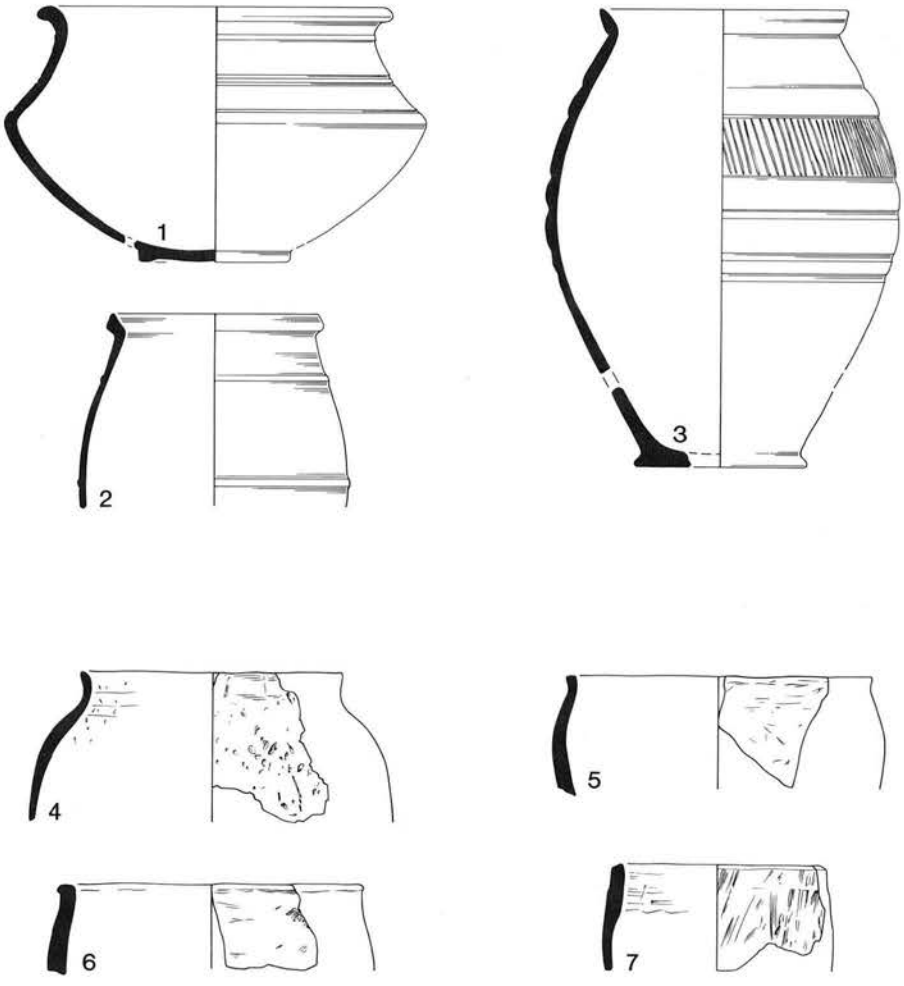


Figure 136 Brandon Road. Pottery, Periods I–II. Nos 1–3 Roman, Nos 4–7 handmade. Scale 1:4.

31. Dense fabric, much fine rounded quartz, some small brown inclusions, rare dull red inclusions up to 3 mm. Light yellow, with medium brownish-red paint. Northern French or Rhenish?
(319), N19, unstratified over kiln N19 F7.
32. Dense fabric, much fine rounded quartz, occasional brown inclusions (of iron ore?) up to 2 mm, rare dull red particles up to 2 mm. Light yellow with dark brownish-red paint. Middle Rhenish 'Pingsdorf-type'.
(979) M21 F61, Period IV pit.
33. Fabric very hard and dense, much fine regular rounded quartz (mostly clear), rare subangular white particles up to 1 mm. Muddy greyish yellow with dark purplish-red paint. Exterior surface almost vitrified producing a shiny surface of glaze-like consistency. Middle Rhenish 'Pingsdorf-type'.
(596) O22 F32, Period IV pit, depth 1'–2' (30–61 cm).

Kilnyard 1966
(Part III, above)

Kiln products

Some 31,347 sherds were found of which 98.9% (31,011) were Thetford ware (TH). All sherds were examined macroscopically (×10 handlens) and quantified by sherd count. Vessel estimates were only considered for material within features (Groups 1 and 4 below). The pottery was divided into groups by provenance as follows:

1) from inside kilns and stokeholes
2) lying around the site on the OGS and the black trampled soil *i.e.* discarded from the kilns
3) above, or in the top of, filled-in kilns and stokeholes
4) in features other than kilns and stokeholes
5) unprovenanced
6) unstratified

Only Groups 1–4 have been considered in any detail. Group 5 consists of 347 mis-labelled TH which is probably from kiln D16 F115. Group 6 is a total of some 1946 sherds from the topsoil of which 88.1% is TH probably from these kilns. Groups 1–4 are a total of 29,054 sherds of which 99.6% (28,949 sherds) are TH from the kilns. Only kiln products have been dealt with below.

The material has been classified by fabric and form on the same lines previously used for Thetford (Rogerson and Dallas 1984, 118–21). The same forms occur in more than one kiln, thus to avoid repetition, the material is presented by forms (Figs 141–154) rather than by kiln content. The material in each kiln has been presented in tabular form (Tables 1–9, microfiche). A general list of abbreviations can be found above.

The recognition of kiln products

Although it is obvious that not all sherds found on this site need be kiln products and that sherds found inside each kiln need not completely represent products fired

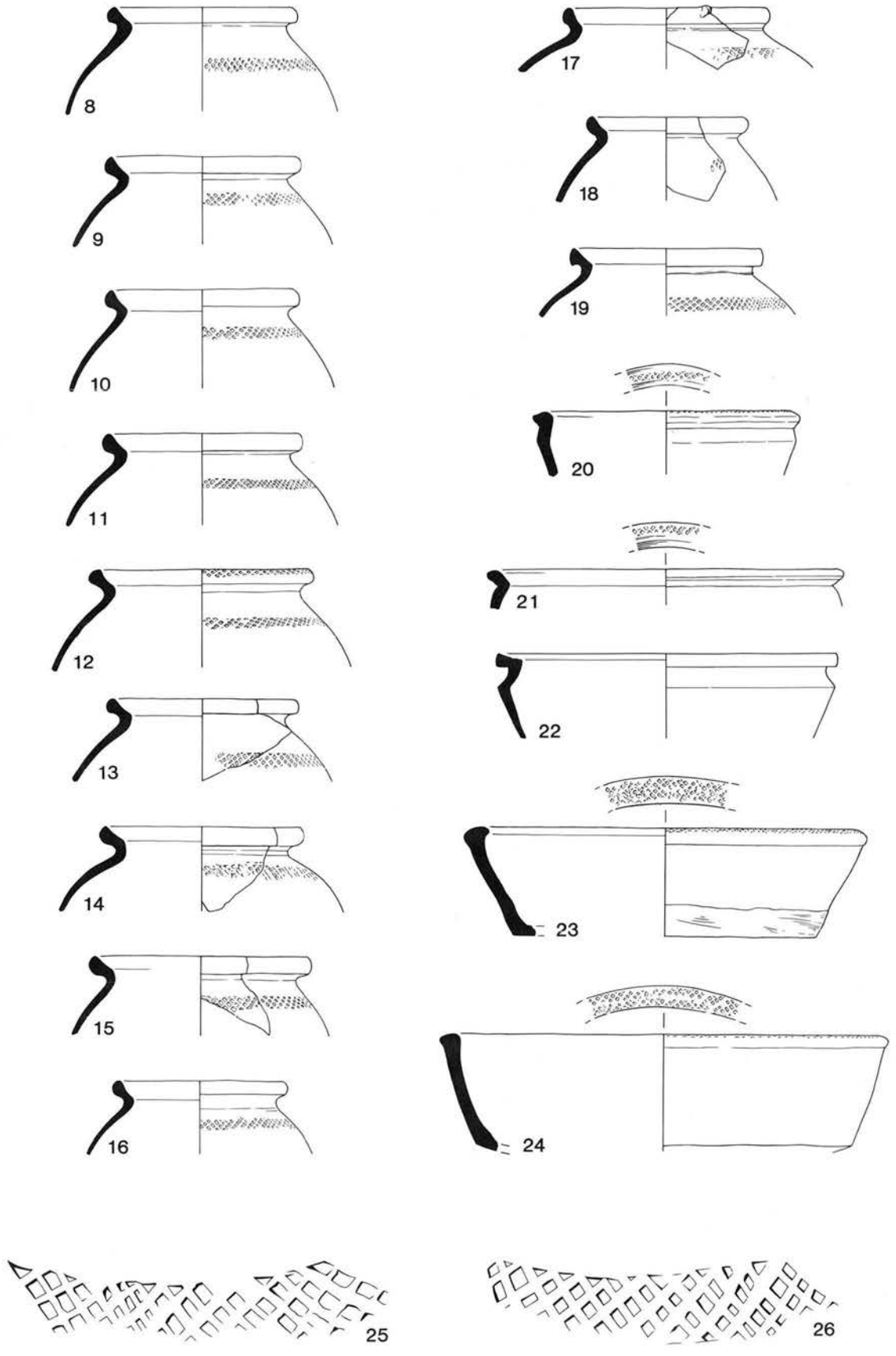


Figure 137 Brandon Road. Pottery from kiln N19 F7. Nos 8–24. Scale 1:4.
(25 and 26 are stamp impressions of Nos 10 and 11. Scale 1:1.)

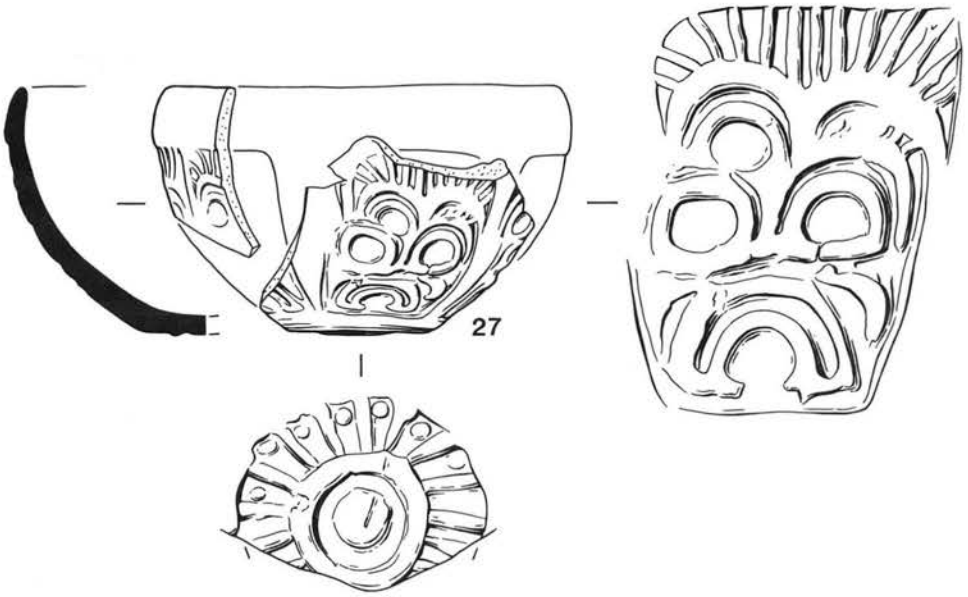


Figure 138 Brandon Road. Pottery No.27 'Crowland bowl'. Scale 1:2.

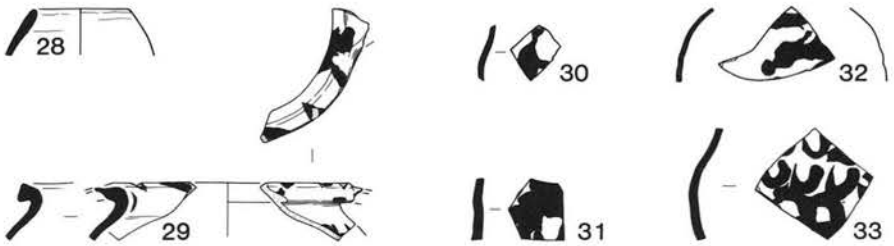


Figure 139 Brandon Road. Pottery Nos 28–33 exotics and imports. Scale 1:4.

in that kiln, kiln products may be recognised by:

a) wasters or misfired sherds
b) repetition of forms and fabrics
c) similarities of manual treatment, such as decoration, construction techniques and vessel finishing
d) absence of signs of domestic use

The sherds within the kilns seems most likely to be from exploded or broken vessels which were not systematically retrieved, particularly since the kilns and stokeholes were not raked out at the bottom. The proportions of types (in Table 2) show not only that differences between the kilns in product range found is also usually seen in their stokeholes, but also that the proportions ratio of vessel types is fairly consistent for the whole site regardless of context. The overall percentages within Group 1 match Groups 2–4, suggesting that the differences between the kilns of Group 1 are real.

It would seem therefore that these figures must be meaningful even if approximate. Some anomalies on Table 1 can be explained, *e.g.* the low percentage of storage jar (AG) rims in the stokehole of kiln E16 F33 is redressed by the high percentage of bodysherds (see AG below), but the overall percentage of costrels (C) may be rather low as it is slightly higher in Group 1. Caveats to this approach must remain; for example, some rim types were rare but we do not know if only a few were made or only a few were spoiled; also, different types of vessel may have had different rates of failure depending on their construction.

However, the large quantities of material and the consistency of the results allow tentative theories to be put forward.

If the kilns are considered in the sequence proposed in this report, some trends and distinctions become apparent. In general, the vessels in kilns D16 F61, F97 and F115 are small, have less variety of form, finer fabrics, and (to some extent) more rouletted decoration; all this which might be expected in earlier vessels. Points arising from comparative analysis are:

1) Pitchers (AD) are frequent throughout but most were found in D16 F137 and quantity trails off in D16 F46.
2) Cooking pots (AA and AB) are frequent throughout. Small sizes are most common in D16 F46 and least common in E16 F33. The ordinary sizes are most frequent in D16 F46 and F61 and least in D16 F137.
3) Storage jars (AG) increase in frequency (and size) in D16 F137, E16 F33 and D16 F46. The standard decoration on the large storage jar set into the ground in the kilnyard (D16 F80, Fig.149, No.163) relates it to kiln D16 F46.

Some vessel types peak in frequency as others decline.

Other than a slightly larger quantity of cooking pots in D16 F61, the D16 F61/F97/F115 group and their stokehole area is fairly consistent in this respect. The other three kilns are more variable as D16 F137 has more AD, AG and D, with less AB; E16 F33 has more AG, less AA and AB and uniquely contains AB/AD, BC and BD; D16 F46 has more AG and AA, less AD, B, C and D.

Thetford Ware fabrics
(Table 4)
Thetford Ware has been classified roughly by fabric as follows (see Rogerson and Dallas 1984, 118):

1) Not present here.
2) Fine sandy, usually dense with a smooth surface feel. Fine particles of quartz sand visible in fracture. On this site, these sherds almost invariably light brown or light grey, sometimes partly orangish.
3) Fine. Ranging between (2) and (3). Often dense.
3) Medium sandy. Normal TH fabric, with particles of quartz, dark grey and reddish-brown ores, fine silver mica, and some fine calcite. Usually grey in colour, but sometimes light or dark grey, some vessels with orange core or margins, but rarely.
3) Red and black. Classed as a fabric type since sherds with black surfaces and red core always with much mica. However, coarseness of temper varying, not certainly a separate fabric (see below).
3) Coarse. Ranged between (3) and (4). Some sherds with occasional flint or chalk particles.
4) Coarse sandy. More inclusions than (3). Often dark grey in colour.
5) Coarse storage jars, clearly not kiln products and probably not Thetford products (see Dating, above). Treated separately as likely to be eleventh-century date.
6) Not present here.
7) High rounded quartz grain content, usually whitish core and light grey surfaces. Unlikely product of these kilns but probably contemporary.

Fabrics (2)–(4) and possibly (7) are included within the range of these kilns, but not (1), (5) or (6). A rough quantification of TH fabrics for Groups 1–3 is shown on Table 4. This cannot be precise as the fabrics are a continuous spectrum, but it can be seen that ordinary fabric (3) accounts for 87.8% of the total. In Group 1 some differences are apparent between the kilns as kiln E16 F33 has a lower quantity of fine fabrics than the other kilns (3.8% as opposed to between 9.5% and 13.4%) and more coarse sherds (1.6% as opposed to up to 0.3%). The suggested (3) red and black fabric category seems more common in kiln D16 F46 (6.3% as opposed to less than 1.7% elsewhere) and may have been more frequent than indicated in kiln D16 F97. This last classification is somewhat artificial as the quantity of the inclusions varies. However, the presence of fine silver mica in these red and black sherds is evident. Mica particles occur occasionally in TH, but these kilns in general contained many more sherds with visible fine silver mica particles than is usual for material found in Thetford so far. This is particularly noticeable in kilns D16 F97 and F115, the latter also having many fine and dense sherds. It is less frequent in kiln E16 F33.

The variations in fabric relate to some extent to the colour characteristics, with (2) mostly light brown, (3) red and black with mica, (3) fine and (4) often black, (3) rarely light brown. Moreover, there are colour variations associated with certain kilns (Table 9) with misfired greenish sherds occurring to some extent in kiln D16 F115, but more frequently in kilns E16 F33 (2.0%) and D16 F46 (3.8%). Accidentally oxidised orange sherds were more frequent in D16 F61 (5.9%) and to some extent in D16 F115 (3.6%) (*cf.* D16 F33 2.3%, the others less than 1%): also, black sherds were more numerous in E16 F33 (3.7%). Although colour variations clearly relate to firing methods, they are also governed by clay sources and it must be the source of the clay which differs slightly from kiln to kiln (see below). This would seem fairly certain by the finding of several sherds where the applied strip decoration has fired a different colour from the body of the vessel.

Thetford Ware forms
The form typology used in this report is that previously devised for Thetford (Rogerson and Dallas 1984, 119–21). This provides a letter code for the basic form, a second letter for subdivisions of form within the general type, and a number for the rim shape variant. The types of form are:

A jar
AA small jar (rim diameter up to 11 cm)
AB medium jar or 'cooking pot' (diameter 12–16 cm)
AC large jar (diameter beyond 16 cm, not used as probably all fall into types AD–AG)
AD pitchers
AE handled jars (not reinforced with clay strips)
AF storage jars without handles (sometimes reinforced with clay strips)
AG storage jars with handles (reinforced with clay strips)
B dish or bowl
BA dish
BB bowl
BC bowl with handles
BD bowl with spout or socket
C costrel
D lamp
E lid
F ring vase (not applicable)

Variations of rim form have been recorded and are summarised in the more detailed discussions of forms below, and the incidence of the general types in Groups 1–4 can be seen in Tables 5 and 6. Sherds which are quite inconclusive or exceptional have been left as unclassified, but in most cases such sherds can be assigned to a specific type as they are nearly all vessels with handles. The difficulties of placing all rims within definite categories are caused by various factors, such as

a) small fragments
b) incomplete profile
c) presence of spouts or handles not clear
d) rim pressed out of shape by addition of handles or spout
e) some forms are open to ambiguous interpretation, *e.g.* BB9/10 resemble lids if small and BA if large, and AB forms resemble those of AD
f) rims can be inconsistent, odd or not true to type

The presence of lids (E) is dubious in all but one instance, as they could all be small bowls (BB). Small bowls may also be muddled with lamp cups (D) as the rim top can be the same. Stem and foot fragments of

Figure 140 Kilnyard. Potters' stamps. Scale 1:1.

baluster lamps (DB) have been included in the rim totals as they are diagnostic, but bodysherds from costrels (listed under C below) and sherds from storage jars (AG) have been omitted from the typology tables because of distortion of the rim totals and possible ambiguity in interpreting the sherds themselves.

Inevitably, degrees of probability are obscured by the statistical categories of tabulated information, but it is evident that as the variables of a factor of something like two or three are insignificant given the large volume of material, this does not alter the conclusions reached. The trends remain the same throughout Groups 1–4 and details recorded at Level III need not be incorporated here.

AA Small jar (diameter up to 11 cm)
(Fig.141)
These constitute 10.0% of the Group 1–4 total (506) sherds and 10.5% (219 sherds) of Group 1. Their frequency of production seems fairly consistent, with slightly more having been found in kilns D16 F61 and F46. Two basic rim shapes predominate: plain flared rims with no internal hollow (AA1 Nos 34–41) and everted rims with internal hollow and sides roughly parallel (AA10 Nos 47–59). The former constitute 25.1% and the latter 47.9% of Group 1. Variations of these forms constitute 26.7% of the remaining Group 1 rims, with only 5.9% which may be classed differently. These last echo rim shapes found in other categories, *e.g.* AD7, and may also be kiln products. No rim shapes dominate in any kiln, but there is a tendency for the AA1 types to become thinner at the rim edge in kilns E16 F33 and D16 F45 (*cf.* AB1).

No jars in this size range were found with handles, and their bases were probably all sagging. Size ranged from *c.* 6 cm diameter (about a dozen examples, in all kilns) to vessels resembling the standard-sized cooking pots (AB). Diamond rouletted decoration occurs occasionally (some seven examples in Group 1) on rim top, shoulder or both. Fabrics are predominantly (3), but can be fine (15% in Group 1), micaceous, 'red and black', and (rarely) coarse (1 in Group 1).

AB
(Figs 141, 142)
These are jars of 12–16 cm diameter, commonly known as 'cooking pots'. They form 26.2% of the total of Groups 1–4 (1322 sherds), and 25.3% (526 sherds) of Group 1. Their production is fairly consistent, with more examples found in kilns D16 F61 and F46.

The most common rim shapes have no internal hollow and are plain flared (AB1 Nos 63–70), plain everted (AB5 Nos 78–82) or variations between the two (AB1/5 Nos 71–77). These constitute 59.5% of Group 1 (313 sherds). Similar forms occur with internal hollow, becoming wedge shaped (AB13 Nos 90–97), degenerate or slack wedge shaped (AB14 Nos 90–97) or parallel-sided (AB11 Nos 86–88) 36.7% of Group 1. This last type AB11 (46 sherds) is difficult to distinguish from AD10 and the estimates of the two types may not be correct. Some sherds with internal hollow and rounded rim edges (AB16 and AB17) forming 1.1% of Group 1 seem to be variations of the AB13/AB14 class.

Also in this class are rims with a deep internal hollow (AB12 No.89) and although only five sherds, (1.0%) were found in Group 1, there is evidence that these were a kiln product probably only of kilns E16 F33 and D16 F46. Only nine sherds (1.7%) in Group 1 fall outside these categories, and three of these are unrecognisable chips.

Any sherds of this form in this category which had handles (or spouts) have been classed as AD. In general, the rim shapes of these jars are different from the pitchers (AD), and, except for the AB/AD classification below, ambiguity occurs only in types AB11 (Nos 86–88) or AD10 (Nos 121–132) or a few rare examples. Absence of evidence does not preclude some of these jars from being pitchers, but the incidence of rim types makes it unlikely in most cases. Moreover, some of the rim shapes within the AB group tend to cluster in certain kilns, viz. long-necked AB13 forms (Nos 90–92) concentrate in kiln D16 F115, with some occurring in kilns D16 F137, E16 F33 and D16 F46; flared rims with an internal hollow (AB14) (Nos 93, 94) occur most frequently in kiln D16 F61; and the plain flared rims (AB1) become longer and thinner in kilns E16 F33 and D16 F46 (Nos 95, 96). This last point may indicate a date in the early eleventh century by analogy with the earliest EM forms and with Thetford-type ware sequences in Norwich, but so far these trends are less clear in Thetford and this is therefore not certain.

Bases of AB were probably all sagging. Decoration consists only of bands of diamond rouletting on the vessel shoulder, of which some thirty-seven examples were found in Group 1, a third of which were in kiln D16 F61.

Fabrics of AB types in Group 1 are three quarters fabric (3), with 23.5% (2) and (3) fine, and few 'red and black' or coarse fabrics.

AB/AD
(Fig.142, Nos 98 and 99)
Although most of the rim shapes of AB and AD types seem mutually exclusive, some confusion is inevitable. Parallel-sided rim shapes have been assigned to either AB11 or AD10, but this AB/AD category has been devised to cover one major uncertainty. This concerns triangular rims (usually AD6) in small AB sizes, *i.e.* 12–13 cm diameter and possibly form AB7. One abraded fragment found in the topsoil has been pressed down for the addition of a handle (or spout?) no longer present, but it is difficult to base evidence on one small piece. A number of other rims in this category constitute nearly half of the rim length, showing that if these vessels were pitchers there was no handle at the back. Pitchers were found on this site with diameters as small as 12–13 cm and it is possible that these are type AD3 variations with an internal hollow, although AD3 types seem usually to have had three handles. If these are AB types, they are the only possibilities for triangular rim shapes as otherwise sizes below 16 cm diameter are rare.

A total of 143 examples were found in Groups 1–4 (2.8%). Of these, fifty were found in kiln E16 F33 and its stokehole and it would seem fairly certain that they are a phenomenon of this kiln only. Fabrics are (3), sometimes slightly coarse, and the vessels are black or dark grey. There were five rims in kiln D16 F46 below 16 cm diameter classed as AD6 which might belong to this class, but they do not resemble the kiln E16 F33 examples very closely in character. These sherds are all undecorated, although a few show throwing lines.

AD
(Figs 143–5)
AD vessels are pitchers, and form the most frequent type, being 31.9% (1614 sherds) of Groups 1–4. In kiln D16 F46 and its stokehole and in kiln D16 F61 they were outnumbered by AB, but elsewhere they far outnumber other types, even allowing for the possibility that some rims counted as AD may have been AB or AE types.

These vessels are basic jar forms, usually larger than AB (being mostly 16–22 cm diameter) with a hole pushed through from inside on to which a separate spout is luted: there seems to be no significance in spout shape, 'D', 'O' or 'U'. Two or three plain strap handles were added and some vessels with slack profile have a corrugated appearance on the shoulder of cordons and grooves (apparently from throwing) (*e.g.* Nos 107–9, 123). Some are decorated with bands of diamond-pattern rouletting put on before the spout and handles were applied. All bases were probably sagging.

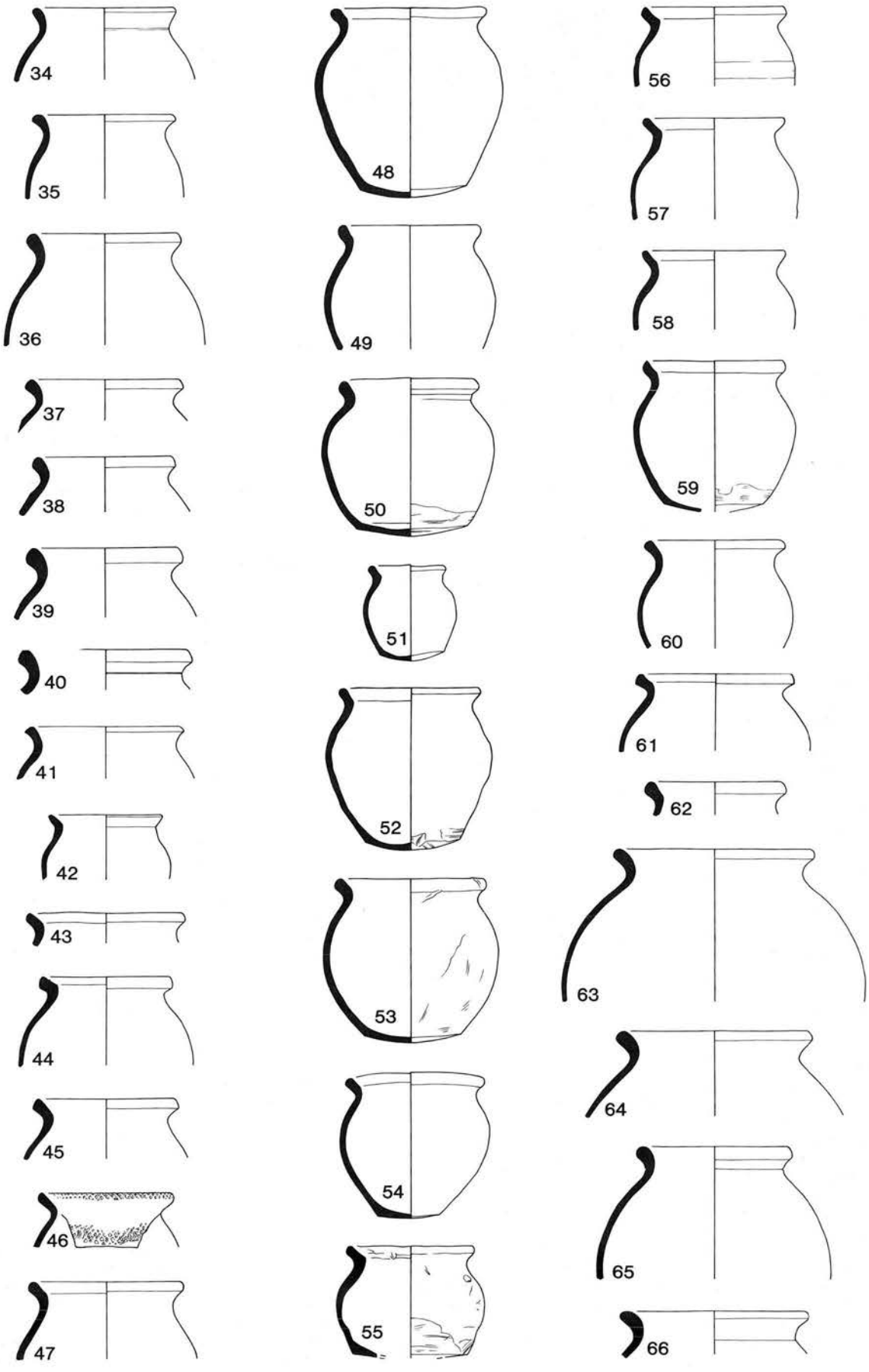


Figure 141 Kilnyard. Pottery Nos 34–62 small jars. Nos 63–66 cooking pots. Scale 1:4.

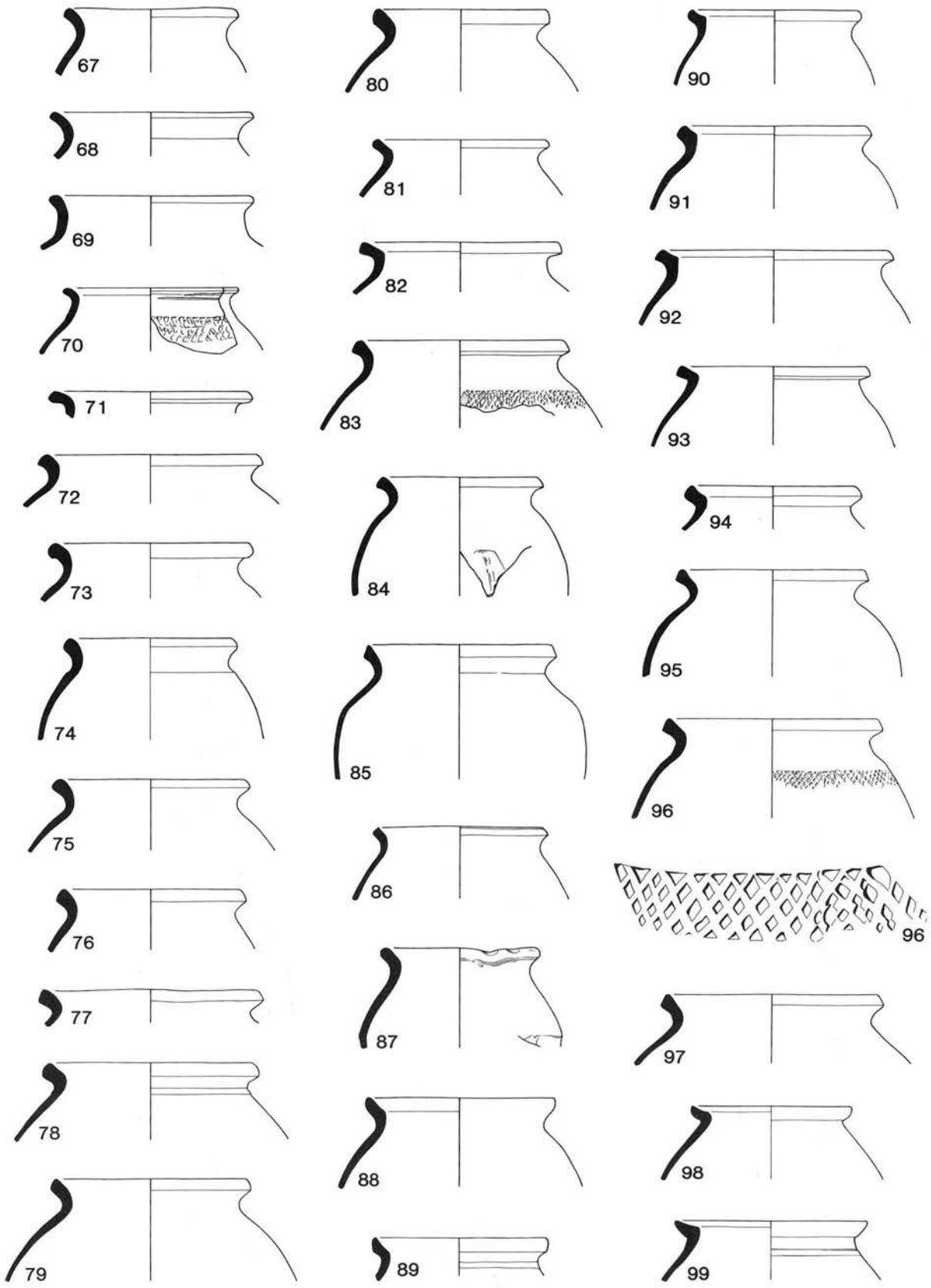


Figure 142 Kilnyard. Pottery Nos 67 – 97 cooking pots. Nos 98 – 99 jars. Scale 1:4. (Stamp impression. Scale 1:1.)

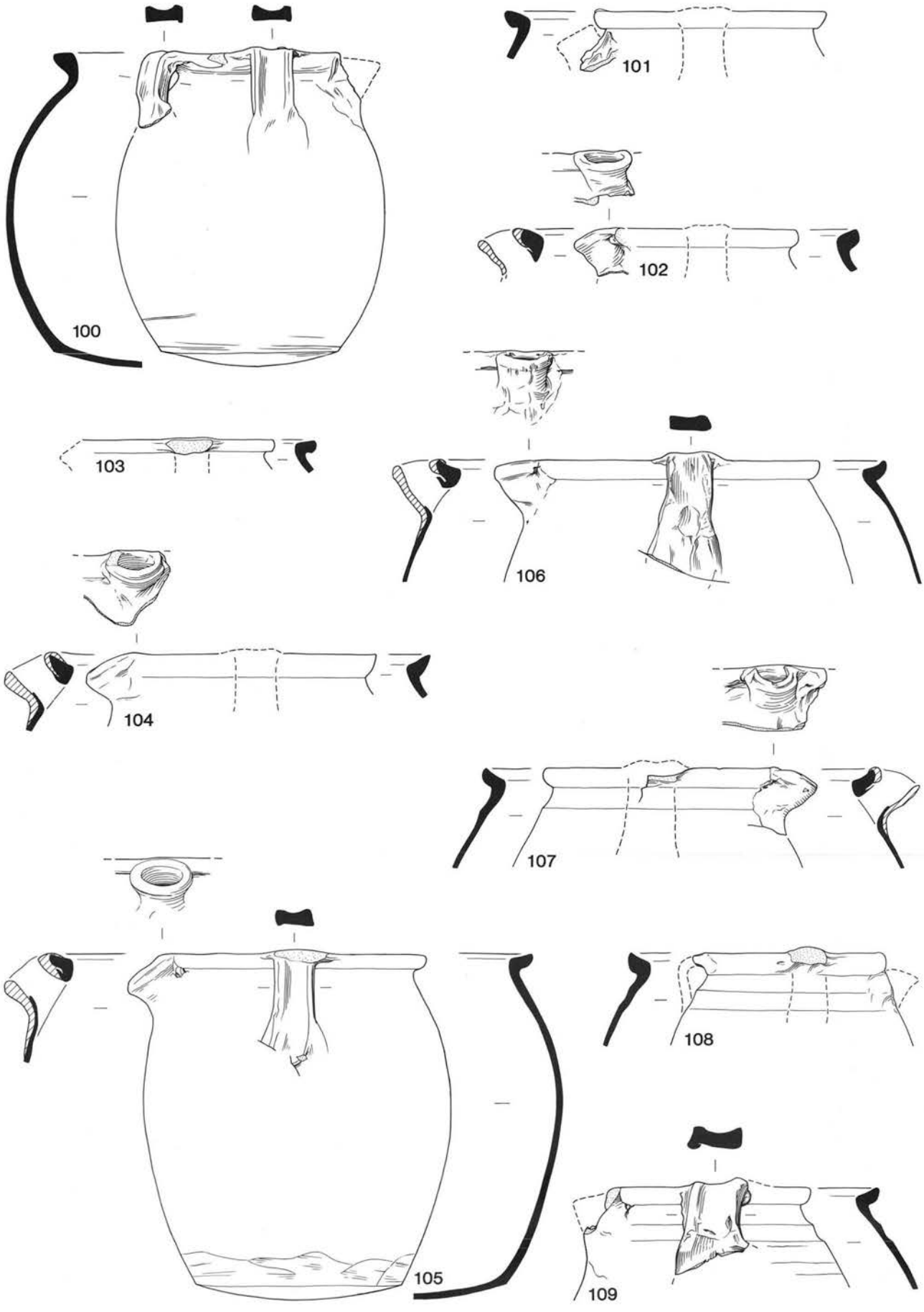


Figure 143 Kilnyard. Pottery Nos 100–109 pitchers. Scale 1:4.

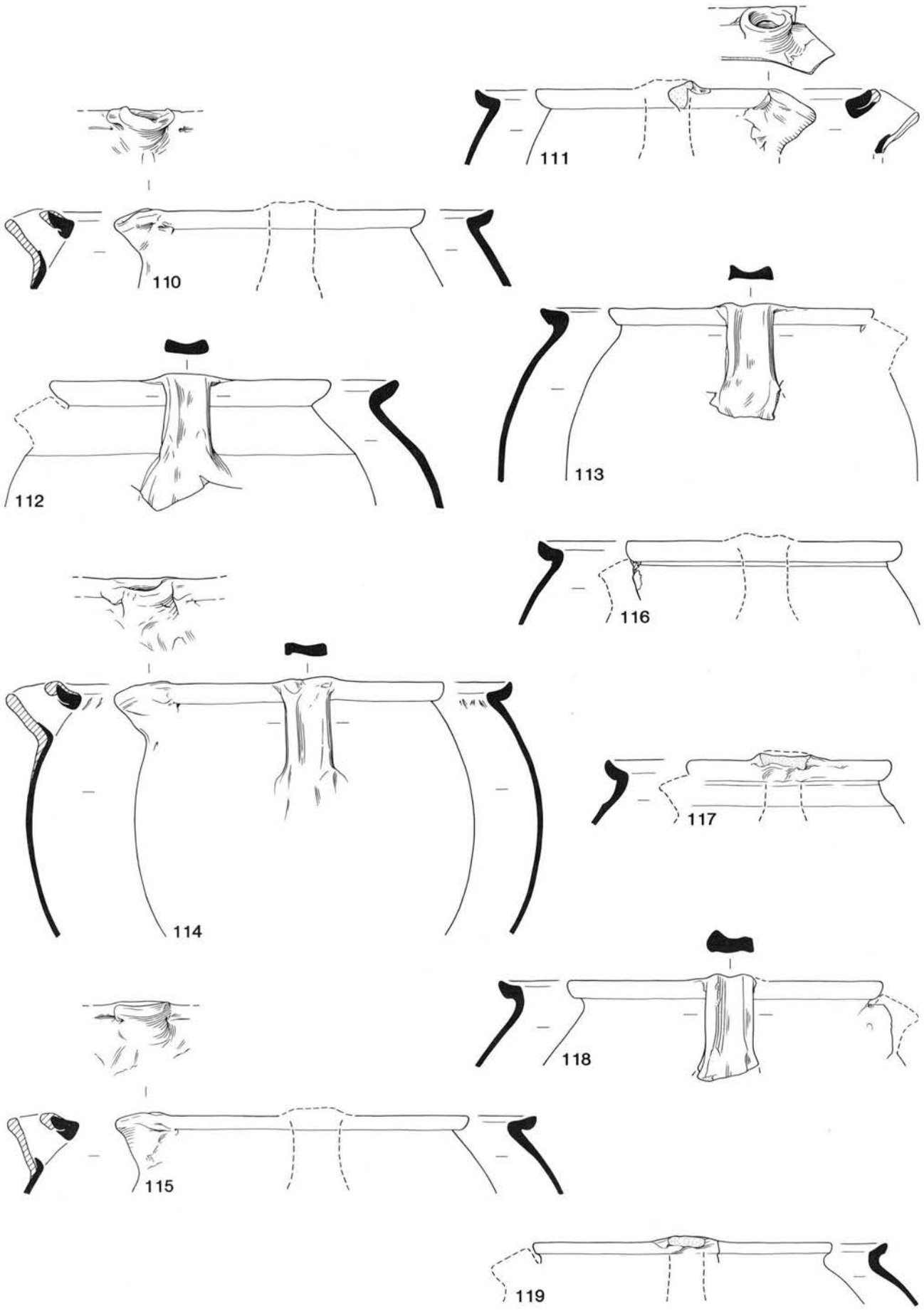


Figure 144 Kilnyard. Pottery Nos 110–119 pitchers. Scale 1:4.

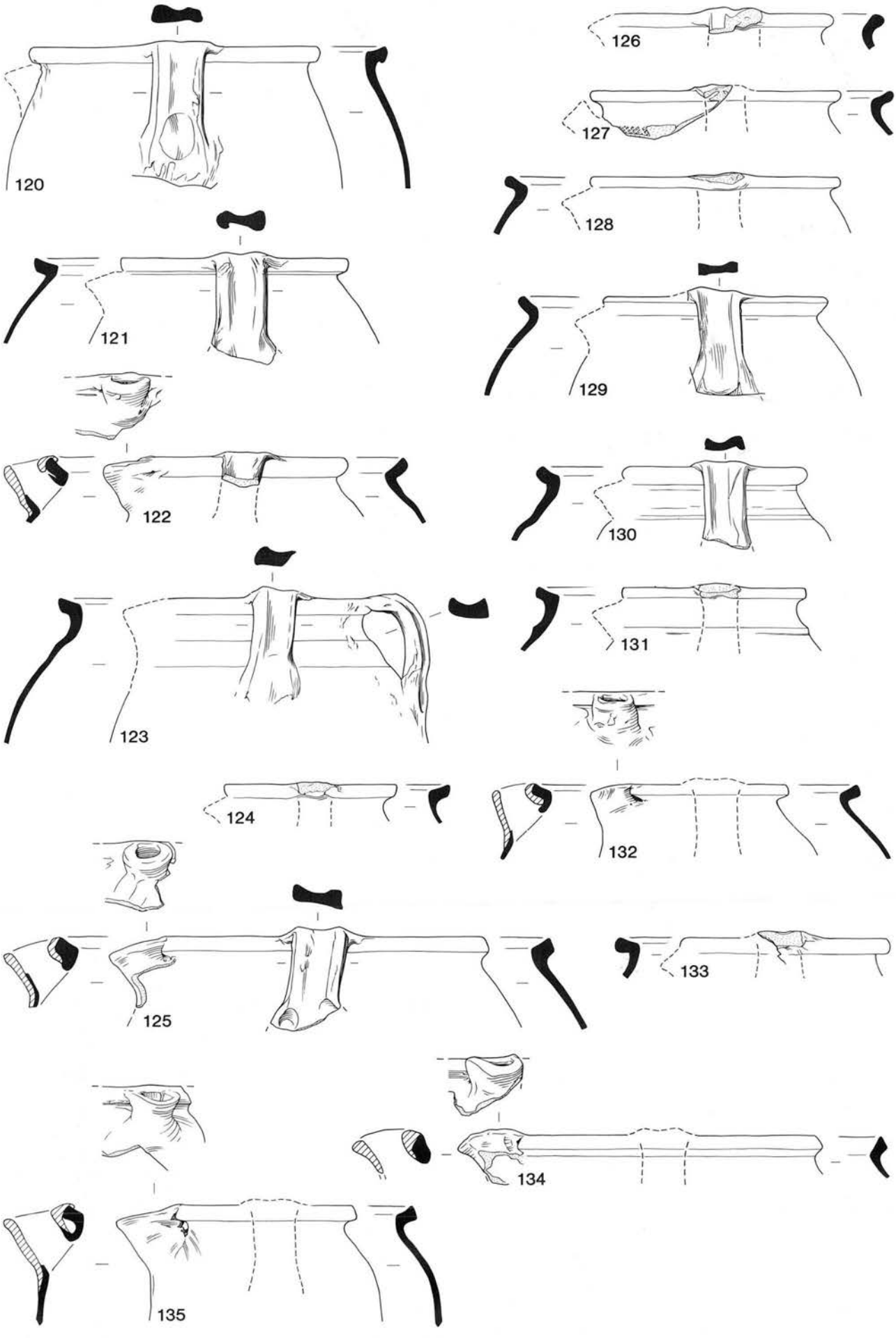


Figure 145 Kilnyard. Pottery Nos 120–135 pitchers. Scale 1:4.

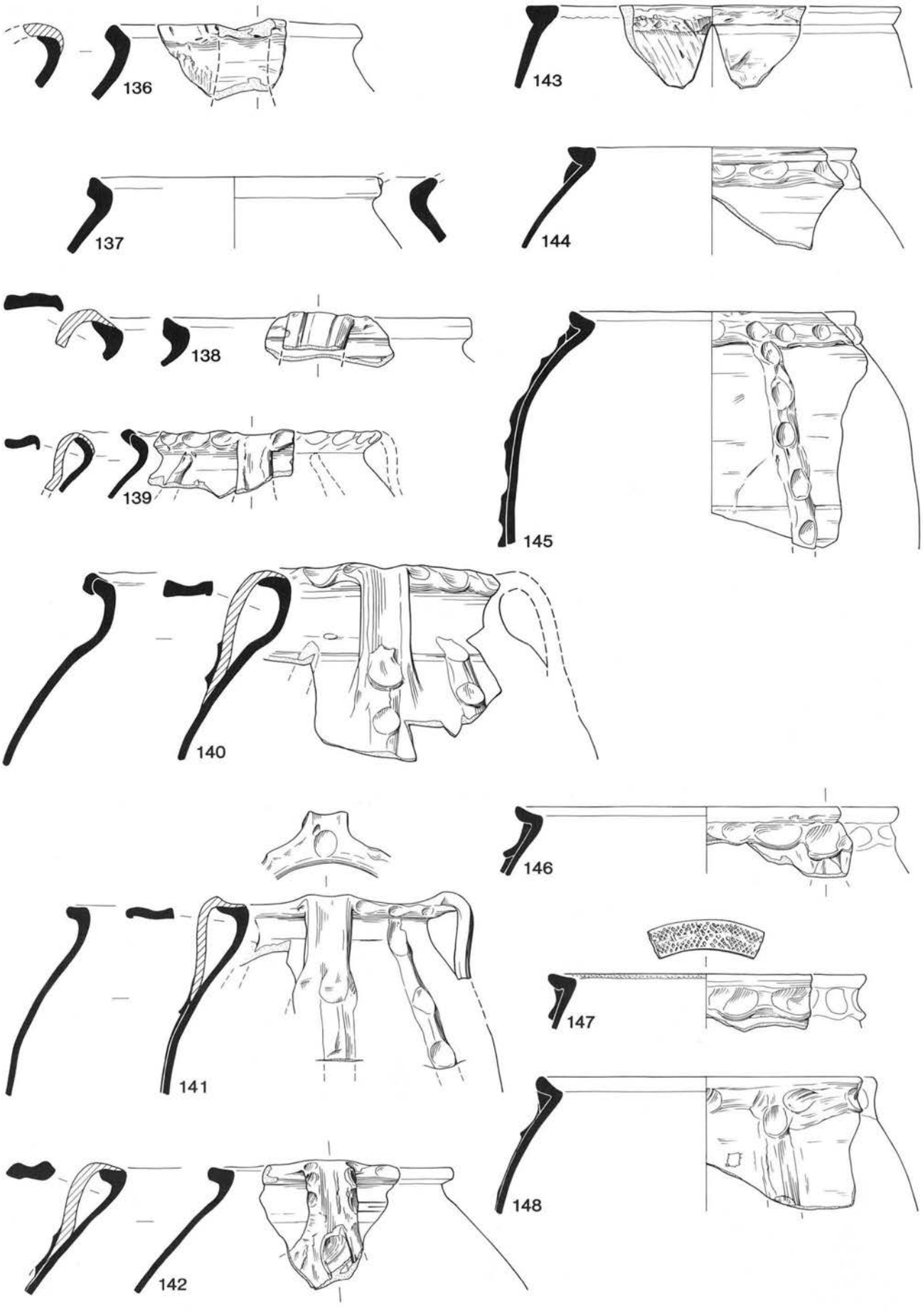


Figure 146 Kilnyard. Pottery Nos 136–138 large handled jars, Nos 139–142 handled jars or storage jars, Nos 143–148 large non-handled jars. Scale 1:4.

Rim shapes can be divided into a few basic types: a) triangular rims, with (AD6) and without (AD3) internal hollow: triangular with developed exterior pendant (AD7) and parallel sided with (AD10) and without (AD4) internal hollow: one example which can be described as wedge-shaped (AD11) was found. Roughly grouped, these account for all AD types in Group 1 (AD3 and AD6 55.1%; AD7 23.5%; AD10 and AD4 19.5% (rest are one AD11 and unclassified fragments)). One example with tapering edge and internal hollow (AD9) was found in the trample in E16 but otherwise the pitchers on the site conform to these rim classifications.

AD3: Triangular rim with no internal hollow (No.100) (forty-nine sherds in Group 1, 6.9%). These rarely occur in fine fabrics (about seven examples in Group 1) and seem to have small rim diameters (12–15 cm maximum, most 12–14 cm) and long necks with unpronounced shoulders. Two larger examples were found in kiln D16 F115 which related more closely to AD6 types than AD3. Evidence for handles indicates that there were usually three and these were often short and/or small. No decorated examples were found although a few (four in Group 1) have cordons. This type becomes less frequent in kilns E16 F33 and D16 F46 (a total of four out of Group 1).

AD4: Parallel-sided rim with no internal hollow (No.102) related to AD10. About six examples in Group 1 (0.8%) from kiln D16 F115 and its stokehole and kiln D16 F137. These are certainly a minor (and temporary?) kiln product as only one example was spalled. The number of handles remains unclear. One fine fabric. None decorated.

AD6: Triangular rim with internal hollow (Nos 104–113). This is the most common form, being 48.2% (343 sherds) of Group 1. In Group 1 some 10.5% occur in fine fabrics; there are a few (about six) red and black examples, and two coarse sherds (in kiln E16 F33). These types would seem to all occur in large sizes of rim diameter 15 or 16 cm–23 cm (one red and black may be as large as 25 cm), but some confusion arises in kiln E16 F33 which may have produced some small examples (see AB/AD). The rim shape in this class is fairly consistent although some longer or squarer shapes occur. It is possible that this form only had side handles as all sufficiently complete rims found (only eight examples) had no handle at the back. How this worked in practice for such large vessels is difficult to gauge—perhaps they were tilted towards the user when full. The shape of the neck varies in this class with some vessels having rounded shoulders and some slack. The latter is less common and it is this shape which sometimes has cordons and grooves (about thirteen examples in Group 1, mostly in kilns E16 F33 and D16 F46). This form is slightly more frequent in relation to the other AD in kiln E16 F33 (some 73%), and ranges from a quarter to half of the pitchers elsewhere in Group 1. These pitchers sometimes have rouletted bands on the shoulder (about eight examples in Group 1), but decoration is rare.

AD7: Triangular rim with internal hollow and developed exterior pendant (Nos 114–120). These constitute 23.5% (167 sherds) of Group 1). In kilns D16 F61, F97, F115 and F46 they almost equal AD6 in quantity, but in kilns E16 F137 and E16 F33 they are less numerous. This form seems to occur in fine fabrics more than other pitchers (32.9% of those in Group 1), and there are a few red and black and coarse examples (two of each in Group 1). Some vessels (about sixteen, mostly in kilns E16 F33 and D16 F46) have cordons and grooves, and some diamond roulette bands (about eleven). Handles would seem to have been two or perhaps three (*cf.* AD6).

AD10: Parallel-sided rim with internal hollow (Nos 121–132). 18.7% (some 133 examples) in Group 1. This type is not only less consistent than the others in size and characteristics, but it is difficult to distinguish from AB11 in small sizes and AE in large sizes. The true quantity of this type may therefore not be accurately gauged. This type ranges in diameter from 13 cm to 24 cm with no apparent clustering except that more small examples may have been associated with kiln E16 F33. The rim forms are basically everted but vary in angle, and necks are both long and short. The number of handles may have varied and two examples with side handles only were found in kiln D16 F137 (*cf.* AD6 and AD7). In Group 1 18.0% of sherds occurred in fine fabrics and none were coarse. Some sherds (six) have cordons and one has rouletted decoration.

AD11: Wedge-shaped (Nos 134 and 135). At least one certain example was found in the stokehole of E16 F33 and an orangish colour suggests that it may have been a kiln product. This rim form coincides with AB13 and as the spouted sherd had an external diameter of only 11 cm the frequency of such a type is unclear. As AB13 was also not found in any quantity in kiln E16 F33 (three examples) this may have been a rare form, or a 'new' product of kiln E16 F33.

It can be seen that pitchers occur in similar or related rim forms. There are possibly some differences between the forms since AD6 and AD7 are mostly large and are more likely to have two handles only, cordons, or rouletted decoration. AD10 varies and may have had either two or three handles on forms which varied in detail. AD3 are fairly consistent and seem to have had small diameters, slack shoulders/long necks and possibly three handles. No decorated AD3 were found. These characteristics by type seem to hold in general throughout the kilns except that more small pitchers were found in kilns D16 F115, F137 and E16 F33.

AE

(Fig.146, Nos 136–138)

Large handled jars (16 cm diameter or more). This type is difficult to distinguish from AD as forms can be similar. No complete AE rims were found on this site but the size and thickness of some sherds indicates that large, plain jars with two or (more likely) four handles may have been a minor kiln product. Miscoloured (greenish) sherds were found in the trampled area. Only fourteen sherds attributed to this class were found in Group 1, and the total in Groups 1–4 constitutes 1.2% (62 sherds) of those groups. Rim forms are parallel-sided usually with an internal hollow and no vessels are decorated. All are fabric (3). None are attributable to kilns D16 F115 or F46, but with such a small quantity this may not be of any significance.

AE/AG

(Fig.146, Nos 139–142)

This type comprises large handled jars of a certain kind which are a product of these kilns. They differ from AE in having applied clay strips and from AG in having long necks and no clay wrapped around the rim, as well as being of smaller size. The rim diameter is usually 16–19 cm (maximum 22 cm) and the rim shape is parallel-sided with an internal hollow but is finer than AE types. There are four plain strap handles and the form is usually long-necked. A thin band of thumbed clay has usually been applied to the edge of the rim although in some cases the rim edge has been thumb-impressed directly. Evidence exists on the larger sherds for one or two vertical thumbed applied strips evenly spaced between the handles. These constitute 2.0% (102 sherds) of Groups 1–4, of which forty-nine sherds are in Group 1 (2.4% of Group 1). There is a propensity for the fabrics to be fine ((2) or (3) fine) and these vessels are often light grey. Slightly more would found in kiln D16 F97 than elsewhere but the quantity is still not large.

AF

(Fig.146, Nos 143–148)

Large jars with added clay and no handles. Although these can resemble deep curve-sided bowls, these would seem to be storage jars as the mouths are too closed to be classed as bowl forms. The rim diameters are large (*c.* 16–26 cm) and there is usually a horizontal thumbed band around the outside of the neck; some vessels also have vertical thumbed strips regularly spaced around the sides. Four also had diamond rouletting on the rim top. Triangular and parallel-sided rim shapes occur both with and without internal hollows in no apparent clusters. These comprise 3.3% (167 sherds) of Groups 1–4, and 2.8% of Group 1 (59 sherds). In Group 1, 30.5% were in fine fabrics.

AG

(Figs 147–151, Nos 149–174)

Large multi-handled storage jars with added clay strips. In this class, the applied thumbed strips would seem to have had a structural function in strengthening rims, sealing down handles after they had been added, and binding the body of these vessels which were built up by coil technique, being too large to throw on the wheel. Storage jars comprise 10.3% of Groups 1–4 (518 rim sherds) and 10.1% (211 rim sherds) of Group 1. Some 17.5% of AG rims in Group 1 have been classed as fine fabrics, but there was only one coarse example noted (0.5%, in the stokehole of kiln D16 F115). Rim diameters of AG jars range from *c.* 18–19 cm to *c.* 38 cm, and one may have been as large as 43 cm although the true size of these vessels is often not strictly classifiable as they can be irregular in shape (one has a rim which is quite oval in plan). All would seem to have had at least four handles, probably increasing in these examples to eight and occasionally sixteen. All handles were strap forms although some neck handles had almost square sections. These last are invariably undecorated (except perhaps for large storage jar No.163). All the decorative motifs associated with handles on this site (see below) occurred on handles attached to AG rims. Few examples were sufficiently complete to show the overall appearance and the point in the size scale at which extra handles at the neck would have been required is not evident: they would certainly have been needed above a diameter of 30 cm, but may have also been required by less, such as 28 cm or 26 cm. Also, as some smaller pitchers were given more handles than might be thought necessary (see AD), it is possible that

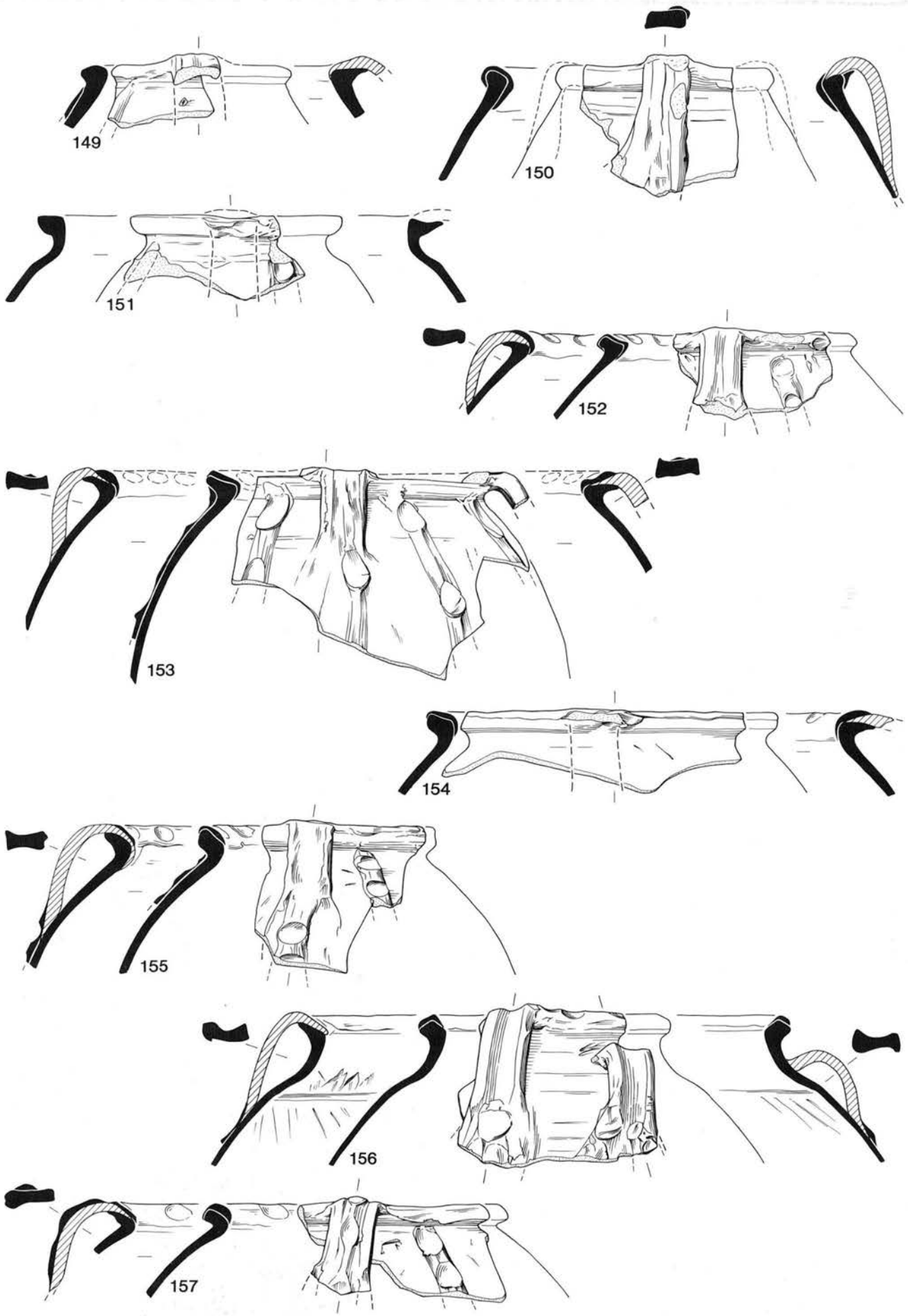


Figure 147 Kilnyard. Pottery Nos 149–151 storage jars?, Nos 152–157 storage jars. Scale 1:4.

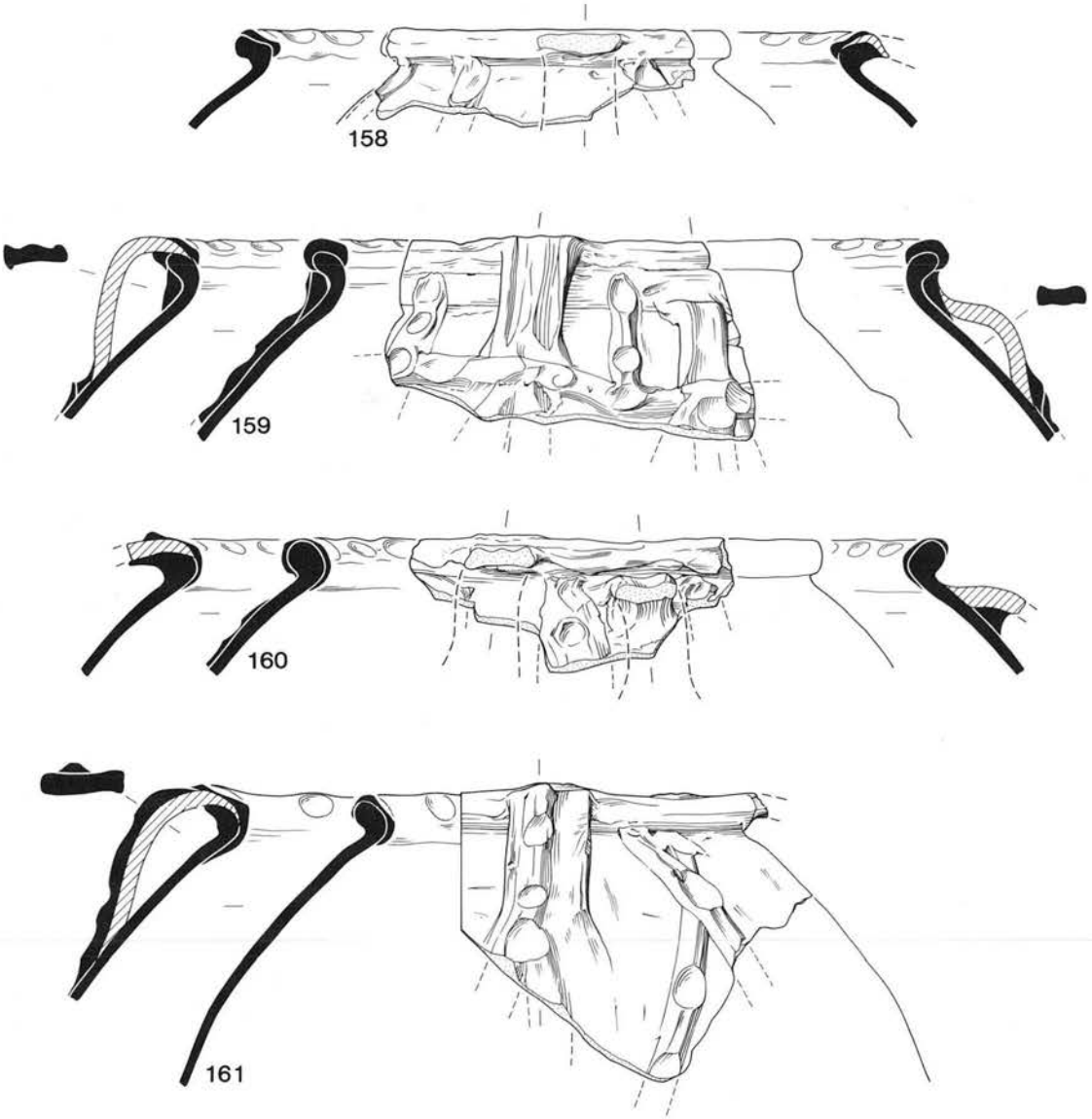


Figure 148 Kilnyard. Pottery Nos 158–161 storage jars. Scale 1:4.

some elements which were originally functional could have been retained on smaller vessels as a rather mindless matter of convention.

Overall designs are rarely sufficiently complete, especially as the neck angle seems to have been a weak point liable to fracture, but a number of different designs seem to have been used, particularly in kilns E16 F33 and D16 F46 which contained large quantities of storage jars. All AG jars have handles, clay strips added to the rim top and sometimes externally to the neck, and applied thumbed strips on the body. The top bands of many examples in these kilns only have thumb impressions where the handles were joined, if at all, and the few neck bands are plain. Bases are all sagging or rounded and occasionally the larger vessels have applied thumbed strips crossing the base: these range from two strips crossing at right angles to many radiating from the centre (No.163). Such vessels also have a horizontal applied strip around the basal angle which the other strips on the base met and the strips on the vessel sides did not.

Thumbed strip designs range from:

a) vertical strips regularly spaced between (usually four) handles
b) diagonal strips
c) criss-cross strips forming a lattice pattern
d) zoned designs. These usually have vertical or criss-cross strips on the neck and a horizontal band around the shoulder, below which are criss-cross or vertical strips. A large sherd from kiln D16 F46 shows how these more complex designs were built up on the larger vessels. First, a plain pot was made by coil technique and probably a wheel-thrown rim was added: it is not clear whether the (often rather rounded) bases could have been an integral part of the coil-made vessel (if so, they may have been made upside down), or whether they too might have been added (at the point of the basal angle). It is also possible that some rims may have been added by hand in stages. The vessels were well smoothed on the exterior but scrape marks are much in evidence internally. A plain horizontal band was then added around the exterior of the neck. Four handles were added to the rim with four more in between them attached to the neck band and vessel body. Then a broad strip was added to the rim top to seal on the handles: this usually had some thumb impressions although they were often only functional having been formed as the handles were pressed down. Then a horizontal thumbed strip was added to seal the bottom of the handles: as the neck handles were shorter than those coming off the rim they ended on the same line. Then vertical and diagonal or lattice thumbed strips were added to the neck and body.
e) Stamped designs. The only kiln with which these were associated was D16 F46. Five rims were found, and four bodysherds, all (with one possible exception) from different vessels. These vessels all seem fairly large (*c.* 26–34 cm diameter) and had eight handles where such evidence survives. The stamps occur spaced out in a line on the band on the rim top, or on the strips on the vessel wall, or on the handles. One type of design was found (Fig.140) but it may have occurred in two sizes (see 'stamps' below) and on more than one stamp.

The larger of the stamps is that found on the large storage jar No.163 found set into the ground in the kilnyard, and that would seem to have been a product of kiln D16 F46. This excep-

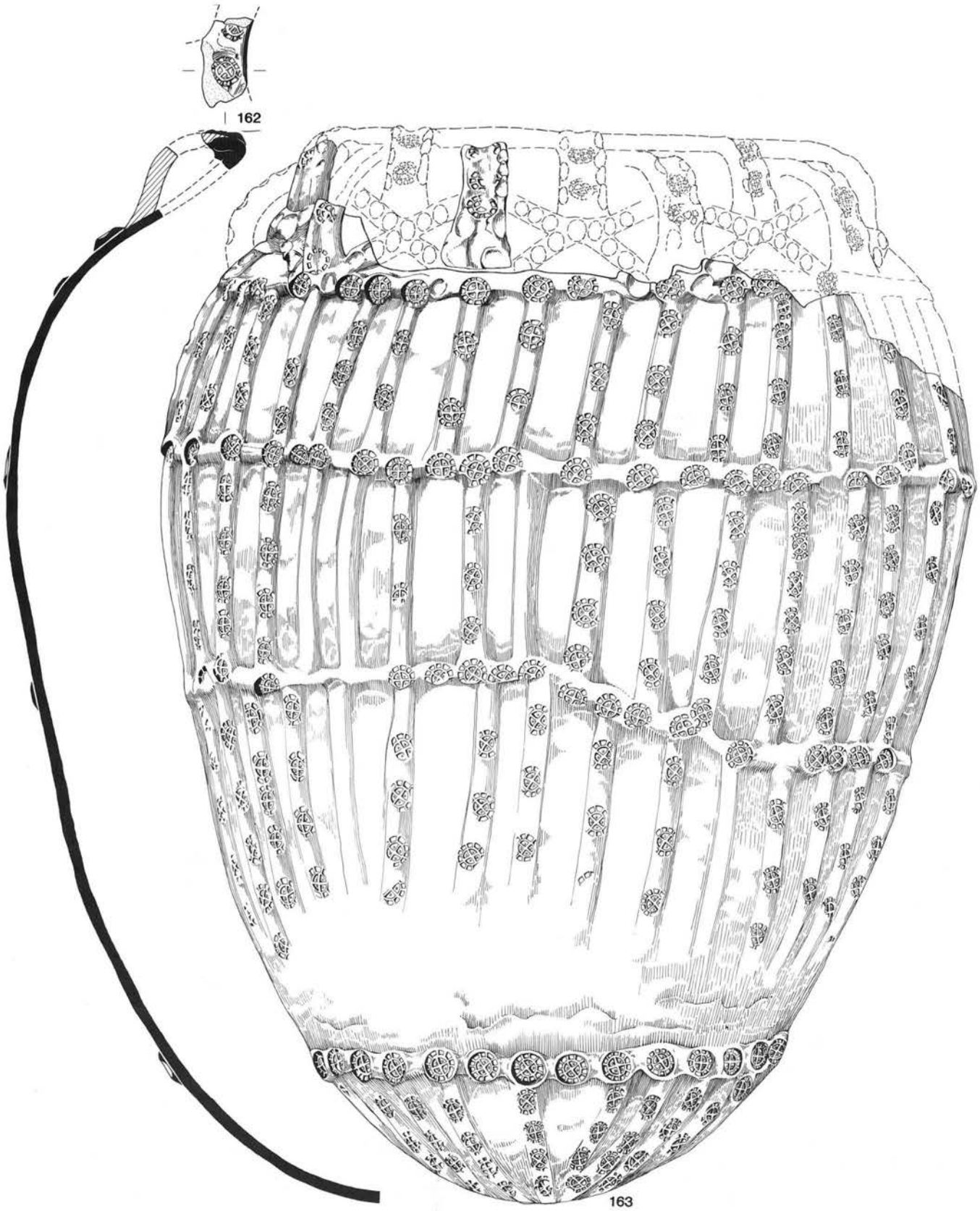


Figure 149 Kilnyard. Pottery Nos 162–3 large storage jar D16 F80. Scale 1:5.

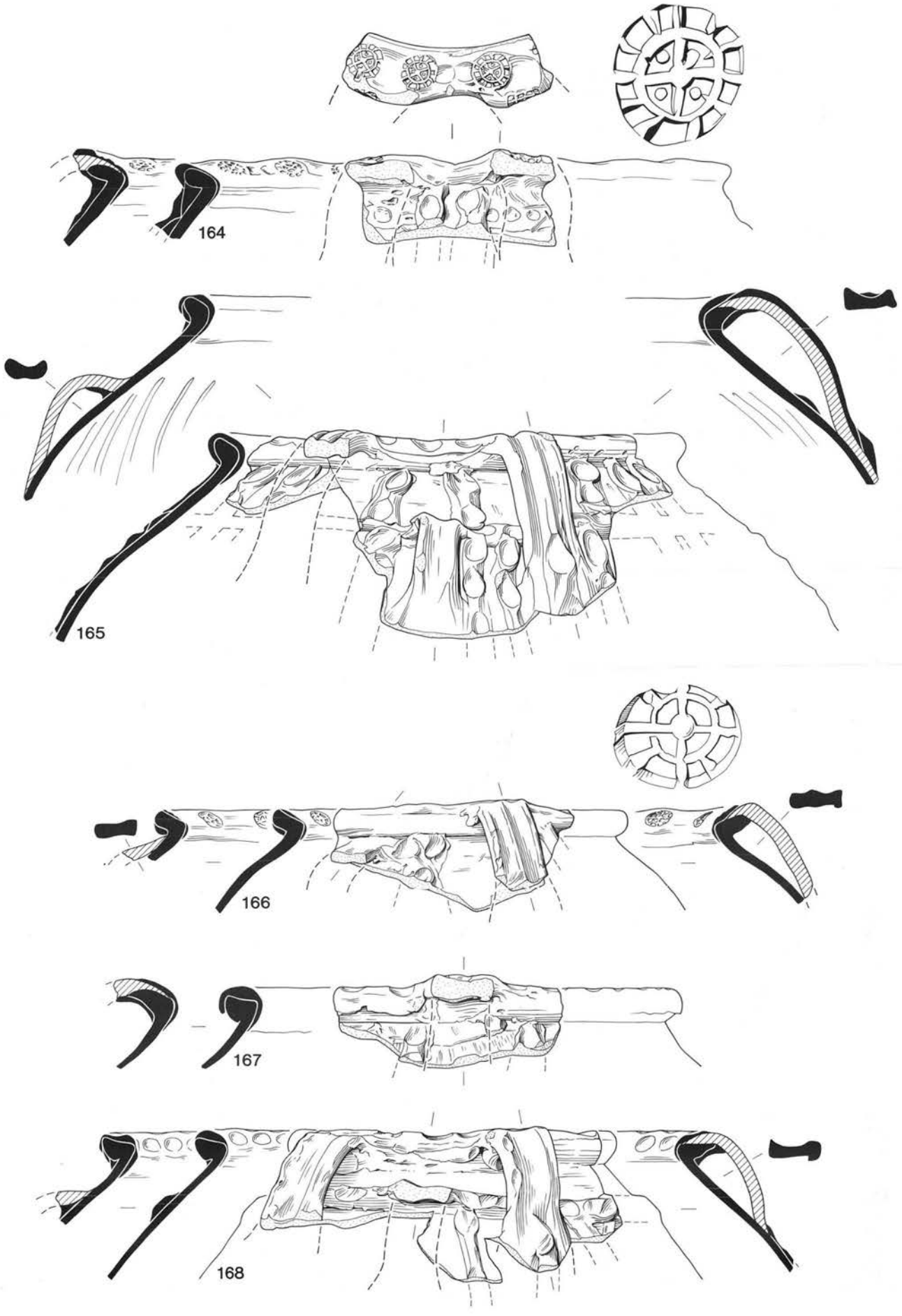


Figure 150 Kilnyard. Pottery Nos 164–168 storage jars. Scale 1:4.

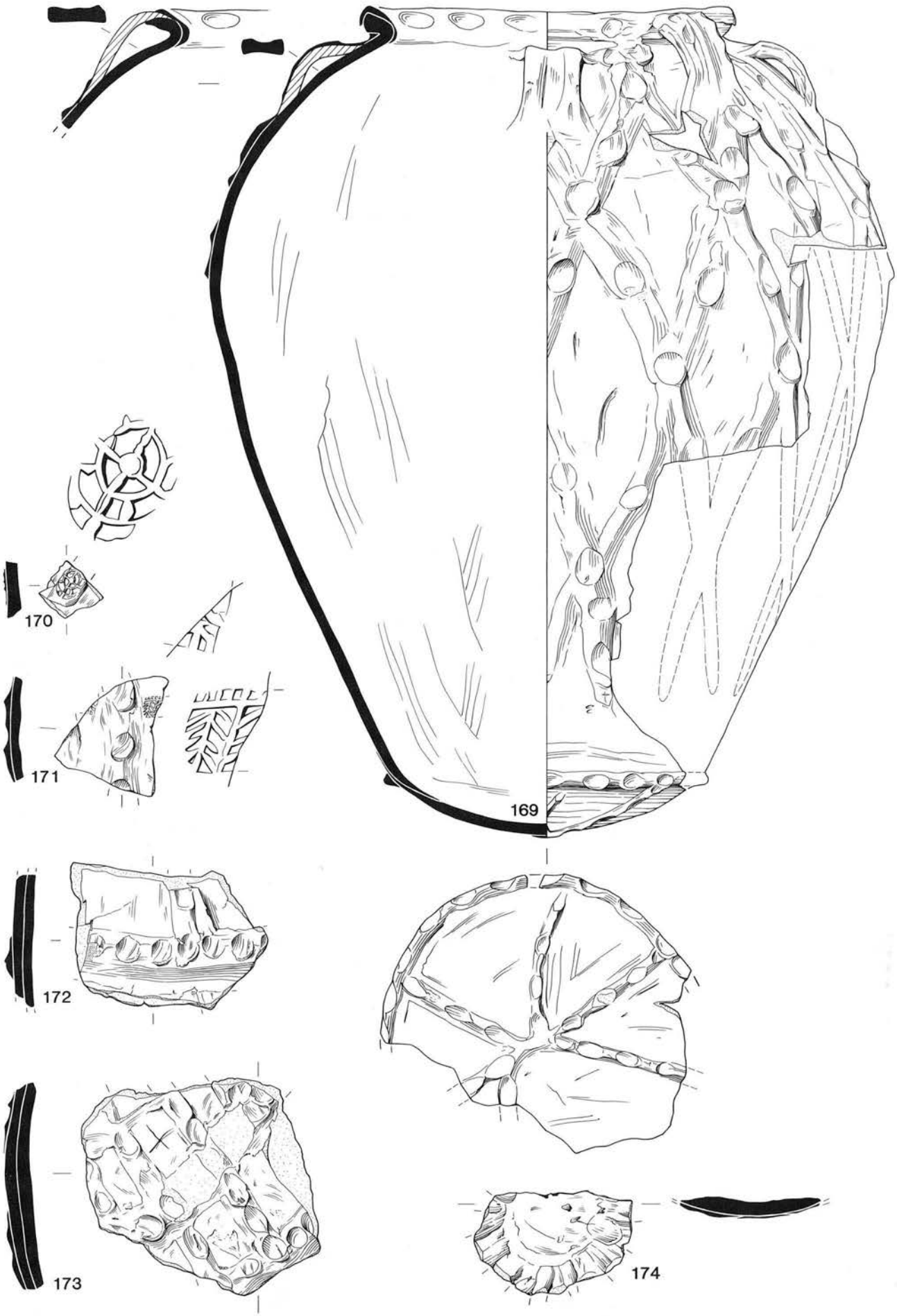


Figure 151 Kilnyard. Pottery No.169 storage jar. Nos 170–174 storage jar fragments. Scale 1:4.

tionally large jar would seem to have been made by the basic coil technique and is well smoothed.

Some vessels found on the site seem to have been made in two layers (Nos 172 and 173) and this technique probably related to kilns D16 F137, E16 F33 and D16 F46 which contained a number of messy, sometimes incompetent vessels. Within Group 1 it is noticeable that the AG quantity increases in kilns D16 F137, E16 F33 and D16 F46 (Tables 1, 5 and 6). This is reflected by a similar increase in bodysherds with applied thumbed strips which are mostly from AG vessels (rather than AE/AG, AF, or BB), *i.e.* in kilns D16 F61, F97, F115 and their stokehole range from 15.4% to 18.6%, but kilns D16 F137, E16 F33, D16 F46 and their stokeholes range from 26.2% to 34.5% of all bodysherds. Also, the size of the storage jars increases in kilns E16 F33 and D16 F46. No diameters which exceeded 30 cm were observed in kilns D16 F61, F97 and F115 (and possibly kiln D16 F137), but approximately a quarter to a third at least of those in kilns E16 F33 and D16 F46 were larger than 30 cm diameter.

BA

(Fig.152, Nos 175–181)

These dishes are difficult to distinguish from inturned bowls (BB9/10) if little survives, but some forty-seven (0.9%) seem to have been found in Groups 1–4, of which thirty-two (1.5%) were in Group 1. They are usually large (30–32 cm diameter) platter-like vessels with inturned rims (BA2) and a slightly sagging almost flat base. Some 59.4% in Group 1 were in fine fabrics, an unusually high percentage. One example (from kilns D16 F46, No.181) had diamond-pattern roulette decoration, but all other examples were plain. They seem particularly frequent in kilns D16 F61, F137 and E16 F33.

BB

Confusion in identifying BB bowls exists in several areas: a) some of the bowls with expanded rims (BB4, BB7) may have been spouted or socketed bowls (BD); b) large inturned rims (BB9/10) might be dishes (BA); c) small inturned rims (BB3) rims could be lids (E); d) small bowls with plain rims (BB2) could be lamp cups (D). In Groups 1–4, 258 vessels (5.1%) have been classes as ordinary bowls (BB) and in Group 1 there are eighty-three such rims (4.0% of Group 1 total). Of these last, 83.1% are bowls with an inturned rim (BB3 or, mostly, BB9/10). These range in diameter from a few at 14–15 cm (*cf.* Class E) to 320 cm (the larger size being more common) and 53.8% are in finer fabrics. Five BB9/10 rims were found in Group 1 which had diamond-pattern rouletting on the top part of the rim exterior, six had a horizontal thumbed band applied to the exterior of the angle, and one had a horizontal external groove which seemed to have been deliberate. The few examples (four) which might be classed as BB3 (but *cf.* BD) were plain. All identifiable BB sherds in kilns D16 F61, F97, F115, F137 and F46 have inturned rims (BB3 or BB9/10), and it is only kiln E16 F33 in which the expanded types (BB4 and BB7, 9.6% of Group 1) appear. It is not clear whether these might all have been spouted, and there is no firm evidence (*i.e.* complete rims) that expanded rim bowls without spouts or sockets were being made. Some expanded rims (BB4, BB7) in kiln E16 F33 and its stokehole, had a horizontal thumbed strip around the outside of the rim (No.189). These expanded rims, with one fine exception, were in fabric (3) and one was red and black.

The remaining percentage of bowls in Group 1 were too fragmentary to identify as types.

BC

(not illustrated)

Bowls with vertical 'D' handles (BC). One expanded rim and one handle fragment in fabric (3) were found associated with kiln E16 F33. They both had an applied thumbed strip on the top, but did not seem to be the same vessel. It is not clear whether this was a minor product of kiln E16 F33 or not. A total of five possible BC sherds were found in Groups 1–4 (0.1%).

BD

(Fig.152, Nos 190 and 191)

Bowls with spout or socket (0.2% of Groups 1–4, eleven examples). These have inturned (BD1, in kilns D16 F61 and E16 F33) or expanded (BD2, in kiln E16 F33) rims with 'O' shaped spouts luted on. Two rims (and a spout) were found in kiln D16 F61, and the five sherds in kiln E16 F33 represent two vessels only. One was in fine fabric and none were decorated. They would seem to have been a minor kiln product by their presence in an apparently unused state (the sherds form 0.3% of Group 1), but only some brownish patches hint at kiln production.

C

(Fig.153, Nos 192 and 193)

Costrels. Except for one unstratified three-handled example (which may not have been a kiln product), these are all the same form. They are barrel-type costrels with two handles. The method of production seems to have been that a beehive-shaped vessel was thrown on the wheel; a hole was pushed through the centre from inside and a plain neck was luted onto this (one example has lines suggesting that the neck may sometimes have been finished on the wheel at this stage); then the rim edge and opposing plain strap handles were added in stages, and the open end was sealed up by the addition of a sagging base which was probably thrown separately and then luted on. All vessels were plain. Some variations in size are evidenced (the smallest being a fragment measuring *c.* 5 cm from the base of the neck to the corner angle of the flat (sagging base end)). Costrel rims, each representing one vessel, amounted to 3.1% (156 sherds) of Groups 1–4 and 4.5% (ninety-three sherds) of Group 1. In Group 1, 8.6 % were in fine fabrics, and 2.1% coarse. Costrels were found in all kilns (including No.192, a complete example in kiln D16 F61, Fig.88) but were less frequent in kiln D16 F46. A further 228 bodysherds were found in Group 1 which may have been from costrels (the rounded end, necks and areas of handle attachment are distinctive/diagnostic), and their percentages in relation to other bodysherds indicate that costrels may have been more frequent in the kiln D16 F61, F97, F115 group (2.8% to 5.3% (or 6.8% including thirty-one sherds from the same vessel)) compared to kilns D16 F137, E16 F33 and D16 F46 (from 0.5% to 2.0%). These vessels could hold up to twelve pints, and could have been used either by being lifted and inverted or, when full, set on the sagging base end and tilted towards the user. Experiments with the complete example showed that this vessel poured best from that direction and not from the side.

D

(Fig.153, Nos 194 and 195)

Lamps. Diagnostic base and stem sherds have been included in the rim totals in Tables 5 and 6 but it is possible that some rim sherds of small plain bowls (BB2) of 10–11 cm diameter have been included in the D totals. Some cracked and oxidised examples indicate that baluster lamps (DB) were a kiln product (Nos 194 and 195), albeit a minor one being 0.9% (forty-six examples) of Groups 1–4 and 0.6% (thirteen examples) of Group 1. Except for one red and black stem fragment in kiln E16 F33, all lamps were in fabric (3). A sooted cup was found in pit C16 F11 but otherwise the site lamps were unused. One base fragment of a spiked lamp (DA) was found but it does not show any evidence of kiln production.

E

Lids. It is not clear whether this class was ever a kiln product, and only one certain example of a lid was found on the site (a flanged fragment). The E sherds would comprise no more than 0.2% of Groups 1–4 and there were only two possible examples in Group 1 (0.1% of Group 1). Most of the possible lids on the site were probably small inturned bowls (BB9/10) which in any case could themselves have been inverted over other vessels (particularly the cooking pots, AB) for use as lids. No examples were sooted, or showed evidence of production in the kilns on this site.

Handles

As well as handles still adhering to pitchers (AD), handled jars (AE and AE/AG), and storage jars (AG), some 1000 broken-off handles were found loose.

Handles can be classed as follows:

a) Plain strap. These can be short, medium or long and occur on all handled vessels.

b) Neck or body handles on storage jars (AG). These are plain (except for stamped examples on D16 F80, No.163) and are not readily distinguishable from plain strap handles (a); although sometimes they are short and broad, are more square-sectioned, and/or have a greater curvature, than other handles.

c) With midrib. Many handles have a central ridge, possibly deliberately formed. They occur on storage jars (AG) and pitchers (AD).

d) With plain applied strip. These seem only to occur on AG vessels, and are possibly mostly associated with kilns E16 F33 and D16 F46, (and possibly kilns D16 F137). The central strip is often placed crookedly so that it is almost diagonal.

e) With applied thumbed strip. These occur rarely and, often being untidy, may be associated with the elaborate storage jars (AG) of kilns E16 F33 and D16 F46.

f) Direct finger printing. This does not occur often, and can be on

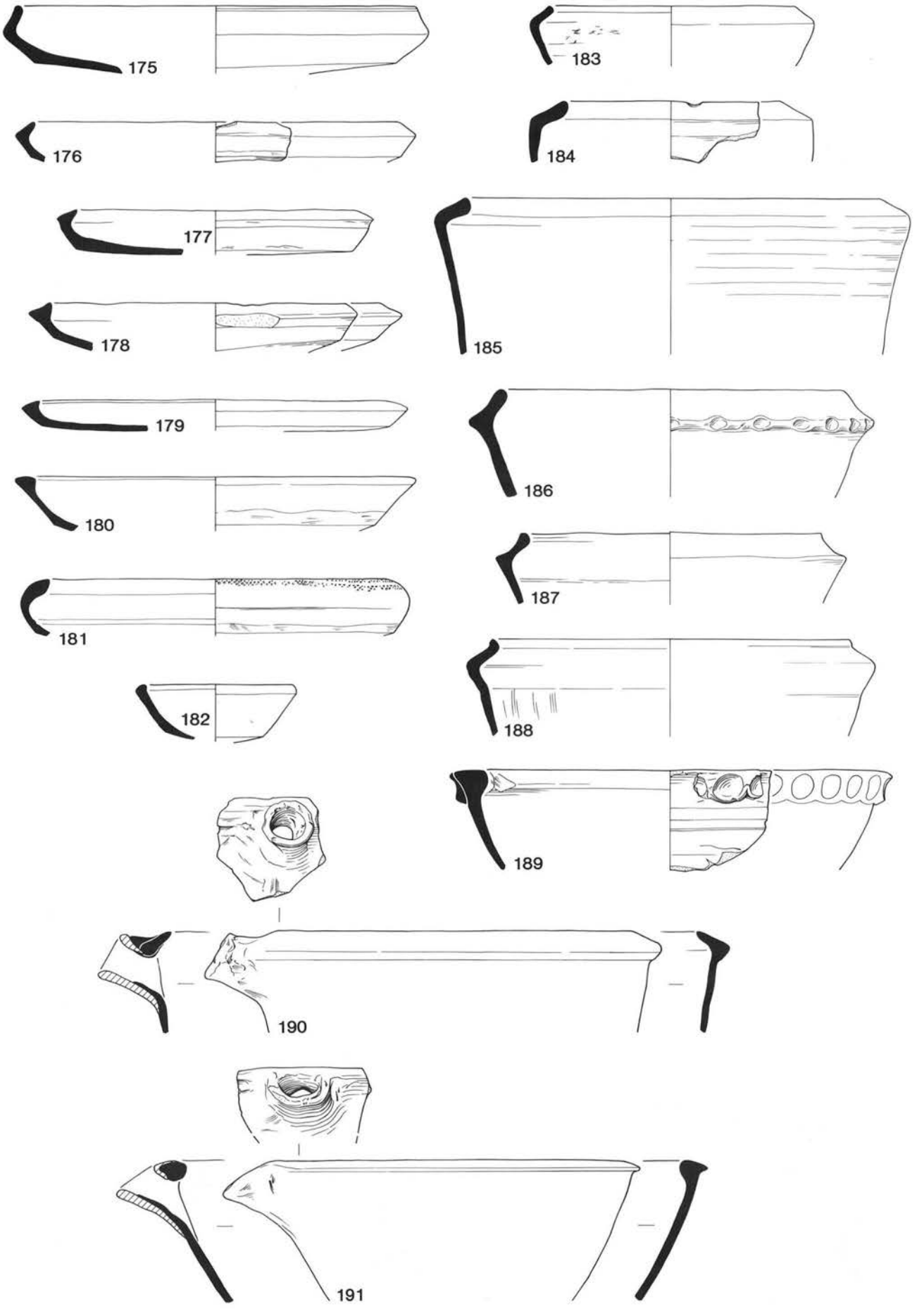


Figure 152 Kilnyard. Pottery Nos 175–191 dishes and bowls. Scale 1:4.

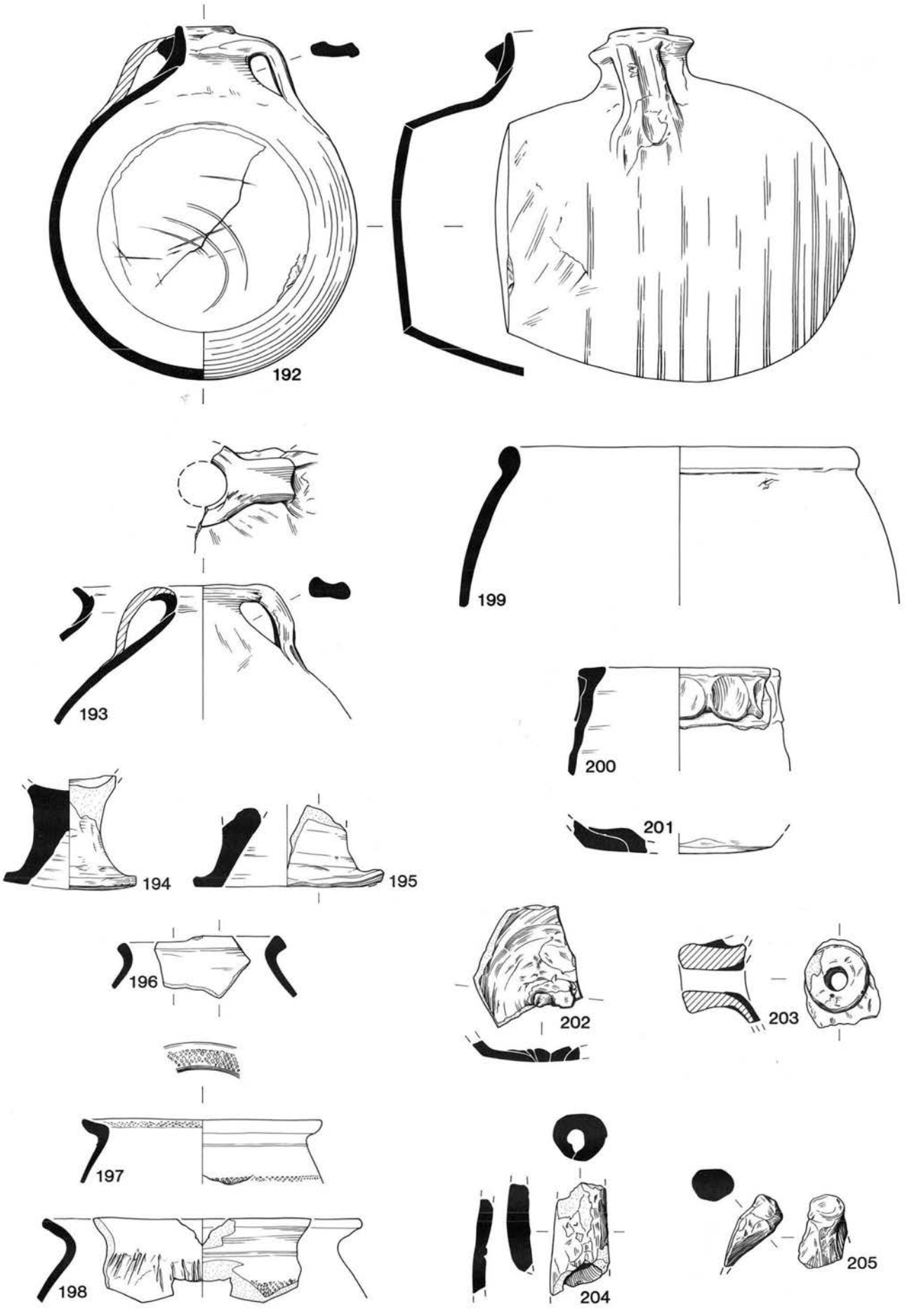


Figure 153 Kilnyard. Pottery Nos 192–3 costrels, Nos 194–5 lamps, Nos 196–205 miscellaneous. Scale 1:4.

one or both edges of the handle. It seems to have been mostly associated with kilns E16 F33 and D16 F46.

g) 'D' handle of BC bowls. One example, covered in thumbed strip, in kiln E16 F33.

Therefore, it would seem that all decorated handles occur only on storage jars (AG) and that variations of design were developed in kilns E16 F33 and D16 F46. Handles were sometimes propped up with extra clay in the larger storage jars. The pitchers all seem to have had handles which are plain or have a raised central midrib. The handles on large jars (AE and AE/AG) all seem to be plain strap.

The handles found on this site would all seem to have been made by hand on their sides and show a characteristic uneven profile (*e.g.* Nos 156, 165, 168, 169) where pressed down in the process.

Spouts

Spouts were formed from separate pieces of clay and added onto holes punched through wheel-thrown jars to form pitchers. A few tubular 'O' shaped spouts were also found from bowls (BD). The pitcher spouts form 'D', 'O', and 'U' shapes apparently at random. Some fifty-three spout fragments were found which had been broken off pitchers, and many pitchers were found where the spout did not survive. Therefore, no percentages of different shapes are offered here as the original quantities of each shape cannot be gauged and probably had no significance. The 'D' shape seems slightly more common on this site, but were certainly contemporary with the other types and none seem attributable to any particular phase, rim shape, fabric group or kiln.

Bases

Of the 3337 bases found in Groups 1–4, fifty-two (1.6%) were flat, and 3285 (98.4%) sagging: the percentage of Group 1 is exactly the same.

To which vessels the flat bases belonged is not clear, but their sizes suggest AB or AD vessel types as most likely, as they seem too large and thick for small jars (AA), and too narrow for AE, AF, AG or C. They occur sporadically in the kilns but seem to be slightly more frequent in kiln E16 F33. An unusual characteristic of the kiln E16 F33 flat bases is some that show 'cheese wire' cut marks in the centre, but are clearly trimmed around the edges of the bottom and sides.

The sagging bases come in a variety of sizes and thicknesses. Some of the large, often rather rounded, storage jar (AG) bases have applied thumbed strip decoration across the base (see above, AG). Some bases show knife-trimming but most are well smoothed. Two types of sagging bases were found on this site which need some discussion:

a) *Bases with added clay.* Several bases were found which had untidy wads of clay added to the interior. In some cases it seems as though the base was thrown or trimmed so that it was too thin, or even open, in the centre, and had to be made thicker, or filled in, with extra clay. The added clay was left untidy on the interior, but so well smoothed on the exterior that the joins were not visible on the outside. A few bases were found where extra clay had been added externally to reinforce the basal angle (Nos 163, 169) as this was a weak point liable to fracture.

b) *Added bases.* Certain examples were found of sagging bases which had been thrown separately and then luted onto the walls of the vessel. Although direct evidence was lacking, it seem probable that these were the flat ends of the costrels (C) as these would seem to have been added on as the final stage of manufacture.

Decoration

Decorative designs occur on some classes of vessel, but none was found on large jars (AE), costrels (C), lamps (D), or lids (E).

Decorative motifs can be classified as follows:

a) *Rouletted bands.* All roulette patterns found on the site are diamond pattern, and they are not very common although most were found in kilns D16 F61 and E16 F33: in the first instance there may have been two roulettes used, but in the latter the case is not very clear. Few clear or complete examples were found so that comparisons are difficult, but vessels with the same roulette as those in kiln D16 F61 seem also to have occurred in kiln D16 F97. Rouletted bands were found on small jars (AA) (rarely), cooking pots (AB), pitchers (AD), dishes (BA) (one example), and bowls (BB). The AB and AD types account for most examples with rouletting on the shoulders, and some inturned BB9/10 bowls have rouletting on the upper part of the rim.

b) *Applied thumbed strips.* These occur mainly on storage jars (AG) where they are always present, and on large handled jars (AE/AG) as well as on large non-handled jars (AF) and on bowls (BB and BD).

The designs on the storage jars are discussed under AG (above). The spacing of the thumb impressions varies but on this site closely spaced finger prints are rare. The AG body wall strips are either impressed at intervals if vertical, or only at the junctions if placed in criss-cross patterns. (The plain part of the strip on this last is often trimmed into a rather squarish profile, see above.) The band at the top of the rim is often impressed only where the handles are joined and sometimes not at all. In some cases, the top bands are only impressed on one side of the rim, or an impressed band is added to the outside edge of a previously-applied plain one. In many of the spoiled misfired vessels, the strips have fallen off cleanly from the rim or vessel side.

c) *Stamps.* These only occur in association with kiln D16 F46 (nine plus large storage jar No.163), or lying unstratified in the trampled soil (one in D15). At least four different stamps seem to have been present: three similar developed cross-in-circle designs, Fig.140, Nos 164A, 166A, and one example of a design of lines, Fig.140, No.170A (perhaps copying or reusing a Roman mortarium stamp or Early Saxon geometric motifs) which was found in the stokehole of kiln D16 F46. The last-named has been stamped directly on to the surface of a vessel of uncertain form. The round stamp designs all occur on the rim tops and applied strips of large storage jars (AG). In one instance, the stamp has been impressed to a depth of 6 mm with the side grooves continuing; *i.e.* the pattern must have been cut this far down the outside edge of the stamp. Insufficient fragments remain to show how the stamps were used in the overall design, but their distribution was clearly varied. The stamps were used in only part of the design in combination with plain thumbed strips (Fig.150, Nos 164, 166) and not only as on the large storage jar No.163.

d) *Cordons, grooves and lines.* These occur on some vessels, usually pitchers (AD) where identifiable. In most instances they seem to have been formed by the throwing of the pot on the wheel and deliberately incised lines or grooves are rare. One instance of wavy line decoration in E16 probably does not derive from these kilns.

Nos 34 – 205 Kilnyard 1966

(Part III, above)

The quantity of material has necessitated arrangement by vessel type rather than kiln group. The types are based on previous divisions (Rogerson and Dallas 1984, 119–21): see also Pottery. All sherds are Thetford ware, medium grey fabric (3) unless stated otherwise. Soot marks are from re-burning in subsequent kiln firings.

Nos 34–62 AA small jars

34–41 AA1, 42 AA3, 43–45 AA4, 46 AA7, 47–59 AA10, 60–62 AA11

34. Fabric (3) fine. (1674) kiln D16 F61, north-west quadrant.
35. (1753) kiln D16 F97, north-west quadrant.
36. (1688) kiln D16 F61 north-west quadrant, from 1′ (30 cm) to bottom.
37. Light grey. (1585) kiln D16 F115, north-east quadrant, top 6″ (15 cm).
38. (1647) kiln D16 F97, south-west quadrant, top 1′ (30 cm).
39. Fabric (3) fine. (1748) kiln D16 F61, south-west quadrant, top 1′ (30 cm).
40. Dark grey-black. (1619) kiln D16 F61, south-east quadrant, top 1′6″ (45 cm).
41. (1733) kiln D16 F46, bottom 6″ (15 cm).
42. (1801) kiln D16 F46, in pottery layer at bottom of kiln.
43. Light grey. (1739) kiln E16 F33, west of fire-arch, below 2′ (61 cm).
44. Dark grey. (1789) (1730) kiln E16 F33, north side, west end, 2′6″–4′6″ (61 cm–1.37 m).
45. Fabric (3) fine, light grey. (1755) kiln D16 F46, north-east quadrant, bottom layer.
46. Light grey. (1729) kiln D16 F97, north-east quadrant.
47. Fabric (3) fine, light grey. (1710) kiln D16 F46, north-east quadrant, bottom layer.
48. Light grey. (1744), kiln D16 F46, north-west quadrant, bottom 9″ (22 cm).
49. Light grey. (1735) kiln D16 F97, south-west quadrant.
50. Marked with soot. (1864) kiln D16 F115, from mouth of kiln, north-west quadrant, depth 2′ (61 cm).
51. Uneven rim top. (1895) kiln D16 F46, south-west quadrant, above fire-arch, depth 1′6″ (45 cm).
52. Reddish core, soot-marked. (1897) context uncertain.
53. (1896) kiln D16 F115, 2′ (61 cm) deep, shown in section drawing Fig.91.
54. Soot-marked. (1624) kiln D16 F61, upper filling, on section drawing Fig.88.
55. Light grey, untidy. (1614) pit C16 F10.
56. Red core, black surfaces. (1683) kiln D16 F61, south-east area.

57. Fabric (3) fine, some soot marking on interior. (1710) kiln D16 F46, north-east quadrant, bottom layer.
58. Fabric (2), dark grey with brownish exterior. (1585) kiln D16 F115, north-east quadrant, top 6″ (15 cm).
59. Light grey, soot marked. (1900) kiln D16 F115, north-east quadrant.
60. Fabric (3) fine, margins red in places. (1689) kiln D16 F61, south-east quadrant, top 1′6″ (45 cm).
61. (1767) kiln D16 F115, south-east quadrant, top 1′ (30 cm).
62. Fabric (3) fine, dark grey with brownish interior. (1831) kiln D16 F61, south-west quadrant.

Nos 63–97 AB Medium jars or 'cooking pots'

63–70 AB1, 71–77 AB1/5, 78–82 AB5, 83–85 AB5/6, 86–88 AB11, 89 AB12, 90–97 AB13/14.

63. Dark grey. (1871) kiln D16 F33, in south-east quadrant of fire arch.
64. Dark grey. (1725) kiln D16 F61, north-west quadrant.
65. Dark grey. (1647) kiln D16 F97, south-west quadrant, top 1′ (30 cm).
66. Light brownish-grey. (1648) kiln D16 F33, south side, top 2′ (61 cm).
67. (1673) kiln D16 F46, bottom 6″ (15 cm).
68. Light grey. (1760) stokehole of kiln E16 F33.
69. Light grey. (1786) kiln E16 F33, southern half.
70. Light grey. (1738) stokehole of kiln E16 F33, south-west quadrant.
71. Light grey, cracked and slightly twisted. (1648) kiln E16 F33, south side, top 2′ (61 cm).
72. (1688) kiln D16 F61, south-west quadrant, from 1′ (30 cm) to bottom.
73. Light grey, orange external margin. (1781) kiln D16 F115 south-west quadrant, top 1′ (30 cm).
74. Burnished patches on exterior. (1727) kiln D16 F97, north-west quadrant.
75. Orange, light grey core. (1652) kiln D16 F61 north-east quadrant, lower half to bottom.
76. (1802), kiln D16 F137, top 6″ (15 cm).
77. Greenish, warped, a little overfired. (1483) E16 over F29.
78. Light grey. (1781) kiln D16 F115, south-west quadrant, top 1′ (30 cm).
79. Dark grey. (1748) kiln D16 F61, south-west quadrant, top 1′ (30 cm).
80. Dark grey. (1729) kiln D16 F97, north-east quadrant.
81. Fabric (3) fine, medium brownish-grey, partly red core, rim abraded on one broken edge. (1710) kiln D16 F46, north-east quadrant, bottom layer.
82. Dark grey. (1801) kiln D16 F46, pottery layer at bottom of kiln.
83. Light grey, some soot marks. (1773), kiln D16 F61, north-east-quadrant, top 9″ (22 cm).
84. Dark grey, body dented. (1714) kiln D16 F97, north-west quadrant.
85. Rim profile irregular. (1691) kiln D16 F115, south-east quadrant.
86. Fabric (3) fine. (1801) kiln D16 F46, pottery layer at bottom of kiln.
87. Fabric (3) fine, light grey. (1710, 1755) kiln D16 F46, north-east quadrant, bottom layer.
88. (1786) kiln E16 F33, southern half.
89. (1707) kiln E16 F33, top 6″ (15 cm).
90. Fabric (3) fine. (1691) kiln D16 F115, south-east quadrant.
91. Fabric (3) fine, dark grey-black surfaces, red core with grey in centre of rim. (1787) kiln D16 F115 south-east quadrant.
92. Fabric (2), brownish grey, soot-marked. (1649) kiln D16 F115, south-west quadrant.
93. Light grey. (1648) kiln E16 F33, south side, top 2′ (61 cm).
94. Fabric (3) fine, black surfaces, red core, micaceous. (1692) kiln D16 F46, north-west quadrant, from 2′3″ (68 cm) to bottom.
95. Dark grey rim slightly crooked. (1735) kiln D16 F97, south-west quadrant.
96. Orange. (1689, 1794) kiln D16 F61, south-east quadrant, top 1′6″ (45 cm) and 1′6″ (45 cm) to bottom.
97. Fabric (2), light grey, orange areas, soot marks. (1773) kiln D16 F61, north-east quadrant, top 9″ (22 cm).

Nos 98 and 99 AB or AD (see Pottery) (AB7/AD6)

98. Dark grey. (1786) kiln E16 F33, south half.
99. Dark grey-black, fabric rather fine. (1721) stokehole of kiln E16 F33, top 6″ (15 cm).

Nos 100–135 AD Pitchers

The number of handles has been stated in the text if known: they have been omitted from the back of the vessel unless certain.

100 AD3, 101 AD3/4, 102 AD4, 103 AD5, 104–113 AD6, 114–120 AD7, 121–132 AD10, 133 AD10/11, 134–135 AD11.

100. Three or four handles, some external patches of vertical smoothing or burnishing, lower half of interior vertically scraped, some gouge marks on body (see p.00). (1774) D16 in 'trample' east of kiln D16 F115.
101. (1661) kiln E16 F33, 1′–1′6″ (30–45 cm) in top clay (fallen dome?).
102. D spout, dark grey with greenish surfaces, kiln D16 F115, south-west quadrant.
103. Light grey. (1710) kiln D16 F46, north-east quadrant, bottom layer.
104. D spout, black with red margins, some fine silver mica. (1469) D16 above stokehole of kilns F61, F97, F115.
105. Two handles, O spout, light grey, spalled and split in several places, lower half of interior scraped diagonally. (1756, 1775, 1649) kiln D16 F115 south-west quadrant and (1787) south-east quadrant.
106. Two handles, D spout, rim possibly extended in two stages but more likely made by being folded over. Fabric rather hard and dense, light grey. (1830) kiln D16 F46, around fire-arch to south-east.
107. U spout, fabric (3) fine, soot-marked. (1711) kiln D16 F46, west side, north end, 1′3″ (38 cm) north of fire-arch, *c.* 3′ (91 cm) depth.
108. Three handles, black with red core in part, micaceous. (1714, 1727) kiln D16 F97, north-west quadrant.
109. Light greenish-grey, handle untidy as clay was probably too dry. (1737) kiln E16 F33 southern half.
110. D spout, dark grey. (1767) kiln D16 F115, south-east quadrant, top 1′ (30 cm).
111. O spout, fabric (3) fine. (1793) kiln D16 F46, north-west quadrant.
112. Fabric (3) fine, soot-marked. (1740) kiln D16 F137, depth 2′ (61 cm).
113. Two handles, fabric (3) fine, light grey, spalled and split, lower part of interior scraped vertically. (1812, 1682) kiln D16 F61, north-east quadrant, top 9″ (22 cm).
114. U spout, black surfaces, red core, some fine silver mica, short vertical gouge marks inside rim (see Pottery), lower part of interior scraped vertically. (1729) kiln D16 F97, north-east quadrant.
115. D spout, hard white inclusions (up to 2 mm). (1731) kiln E16 F33, east end, lowest 1′, in dark soil.
116. Fabric (3) fine. (1705) kiln D16 F137, north-east quadrant, depth 1′3″ (38 cm).
117. Probably two handles, fabric (3) fine. (1793) kiln D16 F46, north-west quadrant.
118. Dark grey. (1747) kiln D16 F115 south-east quadrant and (1775) south-west quadrant.
119. Dark grey, short vertical gouge marks on interior. (1530) D16 in 'trample' west of stokehole of kilns F61, F97, F115.
120. Dark grey. (1649) kiln D16 F115, south-west quadrant.
121. Patches of orangish-brown on handle and in margins. (1765) kiln E16 F33 east end, clay layers under fire-arch, depth 1′9″–2′6″ (53–76 cm) and (1833) south-west quadrant, lowest 8″–9″–22 cm).
122. Two handles, D spout, a few gouged lines inside rim, light grey, rather fine fabric. (1793) kiln D16 F46 north-west quadrant and (1692) north-west quadrant from 2′3″ (68 cm) to bottom.
123. Three handles, some internal scraping on lower part. (1756) kiln D16 F115, south-west quadrant.
124. Dark grey with greenish surfaces. (1756) kiln D16 F115, south-west quadrant.
125. U spout, fabric (3) coarse, with grits up to 7 mm, dark grey. (1760) stokehole of kiln E16 F33, and (1658) ditto, south-west quadrant.
126. Black with greenish surfaces. (1470) E16, in 'trample' north-west of kiln F33, west of F21.
127. Dark grey, fabric rather hard, micaceous. (1689) kiln D16 F61, south-east quadrant, top 1′6″ (45 cm).
128. Dark grey, fabric rather fine. (1855) kiln D16 F137, depth 1′ (61 cm).
129. Light grey, lower interior scraped vertically. (1548) D16, in 'trample' south of kiln F115.
130. Black, some vertical short gouge marks inside rim. (1674) kiln D16 F61, north-west quadrant.
131. Dark grey, soot marked, fabric rather fine. (1725) kiln D16 F61, north-west quadrant.
132. Dented U spout, dark grey. (1689) kiln D16 F61, south-east quadrant, top 1′6″ (45 cm).
133. Light, slightly greenish, grey. (1725) kiln D16 F61, north-west quadrant.
134. U spout, large and untidy, light greenish-grey. (1488) E16, in OGS north of kiln F33.
135. U spout, light brownish-grey with pinkish-brown margins. (1760) stokehole of kiln E16 F33.

Nos 136–138 AE Large handled jars

136. Light grey, greenish surfaces, untidy. (1764) above stokehole of kilns D16 F61, F97, F115.
137. Light greenish grey with light brown core. (1762) stokehole of kiln E16 F33, south-west quadrant.
138. Surface partly light brown. (1842), stokehole of kiln E16 F33.

Nos 139–142 AE/AG (see Pottery). *Handled jars or storage jars*

139. *Cf.* small storage jars No.156. (1753) kiln D16 F97, north-west quadrant.
140. Medium greyish-brown, partly dark grey with reddish-brown core. (1765) kiln E16 F33, east end, clay layers under fire-arch depth 1′9″–2′6″ (53–76 cm), and (1873) south-west quadrant, lowest 8″–9″ (20–22 cm).
141. Some vertical gouge marks on interior, beginning to spall. (1692, 1667, 1754) kiln D16 F46, north-west quadrant, 2′3″ (68 cm) to bottom and bottom layer.
142. Form not certain, light greenish-grey. (1735) kiln D16 F97, south-west quadrant.

Nos 143–148 AF Large jars without handles

143. Plain form unusual, interior scraped, dark grey, rather micaceous. (1812) kiln D16 F61, north-east quadrant, top 9″ (22 cm).
144. (1674) kiln D16 F61, north-west quadrant.
145. Lower part of interior vertically scraped. (1753) kiln D16 F97, north-west quadrant.
146. Light-grey. (1674, 1725) kiln D16 F61, north-west quadrant.
147. Fabric (3) fine. (1725) kiln D16 F61, north-west quadrant.
148. Dark grey, one grit 12 mm, lower part of interior vertically scraped. (1706) kiln D16 F115, north-east quadrant.

Nos 149–151 AG? Wheelmade, probably with clay added to rim

149. Rough external appearance of rim indicates added clay, but junctions not visible, form unusual but *cf.* No.150. (1784) stokehole of kiln D16 F46, east side.
150. Unusual form, messy handle possibly built up in stages. (1560) above kiln D16 F137.
151. Possibly added clay at rim top, but not clear—form uncertain (*cf.* AE/AG Nos 139–142), greenish-grey, grits up to 8 mm, fabric laminated appearance in fracture and possibly spalled. (1460) D17 F8, upper filling.

Nos 152–174 AG Storage jars

Nos 152–158 wheelmade. Nos 159–174 coil-made.

152. Four handles, rough patch on top of handle. (1648) kiln E16 F33, south side, top 2′ (61 cm).
153. Four handles, cracked, part of top band fallen off, one split patch (spalled?). (1666) kiln D16 F46, in pottery layer at bottom of kiln.
154. Four handles, fabric (2), light brown, absence of decoration unusual, few thumb impressions in top band. (1767) kiln D16 F115, south-east quadrant, top 1′ (30 cm).
155. Four handles, fabric (3) fine, dark grey with light brown exterior patches. (1781) kiln D16 F115, south-west quadrant, top 1′ (30 cm).
156. Eight handles, interior scraped, *cf.* AE/AG No.139. (1770) kiln E16 F33, sandy layer under fire-arch, depth 2′ (61 cm).
157. Four handles, dark grey, some brown patches, vessel body wall pushed crooked from within while applying handle and outer surface slightly damaged (some clay pushed upwards by potter's fingernail?). (1648) kiln E16 F33, south side, top 2′ (61 cm).
158. Four handles, fabric rather fine, rough patches on rim top, body wall pushed crooked by application of strips. (1763) kiln D16 F46, north-west quadrant, bottom layer.
159. Eight handles, light grey, soot-marked, rough patches on rim top. (1763) kiln D16 F46, north-west quadrant, bottom layer.
160. Eight handles, light greenish-grey, added strips more grey than rest of pot, cracked, rough patches on rim top. (1604) kiln D16 F115, north-east quadrant, top 1′ (30 cm).
161. Four handles, handle cracking, one area probably split (spalled?). (1758) kiln E16 F33, in north-west quadrant of fire-arch.
162. Number of handles uncertain, diameter unclear (at least 38 cm), probably rim of No.163 as same stamp, lightish medium grey with light grey core. (1497) found with D16 F80, No.163 below.
163. Reconstructed having twenty handles, exceptionally large, same stamp as Nos 162 and 164, fabric (3) with occasional grits up to 5 mm, lightish medium grey with light grey core, parts of core or margins reddish-brown, interior vertically scraped. Previously published in Hurst 1976a, fig.7, no.16. (1497) D16 F89, set into natural ground in hole dug for the purpose, see Fig.86.
164. Probably twenty handles, vessel of similar size to No.163, same stamp, dark grey, medium grey margins. (1662) stokehole of kiln D16 F46.

164a. Stamp design from No.164.

165. Probably sixteen handles, band on rim top only thumbed on outer edge, interior scraped, soot marked on rim. (1684) kiln D16 F33, east end, dark soil layer in bottom.
166. Eight handles, light grey, rather micaceous, rough patches on rim top, stamp different from Nos 162–164, one of impressions is 6 mm deep. (1763) kiln D16 F46, north-west quadrant, bottom layer.

166a. Stamp design from No.166.

167. Four or eight handles, lightish medium grey, partly light grey core, band on rim top only thumbed on outer edge and not on top of handle, beginning to crack at junctions of added clay, lower part of interior and exterior scraped. (1765) kiln E16 F33, east end, clay layers under fire-arch, depth 1′9″–2′6″ (53–76 cm).
168. Probably sixteen handles, rough patches on rim top, generally untidily made, some cracking particularly where applied clay has shrunk. (1724) kiln E16 F33, clay layers under fire-arch; depth 1′9″–2′6″ (53–76 cm) and (1844) sandy layers under fire-arch.
169. Probably eight handles, fabric fairly fine, medium grey with some light brown in core of base, interior heavily scraped diagonally and vertically, many tool marks on exterior, rough patches on rim top. (1670, 1690) kiln E16 F33; probably the jar in the section drawing Fig.95.
170. Bodysherd of AG, different stamp from Nos 162–4 and 166, orange interior. (1595) unstratified in D15.

170a. Stamp design from No.170.

171. Probably AG, possibly wheelmade, unusual stamp, light greenish-grey. (1750) stokehole of kiln D16 F46, east side.
172. AG bodysherd, apparently made in two layers, cracking, light grey with dark grey interior, textile impression (see Textile impressions). (1873) kiln E16 F33, lowest 8″ (20 cm).
173. AG bodysherd, possibly made in two layers, cracking and part of one strip fallen off, incised cross, generally untidy. (1661) kiln E16 F33, in clay, depth 1′–1′6″ (30–45 cm).
174. AG base fragment, interior split off, strips held on by central panel, untidy. (1743) stokehole of kiln E16 F33.

Nos 175–181 BA Dishes

175. Fabric rather fine, light greenish-grey, base and lower body well smoothed on exterior. (1773) kiln D16 F61, north-east quadrant, top 9″ (22 cm).
176. (1651) stokehole of kiln E16 F33, south-west quadrant.
177. Exterior brownish and soot-marked, well smoothed, partly reddish brown margins with light grey core. (1834) kiln E16 F33, sandy layer under fire-arch.
178. Light grey with greenish patches, irregular shape, diameter not certain. (1765) kiln E16 F33, east end, clay layers under fire-arch, 1′9″–2′6″ (53–76 cm).
179. (1731) kiln E16 F33, east end, dark soil, lowest 1′ (30 cm).
180. Partly light brown, partly dark grey, irregular. (1654) kiln E16 F33, north side, 6″–1′6″ (15–45 cm).
181. Fabric (3) fine, exterior dark grey, interior and margins light brownish-grey, soot marked. (1674) kiln D16 F61, north-west quadrant.

Nos 182–189 BB Bowls

182. Light grey core, medium brownish-grey surfaces, slightly irregular. (1657) stokehole of kilns D16 F61, F97, F115, near kiln F115.
183. Fabric (3) fine, interior fingernail impressions?. (1787) kiln D16 F115, south-east quadrant.
184. Fabric (3) fine, rather micaceous, dark grey to black, margins and interior light brownish-grey. (1553) D16, in trample south of kiln D16 F46.
185. Yellowish-orange, core partly light grey, soot marks, cracking and beginning to spall, scrape marks on rim top (mostly with a pointed tool?), lower part of interior scraped horizontally. (1652) kiln D16 F61, north-east quadrant, lower half to bottom.
186. Light grey, cracking. (1773) kiln D16 F61, north-east quadrant, top 9″ (22 cm).
187. Light greenish grey, irregular and untidily made, cracking. (1647) kiln D16 F97, south-west quadrant, top 1′ (30 cm).
188. Fabric 2, rather micaceous, light grey, cracking, lower part of interior vertically scraped. (1695) kiln D16 F137, depth unspecified.
189. Black, slightly friable as over-fired, thumbed strip partly fallen off, lower part of interior diagonally scraped, some trimming inside rim. (1743) stokehole of kiln E16 F33.

BC Not illustrated

Nos 190 and 191 BD Spouted bowls

190. O spout, fabric (3) fine, brownish-grey, rough surfaces, lower part of interior scraped diagonally. (1773) kiln D16 F61, north-east quadrant, top 9″ (22 cm).
191. U spout, fabric fairly fine, dark grey, some brownish patches. (1765) kiln E16 F33, east end, clay layers under fire-arch, 1′9″ – 2′6″ (53 – 76 cm), (1731) east end, lowest 1′ (30 cm), dark soil, (1873) south-west quadrant, lowest 8″ – 9″ (20 – 22 cm).

Nos 192 and 193 C Costrels

192. Complete costrel, see above for description of construction; holds twelve pints, fabric fairly fine, cracked at end. Previously published Hurst 1976a, fig.7.15, no.1 and photo in *Current Archaeology* 1. (1623) kiln D16 F61, on section drawing Fig.88.
193. Fragment, form more rounded than No.191, interior light grey. (1816) kiln D16 F115, south-east quadrant.

Nos 194 and 195 D Lamps

194 and 195 DB baluster lamps

194. Base of DB lamp. Reddish-brown core, light orangish-brown surfaces with light grey area one side, cracked, base hand-trimmed, possibly handmade as uneven and very untidy. (1498) found in D16 with D16 F80 (No.163).
195. Base of DB lamp. Reddish-orange core, exterior light brownish-orange, interior dark grey and light brownish-grey, interior hand-trimmed, uneven and untidy. (1560) above kiln D16 F137.

Nos 196 – 205 Miscellaneous unclassified

Nos 196 – 200 unclassified jars, Nos 201 – 202 bases, Nos 203 – 205 spouts and oddities.

Nos 196 – 200 unclassified jars

196. AA1 with rim change, well-made otherwise. Possibly extra clay added while still on wheel, but final form not clear. (1732) pit E16 F23, northern half, top 1′6″ (45 cm).
197. Greenish-grey, possibly an AD6 or an AE. (1703) kiln D16 F97, south-east quadrant.
198. Diameter uncertain, but too large for AB. Fabric (3) fine, light grey, internal vertical gouge marks, badly spalled. No similar examples. (1729) kiln D16 F97, north-east quadrant.
199. Plain AF?. No other examples of this form. Fabric (3) coarse with grits up to 3 mm, dark grey with lighter core, lower part of interior scraped vertically, cracking, slightly uneven, diameter uncertain. (1739) kiln E16 F33, west of fire-arch, beneath 2′ (61 cm) depth.
200. Unique form (in 1987). Fabric fairly fine, light grey, brownish in places, almost buff, thumbed band partly fallen off. (1589, 1671, 1771) above stokehole of kilns D16 F61, F97, F115 in area of kiln F61.

Nos 201 and 202 bases

201. Base with added clay. (1728) D16 in trample south of kiln D16 F115.
202. Base with added clay. fabric (2), light greyish-brown, core partly light grey. (1816) kiln D16 F115, south-east quadrant.

Nos 203 – 205 spouts and oddities

203. Large spout, possibly from a bowl such as No.190 but of exceptional thickness. Light greenish-grey. (1630) E16, unstratified on OGS.
204. Tube of Thetford-type ware, fabric (3), broken both ends. Handmade by rolling over an uneven slab of clay, at least part of surface added as a thin top layer, roughly tooled longitudinally. Light brownish-grey with black surfaces. Possibly a long tubular spout, a tuyère (not burnt), or else a specialised usage such as kiln prop? (1594) C16 F1 – 4, top of pits.
205. Handmade. Fabric (3), rather micaceous, medium grey with light grey core. Resembles a tripod foot (unknown in Thetford Ware), possibly a handle for a small bowl? (1732) E16 F23 pit, north half, top 1′6″ (45 cm).

1969 – 70 Site 5759 Trench 1

Pottery

Note: All references to fabric and form are explained in Rogerson and Dallas 1984 and in this report, above.

A total of 3608 sherds were found in this trench. Of these, 481 were unstratified as they were retrieved from the trench collapse, the machining, or were in the topsoil. They comprise: five modern/PM; five Medieval; twenty-three EM (one twelfth century, the rest eleventh-century fabric (A)); six ST; twenty-two SN; 420 TH (87.3%).

The stratified material consists of 3128 sherds as follows: 20 EM (0.6%); 30 ST (1.0%); 70 SN (2.2%); 3007 TH (96.2%); 1 Roman (less than 0.1%).

The latest material is EM of which three sherds in later eleventh or twelfth-century fabrics (B) and (C) are likely to be intrusive as this is not a sufficient quantity of material to argue a twelfth-century phase. Otherwise, the EM is sandy fabric (A) and the three rims are small jars with plain flared rims. The seventy SN sherds include eight jars, one hammer-head bowl, one inturned bowl and one sagging base: the rest are plain bodysherds.

The TH, 3007 sherds (96.2%), includes only 271 rims. Of these, 13 are small jars (AA), 230 cooking pots (AB), 10 pitchers (AD), 1 storage jar (AG), 13 bowls (BB), 2 spouted bowls (BD), 2 baluster lamps (DB). There are also three crucibles (BE), one ring vase fragment (F), and one possible costrel bodysherd (C). An unusually high number of bases were found, 367, of which 56 (15.3%) are flat and 311 (84.7%) sag. There were ten loose handles in three types—plain strap, strap with midrib, and small with square section. Twenty-one bodysherds have applied thumbed strips, indicating that they are from storage jars (AG). Rouletting is common: diamond pattern predominates but there are also square, rectangular, and combination designs.

Several pitchers were found, all in pit F13, with decorative designs of cordons, wavy lines and diamond rouletting; one of these has a tubular spout which must have been propped up externally with extra clay. One bodysherd has small circle 'bird bone' stamps on criss-cross applied strips. Almost all the TH can be classed as medium sandy fabric (3), except for 14 fine (2), 3 coarse (4), 5 high quartz content (7); there was also one probable eleventh-century sherd in fabric (5) which was possibly not a Thetford product. Except for perhaps F27 (453 sherds representing some 380 vessels) and, to some extent, F13 (488 sherds representing *c.* 460 vessels), vessel estimates equate with sherd counts for features as well as layers. F14 contained a number of sherds from one cooking pot with a triangular-shaped rim (AB7) but otherwise the sherds represented different vessels in this feature as well.

An important aspect of this trench is that it contained a number of TH wasters and some misfired sherds, as well as some repetition of rim forms being noticeable. The forms which are involved are mostly cooking pots (AB) although bowls (*e.g.* BB12 No.213) may be included. Of the 230 TH cooking pot rims, three-quarters are taken up by a few rim types, some of which occur in possible wasters. All had an internal hollow and the rim shapes are: developed exterior pendant (25 AB8, 45 AB15, 2 AB16: total 72, 26.5% of TH rims; one miscoloured unstratified); triangular (34 AB7, 12.5% of TH rims; one underfired in (3)); parallel-sided (26 AB11, 9.6% of TH rims; one spalled in F27); wedge-shaped (33 AB13, 12.2% of TH rims; one dented in (21)); degenerate wedge shaped (35 AB14, 13.0% of TH rims; ?waster in F27). Much of the pottery, including misfired and ?waster sherds, seems to have been used, with bands of external soot on the rim, shoulder and base, indicating domestic use, and many sherds have an internal lime accretion like 'kettle fur'.

A worked bone object which may have been a pottery stamp was found in F27 (Fig.162, No.18) but no sherds were found with such a stamp. Many vessels had rouletted bands in combinations of design (*e.g.* diamond and squares used in the same band) and this is likely to have been a decorative motif of the potter(s) in the area.

The date of this activity is difficult to pinpoint precisely as the possible waster sherds are scattered throughout the sequence, without concentrating in any particular phase or area. However, this may be tenth-century activity as two dented rim sherds are probably attributable to earliest layer (21) and, in any case, there are three wasters in pit F27 and a dented sherd in hearth F49 in F14. A further seven misfired sherds may be residual in eleventh-century contexts (in F26, F22/F23, and layer (3), as well as one unstratified example).

Discussion

For a small trench, a large quantity of pottery was recovered, reflecting the intensive use of the area suggested by the number of layers and features found. The pottery in general is in small, often abraded, fragments, and seems to be all tenth or eleventh century in date. The presence of a few TH wasters and repetitive rim forms indicates kiln activity in the vicinity although it is not clear whether this might have been directly related to this pottery or not. Almost all the vessels found in the excavations show evidence of use which is likely to be domestic, and the sherds are not a pottery dump discarded from the kilns directly. There is nothing distinctive about the vessels that might identify a certain potter or potters, but some of the occupation on this site might be connected with pottery production as some vessels that are seconds or possibly even wasters seem to have been pressed into service. It may indicate the residence of a potter, or a relationship with a potter as relative, friend, neighbour or employer. On the other hand, it may simply reflect poverty with substandard utensils having been bought cheaply or scavenged from kiln dumps in the area.

Catalogue

All sherds are medium grey Fabric (3) Thetford Ware unless stated otherwise.

Fig.154

206. Light grey, beginning to spall. (731), F17 layer (68).
207. Dark grey, warped and slightly overfired, external soot on body and rim edge. (721), F17 layer (67).
208. Dark grey to black, body brownish-red core, rim brownish-red margins, warped, some external soot. (684), layer (21)?
209. Interior surface shiny, hard-fired. (738), layer (66).
210. Dark grey, rim slightly uneven. (731), F27 layer (68).
211. Interior surface lighter grey, slightly shiny inside neck, rim uneven. (731) F27 layer (68).
212. Interior light grey and shiny, exterior sooted on rim edge and body from shoulder to about 1 cm above base, base clean, rim slightly crooked. Sooting most unusual on a handled vessel as these are normally pitchers or storage jars, and possibly reused for a different function. (731) F27 layer (68).
213. Dark grey, exterior surface black with soot, rim slightly uneven. (683) layer (21)?

1969 – 70 Site 5759 Trench 2 The church

Pottery

A total of 114 sherds were found in the excavations, nearly a quarter of which (23.4%) were from topsoil, modern features or unprovenanced. Half of the sherds (50.7%) were phased in Periods I – VIII, and the rest were from burials (5.8%), layers (6.5%), or were in other features or generally lying about (misc. 13.0%). Although Periods V – VIII are likely to have post-dated the late twelfth century, the phased material only spans the tenth to late twelfth century.

The latest phased material includes late eleventh to twelfth century GMT which occurred in Periods VI – VIII; under and in floor F223, in boundary wall F219 and in the west wall of the west annexe F213. Forms where recognisable are all storage jars except for one late twelfth-century jug in layer (r).

Early Medieval wares only account for 8.2% of the pottery, although another 1.2% is possibly Early Medieval rather than TH. EM fabrics (Pottery, Early Medieval Wares, above) are predominantly sandy as only five sherds contain calcite (see fabric C) and only four sherds have sufficient quartz tempering to be classed as fabric (B): the only stratified (B) sherd was associated with mortar F296 in Period VIII. The twelve EM rims are all jars, of which six were everted, and six were upright with a turned-out top: two of the former have thumbed decoration and two of the latter have combed decoration. The upright forms are later in the EM sequence than the everted or 'rolled' types, and the stratified examples were associated with Period VIII: one was beneath the north annexe and one was in floor F223. Seven EM sagging base sherds were found and one probable EM handle was sealed beneath the west annexe. There is one rim of a type suggesting the twelfth-century transition from TH to EM at Norwich (see above, Pottery), unstratified in a modern pit.

St Neots-type ware accounts for 6.2% of the pottery total. Form evidence includes nine jars and four bowls of which three are inturned. All six bases are sagging.

The pottery at all periods is dominated by TH (77.5%), which must be mostly residual (certainly late Period IV onwards). The TH fabrics present are mostly (3), with two (2), five (4), one (5), and one ?(7), but some of the sherds are micaceous. Some sherds are red and black, and a number include brown or orange areas. The most frequent vessel type found on the site is the 'cooking pot' (63 examples in common types AB1, AB7, AB8, AB9, AB10, AB11, AB12, AB13, AB14; of which types AB8 and AB14 (everted with internal hollow and developed exterior pendant) and AB14 (degenerate wedge shape) are the most numerous). There are two or three examples each of small jars (AA), pitchers (AD), handled jars (AE), and storage jars (AG). There is one unusual close-mouthed jar (?AF) from the topsoil, and one fragment of an 'angled bowl' (BB12). Eight lamp fragments were found, which all seem to be of baluster type (DB). There is one flat base and seventy sagging bases. Nine handles were found, one with a central thumbed applied strip. Some vessels have thumbed strip or diamond-rouletted decoration and there are two sherds with small circle (bird bone) stamps.

The unstratified and other material from the site reflects the high proportion of TH. There are only three medieval (thirteenth-fourteenth century) glazed sherds (from layers (a) (f) and (m)) and these are small abraded fragments from different vessels. It is noticeable that, as well as some LM or later roof tile fragments, nearly all of the twenty-two PM sherds are late sixteenth-seventeenth century. These are, mostly, yellow-glazed GRE and although they were in unstratified contexts they are from different vessels and must represent PM activity on the site (Period VIII?) or nearby.

Discussion

The pottery contains little of intrinsic or ceramic interest except for a possible EM waster from the topsoil (No.215) which is a unique find in Thetford so far (1986). The collection is dominated by TH in all areas and periods but it must be residual after Period III. If the ditches, pits and post-holes on the site represent earlier occupation than the church sequence, this may be the derivation of much of the TH. The sherds are domestic in appearance as most are sooted, and there are many small pieces from different vessels. This is to be expected on a church site, but it also applies to the few pits excavated in the northern area. The prevalence of two rim forms among the TH cooking pots (AB8 and AB14) perhaps relates to the evidence from site A of pottery production in the vicinity, although no wasters were found in this trench. Some of the TH would seem to have been contemporary with the eleventh-century church of Periods II and III as it is not uniformly grey and there are variations within the sandy (3) fabrics suggesting that some vessels may not have been made at Thetford. Both of these points are late TH characteristics at Thetford, and eleventh-century dating is supported by the late forms of the TH storage jars, and the presence of fabric (5) and the EM. An unusually high number of baluster lamps were found, presumably one of the few pottery vessels in use in conjunction with the church (*cf.* Ayers 1985, 34). The other pottery probably derived from domestic occupation nearby.

There is less EM from the site than might have been expected, but a number of different vessels are represented and it is noticeable that twelfth-century rim forms make up half of the small EM rim total. Two of these were sealed beneath Period VIII features but there are no stratified examples from earlier contexts.

The ceramic evidence suggests little or no medieval occupation and a period of some activity in the late sixteenth–seventeenth century.

The church: **Catalogue**

Fig.154

214. Early Medieval jar, fine sandy fabric, light grey core, reddish-brown margins, medium grey interior surface, exterior surface dark grey with soot (heaviest on rim edge). Type unusual at Thetford, more similar to vessels found at Norwich (cf. Jennings 1981, fig.14). (1584) F252, Period I burnt layer beneath Period II timber church.
215. Early Medieval jar. Sandy fabric (A), dark grey, heavily overfired, cracked and warped, probably a waster (if re-burnt, heat must have been of remarkable intensity). Unstratified.

IX. Ceramic Artefacts

Brandon Road

(Part II, above)

Fig.155

1. **Spindlewhorl**, chipped out of a sherd of Thetford-type ware, fabric (3).
   SF551 (30) O20 F2(b), Period IV pit.
2. **Pottery counter** chipped out of Thetford ware fabric (3).
   SF471, (2071) J26 F6, cellared Building L, filling, early Period V.

(ni) **Pottery counter?**, Thetford ware flat base, 53 mm diameter. SF484 (185) kiln N19 F7(d), Period III.

Kilnyard

(Part III, above)

(ni) **Pottery counter?**, centre of Thetford ware sagging base, 37 mm diameter. SF728 C16 F1–4, top of pits.

(ni) Two Thetford ware rims with holes pierced after vessels had been fired, probably for use as **weights**, *e.g.* loomweights,
SF770 Rim AB11 cooking pot, hole 9 mm diameter, weight 65 g. (1591) E16 unstratified, lying 2′ (61 cm) north of kiln E16 F33.
SF771 Rim BB10 bowl, hole 5 mm diameter, weight 155 g, exterior heavily sooted probably from domestic use. (1607) D15 F11, pit.

1969 – 70 Trench 2 The church

(Part IV, above)

3. Clay **spindlewhorl**, fabric fine sandy with much fine silver mica, oxidised dull reddish-brown, smooth, regular surfaces. SF968 (624) layer (g), unstratified north-west of church.

(ni) EM (fabric A) sagging base chopped into rough circle 73 mm diameter. SF997 (1660) in filling of F285, Period V.

X. Stone Architectural Fragments

Brandon Road

(ni) Small fragment of Porfido Verde Antico from Marathonisi (Gythium), Laconia, Greece (ident. D.T. Moore). Worked into smooth slab 20 mm thick, one side polished (by wear as flooring?), Roman period import. SF464 (1938) M24 F42, unphased post-hole.

Fig.156

1. Roughly-shaped **chalk block**, with rectangular socket on one face, oblong groove on opposite face, and cylindrical groove in one long side. The socket and grooves show marks of tooling. Functions obscure, probably post socket base reused twice.
   SF732 (3112) K26 F33, well Period V, depth 11′ (3.35 m) in filling.

Fig.157

(Pl.XIX)

2. Saxon **interlace carving**, probably from cross shaft as rather thick for grave slab, stone reused as thirteenth-century roll-moulded voussoir. Oolitic limestone, fairly coarse and shelly (Northamptonshire/Lincolnshire). Two-strand interlace partly worn away, to be discussed in Margeson forthcoming.
   SF738 (3116) unstratified in topsoil 1966 season (see below).
3. Norman **scalloped capital**, roughly recut into a rectangular block. Oolitic shelly limestone, partly burnt. Twelfth, possibly late twelfth century (inf. N. Batcock). SF737 (3114) reused in M24 Wall D, Period VI–VII.

Not illustrated

A number of ecclesiastical fragments, mostly of late twelfth to thirteenth-century date, were found in 1966 at the southern edge of the site in the churchyard at TL 8641 8295 (Fig.2). Some show signs of reuse. The group comprises Fig.157, No.2 above and:

SF733 roll-moulded voussoir, oolitic shelly limestone with traces of plaster on surface, thirteenth century.
SF 734 half drum from shaft, oolitic shelly limestone, diameter 26 cm, partly burnt, date uncertain.
SF735 plain voussoir from window or small door, chalk, 32 cm long by 10 cm wide, date uncertain.
SF736 base of circular column or shaft 11 cm in diameter, an incised cross on the top is probably to mark position of shaft when setting out (inf. N. Batcock), oolitic shelly limestone, thirteenth-century 'water holding' base.
SF738 Fig.157, No.2, above.
SF739 drum of five-sided door jamb, two smooth faces but rest left roughly tooled, oolitic shelly limestone, date uncertain.
SF740 roll-moulded voussoir, oolitic shelly limestone, early thirteenth century.

Found in 1964 unstratified in north-west part of site:

SF741 chamfered limestone block 19 cm long by 15 cm wide by 8 cm high, plinth or string course, oolitic shelly limestone, partly burnt, date uncertain.

1969 – 70 Trench 2 The church

Fig.157

4. Norman **scalloped capital**, door respond. Oolitic shelly limestone, partly burnt. Post-Conquest, *c.* AD 1100 (inf. N. Batcock).
   SF972 (1599), reused in metalworking feature F284, Period V.

XI. Building Materials

Brandon Road

The only building fragments retained were those from features cut into natural ground surface. (I am grateful to Paul Drury for examining these fragments.) For burnt clay see below.

Floor tiles. Not illustrated. The only three examples are: one fourteenth century from Bawsey in north-west Norfolk (probably plain with yellow glaze) and one thirteenth to sixteenth-century English (green glaze) (both from pit M25 F71b/M26 F29 (Period VI – VII)); one late fourteenth to mid-sixteenth-century Flemish (green/black glaze) (L26 F26 Period VII).

Roof tiles. Not illustrated. There are four pieces of Roman tile. Six fragments seem to be Medieval, including one with green glaze, and all were found in the area J26 – K26 (in J26 F16, K26 F9, and the tops of cellared Building L and pit J26 F61). They are in a red sandy fabric with small chalk inclusions, a fabric found in west Norfolk along the Fen Edge and assumed to be manufactured in that area as they are not normally found in east Norfolk (and are not present (1986) in Norwich). Over fifty red sandy peg tiles were found which seem to be Late Medieval in date (one RT1 and fifty-one RT4, Drury types). Other than several dumped into well K26 F7 and four in area N23, these are widely scattered although, except for some on O18, O20, and O21, they occurred in the eastern half of the site (in grids K24, K26, L21, L23, L24, L26, L27, M20, M21, M23, M24, N21, N23).

Brick. Not illustrated. Two pieces of late fifteenth to seventeenth-century date were found in pit L26 F26 (Period VII). The other seventeen fragments are a disparate collection of alluvial clay bricks of late thirteenth to fifteenth-century date (in grids K26, K28, L22, M21, M23, M26, N23). The inconsistency of the types suggests that they were reused.

Mortar and wallplaster. Not illustrated. Only a few samples were kept. Of the mortar samples kept from Saxo-Norman contexts (none were kept from Building J) only one from an unknown depth in pit K24 F66 (III or IV) may be lime mortar and the rest seem to be either burnt lime or limestone or natural concretions. Samples of mortar from Period V – VII contexts comprise J26 F16, M23 F101 and O20 Ditch A. This last example seems to be faced with white wallplaster, and plaster was also kept from pits M23 F11 and F12 (a well filled in Period VII).

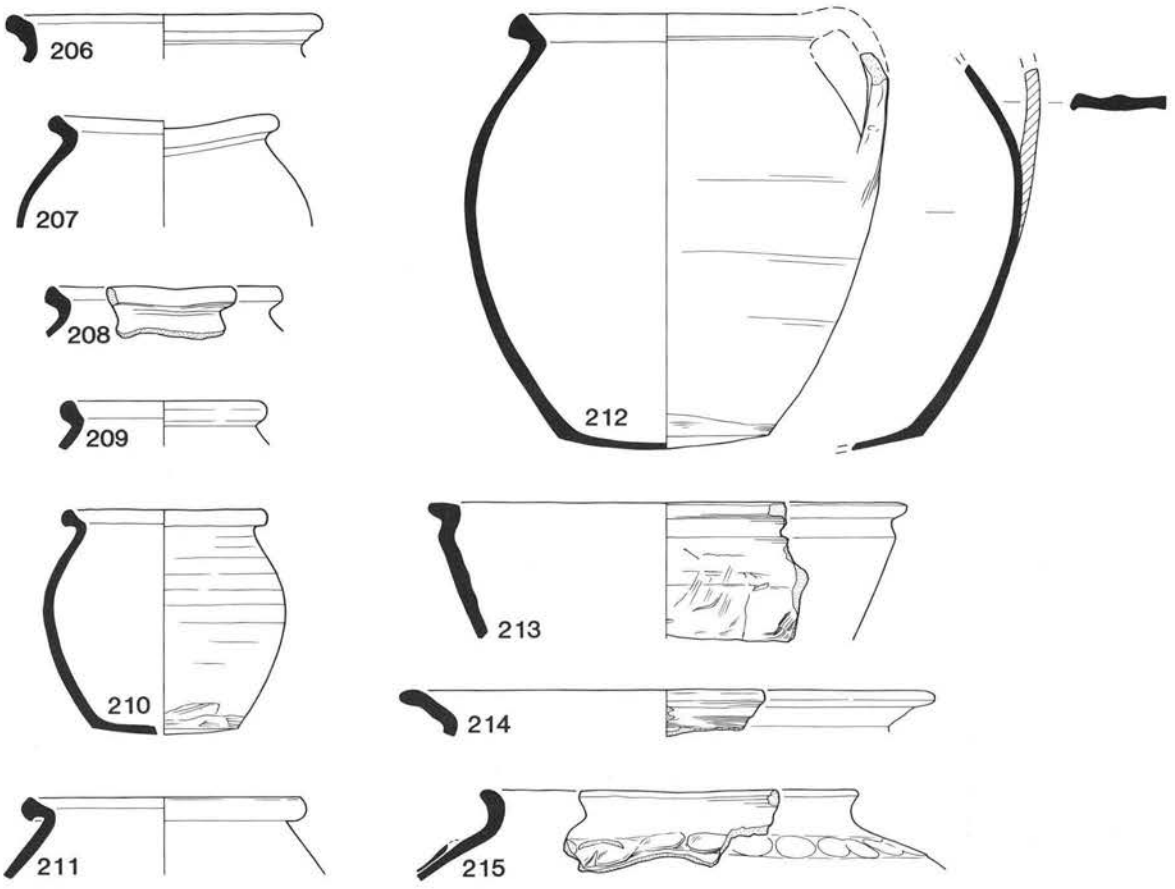


Figure 154 Site 5759. Pottery Nos 206 – 213 Trench 1, Nos 214 – 215 Trench 2, The church. Scale 1:4.

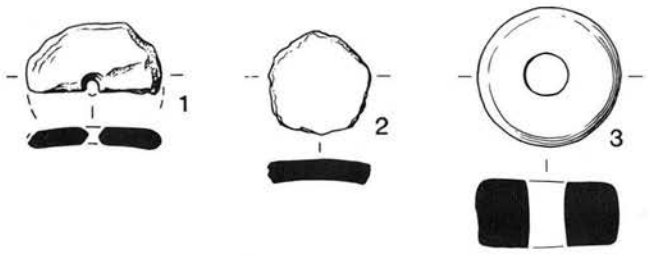


Figure 155 Ceramic artefacts. Nos 1–2 Brandon Road; No.3 Site 5759, Trench 2 The church. Scale 1:2.

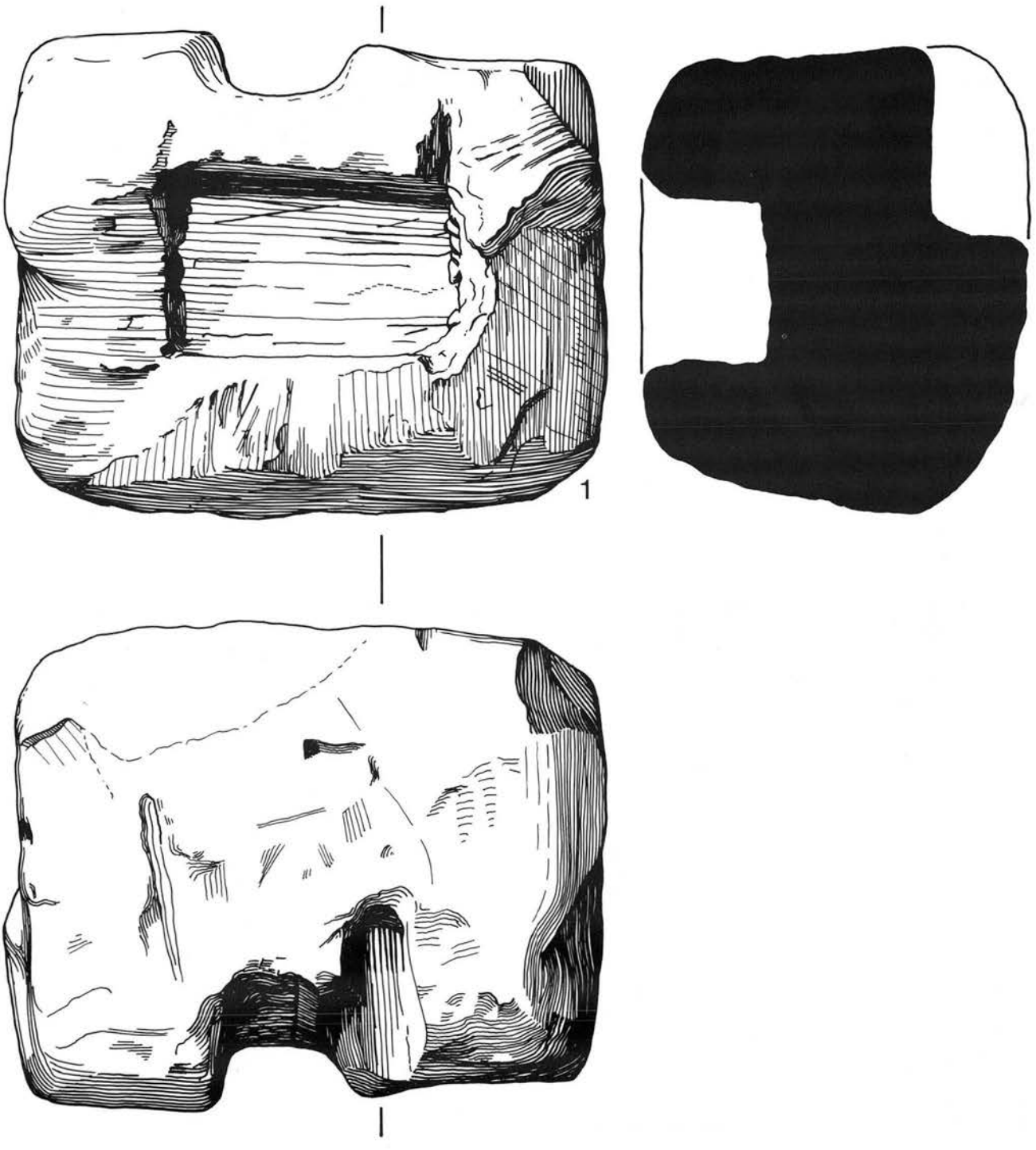


Figure 156 Reused chalk socket. Brandon Road. Scale 1:3.

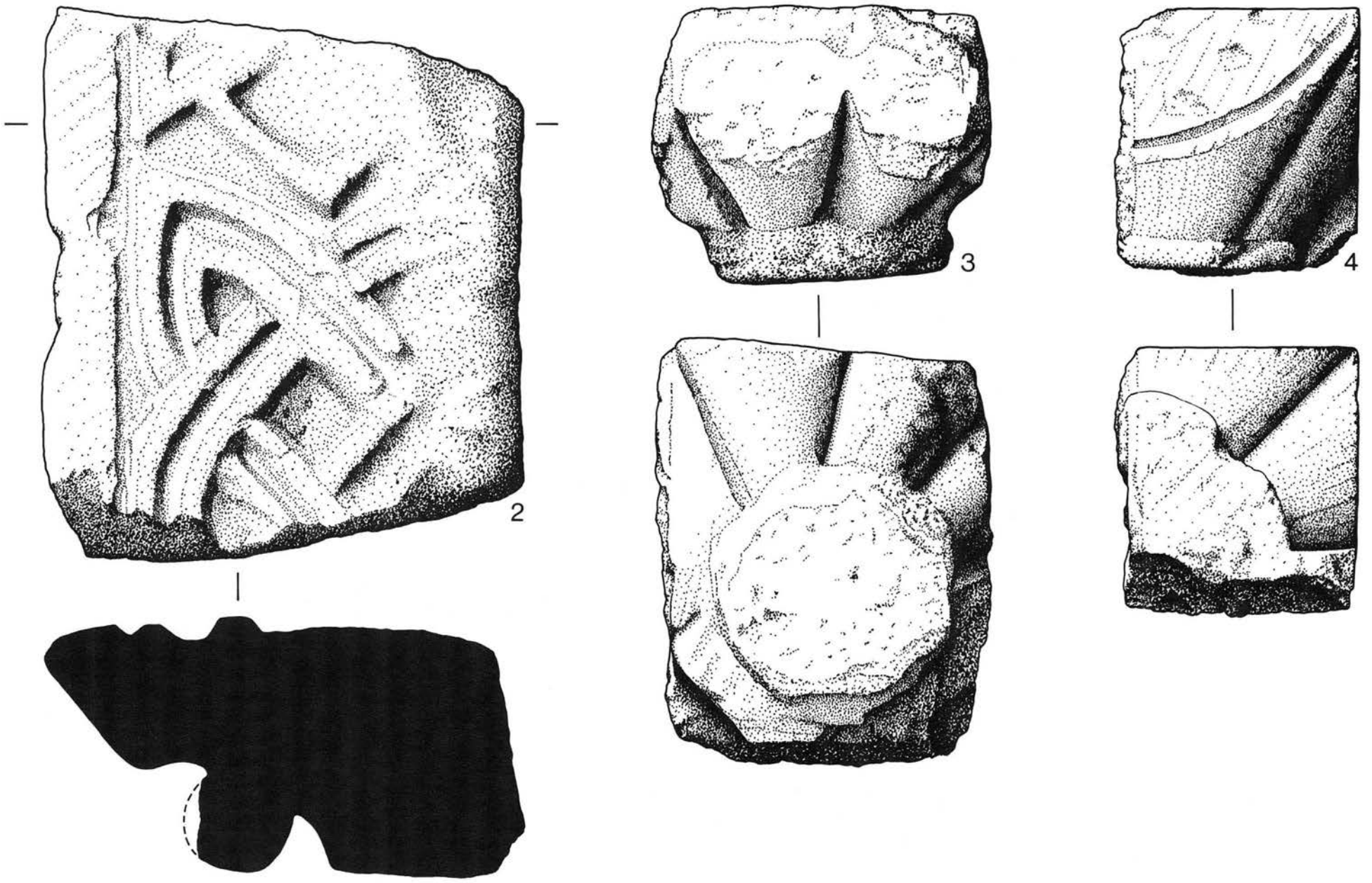


Figure 157 Stone carving: No.2 Saxon interlace carving. Brandon Road. Scale 1:3. Nos 3 and 4 Norman capitals. No.3 Brandon Road; No.4 Site 5759, Trench 2 The church. Scale 1:3.

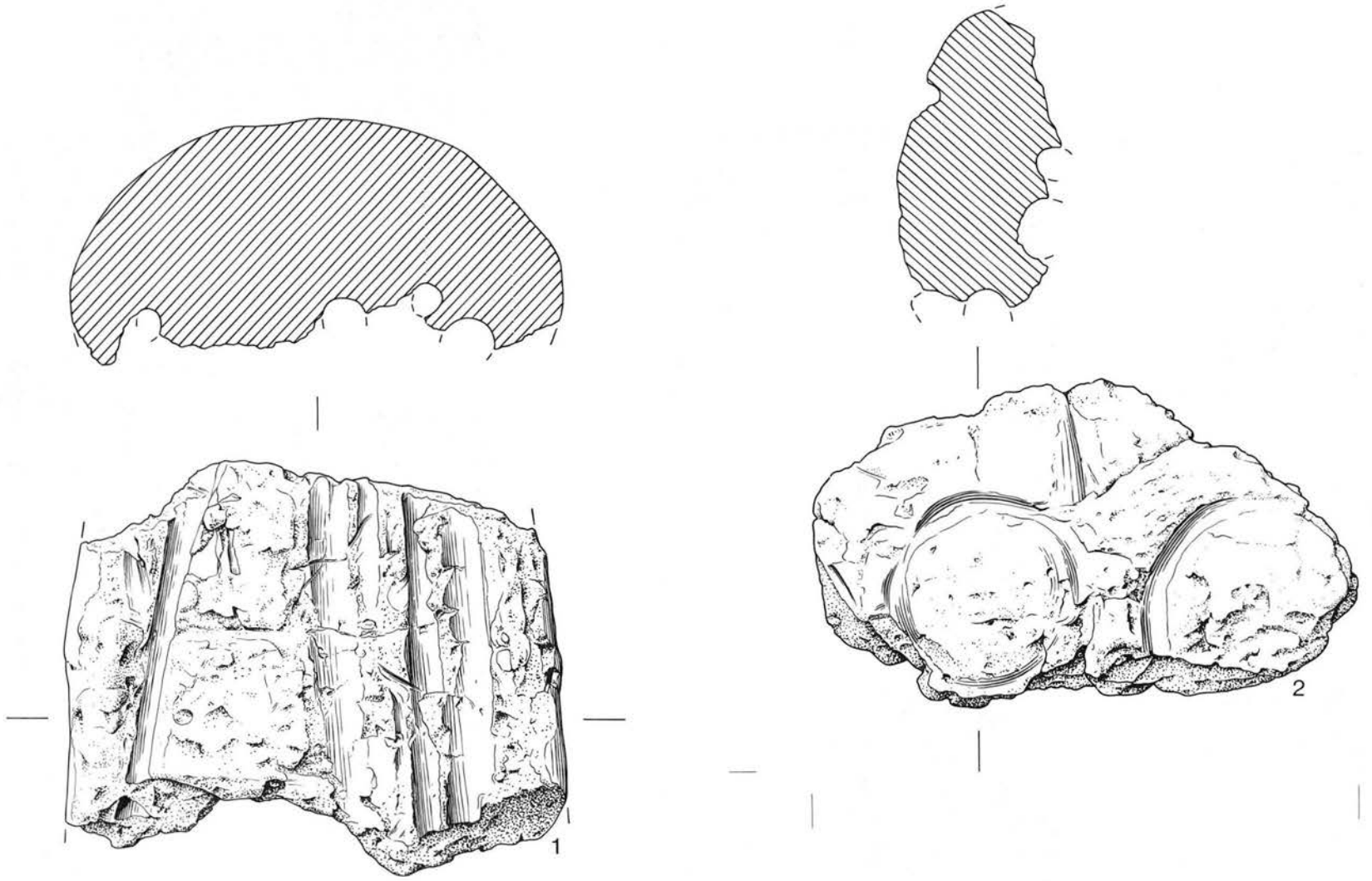


Figure 158 Kiln fragments: No.1 Brandon Road. Fragment of fire-arch, kiln N19 F7. Scale 1:3. No.2 Kilnyard. Fragment of fire-arch, kiln D16 F97, showing pot-rim impressions. Scale 1:3.

Plate XIX Brandon Road. Anglo-Saxon interlace carving (SF738). (See Fig.157, No.2.)

XII. Burnt Clay

Brandon Road

For hearths see above, Part II.

Fig.158

1. Fragment of fire-arch, showing withy support on which clay was laid to form arch. (504) kiln N19 F7(b), Period III.

Kilnyard

2. Fragment of fire-arch, showing impressions of pottery rims (small jars, AA) on upper surface. Section shows profile of withy impressions on bottom and side. Kiln D16 F97, part of piece shown in transverse section Fig.89.

XIII. Objects of Bone, Antler and Ivory

Bone identifications are by Gillian Jones. All items are thought to be Saxo-Norman unless stated otherwise.

Brandon Road

(Part II, above)

Some sixty-seven objects were found, probably all of Anglo-Saxon date. Evidence of bone-working was not clearly present but some cut bones are included in the total. Examples of classifiable objects have been illustrated.

Combs

Only nine examples were found. Except for Fig.159, No.1 below, all were of single-sided composite design.

Fig.159

1. Double-sided **comb** of elephant ivory (ident. J. Watson for AM Lab.). Made in one piece, incised lines at edge of teeth, Roman or Early Saxon.
   SF573 (3083) under Period VI–VII walls (no grid ref.).
2. Composite **comb**, probably antler. Both sides decorated incised lines with panels and bands of ring-and-dot design, originally six iron rivets, tooth plates average 1.7 cm wide.
   SF1, Q20 F1 (SFB2), in south-west corner 9" (22 cm) below natural ground surface, beside bench.
3. Composite **comb**, probably antler. Incised line decoration on exterior of both connecting plates, one hole and one iron rivet surviving.
   SF475 (2447), K26 F6, Early Period V feature.
4. Composite **comb**, probably antler. Incised line decoration on exterior of both connecting plates, iron rivets.
   SF341 (2959) K25 F19, Period IV pit.
5. Bone strip with three holes for iron rivet, possibly **comb connecting plate**; split rib.
   SF549 (1323) L20 F20, top of Period III(?) pit.

(ni) Fragment of plain **side plate**. One iron rivet, one hole, split rib (of sheep/goat).
SF217 (1431) context uncertain, probably Period IV or V.

(ni) Fragment of **tooth plate**, antler.
SF343 underneath Road C Period VI–VII.

(ni) Fragment of plain **side plate**. One iron rivet, notched where teeth were cut, split rib.
SF459 (2986) context uncertain.

(ni) Fragment of plain **side plate**. Two rivet holes, split rib.
SF489 (1170) L21 F34, Period IV?

Needle

Fig.160

6. Top of bone **needle**. Immature pig fibula. SF518 (3043) K25 F8, Period III pit.

Double-ended implements

These objects seem mostly likely to have been associated with the weaving industry (MacGregor 1985, 189). Six examples were found on this site. They range in thickness but are of similar lengths and all show polished surfaces from wear.

7. **Double-ended bone implement**. Polished surfaces, cross-hatched lines probably vestiges of original decoration, large mammal. SF490 (762) M20 F54, Period IV pit.
8. **Double-ended bone implement**. Highly polished surfaces, pointed end darker than rest, large mammal. SF550 (962) M21, unstratified in area west of pit M21 F40 (Period IV pit).

Not illustrated:
SF456 (2009) L24 F71, Period III pit.
SF457 (2896) L26 F75, Period III–IV pit.
SF483 (527) M17, unstratified.
SF537 (2509) J26 F20, Period V pit.

Spindlewhorls

Five bone spindlewhorls were found, all made from the unfused immature heads of cattle femora. None were decorated except the example illustrated below.

9. Bone **spindlewhorl**. Faint incised line decoration, cattle femur, unfused femoral head. SF462 (2020), J25 F60, Period IV pit.

Not illustrated:
SF460 (508) M18 unstratified.
SF546 (873) M20 F111, Period IV pit.
SF547 between Roads B and C, Period IV–VI.
SF724 (404) N19 F37, Period IV pit, top.

Skates

Not illustrated.

Four examples were found, all of which show signs of wear on the flat-tend side. None shows any visible signs of method of attachment, but they could still have been skates (MacGregor 1985, 142). All are made from the metatarsal or metacarpal bones of cattle or horse. Two almost complete examples are 225 mm long (*cf.* child's skate from Kilnyard, see below). Contexts are:

SF536 (1294) K21 F21, Period V pit.
SF543 (211) O18, unstratified.
SF544 between Roads B and C, Period IV–VI.
SF545 (1280) K21 F13, Period IV pit.

Of note are three cattle metacarpals which may be roughouts for bone skates:

SF511. Smoothed area, some cut marks. (2193) J25, resting on surface of Road B, Period IV–VI.
SF560. Both ends trimmed. (2743) L26 F58, Period III pit.
SF760. Proximal end trimmed. (34) O20 F2, Period IV pit.

Points or 'gouges'

These are the proximal ends of cattle metatarsal bones cut to a dull point which is usually very worn. The purpose of these tools is not clear but they may have been associated with the leather working industry (MacGregor 1985, 175). Four examples were found on this site, all of which had holes cut in the proximal end (possibly for the attachment of a handle?).

10. Bone '**gouge**'. Sides polished, point blunted and worn by wear, hole cut in proximal end, cattle metatarsal. SF538 (2509) J26 F20, Period V ?pit, below 1′ (30 cm). (ni) 'Gouge', length 102 mm, squarish hole 15 mm in size cut in proximal end, point well worn. SF548 (150) O19 unstratified.

(ni) 'Gouge', length 94 mm, oval hole 23 mm by 19 mm cut in proximal end.
SF720 (309) N19 F31(a), top of unphased pit, with Early Period III pottery from kiln N19 F7.

(ni) 'Gouge', length 67 mm, roundish hole 15 mm in diameter cut in proximal end, tool formed by roughly splitting bone leaving edges jagged, point less worn than in other examples.
SF723 (514) N17 F27(d), Late Period IV or Early Period V.
Also in this category are possibly two broken off bone points:
SF534 Cattle metatarsal. (2337) J26 F9, Period VI pit.
SF535 Large mammal bone. (1285) L22 F48, Period V–VII well.
A similar tool is perhaps represented by a cattle metatarsal chopped to a rough point 135 mm from the proximal end, in which there is no hole: the point is jagged and shows little sign of wear. SF514 (1401) L20 F40, Period III or VI–VII pit.

Antler point

One example.

Fig.160

11. **Worked antler tine**. Sawn proximal end, cut sides, pointed end cut flat on two sides so that point is oblong in plan, red deer tine. SF491 (959) M21 context uncertain.

Objects of uncertain use

12. Bone object of uncertain function, cattle metatarsal shaft with cut end(s) and opposed pierced holes. Length possibly complete so holes were central, but sides broken. Resembles decorated ?mounts from Thetford (Rogerson and Dallas 1984, fig.200, nos 106, 107) but has only one hole twice the size of those examples. It seems too large to have been a toggle. Exterior surfaces polished, particularly at complete end. Broken end very worn by comparison with broken sides and may have been reused as a dull point or 'gouge' type instrument after breaking.
SF512 (2735) K25 F19, Period IV pit.

Not illustrated.

A number of cut bones have been included in the site total, and some may have been intended or used as artefacts, for example:

SF719 from M26 F6 Period III pit and SF722 from M21 F61 Period IV pit: two sheep metatarsal bones with a hole cut in the proximal end.

SF517 from L20 F13, Period III pit with later top, cattle metacarpal with hole 56 mm long by 25 mm wide gouged in one side, edges left rough.

SF527 from K25 F16 Period III–IV pit, cattle scapula with hole 6.5 mm made from both sides.

Also of possible interest are two sheep metatarsal bones, the surfaces polished by wear from handling:

SF523 from M20 F111 Period IV pit, late eleventh century.

SF533 from J26 F38/F39, Period V pits.

Toggles

Seven examples of pig metatarsal and metacarpal bones were found with pierced central holes, usually interpreted as fasteners.

13. Bone **toggle**. Pig metacarpal with opposed pierced holes. SF526 (488) M19 F58, Period III–IV pit.

Not illustrated:

SF461 (1931) N25, context uncertain.
SF513 (2599) J26 F35, Period IV pit.
SF515 (2342) J26 F43, Period IV pit.
SF532 (2654) K24 F31, top Period III pit.

Fittings

Only one object was found which is a mount or fitting.

14. Bone **plate** decorated with incised ring-and-dot design. Curved outwards and possibly warped, seems to be complete at edges although chipped and broken in places, two of rings seem to form cut holes at different heights at either end, rib of large mammal. SF458 (2067) J26 F14, top of Period IV pit, part of backfilling of cellared Building L *c.* AD 1200, depth 1′–1′6″ (30–45 cm)

Note on bone flutes

Fig.161

15, 16, 17. The following note has been contributed by Graeme Lawson of the Cambridge Music-archaeological survey:

The finds of three bird-bone pipes recovered from the 1966 season of excavations now bring to a total of five the number of such instruments from Late Saxon and medieval Thetford, and add to the now rapidly increasing body of archaeological evidence for popular music-making in medieval Britain. From the East Anglian region alone more than twenty bird-bone pipes and whistles have so far been recorded, several of them already published, representing one of the most comprehensive regional samples yet recovered in Europe (Megaw 1968, 149; Clarke and Carter 1977, 314; Lawson 1982, 1984). Together with pipes of other varieties, notably those made from sheep and goat *tibiae*, and stringed instrument components such as tuning-pegs, they show both music-making and functional sound-production to have formed important elements in medieval entertainment and work alike. In addition they provide a remarkable variety of information about the actual music of their time which is not available from any other source.[1]

The three finds described here have each been made from the *ulna* of a large bird, one of crane, the others of goose, both of which were commonly used for this purpose during the Middle Ages. The first, **No. 16** comprising 111 mm of crane *ulna* associated with late eleventh to twelfth-century pottery, is incomplete having been broken at both ends prior to deposition. Nevertheless enough remains to support a firm musical identification despite the absence of finger-holes. Parallels both from the Anglian region and elsewhere confirm that these, numbering only three or four, would have been confined to the now missing distal portion of the instrument.

The external surfaces of the bone seem to have been only lightly worked, many of the natural features remaining visible. The few noteworthy tool-marks include sliced facets around the *foramen* and on the opposite surface fine chatter marks left by the back-scraping action of a sharp blade.

The break at the proximal end of the bone bisects the only primary musical feature, a curved, chamfered edge, which is all that remains of the D-shaped sound-hole usually associated with the mouth-pieces of such pipes. Its location on the inward-curving, ventral surface is unusual but strikingly repeated in No. 17 below. The surviving edge, against which the ducted air-jet from the mouthpiece would have been directed, is still intact. A slight general polishing both here and elsewhere on the ventral surface indicates that the instrument had seen some use before it was discarded.

The three-holed pipe of goose *ulna* recovered from the filling of cellared Building L in *c.* 1200, **No. 17**, is extremely well preserved, with only a small chip missing between the distal finger-hole and tip. Operational surface wear is very slight, restricted to the cut and trimmed edges alone, suggesting only limited handling and musical usage prior to deposition. Knife-marks resulting from the scraping smooth of the surface of the bone are also light and superficial, while the cutting of both sound-hole and finger-holes in the ventral surface, and the trimming of each end, also represent knife-work. Internally the finger-holes are only roughly finished, nor are they rebated externally.

As might be expected the block (or 'fipple') which would have formed the air duct inside the mouthpiece is missing. Among excavated medieval bone flutes such features almost invariably fail to survive. Although some may have been carved from wood or bone, as they were in some simple whistles and in later, all-wooden flutes, the irregular internal shapes of most bones would probably have made beeswax the most practical, economical and convenient choice. Indeed, in this particular case this is corroborated by close examination of the internal surfaces of the bone, the natural coarseness of which proves to have undergone none of the shaving that would have been essential for the airtight fitting of a rigid block. It is further supported by linear scratching inside the roof of the mouthpiece cavity, consistent with surface adjustment of a soft wax block by knife.[2]

The remains of a second pipe of goose *ulna* **No. 15** were recovered from an eleventh-century pit, the earliest context of the three. Altogether 67 mm remains, including the distal end and four finger-holes cut into the dorsal surface. Although broken at the uppermost hole these probably would have represented its full original complement. All four are neatly rebated, unlike those of No. 17, and once again tool-marks point to a simple manufacture in which trimming, perforation and overall smoothing were all achieved by knife. Here, however, a remarkable feature is the high degree of polishing of the whole surface, and especially

of the finger-hole areas, suggesting that the instrument had been extensively handled and played before deposition.

Conclusion

Musical interest in this assemblage derives particularly from the positioning of the finger-holes in the complete pipe No. 17, from which its original tuning can be reliably reconstructed by practical experiment. In a controlled experimental replication based on an identical goose *ulna* selected from a modern comparative collection, tests show this to have been, in asscending order, g#'''', a#'''', c#'''', e'''', overblowing one octave higher.[3] Of the intervals between them each exceeds a full tone, at 1¼, 1½ (a full minor third) and 1¼ respectively. Such irregularity, which is not unlike that of many other small bone pipes of the period, contrasts with the broadly diatonic tunings of more sophisticated instruments such as pan-pipes and some of the larger sheep and crane-bone flutes, which play more-or-less straight seven-note scales made up of intervals of a tone or less.[4] This may well be due merely to the relatively short length of the goose *ulna*, the limitations of finger-breadth forcing omission of certain notes of the scale. These can in fact still be achieved with relative ease, either by varying breath pressure or by half-stopping the holes. Whether this was indeed the intention it is at present still too early to say. Nevertheless it is interesting to note here two small transverse chop-marks, one close to the upper edge of the sound-hole and the other close to the second finger-hole, which suggest preliminary marking-out and therefore a significant element of premeditation in their location. That they are not simply accidental is becoming apparent from a growing number of recent finds, notably the *tibia* from Castle Acre, Norfolk (Lawson 1982, fig.47). It is intriguing too to note the close metrical correlation between the spacing of these holes and those of the fragmentary pipe No. 15, which would consequently have produced a broadly similar tonal pattern.[5]

Contexts

15. SF342 (2959) K25 F19, Period IV pit.
16. SF758 (2351) K26 F6, Early Period V pit.
17. SF542 J26 F6 (C), cellared Building L, in filling of *c.* 1200.

Kilnyard

(Part III, above)

The only purpose-made bone artefacts are not illustrated (see also Potter's tools):

(ni) Child's **skate** 150 mm long, cattle metacarpal, flat side polished by wear. SF506 (1569) D16 F80, large storage jar set in ground (Fig.149, NO.163).

(ni) **Spindlewhorl**, immature femoral head of cattle.
SF572 (1881) D15 F4 pit.

1969 – 1970 excavations Site 5759

Trench 1

(Part IV, above)

One chapped red deer antler was found in pit F27 and there were five bone objects:

Fig.162

18. **Pottery stamp or tool of uncertain purpose**. Right cattle metatarsal proximal half, proximal end trimmed down and slightly eroded, incised line decoration, sides polished by handling. Surviving portion of cut end shows radiating segments cut to a depth of 1–2 mm with a saw 0.6 mm thick. Central hole is natural. Object resembles a handle but the vertical septum in the medullary cavity is undamaged and nothing can have been inserted into the opening. Found in tenth-century pit F27 which contained pottery wasters and warped sherds (Fig.102) and, although no stamped sherds were found, a pottery stamp seems the most likely interpretation of this object.
SF970 (735) F27 layer (68), tenth century.

(ni) **Split and trimmed rib** 10 mm wide by 104 mm long, one rivet hole in each end *c.* 80 mm apart, short transverse cut marks on either side, probably from cutting teeth of comb.
SF969 layer (52) in ditch F12, eleventh century.

(ni) **'Gouge'** (see above, Points or 'gouges'), length 77 mm, hole 18 mm wide cut in proximal end, point jagged and little worn, split longitudinally in half in antiquity and may be why so little used.
SF1019 (657) pit F27, in layer (68), tenth century.

(ni) **'Gouge'**, length 102 mm, left cattle metatarsal proximal end, irregularly rounded hole 20 mm diameter cut in proximal end, some wear on point.
SF1020 (877) pit F46, tenth century?

(ni) Small right *cattle metatarsal*, both ends neatly sawn off, ventral side longitudinally sliced, length 141 mm. Function, if any, obscure (handle?).
SF1002 layer (31), eleventh century.

Trench 2 The Church

(Part IV, above)

Only four items were found:

19. **Double-ended bone implement**. Surfaces highly polished, flat end very sharp, scratches suggest used on flat sides, pointed end darker at tip than rest of tool, long bone of horse or cattle.
SF937 (734) in filling of grave F108, eleventh century.

20. **Double-ended bone implement**. All surfaces polished including concave area, original cut edges smoothed by wear, long bone of horse or cattle.
SF938 (839) beneath Period VIII F18, F19, F20, in south-east part of trench.

(ni) **Comb plate**. Split rib, curved top, straight lower edge, surviving fragment 82 mm long, one fe rivet, ring-and-dot decoration.
SF8000, F284 Period V, in filling.

(ni) Bone **skate**, right cattle metatarsal, distal end curves upward (toe end) but little side trimming, polished by wear on flat side, could have been attached to foot by natural holes and cleft in distal end.
SF1018 (767) layer (g), north-west of church.

XIV. Wooden Objects

Brandon Road

(Part II, above)

Carbonised wood from cellared Building J includes two artefacts or fragments of furniture (wood analysis by P. Murphy, below, Plant Remains).

Fig.163

1. Carbonised wood, slightly curved. Use not obvious, for example, could be part of a wheel, a reel for winding wool (Graham-Campbell 1980, no. 74) or a handle (perhaps of a scoop?).
SF763 (2275) K27 F15, Period III cellared Building J, from charcoal patch in entrance.

2. Carbonised wood, flat ring with slightly convex profile; a complete circle would have had a diameter of *c.* 290 mm internally and *c.* 340 mm externally; seems too large for an embroidery frame, purpose remains obscure and may have been a specialised item related to an industrial occupation.
SF764 (2275) K27 F15, Period III cellared Building J, from charcoal patch in entrance.

XV. Textile Impressions

(Pls XX–XXIV; Figs 164, 165; Table 20)

by Elisabeth Crowfoot

Brandon Road

(Part II, above)

As well as some impressions on iron object No.106 (Fig.124), one large fragment was examined from a hearth discarded in Period III pit M24 F38 in property Q. This showed a probable unpatterned coarse *four-shed twill* (bag 1927b) and a fine *three-shed twill* with point repeat (bag 1927a) (Fig.164c, Pl.XX). The clarity of the fine diamond twill impression (bag 1927a) suggests that the wearer must have knelt, thinking the clay was hard, perhaps during inspection of work in progress. This was a high quality cloth, unlikely to have been worn by any labourer.

Kilnyard 1966

(Part III, above)

The impressions on coarse domestic pottery are surprisingly clear and varied, covering the main weave types

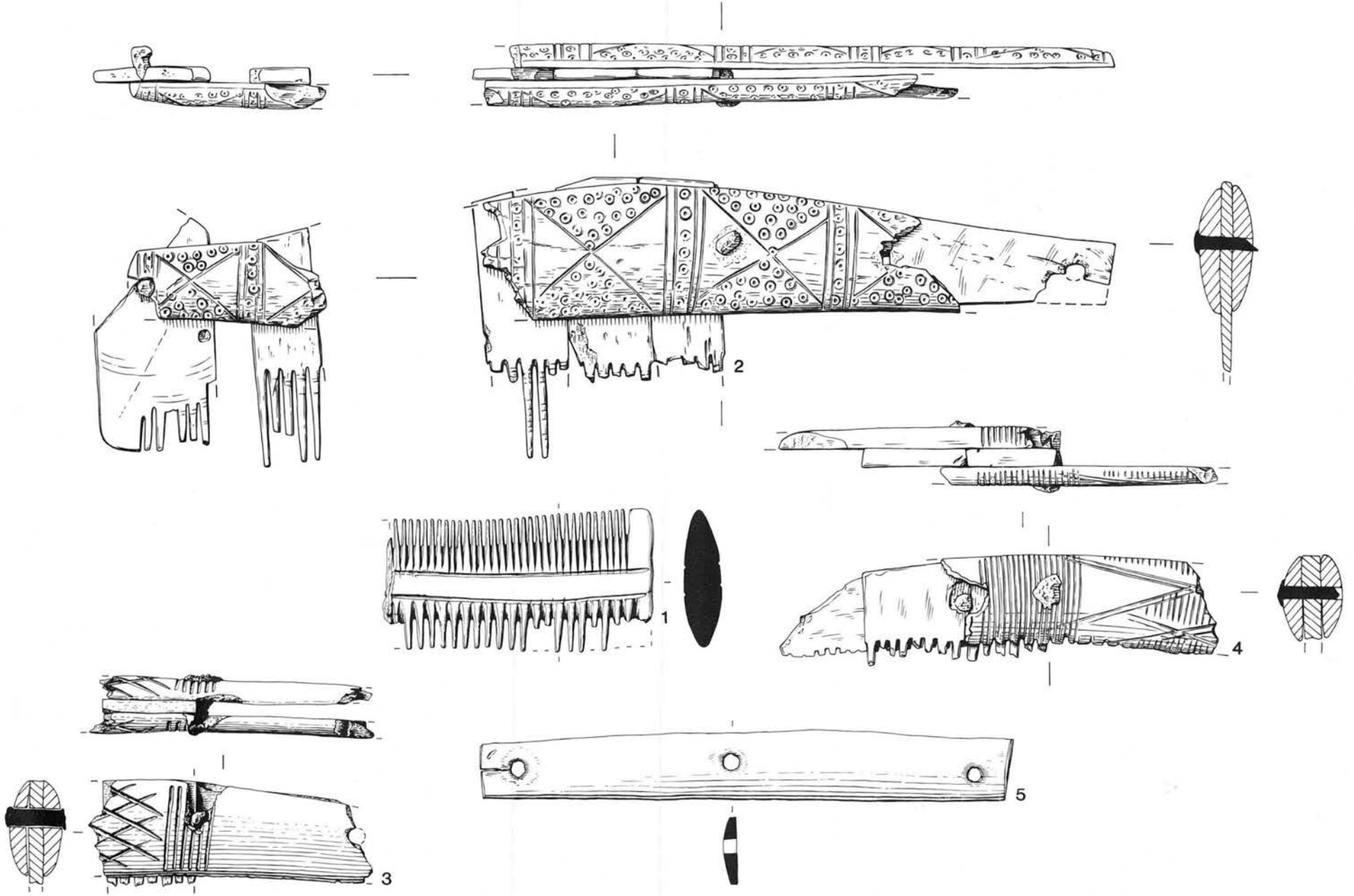


Figure 159 Brandon Road. Objects of bone, antler and ivory. Combs. Scale 1:1.

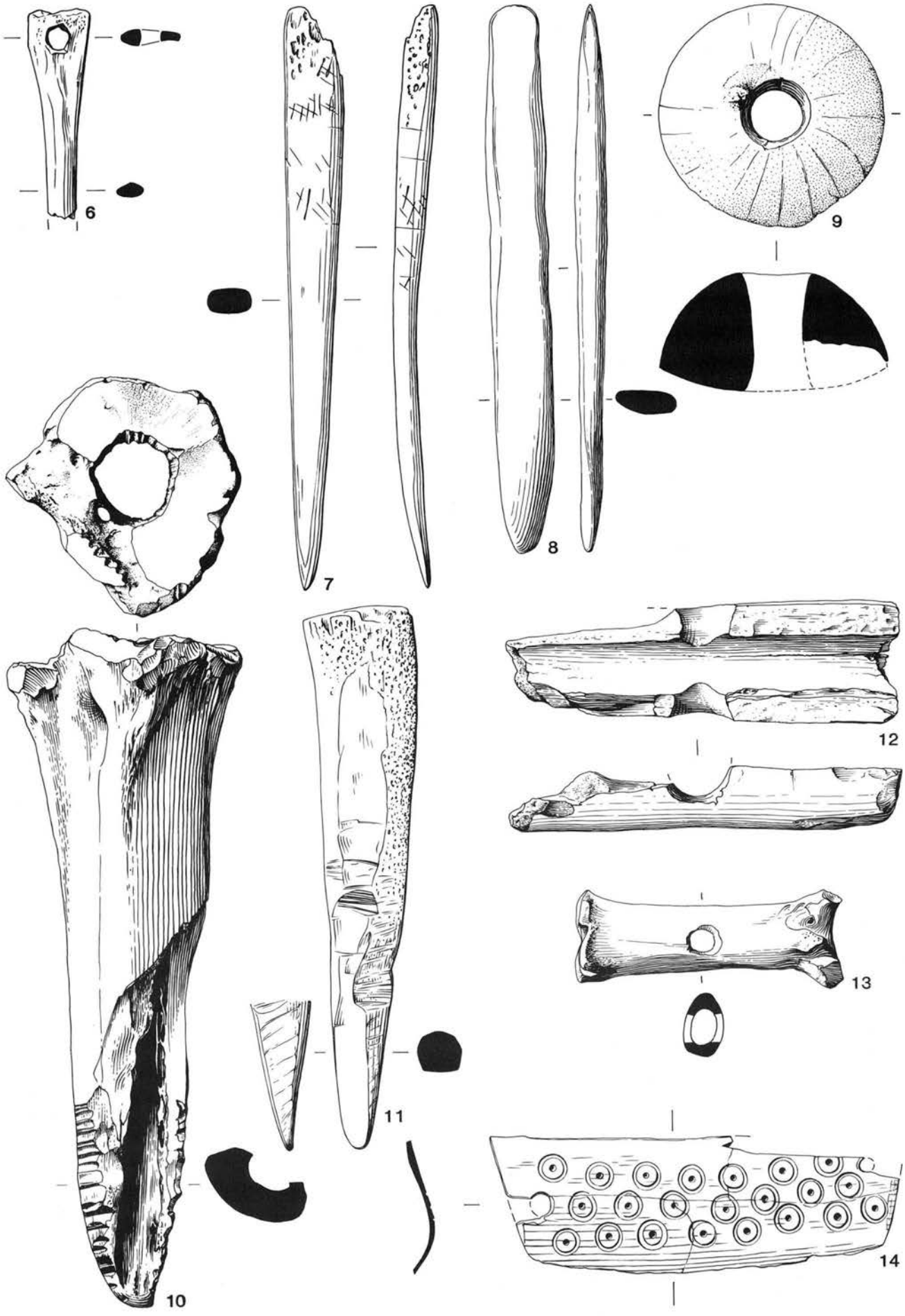


Figure 160 Brandon Road. Objects of bone and antler. Tools and domestic objects. Scale 1:1.

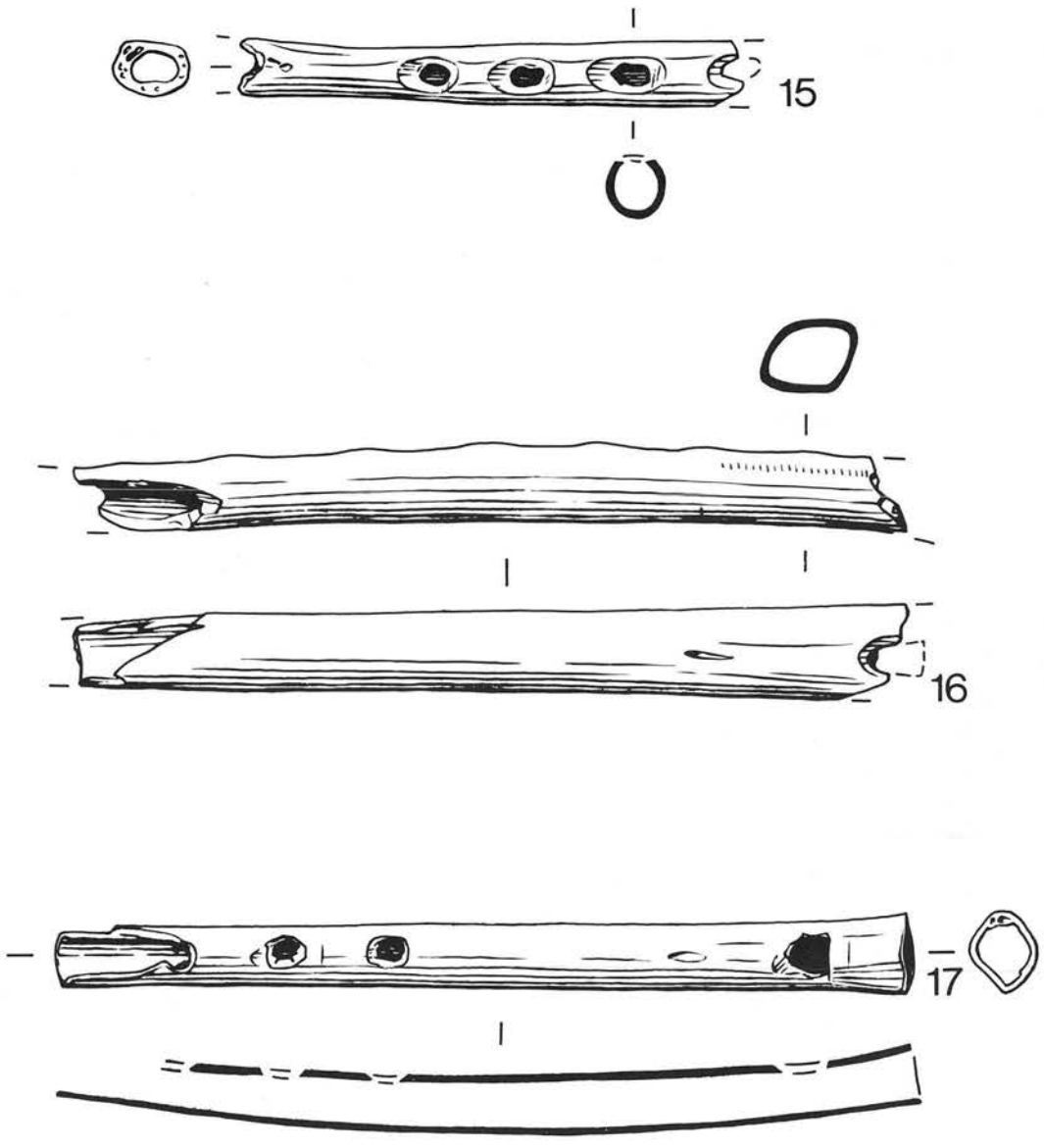


Figure 161 Brandon Road. Bone flutes. Scale 1:1.

identified in Late Saxon and Anglo-Scandinavian deposits of the same period.

Of the *tabby weaves* (Fig.164a) eight can be classified as coarse (bags 1656, 1708, 1703, 1797, 1799, 1515, 1736, 1842), seven medium (bags 1600, 1661, 1759, 1873, 1742, 1702, 1752) and two fine (bags 1727, 1793). Two of the probable coarse *four-shed twills* (Fig.164b) may be unpatterned (bags 1769, 1927b); but there is one example of *broken diamond twill* (Fig.164d) of good medium quality (bag 1745). One fragment, of which the ground weave is uncertain, may possibly have a trace of embroidery (bag 1588, Pl.XXIV, Fig.165).

In spite of the coarseness of the ware, in many of the impressions the spinning direction could be seen by taking a positive cast. In all but a few cases this proved to be Z in both systems. Though at this period this is the direction commonly used for both wool and flax in Europe, the thread quality suggests that most of the fabrics here would have been of wool, possible exceptions being some of the finer tabbies. The appearance of fibres in some of the crudest weaves could suggest hemp, but their S-spinning in one or both systems (bags 1703, 1797, 1799) makes a vegetable fibre unlikely here. In the two ?unpatterned twills the spinning is probably mixed, *i.e.* Z in one system, S the other. The close packing of the ?warp in both types of diamond twill means that this is the only system clearly visible; the evenness of the Z-spun threads, and their sharp profile, suggest the fine worsted yarn commonly associated with these patterned weaves.

With the exception of the diamond twills, the weaves are those of the few Late Saxon examples already published from Thetford (Crowfoot G.M. and E. 1984, 185). Comparative material in England comes mainly from the Anglo-Scandinavian levels at York and Late Saxon deposits from the City of London. In both areas the majority of wool tabbies are near in quality to the coarser ones of the impressions (Hedges 1982, 103, 123; Pritchard 1984, 51), with the mixed spinning and low thread counts also characteristic of the ninth to tenth-century tabby weaves from the Viking site of Birka, Sweden (Geijer 1938, 21–2). In the two probable coarse four-shed twills the visible diagonals that survive all lie in the same direc-

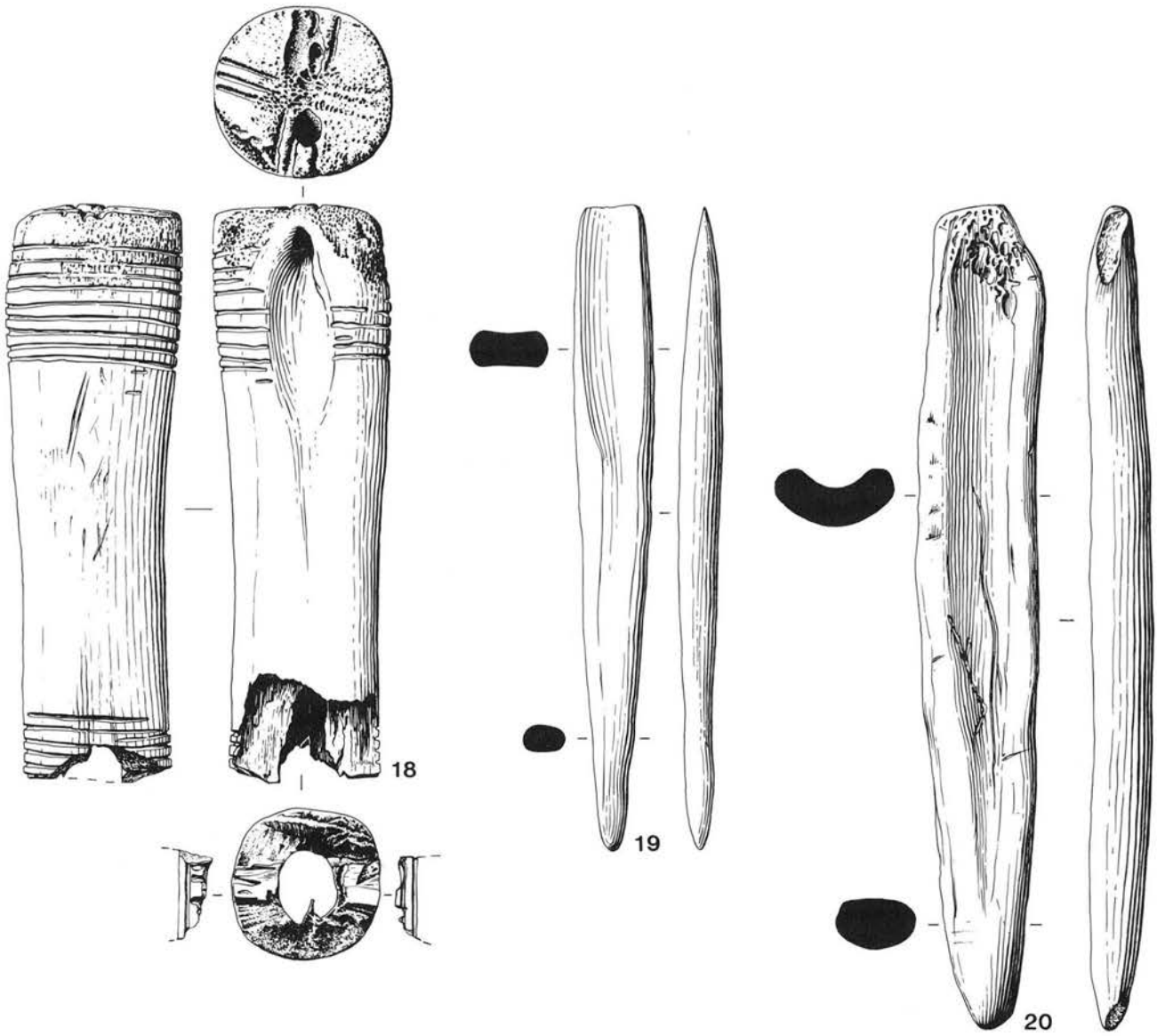


Figure 162 Site 5759. Bone objects. Scale 1:1.

Figure 163 Brandon Road. Carbonised wood, fragments of objects. Scale 1:1.

tion, but with so little preserved these could be simple twills, as suggested for similar grade rather small fragments from York (Hedges 1982, 126–7), or, as in finer twills from London of which larger pieces have survived, from weaves with chevron (herringbone) reverses (Pritchard 1984, 53–5).

Of the two types of patterned twill present, the broken diamond weave has a long history in England and northern Europe, from pre-Roman and Anglo-Saxon to Viking finds (Geijer 1938, 22–6; Wild 1970, 47–9; Bender Jørgensen 1980, 29ff; Hald 1980, 86–95; Crowfoot, E. 1983, 422–5). After the end of the tenth century this weave disappears, its place being taken in the eleventh to thirteenth centuries by the three-shed diamond twill, a change-over clearly shown in the London collection (Pritchard 1984, 56, 68–70; Hedges 1982, 101, 111; Crowfoot, E. 1980, 112–15; Kjellberg 1982, 137–40). Though not in the same luxury class as the earliest examples from Sweden, regarded there as imports (Geijer 1938, 278; Lindström 1982, 181, 190), these English weaves are clearly high grade professional productions; the count of 28/18 threads per 1 cm on the Thetford impressions is close to that of the finest London pieces, and finer than the twill of the ?white chasuble in which Roger, Abbot of St Augustine's, Canterbury (1252–72) was buried.

Table 20. Textile Impressions*

Provenance	*Grid*	*Bag*	*Position*		*Measurements*	*Spin*	*Weave*	*Thread Count*	*Comments*
Brandon Road									
Settlement	M24	1927	clay hearth fragment	(a)	c. 2.0 x 2.0	Z/?Z	2/1 diamond	c. 28/16-18	(Plate XX) very fine even yarn,
F38 pit							twill	(14/8-9 on 5 mm)	close regular weave, ?warp clear, ?weft only occasionally visible
				(b)	c. 10.0 x 8.0	S/?Z	?2/2 twill	est. c. 8/6	coarse impressions scattered over area, occasional groups of threads clear
Kiln Site									
Kiln 61	D16	1600	top edges of handle		(L) 2.8 x 1.9 (R) 1.0 x 0.5	Z/Z	tabby	9/9	coarse-fibred yarns, light spin, regular weave
		1656	exterior		c. 0.5 x 1.0	Z/Z	tabby	c. 8/6 (4/3 on 5 mm)	?warp clear, other system fine, only occasionally visible
(stokehole)		1708	top of rim		for c. 2.0 cm	?	?tabby	—	poor impression (see below, around edge 1703, 1799)
		1719	on applied strip		c. 2.0 x 1.0 widest	Z/S	2/2 twill	c. 6/6 (3/3 on 5 mm)	coarse fibred yarns, occasional pairs of threads clear
Kiln 97	D16	1703	exterior		1.2 x 1.5	?S/?	tabby	5/4	open weave, one system thicker
		1727	on handle		c. 2.5 x 0.4	?Z/Z	tabby	c. 18/14 (9/7 on 5 mm)	clear, very fine even spin, close regular weave, edge folded on bias
		1797	on neck edge		4.0 cm round, widest 1.0 cm	S/S	tabby	5/4	coarse fibred, even fairly close weave
Kilns 61, 97 115 (above stokehole)		1799	top of rim, near handle		c. 2.0 x 1.5	S/?	tabby	c. 3/3	coarse fibred yarn, one thick system clear, other finer (*cf.* 1703, 1708)
Kiln 137	D16	1745	side edge of handle		2.2 x 1.7 clear, traces 1.5 x 1.5	Z/?Z	2/2 broken diamond twill	13-14/11-12	(Fig.164) very clear, faint extension of pattern beyond, even weave, warp even yarn, weft hardly visible
Kiln 33	E16	1661A	edge of finger-mark	(a)	c. 0.5 x 0.9	?Z/Z	tabby	c. 14/12 (7/6 on 5 mm)	(a) impression, even spin, close weave
			rough lump adjoining	(b)	c. 0.6 x 0.5	Z/Z	tabby	7/6 on 5 mm	positive cast of weave (a)
		1661B	on top of handle			Z/Z	tabby	-	scrap impression of same weave
		1759	edge of finger-mark		c. 1.1 x 0.6	Z/?Z	tabby	10/10-11 warp (5 on 5 mm)	and other traces; open weave
		1842	rim, below dimple		c. 2.0 x 0.5	?	tabby	c. 5/6 weft (3 on 5 mm)	very light impressions, ?open weave (*cf.* 1703, 1799)
		1873	on applied strip		c. 2.0 x 1.3	Z/Z	tabby	14/10-11	very even spin, close regular weave, folded edge (bias) lying along, perhaps hem
Kiln 46	D16	1742	exterior		0.6 x 1.1	Z/Z	tabby	9/9 weft (4-5 on 5 mm)	very even spin, close regular weave
		1793	edge of handle		1.0 x 0.4, 1.0 x 0.7,	Z/Z	tabby	est.16/16 weft (7 on 4 mm), c.20/14 (5 on 2.5/7 on 5 mm)	very even spin, close weave; all impressions from same good quality cloth
			around lip		c. 0.8 x 0.8				
Kilns 33,46 F23 pit	E16	1697	rim and top of handle		—	?	?tabby	—	slight impressions, suggesting medium grade cloth
Unstrat.	D16	1588	on applied rim		1.3 x 0.9	Z/Z	?tabby or 1/2 twill	c. 10-12/10 (5-6/5 on 5 mm)	even spin, close weave, possibly weft face of 3-shed twill; ?embroidery, Z or Zply threads (Fig.165)

1702	exterior, on ridge	(a)	c. 2. 0 x 0.6	Z/Z	?tabby	c. 10/6 weft (3 on 5 mm)	light impression, loose weave, ?warp finer thread
	on rim, and trace inside rim	(b)	0.9 x 0.5	?Z/Z	tabby	c. 12/6 (6/3 on 5 mm)	?finer and closer, but perhaps better preserved area of (a)
1736	exterior		1.3 x 1.2 and other traces	Z/Z	tabby	c. 5/6	coarse fibred threads, fairly close weave
1752A	exterior		2.5 x 1.0	Z/Z	tabby	c. 9-10/8	close even weave, parts confused (1752B clear finger impressions)
1515	burnt clay from kiln		c. 7.0 x 5.0 at widest	?Z/Z	tabby	c. 8/6	large area, all same rather open weave; details not clear on very coarse fabric

*Measurements in cm, and counts in threads per 1 cm except where otherwise stated.

Table 20. Textile Impressions*

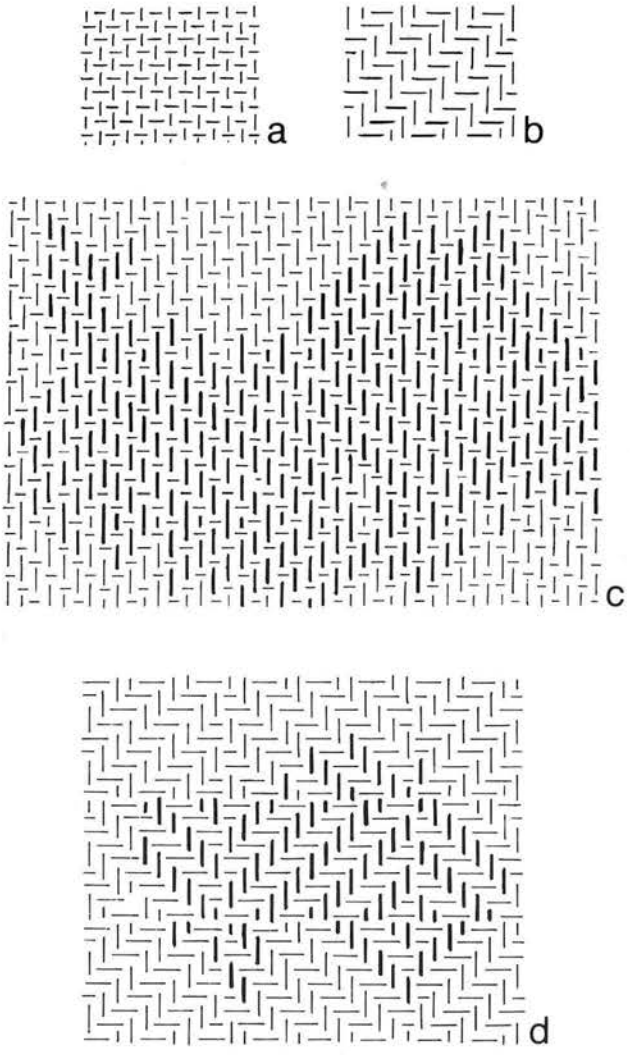


Figure 164 Weaves (a) tabby, (b) 2/2 twill, (c) 2/1 diamond twill (bag 1927), (d) 2/2 broken diamond twill (bag 1745). Not to scale.

Figure 165 Threads, ?stem-stitch embroidery, on surface of confused textile impression (see Pl.XXIV) (bag 1588). Scale 2:1.

In one unusual impression on an applied strip (bag 1588, Fig.165 and Pl.XXIV) the ground weave is not clear; it appears in places to be a tabby weave, but could be the ½ (weft) face of a three-shed twill. Rather coarse woolly Z-plyed threads lying on the surface seemed at first to be a loop, but in the cast it is clear that the near circle is not complete; there is no sign of cut or frayed ends, and the threads appear to go underneath a few warps and wefts of the ground weave. As the 'Z-ply' threads are also Z-spun, it is possible that they are really stem-stitch embroidery; threads can also be seen in two small spots on the ground weave area within the curved lines. While embroidery in such a context seems improbable, stem-stitch is used for outlines and small circles in some areas of the famous embroidery from Mammen, Denmark, of the late tenth century, in wool on a fine three-shed twill (Hald 1980, 102–5, fig.92). Very little domestic embroidery from this period has survived, but a fragment in coloured wools from a seventh-century Anglo-Saxon 'relic-box' (Crowfoot, E. 1990, 49–50) is in the Mammen style. Contact with the woollen decoration on a sleeve-edge is perhaps not impossible.

All these impressions must obviously have been accidental. The position of many, on the handles and rims of costrels (Pl. XXIII) and pitchers, and the applied strips decorating storage jars, suggest that contact occurred as the completed vessels were moved and stacked in a suitable place in the open air to dry before being fired, when perhaps part of the potter's garments pressed momentarily against the clay. On these coarse domestic wares no attempt has been made to remove the marks. The casual nature of the contact is illustrated in 1745 (Pl. XXII), where the pressure that produced a clear picture of the broken diamond twill, perhaps from the sleeve of the potter's tunic, has distorted one side of what was originally a rough but evenly shaped handle. This was a good garment weave, and many of the tabby weaves are also of respectable quality, though some of the coarser marks are very much of working stuff. As women may have been concerned in the pottery-making, two narrow impressed strips of tabby weave, one of the finest present (1727, Pl.XXI), which show a bias-fold or hem with the threads clearly curling under, could be from the end of a headcloth, caught under the hand as the undried pot was moved.

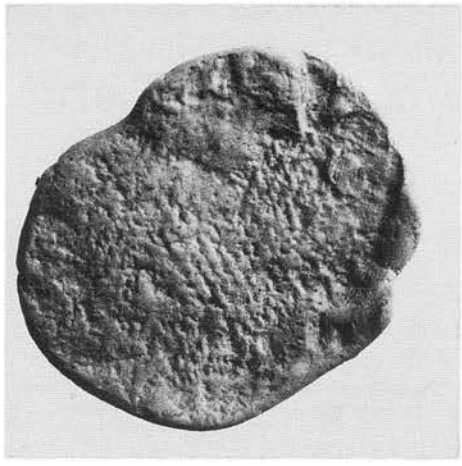


Plate XX Brandon Road. Textile impressions on burnt clay, 2/1 diamond twill (bag 1927a), (a) impression (b) cast. (See Fig.164c.)

Plate XXI Kilnyard. Textile impressions on handle, fine tabby weave (bag 1727). (See Fig.164a.)

Plate XXII Kilnyard. Textile impressions on handle, 2/2 broken diamond twill (bag 1745). (See Fig.164d.)

Plate XXIII Kilnyard. Textile impression on rim of costrel, coarse tabby weave (bag 1797). (See Fig.164a.)

Plate XXIV Kilnyard. Textile impression on applied strip, confused weave with possible embroidery (Fig.165) (bag 1588) (a) impression (b) cast.

Part VI
Zoological and Botanical Evidence

I. Human Skeletal Material
by Gillian Stroud

Brandon Road
(Part II, above)

The human bone from excavations at Brandon Road consisted of five discrete inhumations (F18, F25, F33, F41 in Grid M25, and F1 in Grid N18) and a small amount of miscellaneous bone recovered from various pits. Preservation was generally very poor, with frequent loss of vertebral bodies, long bone ends and much of the outer surface of long bone shafts. The burials were examined for details of age, sex, stature, dental and bone anomalies and pathology. However, the poor preservation considerably reduced the amount of information which could be recorded. Individual summaries are listed at the end of the report, with complete inventories being kept in the archives. The miscellaneous bone was also examined, in order to see whether any could be matched with the discrete burials, and also to obtain a minimum number of individuals from the site as a whole. When the miscellaneous material was compared with the discrete burials, a further six individuals were found to be represented. In addition it was possible that the ulna and femur from M25 F32 could belong to the skeleton F33, although post-mortem damage did not permit a definite assignment. A full list of the miscellaneous bone is kept in the archives.

Demographic results

Age: The inhumations consisted of two adults and three sub-adults, one sub-adult (F1) being aged *c.* 10–14 years and two (F18 and F41) between 14 and 18 years. The two adults could not be aged with any accuracy, although one (F25) appeared to be a young adult and the other (F33) in middle or old age. A further four adults, one sub-adult aged 8–12 years, and one infant, were represented by the miscellaneous material recovered from pits.

Sex and stature: One of the adults (F33) was sexed as ?female; poor preservation of the second adult did not permit even a tentative assignment of sex. Stature of the former was estimated to be 1.64 m (5′4″).

(A list of the methods used for age and sex determination can be found in microfiche)

Skeletal anomalies

F18, one of the sub-adults, had Wormian bones in the lambdoid and sagittal sutures, and retention of the metopic suture. This individual was the only one for whom any cranial non-metric traits could be recorded.

Dentition

Three individuals (F1, F18 and F25) had partial dentitions present and there were in addition a further two from the miscellaneous bone. A total of forty-four permanent teeth and four deciduous teeth were examined. No carious cavities were visible; however, the majority of teeth were in poor condition, often speckled or covered with a black deposit and sometimes with post-mortem chipping of the enamel. This made the recording of enamel hypoplasia impossible in most cases, with the exception of a sub-adult from the miscellaneous bone (F212), whose permanent teeth showed marked hypoplasia, five or six clear lines being visible on each of the anterior teeth. This individual had clearly suffered repeated periods of stress, such as malnutrition or illness (Goodman *et al.* 1984), during the development of tooth enamel.

Pathology

F18, a sub-adult, had evidence of cribra orbitalia, suggestive of iron deficiency anaemia (Stuart-Macadam 1982), present as an area of pitting in the damaged right orbital roof. F33 had degenerative changes to the intervertebral facet joints of four upper/mid thoracic vertebrae, with lipping, pitting and eburnation. The lowest of these four vertebrae had a healed fracture of the spinous process, with slight inferior displacement of the terminal half of the process. Such a fracture would probably have been caused by a direct blow from a hard object while the individual was in the flexed position. In addition, the same individual had spondylolysis of the 4th lumbar vertebra, where non-union of the posterior part of the neural arch had occurred at the pars interarticulares. There were changes to the inferior articular processes of the third lumbar vertebra in the form of flattening and eburnation inferiorly which suggested that some posterior slippage of the detached L4 arch fragment had occurred.

Finally, despite the generally poor preservation of the outer surface of the bone, a right tibia and right fibula from the miscellaneous material, F184, showed considerable amounts of periosteal new bone over their entire shafts, probably as an inflammatory response to some sort of infection.

Summary

A minimum number of eleven individuals recovered from discrete burials and miscellaneous bone from Redcastle Furze were examined. Poor preservation meant that information was limited, with ageing only possible for sub-adults, and sexing virtually impossible. Dental pathology was limited to severe enamel hypoplasia in one individual, while skeletal pathology consisted of degenerative changes to the spine, a fractured spinous process and spondylolysis, all in the same individual, and a case of periosteal new bone on the lower leg bones of a second individual.

Trench 2 The church
(Part IV, above)

The human bones recovered from excavations at the church can be placed in two broad categories—discrete inhumations and groups of disarticulated bone. Approximately 60% of the discrete inhumations were represented by more than half of the skeleton, while some 14% had less than a quarter of the skeleton present. This is the result both of post-burial disturbance such as intercutting of graves and the digging of a sewer trench, and of the generally poor state of preservation due to the acidity of the burial environment. There was very poor preservation of trabecular bone in particular, causing frequent damage to or complete loss of long bone ends and vertebral bodies.

For the discrete inhumations age, sex and stature were determined wherever possible. A full description of methods used is present on microfiche. Cranial and postcranial non-metric traits were recorded (Berry and Berry 1967; Finnegan 1978), standard measurements taken wherever preservation permitted (Brothwell 1981), and any dental and skeletal pathologies noted.

The disarticulated material was listed, with cranial metrical and non-metric data recorded. These data were not taken for the postcranial bones, although a note of possible sex was made for disarticulated innominates

where possible. Dental and bone pathology was noted. Since the cemetery is thought to have a limited time span, the data for the disarticulated burials have been included in analyses wherever possible.

A list of bones by feature number, giving criteria used for ageing, sexing and stature estimation, together with a summary of pathology, is present on microfiche, while a brief summary can be found at the end of this report (Table 28).

Number of individuals

According to the archaeological report, ninety-nine graves *in situ* were excavated, and a further thirty-six feature numbers allocated to reburials and disarticulated bone, some of the latter clearly representing more than one individual. Not all the material recorded during excavation was received by the osteologist. Bone examined represented seventy-nine apparently discrete inhumations and thirty-six feature numbers. Two of the inhumations were found to contain more than one individual.

As mentioned above, several of the disarticulated bone groups consisted of more than one individual. If these were totalled, counting each feature as completely separate, then the disarticulated material represents fifty-one adults, fourteen sub-adults and three infants. In terms of minimum numbers, however, counting the most frequently represented part of a bone, the totals are twenty-three adults, four sub-adults and one infant. The minimum number of individuals represented and examined from the site as a whole, articulated and disarticulated, therefore, is 101, and the maximum number is 149.

Sex

Assessment of sex was only attempted for adult skeletons, since the criteria for sexing are considered unreliable for sub-adults. The incompleteness of skeletons meant that not all could be sexed with as much confidence as others while one or two, although complete, were somewhat ambiguous. The results are as follows:

Male	16
Male	3
Female	11
?Female	9
Unsexed	1

Table 21. Sex Determination

Disarticulated innominates represented ten possible males and six possible females. There appears therefore to be an approximately even distribution of males and females from the site.

Age

Due to the inaccuracies in ageing adult skeletons of over twenty-five years, the results of age estimation have been divided into ten-year groups, compared to five-year groups for the sub-adults. The results were as follows:

Years	No. of individuals
0–5	27
5–10	9
10–15	2
15–20	3
20–25	4 (2 M, 2 F)
25–35	8 (3 M, 5 F)
35–45	15 (9 M, 6 F)
45+	9 (4 M, 5 F)
adult	4

Table 22. Estimation of age at death

Of the twenty-six individuals in the 0–5 year age group, ten were about 1 year old or less, eleven were between approximately 1 and 3 years and six were between 4 and 5 years. Of those dying before reaching adulthood, therefore, just over half died within the first three years of life. Burials of children are often though to be under-represented in skeletal samples. At North Elmham (Wells 1980, 252), for example, less than one in five burials were under 18 years of age at death, with only a very few infants. The ratio of sub-adult to adult at this site of approximately 1:1 is closer to what might be expected on demographic grounds, and is similar to that found by Stirland (1985, 49) at Norwich Castle, where 62.5% of the burials were of sub-adults, over half of these dying before the age of 5.

The age group '45+' reflects the problems in ageing older adult skeletons. Undoubtedly it includes some individuals who were considerably older than 45 at death, but just how much older is uncertain. Conditions such as the osteoporosis and severe temporomandibular joint disease seen in F99, and the osteoarthritis and spinal ankylosis in F153, are present to a degree which might be expected, at least today, in individuals well into their fifth or sixth decades.

Stature

The total number of individuals for whom stature could be estimated was thirty-seven. Results are as follows:

Height	Female	Male
<1.50 m	1 *	
1.50–1.54	4 ****	
1.55–1.59	7 *******	
1.60–1.64	6 ******	2 ++
1.65–1.69	1 *	6 ++++++
1.70–1.74		8 +++++++++
1.75–1.79		1 +
>1.80 m		1 +

Table 23. Estimation of Stature

Female stature ranged from 1.45 m (4') to 1.67 m (5'5") with a mean of 1.58 m (5'2") while for males results ranged from 1.63 m (5'4") to 1.82 m (5'11") with a mean of 1.70 m (5'7"). There was a slight overlap of male and female heights, as would be expected in any normal population. Mean statures are exactly the same as those for Red Castle, Thetford (Wells 1967), and comparable with other sites of about the same period (for example, Nelson (1985) gives the means for five Late Saxon sites as 1.58 m for females and 1.71 m for males).

Cranial measurements

Standard measurements on the skull were taken wherever preservation permitted. The results tabled below combine data from articulated and disarticulated crania. Even so, numbers are very small, especially when separated into males and females.

Cranial Index		
Dolichocranic (<74.9)	16	(8 M, 8 F)
Mesocranic (75–79.9)	13	(6 M, 7 F)
Brachycranic (79.9–84.9)	—	
Hyperbrachycranic (>85)	1	(Male)
Length–Height Index		
Low skull (<69.9)	18	(9 M, 9 F)
Average (70–74.9)	9	(4 M, 5 F)
High skull (>75)	1	(Male)
Breadth–Height Index		
Low skull (<91.9)	10	(4 M, 6 F)
Average (92–97.9)	13	(5 M, 6 F)
High skull (>98)	2	(1 M, 1 F)
Upper Facial Index		
Wide face (<49.5)	2	(2 Males)
Average (50–54.9)	8	(3 M, 5 F)
Slender face (>55)	3	(1 M, 2 F)
Orbital Index		
Wide orbits (<82.9)	5	(3 M, 2 F)
Average (83–88.9)	11	(6 M, 5 F)
Narrow orbits (>89)	11	(5 M, 7 F)
Nasal Index		
Narrow nose (<47.9)	10	(5 M, 5 F)
Average (48–52.9)	10	(6 M, 4 F)
Broad nose (>53)	6	(2 M, 4 F)

Table 24. Summary of Cranial Indices

Despite the small numbers, males and females appear to be of the same physical type. In general, the results are very similar to others from the same period and area, for example North Elmham (Wells 1980, 257–8) with long, low to medium skulls, average to narrow noses and average to narrow eye sockets. They contrasted slightly with the Norwich Castle results (Stirland 1985, 52) where the tendency was for short broad noses and very rounded eye sockets, and considerably with Red Castle, Thetford, where individuals were predominantly brachycranic, or broad-headed (Wells 1967).

Dentition

The upper and lower jaws of thirty-six adults and twenty-six sub-adults were available for examination, with a further two adults having mandibles only. In addition, nineteen adult maxillae and eighteen mandibles, together with one sub-adult maxilla and two mandibles, were recovered from the disarticulated material. For the adults, there was a total of 1631 observable tooth positions, with 1286 teeth present. 268 teeth had been lost post-mortem with, not surprisingly, a much greater post-mortem tooth loss from the disarticulated jaws, 29.6%, compared with 10% from the articulated inhumations. The single-rooted anterior teeth were more likely to have been lost in this way than the multi-rooted posterior teeth. A total of 342 deciduous teeth were present.

In view of the small number of individuals involved, and the difficulty in sexing disarticulated crania and mandibles, male and female dentitions have not been analysed separately.

Caries

Twenty-four adults (63% of those with teeth present) were found to have at least one carious tooth present, with sixty-nine teeth from the articulated burials being carious – a frequency of 7.5%. A very much lower frequency was present in the 362 disarticulated teeth, where only nine teeth were affected (2.5%). One possible factor may be that of age at death: since the prevalence of caries in the past tended to increase with age, it is possible that the disarticulated material is biased towards younger individuals, thus lowering the frequency.

Work carried out on other skeletal series of the period (*e.g.* Moore and Corbett 1971) shows that caries occurred most frequently in molars, with incisors and canines having the least number of cavities. This pattern is seen in the Thetford material, as shown in Table 25.

It should be noted that no account has been taken here of ante-mortem loss which will have occurred in some cases as the result of carious attack. Frequencies of carious teeth were found to be very slightly higher in the maxillae than in the mandibles (8.5% compared to 6.6%). The overall adult caries rate is not exceptional for a site of this period (for example 6.4% of teeth were carious in the North Elmham material) but is considerably higher than that recorded by Wells for skeletons from Red Castle, Thetford, where only ten carious teeth were present from a surviving 638 (1.6%) (Wells 1967). Possibly again the difference in age composition may be relevant, since at Red Castle eighteen individuals were reported as under 35 years of age at death and only ten over 35, compared to our site, with twelve individuals under 35 and twenty-four over 35. Other unknown factors, such as dietary differences, may also be involved. The small number of individuals from both sites may also, of course, be biasing the results.

The site of origin of caries was recorded where it could be determined. Moore and Corbett (1971) noted that the commonest site for cavities was the cemento-enamel junction, particularly on the interproximal surfaces, with caries at contact areas or in buccal fissures being rare. This pattern was similarly noted here with thirty cavities at the cemento-enamel junction compared with only six at contact areas. Nine teeth had cavities in the occlusal surface, and one in the root, while in a further nineteen cases destruction had occurred to such an extent that site of origin could no longer be determined. Three teeth had cavities in more than one location.

Caries in the deciduous teeth was relatively rare, with only six children having suffered in this way. The maxillary teeth were more frequently affected, with eight teeth of 166 involved (4.8%)—six molars and two incisors—compared with only two mandibular teeth (1.1%)—a molar and a canine.

Abscesses

Thirteen individuals (34% of those with dentitions present), all but two of them over 35 years of age at death, suffered from a total of thirtythree dental abscesses. It is possible that this figure is a slight underrepresentation, since X-rays of the jaws were not taken as a matter of course, nor were firmly embedded teeth removed to inspect the root area. As with caries, abscesses tended to be more frequent in the maxillae than in the mandibles; indeed nearly half the abscesses recorded were associated with carious teeth. In eight cases, affected teeth had undergone considerable attrition, so exposing the pulp cavity and giving access to bacteria. In the remaining cases, the teeth had been lost post-mortem. The association of abscesses with carious teeth is also reflected in the varying frequency of abscesses at different sites (Table 26).

While the majority of abscesses were visible in the skeletons as cavities at the apex of a tooth root, within the alveolar bone, a few had discharged at the surface of the bone. In six cases the opening was on the buccal surface, but in three individuals abscesses had drained palatally. The maxilla of F265 showed particularly severe dental pathology, with two probable oro-antral fistulae, where abscesses had tracked in two directions, opening both into the mouth and into the maxillary antrum. This had probably caused sinusitis.

Ante-mortem tooth loss

Thirteen adults had lost one or more teeth prior to death. Table 27 shows the number of teeth lost ante-mortem at the different tooth positions.

	Tooth number								
	1	2	3	4	5	6	7	8	Total
Artic.	0/103	1/121	0/130	0/129	7/127	25/119	20/121	16/74	69/924
Disartic.	0/27	0/33	0/45	1/59	2/53	4/60	2/49	0/36	9/362
Combined	0/130	1/154	0/175	1/188	9/180	29/179	22/170	16/110	78/1286

Table 25. Differing incidence of caries (carious teeth/no.examined)

	Tooth number								
	1	2	3	4	5	6	7	8	Total
Artic.	1/139	1/141	1/190	2/141	4/139	13/137	7/136	2/120	31/1093
Disartic.	0/67	0/67	0/70	0/71	0/70	1/66	1/66	0/61	2/538
Combined	1/206	1/208	1/210	2/212	4/209	14/203	8/202	2/181	33/1631

Table 26. Differing incidence of abscesses (abscessed teeth/alveolar sites)

	Tooth number								
	1	2	3	4	5	6	7	8	Total
Artic.	5/139	4/141	3/140	5/141	6/139	13/137	16/136	12/120	64/1093
Disartic.	0/67	0/67	0/70	0/71	1/70	4/66	3/66	2/61	10/538
Combined	5/206	4/208	3/210	5/212	7/209	17/203	19/202	14/181	74/1631

Table 27. Differing incidence of ante-mortem tooth loss/teeth lost ante-mortem/alveolar sites

The pattern of ante-mortem tooth loss is similar to that of caries, although with more involvement of the anterior teeth. This suggests that factors other than decay are also involved, possibly including trauma and periodontal disease. As with caries, ante-mortem tooth loss is greater in the articulated material than in the disarticulated, possibly supporting the suggestion that the latter represents generally younger individuals. There is considerable contrast here with Red Castle, where Wells (1967) found that 15.9% of teeth had been lost during life, a contrast which cannot easily be explained by the reported differences in age at death.

Two individuals had retained roots when the rest of the tooth had been lost. In F265 a small fragment of the root of the maxillary right 1st premolar was visible, while in F125 there was retention of the root fragments of the mandibular deciduous left 2nd molar on the buccal surface of the bone on either side of the permanent 2nd premolar.

Calculus and periodontal disease

Some degree of calculus was present on the teeth of all the adults and eight of the sub-adults; this was recorded as slight (less than a third of the tooth surface affected), moderate (between one and two-thirds affected), or considerable (more than two-thirds of the tooth surface affected). In the case of sub-adults, only F97 had any more than slight deposits, while thirteen adults had moderate to considerable amounts, often extending down on to the roots of several teeth. The severity was not always easy to assess, however, since in many cases post-excavation damage had caused calculus to break or chip off the teeth.

In addition to having moderate or considerable calculus deposits on the teeth, ten individuals, all over the age of 35, appeared to have suffered from periodontal disease during life. Periodontal disease involves an inflammatory response to one or more irritants, such as calculus, and affects the tissues around the teeth, including the bone. It was recorded where there was evidence for recession of the alveolar bone around the teeth and or by the presence of defects such as infrabony pockets.

Tooth agenesis and malocclusion

Note was made of any teeth thought to be congenitally absent, impacted, rotated or crowded. X-rays were only taken in a few cases, therefore conclusions are based generally on macroscopic examination of the jaws. In the case of 3rd molars absent in older individuals, it was not always possible to be certain whether the tooth had been congenitally absent or had been lost for a considerable time prior to death, with total closing of the socket.

In modern populations the tooth most likely to be congenitally absent is the 3rd molar, with between 10% to 35% of individuals affected, followed by the maxillary lateral incisors and the maxillary and mandibular 2nd premolars (Pindborg 1970). At our site, ten adults (26%) had possible congenitally absent 3rd molars, three of them having only one molar missing, four with two absent, two with three absent and one with all four missing. In addition, eight molars were considered congenitally absent in the disarticulated dentitions, giving a total of twenty-nine or 16% of all possible 3rd molars. One individual, F265, had maxillary 3rd molars which were considerably reduced in size, a condition which is not uncommon in present-day populations (Pindborg 1970). There was congenital absence, confirmed by X-ray, of a 2nd premolar in one of the disarticulated mandibles, with retention of the deciduous 2nd molar. F97 had congenital absence of the maxillary right lateral incisor, again confirmed by X-ray, with the deciduous incisor retained in the jaw. A disarticulated cranium, F136, had no sign of the right 1st molar and no gap present between the 2nd premolar and 2nd molar. Solitary agenesis of the 1st molar is not unknown, but is rare, and it was considered more likely that this represents a case of early ante-mortem loss of the 1st molar with the 2nd and 3rd molars moving forwards to close the gap.

Three teeth were found to be impacted. In F347, there was mesioangular impaction of the maxillary left 3rd molar. In F152, both maxillary canines were impacted, with retention of the deciduous canine. More unusually, in F100 a molar had migrated to a position high in the coronoid process.

Seven individuals had rotation of one or more teeth from the normal position in the mouth. Maxillary teeth were twice as likely to be rotated, most commonly canines and premolars. In the majority of cases teeth were rotated by no more than 45 degrees, but in F367 the maxillary right and left 1st premolars were rotated by more than 45 degrees, and in F277 the maxillary left lateral incisor was rotated by approximately 90 degrees. Slight crowding of the anterior teeth was noted in four individuals.

Enamel hypoplasia

Enamel hypoplasia is visible macroscopically as lines or pits in the enamel of a tooth, forming as the result of nutritional stress, illness or some other insult to the individual during the development of the tooth. Twelve individuals had one or two hypoplasias recorded in one or more teeth, while seven individuals had four lines or more, sometimes pronounced.

Miscellaneous

Three children had small oval enamel defects in the deciduous mandibular canines. Skinner (1986) studied these defects in several groups from different periods and found them to be quite common, occurring generally in between 25% and 50% of deciduous canines, twice as commonly in the lower jaw, although the cause appears to be uncertain at present. The maxillary left lateral incisor in a disarticulated adult cranium from F270 had a deep groove about 1 mm wide in the labial surface some 5 mm above the cemento-enamel junction. It was the only tooth in the jaw to show such a disruption in the enamel, which suggests that, unlike enamel hypoplasia recorded above, it was the result of a localised rather than a systematic insult.

F248 appeared to have broken a tooth during life. Approximately half the crown of the maxillary right central incisor was missing. Calculus deposits covered the broken surface, suggesting that the damage had happened well before death.

Congenital and developmental anomalies

The full results of the recording of discontinuous non-metrical traits (Berry and Berry 1967; Finnegan 1978) are given in Tables 33 and 34 on microfiche for cranial and postcranial traits respectively. Some frequencies of the more common traits are mentioned below, together with a few other developmental anomalies, the majority of which form a part of the normal variation of the skeleton.

One or more ossicles in the lambdoid suture were present in 46.8% of individuals, with a 9.1% having an ossicle at the lambda itself. Factors determining the occurrence of these ossicles, or Wormian bones, are uncertain. It has been argued that they result from stress placed on the suture during late foetal and early postnatal periods of bone growth (Bennett 1965) although they are perhaps more commonly considered to be under direct genetic control (El Najjar and Dawson 1977). Multiple ossicles, however, can be indicative of rapid cranial expansion for reasons as yet unknown (Grays Anatomy 1980) and in this context there was an interesting feature noted in the bones from our site. Of thirty-nine adults with both sides of the suture scorable, 20.7% had an ossicle or ossicles unilaterally and 17.9% had them occurring bilaterally, whereas of thirteen children's skulls, 23.1% had ossicles on one side and 53.8% had bilateral ossicles, several of these latter being very numerous.

In F59, a child aged 4–6 years, there was premature fusion of the parietotemporal suture, a suture not normally closed until very late adulthood, but completely obliterated in this individual at a very young age. Early fusion at this site is uncommon (Shapiro 1981); other sutures were all still open, however, so the brain would have been able to expand in other directions.

The metopic suture was retained in ten individuals from a total of seventy-eight examined (12.8%), only slightly higher than the 9–10% usually considered to be the average frequency for a western European population (Berry 1968).

No examples of auditory or mandibular tori were found, but six individuals had palatine tori (9.7%). Berry and Berry (1967) point out that there have been problems with the recording of palatine tori, and that there seem to be two distinct entities that can be scored as 'palatine torus'. Certainly in our material a further four individuals had median ridges in the palate that were not considered to be true tori. Berry and Berry also note palatine tori predominating in females, a difference also seen at Thetford where, of the six individuals, only one was a male.

Among the thirteen individuals with both scapulae present, two were found to have an os acromiale, one bilateral and one unilateral.

There were three examples of sternal foramen, a relatively common anomaly resulting from incomplete fusion of two of the several centres of ossification of the sternum. One individual had a supracondylar process of the humerus, a small spur of bone on the medial shaft which is generally asymptomatic, while humeri with septal apertures were present in three individuals, unilateral in two cases and only the one side present in the third.

There was evidence of coraco-clavicular articulation in F63, in the form of a pronounced facet on the inferior surface of the clavicle, occurring at the site of, and apparently replacing, the normal ligamentous attachments. Three cases of spondylolysis were present, but will be discussed below in the section on trauma. F249 was found to have an os acetabulum occurring bilaterally. This small bone appeared to form part of the upper rim of the acetabulum, but had never united with the rest of the bone.

A transitional lumbo-sacral vertebra was present in two individuals, F170 and F278. In the former, the transitional vertebra was fused to

the ala of the sacrum on the right side only, while in the latter, the enlarged right transverse process articulated with the sacrum, rather than being fused. A third example was present among the disarticulated bone of F178. The vertebra clearly articulated with the sacrum on the left side, a 'facet' being present on the inferior surface of the enlarged transverse process. The right side of the vertebra was damaged and incomplete. Such transitional vertebrae are not always asymptomatic. They may be the cause of pain, possibly by nerve compression, degenerative changes, or by causing a deviation in the general curvature of the spine.

Two examples of congenital anomalies of the foot bones were found, in the form of tarsal coalition. Tarsal coalitions occur today in no more than 1% of the population and appear to be inherited (Leonard 1974). In many cases, although by no means all, they give rise to peroneal spastic flat foot, a painful condition in which the abnormal stresses and movement resulting from the tarsal coalition cause spasm of the peroneal muscles. F63 had a calcaneo-navicular bar occurring bilaterally. The bar in this case was either fibrous or cartilaginous. Bony fusion was present in the second case, a disarticulated calcaneus and talus from F261 showing talocalcaneal bridging.

Trauma

The term trauma is used here to include all forms of ante-mortem injury to the bone, both deliberate and accidental. The commonest of these are healed fractures. Thirteen individuals had bones which had been fractured during life; of those who could be sexed, ten were male and only three were female, the preponderance of males with broken bones being a usual feature in archaeological material. Rib fractures are a common finding in skeletal material; indeed they frequently occur today. A well-healed fracture of one rib was present in two individuals (F107 and F153), while F248 appeared to have cracked two ribs relatively shortly before death. The cracks were on the internal surface of the ribs, with a considerable build-up of loosely-textured new bone at the site of injury, healing apparently not being complete.

Depressed fractures of the skull were present in two individuals. In F56, a disarticulated calvarium, an oval depression *c.* 30 mm by 20 mm was visible on the frontal bone some 30 mm above the left supraorbital margin. A corresponding 'bulge' could be seen on the inner table. If this were the result of deliberate rather than accidental injury, it would be consistent with a blow made by a right-handed assailant (assuming a frontal assault). In F298, a male, a roughly circular depression 22 mm in diameter was present, again on the frontal bone approximately centrally between and just above the supraorbital ridges (Pl.XXV). The sides of the depression sloped gently, but there was no bone present in the floor of the depression, only an irregular cap some 8 mm in diameter, with thin, rounded margins indicating that healing had occurred. This was also considered most likely to be the result of a blow to the skull. The blow would undoubtedly have caused haemorrhage (K. Manchester, pers. comm.), but the seriousness of the injury with its possible after-effects can only be guessed at.

Also in F298 the proximal end of the left ulna was abnormal, with discontinuity of the medial articular surface and a considerable amount of new bone posteriorly and superiorly. The most likely explanation was that there had been a fracture of the olecranon (K. Manchester, pers. comm.). There were considerable osteoarthritic changes to the elbow joint, in the form of lipping, roughening of the articular surfaces and eburnation of part of the capitulum of the humerus and the lateral third of the radial head. These changes may well have been secondary to the injury to the ulna. Fracture of the olecranon usually results from very sudden contraction of the triceps as the elbow is forcibly flexed, although it can also occur as the result of a direct blow on the point of the elbow.

In F347, the capitulum of the humerus was larger than usual, as was the radial head, which had some roughening of the articular surface and some 'buttressing' laterally. It was considered that the radial head had been fractured. This is a relatively common injury in adults today, mostly due to indirect trauma such as a fall on the outstretched hand causing the head of the radius to be thrust against the capitulum. Two radii with fractures near the wrist (so-called Colles' fractures) were found in the disarticulated material. F14 being a left radius and F41/43 from the right side. Both were well healed. Such fractures also typically result from a fall on to an outstretched arm.

In F125 there had probably been a fracture of the radial styloid process. A deep crack ran anterio-posteriorly across the lateral third of the articular surface, with slight proximal displacement of the styloid fragment giving rise to an incongruous radial articular surface. A probable fracture of the left ulna was noted in F135. The shaft towards the distal end was thickened and irregular in outline; however, the bone was broken and incomplete at this point, so the presence of a healed fracture is not absolutely certain. Hand bones had been broken in two individuals: F367 had a healed fracture of the shaft of the left 5th metacarpal, while F62 had a healed midshaft fracture of the right 2nd metacarpal.

In addition to a broken rib, F107 also had a well-healed fracture of the right fibula, just above the distal end, while F249 appeared to have fractured the left 2nd metatarsal at the midshaft, where the bone was thickened and irregular.

As mentioned with the congenital and developmental anomalies, three individuals were found to have spondylolysis, a defect in the neural arch of a lower lumbar vertebra whereby there is non-union between the superior and inferior articular processes. Spondylolysis was originally considered to be congenital, but trauma is now thought to play a greater part in the aetiology of the defect, possibly in the form of a stress fracture. Clinically it is generally asymptomatic unless the fibrous tissue holding the neural arch segment to the rest of the vertebra stretches and permits displacement of the bones. The 5th lumbar vertebra was affected in F108 and F267, and the 4th lumbar vertebra in F64, where eburnation of the superior edges of the neural arch fragment and of the inferior surface of the inferior facts of L3 suggested that some slippage may have occurred.

A less frequently recorded injury as the result of trauma is that of dislocation. The glenohumeral joint of the shoulder is the most commonly dislocated major joint today, due mainly to its anatomy. A disarticulated scapular fragment found with F100 showed changes consistent with an unreduced anterior dislocation of the shoulder. The original articular surface was narrowed, roughened and pitted, while on the anterior surface of the body an almost circular concave secondary facet had formed in response to continued use of the arm. Indirect force, such as falling backwards and using the hands to break the impact of the fall could drive the humeral head forwards, and while methods for reducing shoulder dislocations were known at least as early as the fifth century BC, they were clearly not always either carried out or successful.

Skeleton F62 appeared to have been decapitated, although whether this was the cause of death or was for some reason carried out immediately after death could not be ascertained. The blow was clearly from behind, cutting smoothly through almost the whole of the dens of the axis (and partially through the inferior intervertebral facets of the atlas). A small jagged spur of bone remained at the anterior edge of the dens, indicating that the blow had not completely severed the head from the neck (Pl.XXVI). Decapitations are not uncommon in Anglo-Saxon cemeteries. What is fairly uncommon is the high site of the injury, through C1/C2 rather than the more usual part of the neck, around C3/C4.

Schmorl's nodes were present in nine individuals. These depressions in the surface of the vertebral bodies occur as the result of prolapse of intervertebral disc material into the body of the adjacent vertebra. They can be produced by various processes, with chronic trauma, particularly in young adults, being one of the most common causes. They are found predominantly in males, a pattern followed at Thetford, where eight of the nine affected individuals were male. Nodes were most commonly found in the lower thoracic and upper lumbar spine, generally affecting several vertebrae, and involving the inferior surface more often than the superior.

A further possible case of trauma was found in F112, a child aged between 4 and 7 years at death, where the left hip joint was abnormal (Pl.XXVII). There was some ante-mortem destruction of the femoral neck (the femoral head was not recovered), leaving a smooth concave area of trabecular bone. The normal articular surface of the acetabulum had been destroyed ante-mortem, particularly the iliac component. A long tongue of bone extended inferiorly from the posterior part of the superior acetabular border across onto the ischium, although ankylosis did not appear to have taken place. It was suggested that these changes were the result of early dislocation of the child's hip, rupturing the femoral head from the neck, with possible absorption of the head (K. Manchester, pers. comm.).

Metabolic and nutritional disease

Cribra orbitalia was present in fourteen individuals. This presents as porosity of the orbital roofs and is believed to develop as a result of chronic iron-deficiency anaemia in childhood (Stuart-Macadam 1985). Several of the Thetford cases were only slightly affected, with small areas of pitting, ranging through more moderate to the most severe, F169, in which well-defined areas of elevated bone, trabecular in appearance, were present in the medial roof of both orbits.

The frequency of the condition in sub-adults was considerably greater than in adults – of twenty sub-adult skulls—in which presence or absence could be determined, twelve had evidence of cribra (60%) whereas of thirty-five adult skulls, only two were affected (5.7%). It is not known whether the considerably lower rate among adults is due to the higher mortality of children already suffering from iron-deficiency anaemia, or whether the condition has healed and left no trace in the majority of adults.

Plate XXV Human bone: F298 skull, showing healed depressed fracture.

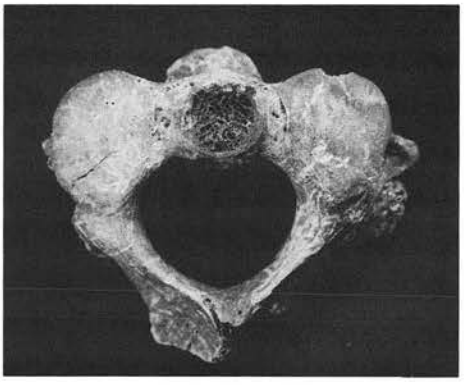


Plate XXVI Human bone: F62. Possible decapitation. Axis showing cut surface.

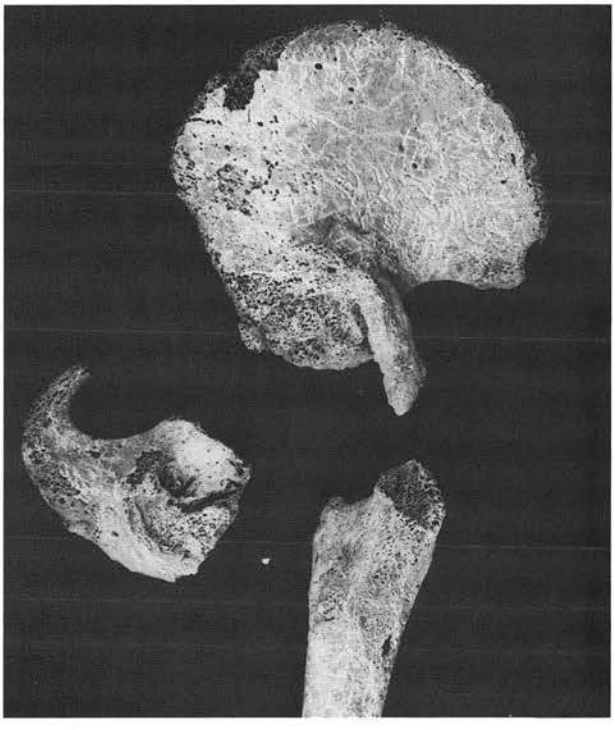


Plate XXVII Human bone: F112. Showing spur of new bone on ilium and concave neck of femur.

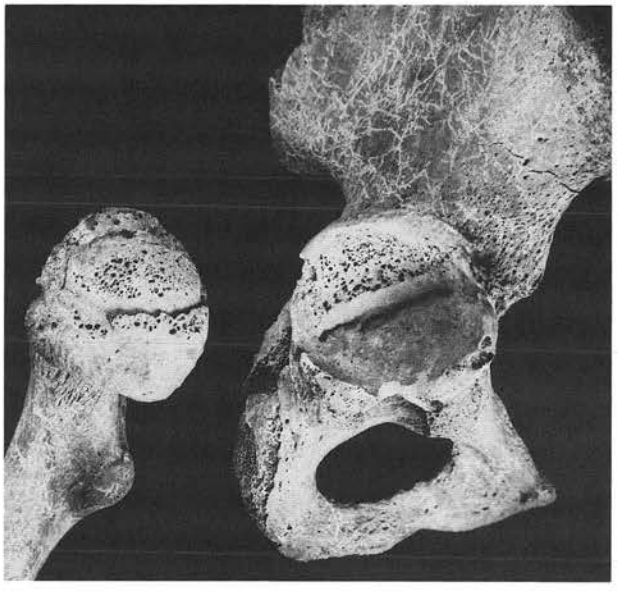


Plate XXVIII Human bone: F63. Disruption of right hip joint.

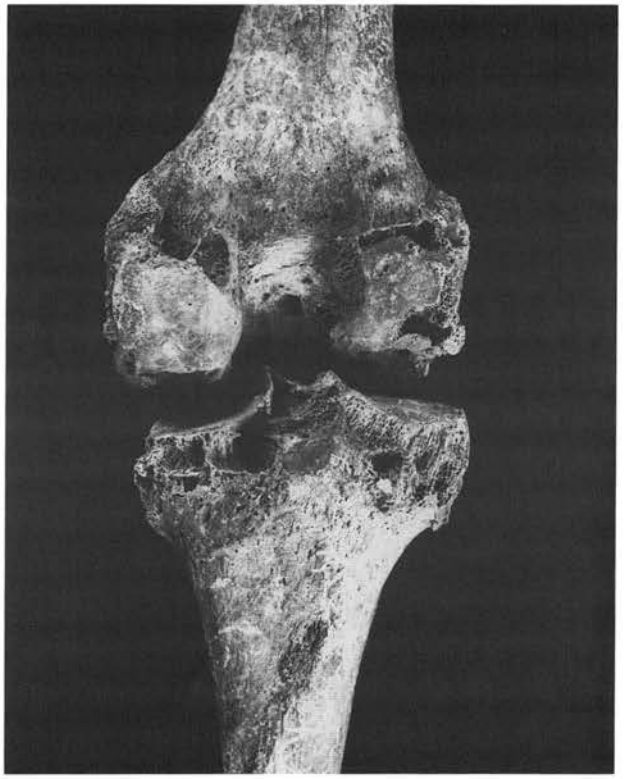


Plate XXIX Human bone: F107. Knee joint, showing large cavities in and around the joint surfaces.

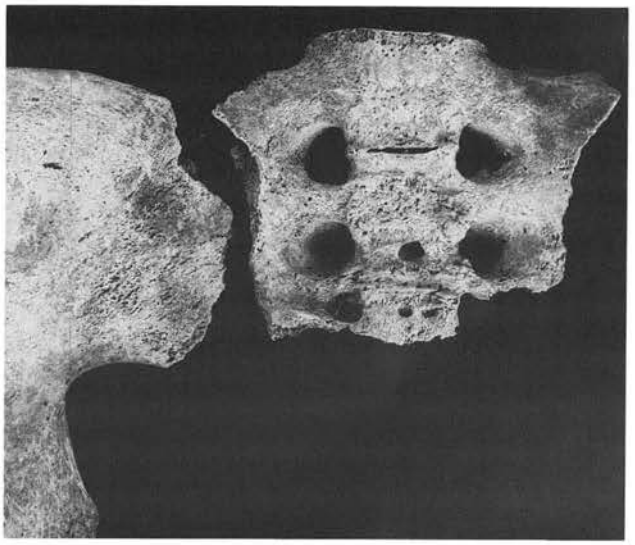


Plate XXX Human bone: F247. Right innominate and sacrum, showing destruction of joint surface and build-up of new bone on sacrum.

Two individuals, F83 and F158 (the latter disarticulated), in addition to having cribra orbitalia, also had porotic pitting of the cranial vault, affecting the posterior parietals bilaterally, close to the lambdoid suture. It is possible that this is part of the same process, although the fact that it was not present in the child most severely affected by cribra leaves some doubt.

Joint disease

While the aetiology of degenerative joint disease (DJD) probably involves many different factors, its presence and severity is clearly correlated with age. It is not, therefore, surprising that DJD, or osteoarthritis, was the pathology most frequently recorded for the material from our site, despite the often poor preservation of vertebral bodies and articular ends of long bones.

Spinal osteophytes, bony projections at the margins of the vertebral body, were present to some degree on the spines of all the individuals over the age of 35. Unfortunately the incompleteness of spines did not permit an accurate picture to be gained. Although thirty-six adults had some vertebrae present, the spine often consisted of no more than one or two poorly preserved arch fragments, and only twelve adults had a complete set of vertebrae in good condition. Lipping of the cervical vertebrae was frequently associated with pitting of the body surface. Such changes occur when degeneration extends beyond the intervertebral disc to the underlying bone. In the seven cases present, the surfaces most commonly involved were those between the 5th, 6th and 7th cervical vertebrae, ranging from slight porosity of the margins of the body to complete destruction of the entire surface by large irregular pits. In five individuals there was some porosity of thoracic body surfaces, generally involving one or more vertebrae between T6 and T10, but never as severely as in the cervical spine. Pitting of lumbar bodies was present in four individuals. In the thoracic spine, lipping rarely affected the first four thoracic bodies, but was often most pronounced between T10, 11 and 12. Involvement of the lumbar spine was very variable, with a slight preference for the lower rather than the upper lumbar. In one individual, F153, undulating bony proliferation down the right side of the bodies of T7 to T10 had fused these into a solid block; this probably represents a case of Forrestier's disease.

Osteophytes were also frequently found at the margins of other joints of the body. Where these are only slight, and occur without any sign of other damage to the joint, they may simply represent a part of the ageing process, rather than a pathological condition. Such marginal 'lipping' has been recorded, where present, but only those cases where osteophytes were accompanied by definite osteoarthritis changes such as altered joint contours, porosity of the articular surface or, in severe cases, eburnation (where the movement of bone upon bone following cartilage loss has resulted in a polished surface) are noted below.

The intervertebral facets of the spine were the commonest sites for degenerative change. Ten individuals showed moderate to severe involvement, some with only one or two vertebrae affected, others with more widespread changes. Eburnation was often present, sometimes occurring just around the rim of a facet, other times affecting the whole articular surface. In addition to being totally eburnated, several cervical facets of F62 were deeply grooved as the result of continued movement of the joints. The pattern of involvement was noticeably different to that of disc degeneration, particularly in the cervical spine, where the joints most commonly involved were between C2, 3 and 4 and between C7 and T1. Involvement of thoracic facets was more variable, but with a tendency to exclude T10–12. The majority of individuals showed only slight osteoarthritic changes to the lumbar intervertebral facets.

Osteoarthritis of the temporomandibular joint was recorded for one individual, F99, a female aged 45+. This is in line with the pattern seen today, whereby females are far more commonly affected than males, generally from the fifth decade on (Blackwood 1963). The right mandibular condyle had lost its normal articular surface due to extensive pitting, and a small eburnated area was present. Osteoarthritis may be associated with misuse of the temporomandibular joint due to malocclusion; this may have been the case with F99, who had lost all her maxillary teeth apart from the canines and incisors well before death.

Four individuals, all over 35, had considerable degenerative changes to the clavicles. Both right and left clavicles were usually affected to the same degree, with the acromial ends invariably showing greater changes than the sternal ends, usually consisting of gross pitting of the whole facet with lipping inferiorly. In one case, F135, eburnation of the acromioclavicular facets was present.

No cases of osteoarthritis of the shoulder joint were found, and only two of the elbow. This reflects the position today also whereby, when the large joints are considered, the lower extremity is more commonly involved than the upper.

Among the disarticulated bone of F33, there was a right humerus with considerable marginal lipping distally, together with a right and left radius and a right and left ulna all with considerable lipping, roughening and pitting of the proximal articular facets. Degenerative changes

to the elbow in F298, consisting of eburnation of the head of the radius and the capitulum of the humerus, were probably secondary to trauma, noted above.

The wrist was affected in three individuals, F62, F63 and F135. In the former, the right radio-ulnar facets were lipped and there was eburnation of the facets between the distal radius and the lunate, and of much of the head and the styloid process of the right ulna. In F63, the left 1st carpo-metacarpal joint was involved, with lipping and eburnation of the trapezium and the 1st metacarpal. Degenerative joint changes at this site are frequently bilateral; however, in F63 the relevant bones from the right side were missing. F135 showed lipping and a small area of eburnation on the facets of the right 1st carpo-metacarpal joint. Although the left trapezium was not present, the left 1st metacarpal appeared normal, suggesting that changes in this case were unilateral. Disarticulated bone from F33 included a right and left ulna with areas of eburnation on the head. Several hand bones of F248 showed osteoarthritic changes, with lipping and eburnation of the 1st right metacarpo-phalangeal joint surfaces, and lipping and roughening of the facets of several middle and distal phalanges.

The only case of marked degenerative disease of the hip occurred in F63 and appeared to be secondary to other pathological changes (see below). The left knee of F62 was affected to some degree, mainly involving the patello-femoral joint surfaces. The patella was not present; however, the lateral articular condyle of the femur was pitted anteriorly, with a trace of eburnation at the supero-lateral margin of the facet. The left patella of F75 showed considerable irregularity of the articular surface, with pitting and small nodules of new bone. A disarticulated left distal femur and left proximal tibia in F33 had somewhat 'lacy'-looking nodules of new bone on the joint surfaces. A right and a left femur from F41/43, disarticulated but undoubtedly belonging to the same small individual, had considerable lipping of the articular condyles with eburnation of the anterior part of the lateral condyles, indicating severe osteoarthritis of the patello-femoral joints.

Arthritic changes to the feet were noted in several individuals. In F62 there was lipping of the distal facets of the right cuboid and navicular, and considerable pitting and eburnation of the right and left 2nd and 3rd tarso-metatarsal joints. Marginal lipping of the articular facets of the right tarsals and the proximal right 1st metatarsal was present in F367; however, the articular facets themselves were too badly damaged to ascertain whether surface changes had occurred. The plantar half of the head of the 1st metatarsal, where it articulates with the sesamoids, was affected in three individuals, with eburnation in all cases. This joint has to take the whole weight of the body, so osteoarthritis here is perhaps to be expected.

In F75 there were considerable changes to the joints of the feet, occurring bilaterally, which were not typically those of osteoarthritis. There was a combination of erosive lesions and bone proliferation, completely destroying the normal articular surfaces of the majority of tarsals and metatarsals, with the exception of the calcanei and tali. Fusion had occurred between the left navicular and 3rd cuneiform and between the 2nd cuneiform and 2nd metatarsal bilaterally, as well as the right 1st metatarso-phalangeal joint. There was the possibility of a second, similar case in the disarticulated bone of F180, where a badly damaged but clearly ankylosed tarsal and metatarsal were found.

As mentioned above, there was severe disruption of the hip joint in F63, the origin of which is uncertain (Pl.XXVIII). The normal contour of the right femoral head was completely absent, with a broad rim of new bone around the margins, partly overlying the inferior articular surface. Considerable pitting and eburnation of the upper two-thirds of the head were present, corresponding with a similar area of eburnation in the acetabulum. A broad bridge of bone extended across the acetabulum notch and it appeared that the leg had probably been held in a flexed position. This deformity also would account for the fact that upon excavation, this individual was the only one noted to have been buried with 'crossed ankles'. In addition, the right femur, patella, tibia, fibula and tarsals were all shorter and more slender than the bones of the left side, although there was no difference in size between right and left metatarsals. The right innominate, although the same size as the left, was noticeably less robust. This suggests long-standing diminished use of the right leg, with little stimulus to development. Assuming that the leg length inequality was secondary to the hip pathology, it also indicates onset during childhood or adolescence, whilst the bones were still growing. Each of the right metatarsal heads were flattened dorsally, producing a 'platform' which extended beyond the normal margin of the head and which suggested that there had been hyperflexion of the metatarso-phalangeal joints such as would occur if the heel was kept lifted and the weight put on the ball of the foot and on the toes.

A disarticulated femur from F219, despite post-mortem damage, appeared to have almost complete absence of any normal femoral head and neck, with little more than a somewhat flattened and irregular 'stump' being present on the posterio-medial shaft just above the lesser trochanter. This was clearly the result of a very long-standing disorder, but with only this one damaged bone present, no conclusions as to cause were drawn.

Inflammation/infection

A relatively common finding in all skeletal groups is the presence, particularly on the lower leg bones, of periosteal new bone, where disease affecting the membrane covering the bone results in the laying down of new bone. This disease may be inflammatory, traumatic, neoplastic – as far as archaeological material is concerned, it is frequently impossible to distinguish the cause. In the skeletons from this site, poor preservation may have obliterated the evidence of new reactive bone in some individuals, although several cases were recorded. In both F64 and F104, patches of porous-looking bone superficial to the normal cortex were present on the right tibia and fibula, while in F249 both right and left tibiae and fibulae were affected. In F104 periosteal new bone was also recorded on the inner surface of four left ribs. Changes at this site may be the result of inflammation of the pleura due to a disease such as pneumonia or pulmonary tuberculosis.

A left tibia from the disarticulated bone of F36 was found to have a localised lytic lesion measuring approximately 25 by 27 mm on the medial shaft close to the distal end. This may represent a case of superficial osteomyelitis, possibly the result of a chronic ulcer. A left fibula was also present, with patches of periosteal new bone on the distal shaft, which may belong to the same individual.

In F229 a localised area of reactive new bone was present on the buccal surface of the right maxilla, extending above the site of the 1st molar. Only one root of this tooth was present, clearly showing destruction of the crown by caries, and it is likely that the new bone was laid down in response to infection from the abscessed tooth.

In all the above cases, if infection was present it could not be ascribed to a specific bacterium. In two other instances, however, lesions were present which were highly suggestive of a specific infectious disease, namely tuberculosis. The first of these was F107, the right knee being the affected joint (Pl.XXIX). Multiple deep destructive lesions were present in and around the joint surfaces and there was virtually no evidence of any new bone formation. The second case was F247 (Pl.XXX). Here, destruction of the right sacro-iliac joint was possibly the result of tuberculosis. Some new bone was present in the iliac fossa. Sinuses emerged on the anterior surface of the 3rd and 4th sacral vertebrae, and there was considerable bone proliferation on the anterior sacrum generally, with the exception of the left ala.

Summary

The human skeletal material excavated at Thetford, Trench 2, The church, represents somewhere between 101 and 148 individuals buried over a period of some 200 years. The presence of an approximately equal number of males and females, together with a high percentage of very young children, suggests that there is no particular bias operating but rather that we are dealing with a 'normal' community of that period. Females were more likely to die before the age of 35 than were males, although having reached 45, both had an equal chance of surviving to an older age. This might suggest that death resulting either directly or indirectly from childbearing might be more a factor in women's earlier deaths than any poorer nutritional status, but the very small numbers involved do not really warrant such speculation.

In their physical type and stature, the group differ little from the majority of others from the area and period. Similarly, oral pathology was fairly typical, with children's teeth rarely being subject to decay, while adults suffered increasingly from caries, abscesses and tooth loss as they lived beyond the age of 35. Poor oral hygiene generally was indicated by the presence in virtually every mouth of deposits of calculus on the teeth, in many cases accompanied by periodontal disease. A range of bone pathology was recorded, including both congenital anomalies and diseases acquired during life. None of the cases of trauma could unequivocally be regarded as the result of deliberate action, with the notable exception of

the decapitation. The presence of anaemia in the population was indicated by the finding of several cases of cribra orbitalia, while two individuals may have suffered from one of the major infectious diseases of the past, tuberculosis. Not surprisingly, osteoarthritis was the commonest disease recorded for the adults.

Despite poor preservation, therefore, the skeletons from this church at Thetford represent an interesting addition to other groups excavated in the area.

Methodology
(microfiche)

List of Human Skeletal Material
(microfiche)

Number	Sex	Age (yrs)	Stature
F13		1-3	
16		1-2	
22		< 1¼	
27		9-12	
35		1-3	
37		Infant	
42		1-3	
44	?F	45+	1.55 m
57		5-8	
59		4-6	
60		16-18	
62	M	45+	1.63 m
63	F	35-45	1.54 m
64	M	35-45	1.72 m
75	M	35-45	1.78 m
76	?M	Adult	
77		5-7	
78		3-6	
79	M	25-35	1.68 m
80		< 1	
83		2-4	
84A		1-2	
84B		< 1	
85		< 1¼	
92	F	35-45	
97		7-10	
98		< 1¼	
99A	F	45+	
99B		< 1	
100	F	25-35	1.58 m
102		4-6	
103		1-2	
104	M	25-35	1.73 m
107	M	35-45	1.63 m
108	?M	25-35	1.69 m
109	?F	35-45	1.54 m
110	M	45+	1.68 m
112		4-7	
125	M	35-45	1.71 m
133	F	25-35	1.53 m
139		Adult	
151		2-4	
153	M	45+	1.66 m
160	M	20-25	1.73 m
165		6-10	
169		1-3	
170	F	35-45	1.62 m
172		7-11	
177		14-18	
183		Infant	
210	F	25-35	1.54 m
229	M	35-45	1.82 m
230		Infant	
232	F	25-35	1.45 m
233		4-6	
234	?F	Adult	
235		5-8	
236		4-10	
237		3-5	
239	F	35-45	1.62 m
247	F	25-35	1.55 m
248	?F	35-45	1.66 m
249	M	35-45	1.72 m
259		Infant	
260		7-9	
264	M	35-45	1.65 m
265	?F	45+	1.61 m
266		13-16	
267	M	35-45	1.73 m
269	?F	20-25	1.61 m
272	?F	20-25	1.64 m
277	M	45+	1.66 m
278	?F	Adult	
281		2-3	
298	M	35-45	1.74 m
331		16-20	
347	?M	20-25	1.70 m
367	?F	45+	1.55 m

Table 28. Summary of articulated skeletons

II. Animal and Bird Bone

by Gillian Jones

Summary
Bone of Early Saxon to early sixteenth-century date from Brandon Road was studied, the main quantity being tenth to twelfth century. Summary of the bone by zone and fragment count gives information on differences in survival, deposition and the proportions of the main species. The scattered and varying character of the bone is related to the use of different areas of the site. Bone density was greater in the eleventh to twelfth centuries than in the tenth century.

The order of importance of the three main domesticates was sheep, cattle, then pig in the number of animals slaughtered, and cattle, sheep then pig in the number of bone fragments and also the quantity of meat produced. Sheep increased in importance relative to cattle through the tenth to sixteenth centuries, and pig remained steady, probably declining in numbers in the fifteenth/early sixteenth century.

In cattle, dental and epiphysial fusion data show variation in the mortality pattern over time and the slaughter of some adults at a moderately young age. Definition of the later wear stages of the lower third molar is discussed. There is evidence of sexual dimorphism in metacarpal bones from the Thetford sites, of the specialisation of hornworking in one area of the town, and of a slight decrease in the size of cattle since the Middle Saxon period.

The age structure of the sheep found indicates slaughter of some sheep in their second year during the main periods of the Brandon Road site but the keeping of both sexes into maturity in the later medieval period. Adult sheep were increasingly kept to a greater age. Wear-rates at all times were faster than on modern sheep and this may relate to folding and overgrazing of winter pasture. Some very small sheep were present in the fifteenth to early sixteenth centuries.

With pigs, changes in the age structure in the tenth to twelfth centuries suggest an increasing preference for fattening young pigs fairly late, but by the latest phases remains of piglets became more frequent. In the fifteenth and early sixteenth centuries there were a few extremely large pigs which may be from the large, long-legged pigs described as the old type of English pig at the time of the eighteenth-century agricultural improvements.

Other species are shown on Tables 35 and 44 (wild bird). Horse remains were few, though scattered, and general carting was probably done with oxen. Somewhat larger horses were present in the later medieval phases. Higher numbers and frequency (the percentage occurrence of a species in the total of features) of dog, cat and fowl bones coincides with areas of domestic occupation. There was little hunting or fowling, and even fragments of antler were not found in the tenth to fourteenth-century samples. Black rat was present in the eleventh–twelfth century. Rabbit was frequent by the fifteenth century; bones tended to come from one area, where was also found a ferret skull, and this is a likely site for a Late Medieval rabbit warren. Fowl bones showed two size groupings, interpreted as sexual dimorphism. Bones from the wing of geese were common, and goose wings may have been traded for feathers or for making bone flutes. Wild birds included red kite, crane and chough, all now absent from the area.

Descriptions of dental and bone pathology and brief notes on butchery marks are given.

Archive

The bones are stored by the Norfolk Museums Service, mainly in grid-square order. Well-preserved cattle and sheep horncores, mandibles, pelves and metapodials were separated and are stored together, as are the pathological specimens, and bird and miscellaneous bones of interest. There are photographs, sketches, notes and some radiographs of the pathological bones, and sketches and identifications of the worked bone finds.

Introduction

A large quantity of bone (over 21,000 fragments) was recovered from the excavations in 1964–6. Bone was collected by hand and although no sieving was done the policy was to collect all bone whether complete or fragmentary. Most was from the large number of pits. The main quantity of material was from the Late Saxon (tenth century, Period III) and early medieval (eleventh to twelfth centuries, Period IV) periods, when the town was at the height of its importance. Exact separation of these two phases was not possible, for reasons of residuality and dating of the pottery (see main text). Occasionally there is also a possibility of the intrusion of later material into upper layers of Period III pits. Some of the pits were not fully excavated, so some primary deposits are missing. The bones were moderately well-preserved.

There is a small amount of early Saxon (Period II) bone, all in a very eroded condition. The bone from the late twelfth to fourteenth-century period (Period V) was considerable in quantity but was from features with residual earlier pottery, and a less detailed record of this material was made. On Table 35 the Period V bone is shown in two columns, the first where features contain-

	II ES	III 10thC			IV 11th-12thC			V 1 12th-14thC			VI 1 14th-15thC		VII 1 15th-e16th	
		BN	%	MN	BN	%	MN	BN	%	BN*	BN	%	BN	%
Cattle	33	1427	*44*	40	1757	*39*	30	229	*30*	(1051)	117	*31*	243	*35*
Sheep/Goat	13	1045	*33*	43	1574	*35*	59	381	*50*	(1065)	151	*40*	298	*43*
Goat		5			3			1		(1)				
Pig	4	483	*15*	23	687	*15*	37	104	*14*	(411)	56	*15*	66	*10*
Horse	3	49	*1.5*		43	*1*		7	*0.9*	(21)	13	*3.4*	19	*2.7*
Dog		22	*0.7*		75+1sk	*1.7*		6	*0.8*	(18)			2	
Cat		27+2sk	*0.9*		74	*1.7*		7	*0.9*	(14)	1			
Hedgehog						1								
Rabbit		1*			1*						8+3sk	*2.9*	26	*3.8*
Hare					1			1		(4)				
Rat					1									
Fox					2					(1)				
Ferret													1	
Red deer					1					(1)	2a			
Fallow		1*												
Roe		1												
Fowl		100	*3.1*		166	*3.7*		18	*2.3*	(98)	13		19	
Goose *cf.*Dom.		35	*1.1*		69	*1.5*		7	*0.9*	(33)	8		11	
Duck *cf.*Mallard		15			8			1		(5)	1		3	
Wild bird					6			4		(2)	5		4	
Total identified														
11397	53	2313			4470			766		(2725)	378		692	
Total bone														
21458	109	5842			7785			1150		(4799)	629		1144	

Notes: BN = number of bones; MN = minimum number (see text); * = dating uncertain (see text); a = antler

Table 35. Summary of Mammal and Bird Bones

ed less than 50% residual pottery by sherd count and the second, in parentheses, where there was more than 50%. Rather less severe problems of residuality apply to the smaller quantities of bone from later periods (VI and VII, late fourteenth to fifteenth century and late fifteenth to early sixteenth century). The situation and geology of Thetford is referred to in the general introduction and discussion.

Method

The total number of bones (BN) consists of all identified to species level including shaft fragments and fairly complete vertebrae but excluding ribs and fragmentary vertebrae. The figure gives a measure of the bone quantities studied. Bones were recorded on two lists: a 'zone' and a fragments lists. On the zone list were recorded complete bones or pieces as follows:

Skull – substantial pieces of horncore, frontal, lacrimal, malar, parietal, squamous temporal, occipital, premaxilla;
– upper jaw and mandible with at least one tooth present;
– loose teeth.

Long bones – where more than half the proximal end, shaft or distal end was present (and see note below on cattle and on shaft pieces). Where an immature bone was found with its epiphysis this was counted as one bone but otherwise both metaphyses and epiphyses were counted.

Other bones – more than half the following bones or bone elements: vertebra; scapula – the distal end; ulna – the proximal articulation; pelvis – the iliac, ischial and/or pubic part of the acetabulum; patella; astragalus; calcaneum – the articulation; phalanges.

With cattle, substantial pieces even if less than half complete were included since these large bones are normally more fragmented than with sheep and pig and important epiphysial fusion data would be lost if such pieces were not recorded in detail. But if, for example, two pieces of proximal tibia came from one layer and could be from the same individual, only one was allotted to the zone list.

With long bone shafts the zone count includes all where more than half the bone shaft was present and in addition the following smaller areas of bone: the distal posterior part of the humerus, the proximal ulnar groove of the radius and the supracondylar fossa of the femur. Ideally these counts should be kept separate but for brevity's sake they have been combined. (Note that proximal, shaft and distal ends in the zone list cannot be added to arrive at the number of bones present, since one complete bone will figure in all three.)

Many bone elements occur uniquely in the skeleton, *e.g.* atlas vertebra, left proximal radius, and these are underlined and suggest the minimum number of individuals represented by that bone element.

Small pieces of bone were recorded on the fragments list as a simple count of each bone in the skeleton; *i.e.* they do not appear on the zone list.

Both in recording and presenting the data there is a conflict in the need for information on fragmentation, preservation, epiphysial fusion and minimum numbers, and inevitably there is a conflict between brevity and detail. The present case by no means achieves a solution, but the degree of detail provides a good deal more information than a simple tally of the numbers of each bone in the skeleton (Watson 1979).

Discussion of the skeletal analyses of bone from Periods III and IV

The record made of the bones is an end result of study, recovery, survival, deposition, household management, the slaughtered animals and the live flocks and herds (see Rackham 1983). From the summary of the bones shown on Tables 36 and 37 various observations, often of a rather circumstantial nature, can be made on these stages. Clearly it is the later stages listed above which are of interest, but some of the numerical differences may be explained by the effect of earlier stages with consequent effects on interpretation of species importance and the bone deposits in this area of the town. Examples are taken from Period III (Table 36) except where stated. The analysis for Period IV is Table 37.

With cattle the number of distal tibiae, calcanea and astragali (the two largest bones of the hock joint at the lower end of the hind leg) were found in similar numbers, whereas in sheep very few calcanea or astragali were found – only three astragali against twenty-three left and twenty-six right distal tibiae. It is possible sheep astragali were removed for other uses (*e.g.* as gaming pieces) but lack of recovery of these fairly small bones is more likely. Similarly, there were few phalangeal bones and no caudal vertebrae of sheep or pig.

None of the soil was sieved and it is therefore expected that small bones and bones of small species are under-represented, as was demonstrated by comparison of the sieved and hand collected samples of fish bones at Site 1092, Thetford (A.K.G. Jones 1984).

Generally the bones of cattle were more fragmented that those of sheep or pig. The proportion of bone recorded on the zone list gives a rough indication of fragmentation and it is, as expected, lower for cattle (67%) than for sheep (76%) or pig (84%). Taking the tibia as an example, for sheep and pig numbers of shaft and distal ends more-than-half-complete are quite close, whereas with cattle the long tibia shaft was usually found broken into pieces and the zone shaft figure is therefore much lower than for the distal end. The number of sheep radii represented by the shaft is high: the total left plus right shafts is seventy-one with a total of ninety-seven radius bones, which compares with fourteen and sixty-six for cattle, *i.e.* sheep bones are far more likely to be in a fairly complete state. Chopmarks on cattle bones show that this is a real depositional difference but it may be exaggerated as a result of survival and recovery.

Comparison of the number of elements of the left and right side is interesting in that it is usually, presumably, a random effect and demonstrates the extent to which variation can be expected from this cause alone. In general, sidedness does appear to be random. However, it is curious that in the Period III cattle bones the right cannon bone is much more frequent than the left, both for the metacarpal and the metatarsal. The difference is unlikely to have arisen by chance (it is significant at the 0.01 level) and some difference in disposal seems likely. The difference does not extend to the hock bones or upper hind limb bones, but for the upper fore limb the right side is somewhat more frequent than the left (significant at the 0.05 level). It could be that in the distribution system one side was more often allocated or sold to this area of the town. The greater difference in the metapodials may mean, for example, a preference for one side in bone-working, or the retention of one side with the hide. Of the worked metapodia, all three from Period III and all four from Period IV were from the right side. It is possible, then, that some of the unworked metapodia (many of them complete bones) are unused bone-working material.

	Cattle				BN	Sheep/Goat			BN	Pig			Total	
	No.of Bones		Zone L	R			Zone L	R			Zone L	R		
horncore	19		*8*	*7*	18	sh	5	*11*						hc
					3	gt	1	2						
skull	146		75		73		60		45		36			sk
maxilla	31		*19*	*12*	20		*7*	*11*	32		*16*	*20*		mx
mandible	127		*31*	*34*	112		*43*	*37*	60		*15*	*23*		md
loose teeth	63		54		41		37		33		27			t
Head	386		(225)		264		(212)		170		(132)		820	
vert.,atlas			*15*				*12*				*12*			at
axis			*7*				*10*				*1*ax			
other cerv.			33				18				4			cv
thoracic			34				10				14			th
lumbar			28				28				10			lu
sacrum			10				1				–			sa
caudal			9				–				–			cd
sub-total	141		136		79		79		42		41			vt
scapula	117	d	*12*	*20*	79	d	*13*	*19*	39	d	*12*	*12*		sc
humerus	69	p	*5*	*4*	57	p	*2*	*1*	43	p	*1*	*2*		hu
		s	*10*	*14*		s	*15*	*16*		s	*19*	*18*		
		d	*10*	*12*		d	*6*	*13*		d	*9*	*5*		
radius	66	p	*9*	*21*	97	p	*24*	*17*	21	p	*7*	*5*		ra
		s	*6*	*8*		s	*35*	*36*		s	*5*	*9*		
		d	*9*	*11*		d	*12*	*12*		d	*2*	*2*		
ulna	24	p	*10*	*13*	18	p	*13*	*9*	25	p	*13*	*12*		ul
pelvis	80	il	*16*	*15*	71	il	*13*	*15*	26	il	*4*	*6*		pe
		is	*11*	*14*		is	*18*	*13*		is	*6*	*6*		
		pu	*6*	*13*		pu	*9*	*5*		pu	–	4		
femur	73	p	*8*	*5*	59	p	*3*	*3*	17	p	*1*	*1*		fe
		s	*15*	*13*		s	*19*	*10*		s	*7*	*5*		
		d	*7*	*7*		d	*9*	*4*		*d*	*1*	*2*		
patella	8		8				-		fib.7					
tibia	106	p	*9*	*9*	135	p	*1*	*6*	36	p	*5*	*3*		ti
		s	*7*	*12*		s	*31*	*35*		s	*8*	*12*		
		d	*21*	*19*		d	*23*	*26*		d	*9*	*6*		
Body	684		(444)		595		(435)		256		(218)		1535	
calcaneum			*22*	*17*			*11*	*2*			*1*	*6*		ca
astragalus			*17*	*11*			*2*	*1*			*2*	*1*		as
carpal/tars.	199		17						10					c/t
metacarpal	77	p	*13*	*40*	60	p	*14*	*18*	15		III IV	III IV		
			mc											
		s	*15*	*33*		s	*14*	*23*		p	*3* –	*5 6*		
		d	*12*	*30*		d	*9*	*11*		d	*2* –	*6 6*		
metatarsal	78	p	*15*	*26*	95	p	*25*	*22*	12	p	*2 3*	*2 5*		mt
		s	*14*	*29*		s	*33*	*33*	d		*2 1*	*2 4*		
		d	*13*	*20*		d	*12*	*8*						
metapodial	5								abax 14 (mp+ph)					
phalanx	98	1st	63		16	1st	13		6		6			ph
		2nd	18			2nd	3			2nd	–			
		3rd	17			3rd	–			3rd	–			
Foot	357		(291)		186		(154)		57		(57)		600	
TOTAL	1427		(960)		1050		(801)		483		(407)		2960	

Unidentified	C/h-size	S/p-size	Small	Bird
vertebra	157	58	–	–
rib	643	740	1	5
other	623	374	5	23
Total 2629	1423	1172	6	28

Zone – see text; p – proximal; s – shaft; d – distal; il/is/pu – iliac/ischial/pubic part of acetabulum; C/h – cattle/horse; S/p – sheep/pig

Table 36. Skeletal Analysis of Main Species, Period III

	Cattle					Sheep/Goat					Pig				
	No.of Bones		Zone L	Zone R	BN		Zone L	Zone R	BN		Zone L	Zone R	
horncore	30		*16*	*8*	43	sh	*22*	*15*					hc
					2	gt	*1*	*1*					
skull	174		84		116		97		65		55		sk
maxilla	33		*16*	*10*	25		*10*	*15*	46		*20*	*25*	mx
mandible	130		*20*	*27*	165		*48*	*59*	85		*29*	*37*	md
loose teeth	78		70		75		69		46		42		t
Head111	445		(249)		424		(329)		242		(202)		
vert.,atlas			*13*				*26*				*8*		at
axis			*10*				*23*				*1*		ax
other cerv.			38				33				22		cv
thoracic			38				15				8		th
lumbar			20				28				19		lu
sacrum			6				4				–		sa
caudal			2				1				2		cd
sub-total	140		127		131		130		60		60		vt
scapula	125	d	*23*	*18*	107	d	*30*	*27*	33	d	*9*	*13*	sc
humerus	95	p	*3*	*5*	85	p	*5*	*6*	47	p	*2*	*2*	hu
		s	*13*	*16*		s	*30*	*29*		s	*16*	*19*	
		d	*15*	*15*		d	*19*	*20*		d	*15*	*8*	
radius	93	p	*18*	*27*	133	p	*25*	*19*	33	p	*8*	*11*	ra
		s	*15*	*15*		s	*43*	*37*		s	*12*	*11*	
		d	*9*	*15*		d	*8*	*16*		d	*1*	*1*	
ulna	53	p	*22*	*20*	25	p	*9*	*12*	35	p	*11*	*18*	ul
pelvis	105	il	*12*	*12*	97	il	*22*	*22*	23	il	*6*	*2*	pe
		is	*20*	*11*		is	*23*	*25*		is	*4*	*2*	
		pu	*9*	*6*		pu	*9*	*18*		pu	*3*	–	
femur	115	p	*10*	*8*	82	p	*4*	*3*	28	p	–	*3*	fe
		s	*26*	*22*		s	*25*	*14*		s	*8*	*8*	
		d	*7*	*7*		d	*7*	*10*		d	–	*3*	
patella	7		7		1		1		fib.20				
tibia	99	p	*9*	*9*	185	p	*6*	*7*	52	p	*2*	*6*	ti
		s	*5*	*7*		s	*41*	*45*		s	*12*	*19*	
		d	*15*	*18*		d	*33*	*43*		d	*10*	*15*	
Body 2009	832		(513)		846		(651)		331		(278)		
calcaneum			*29*	*30*			*8*	*9*			*5*	*6*	ca
astragalus			*22*	*20*			*3*	*6*			*3*	*3*	as
carpal/tars.	133		*27*				*17*						c/t
metacarpal	103	p	*26*	*23*	107	p	29	29	24				mc
											III	IV	III	IV	
		s	*26*	*27*		s	*37*	*27*		p	*6*	*4*	*10*	*3*	
		d	*26*	*25*		d	*20*	*15*		d	*6*	*4*	*9*	*2*	
metatarsal	102	p	*23*	*25*	154	p	*41*	*27*	29	p	*10*	*8*	*6*	*4*	mt
		s	*20*	*27*		s	*46*	*32*		d	*8*	*7*	*4*	*3*	
		d	*17*	*20*		d	*15*	*10*							
metapodial	6								abax 34 (mp+ph)						
phalanx	136	1st	76		19	1st	18		9	1st	7		ph
		2nd	25			2nd	1			2nd	1		
		3rd	35			3rd				3rd	1		
Foot 901	480		(387)		307		(237)		144		(111)		
TOTAL 4021	1757		(1149)		1577		(1217)		687		(591)		

Unidentified	C/h-size	S/p-size	Small	Bird
vertebra	204	108	–	–
rib	842	766	2	7
other	753	593	4	36
Total 3315	1799	1467	6	43

Notes as Table 36

Table 37. Skeletal Analysis of Main Species, Period IV

Numbers of the proximal humerus, proximal and distal femur and proximal tibia are fairly low, which is an expected effect of survival, these parts of the skeleton being formed of cancellous bone with a thin bone cortex. The distal radius is less affected except in the case of pig.

The underlined figures give a precise minimum number of that element for sheep and pigs and give an approximate but probably quite reliable minimum number for cattle (see Method section). Taking the highest zone figure for each main bone of the body (scapula, humerus, radius, ulna, pelvis, femur and tibia) the average figure is 17.1 for cattle, 22.3 for sheep and 11.1 for pig (or 34%, 44% and 22%) for Period III and 21.7, 30.0 and 13.6 (33%, 46% and 21%) for Period IV, both of which suggest a relatively higher value for sheep and pig in relation to cattle than the total bone count. The most numerous element was, for sheep and pig, the mandible. For cattle it was the proximal metacarpal in Period III, and (rather unusually) the calcaneum in Period IV. Proportions from the mandible are 34%, 43% and 23% (Period III) and 22%, 48% and 30% (Period IV). Proportions based on the most numerous element are 38, 40 and 22% (III) and 24, 47 and 29% (IV).

These proportions from mandibles and from the main body bones are similar for Period III, but in Period IV the mandible gives a much lower percentage for cattle. There may be depositional reasons why heads of cattle were less frequent in this area of the town, connected with high numbers of horncores found at Site 1092 (G.G. Jones 1984), (see Table 45 (in microfiche) and Horncores, below) and mandibles may not be a reliable bone on which to base species proportions.

Comparison of cattle with sheep remains a problem (O'Connor 1984, 6) as is seen above in the slight differences in method adopted. Comparison of the bones of the pelvis provides a useful measure. The element is a zone in Watson's strict sense (1979) (the iliac, ischial and/or pubic part of the acetabulum), the bone survives fairly well (being a strong loadbearing part of the skeleton) and it is also a bone less likely than many to be affected by bone/horn-working, marrow or glue extraction and gnawing by dogs. Proportions based solely on the pelvis typify the general pattern of sheep being somewhat the commoner by minimum number and cattle the commoner by fragment count.

The fairly detailed anatomical analysis is valuable in showing different patterns of survival and recovery between the three species. Using the total of identified bones, the following percentages result:

	Period III			*Period IV*		
	N	C,	S/g,P	N	C,	S/g,P
Total Bone	2960	48,	35, 16	3817	44,	39, 17
Head	820	47,	32, 21	1111	40,	38, 22
Body	1535	45,	39, 17	2009	41,	42, 16
Foot	600	59,	31, 9.5	901	53,	34, 13

Pig foot-bones are relatively much less common than sheep and especially cattle even without compensating for the fact that a pig has twice as many metapodia and phalanges than cattle and sheep. The high cattle figure is explainable simply by recovery of 199 carpals and tarsals and ninety-eight phalanges, against seventeen and sixteen for sheep and six and ten for pig. But the difference between sheep and pig seems significant. The highest zone figure for sheep foot-bones is thirty-three and for pig only six (forty-six and ten in Period IV). A possible explanation is that pig trotters may have been boiled-up, and the bones tended not to survive either because they were thrown to dogs or the weakening of the bone through long boiling caused the bones to decay. If the feet of sheep were used similarly, probably only the lower part of the foot would be used: this might explain the much lower number of distal than proximal metapodia, but butchery marks indicating such a practice were not observed.

The extent to which pig bones do decay more easily, and that pig may be consequently under-estimated, is uncertain. Some bone elements come close to or exceed numerically cattle and sheep, viz. the very strong upper jaw, the relatively massive ulna (the atlas vertebra and scapula in Period III only), and the humerus and tibia shafts. Lower jaws (N183 left plus right mandibles with at least one tooth from the three species giving 36, 44 and 21%) and loose teeth (N118: 46, 31 and 23%) suggest pig formed about a fifth of the animals by head count. Pig also comes up to a fifth on the total number of bones recorded on the zone list (Period III N2168: 44, 37, 19% and Period IV N2957: 39, 41, 20%). That is, fewer fragments of pig were recorded. It is not known whether this may be an effect of survival and recovery or a difference in the ease of identifying small fragments of pig bones (see Watson 1972).

If pig bones are adversely affected by decay, one might predict that the percentages based on teeth, the most durable part of the skeleton, would be relatively higher for pig. The proportion of mandibles with at least one tooth present plus the loose teeth is indeed a little higher for pig than for sheep (2–4% difference) which is a fairly small difference. Also, the pig bones found appeared to be in a similar state of preservation to the rest of the material. It is not therefore considered that pig is under-represented to a very great extent.

Variation across the site

(Table 38, microfiche)

Some of the Period III features containing bone fell into recognisable groups, for example the boundary ditches and some groups of pits, which may be within the same property. The bones from these are summarised on Table 38 (microfiche). The summary uses the total number of fragments, and the biases noted above need to be borne in mind.

The quantity of bone found is rather small given the very large size of most of the pits. For example, in the area by the enclosure gullies in the pits centred on grid square M21 (9 on Table 38) there were eighteen pits containing bone, many of them very large yet the average number of bone pieces found in them is only twenty-seven. The overall number of bones per feature is thirty-seven (twenty-one identified).

Rarely were bones found as articulated partial skeletons or joints. The great majority occur as isolated pieces. This is true of the cattle, sheep and pig bones where, for example, phalanges which appeared to be pairs, or pig metapodia with their epiphyses, were not found at all. And it is also true of most of the dog and fowl bones where at most sites it is usual to find several bones likely to be from the same individual. The bone appears to have been deposited in small quantities and may often be an accidental deposition as pits were gradually filled.

The main quantity is from the pit groups situated on each side of the north-to-south road and north of the east-to-west road (including as far north-west as those in L21/M22/N22) (9–16 on Table 38). With all these pit groups the most numerous bones are those of cattle and sheep, their relative numbers varying somewhat, with pig always in third place but present in significant numbers. The bones confirm the general interpretation of this area as domestic occupation.

The quantity of bone from pits near the western part of the east-to-west road (Table 38, 6–8) was lower but the character was similar. Worked bones were not concentrated in a single area but scattered among these pits. They consisted of discarded artefacts. No associated bone-working waste like that from Site 1092 (G.G. Jones 1984, pl.XXII) was found.

The features in the north-western part of the site, the pits in O21, N19 and O19, the kiln and the north-west to south-east boundary gullies (the first, and third to fifth groups on Table 38) may be rather different from the pit groups already discussed. Pig bones were very few; cattle were a good deal more numerous than sheep; and bones of dog and/or cats, present in nearly all the other pit groups, were not found. In the three pits in O21 (Table 38, 4) north of the kiln and some distance from the roads, there was a high proportion of cattle bones, nearly all of them skull and foot bones. This was the case also with pit F28 in O19. The bone finds agree with other archaeological evidence in showing that this area was used differently from the main areas of domestic occupation.

Very little bone came from any feature-type other than pits. A few were from gullies but the small numbers involved precludes comparison.

Less of the Period IV bone could be assigned to groups of pits than with Period III (Table 38, microfiche). The greatest quantities of bone were from pits east of the road junction. A few pits contained 200 or more fragments and these are striking for the range of bones found, including skull, body and foot bones; immature and mature bones; and usually a minimum number of three to six cattle, sheep and pig, but with little evidence that bones belong together, *e.g.* matching upper and lower jaws or tibiae with the adjacent astragalus. That is, the deposits seem to have built up gradually and are not from a single event, in contrast to medieval pits at Netherton (Sadler forthcoming) where articulated remains were found and the actual number of individuals could be inferred with some confidence.

There was less bone, in comparison with Period III, in the area immediately west of the north-to-south road. There was also a good deal more in the western part (grid squares N17–19 and M18–21), and the character of the bone in this area suggests domestic occupation, with cat, dog and fowl bones quite common.

The quantity of bone found per pit was higher in Period IV, on average fifty-seven pieces and thirty-three pieces identified. Many processes may have contributed to this effect of which a greater consumption of meat or a greater population density might be inferred.

Cattle

A detailed record of the cattle mandibles is given on Table 39, microfiche, showing a histogram of the eruption stages (*cf.* Bourdillon and Coy 1980) related to the individual tooth-wear stages (Grant 1982). The Period III mandibles comprised no young calves, only one under about eighteen months (using modern figures), 26% about two or three years old (stage 3), 14% sub-adult (stage 4) and 57% adult. Period IV, similarly, included no young calves, two under about eighteen months, fewer 18–36 months old (16%) and again the majority were sub-adult or adult (20% and 56%).

In general terms the epiphysial fusion information is comparable (Table 40, microfiche). Very few early-fusing bone elements were unfused, though there were a few perinatal bone fragments (also shown on Table 40). These may all have been calf losses, and doubtless the vellum from these would have been a valuable commodity. The difference observed in stage 3 mandibles is not reflected in the intermediate-fusing bone elements which show no difference between Periods III and IV. So the suggestion based on the mandibles, that fewer immature cattle may have been marketed in the Early Medieval period than the Late Saxon, remains tentative.

Looking at the late-fusing long bone elements, 45% and 47% were fused (*i.e.* came from skeletally mature animals). This is lower than the percentage of adult mandibles (with M_3 at stage g or beyond) (57% and 56%). If it is assumed that the samples are typical of the animals deposited, it appears that some long bone epiphysial fusion continued to take place after the third molar had reached the mature-wear stage (g). Fusion of the vertebral centra appears to be delayed to an even greater extent, with only 26% and 35% fused; (only the vertebral body was counted, not loose vertebral epiphyses). Vertebral fusion can be a very late event, especially in castrated animals (Noddle, pers. comm.) and it is certainly to be expected that many of the cattle were in fact castrated oxen used for ploughing and carting.

On Table 39 the mandibles which were certainly from fairly old beasts were grouped as stage 5B. In these, M_3 was beyond stage g, the tooth was well worn and often the root arch, or at least the cement-enamel junction, was visible above the alveolar border. Stage 5A includes mandibles where M_3 was lost but from the alveoli it could be seen that the tooth was fully in occlusion; plus the younger-adult, stage g jaws. The data on these stage g cases is confused by the fact that the bovine pillar (on which the later stages are defined) is sometimes absent. This occurred in four cases, but in none of these was the tooth very low-crowned, *i.e.* very worn.

In terms of husbandry, it seems ill-advised to slaughter as young adults cattle that have been trained for work (note their absence from later medieval Period V), yet their age seems excessive if they have been raised purely for their carcase. Perhaps they are culls due to barrenness or bad character, or beasts sold for individual economic reasons (*e.g.* for tithe or rent).

Numbers of mandibles from later periods were low. They included a few calves: a medieval and post-medieval increase in juvenile remains was seen at North Elmham (Noddle 1980). In all the adult mandibles from Period V the third molar was well worn (stage j and beyond) suggesting that adult cattle were generally being kept to a greater age before slaughter.

An attempt was made to study sexual dimorphism in the cattle, based on horncores, pelves and metacarpals. It was not possible to make definitive conclusions but some tentative observations were made.

Using the shape of the acetabulum of the pelvis (see Grigson 1982), about equal numbers of each sex appear to be present (ten cows and nine males in Period III, and six and five in Period IV). This is as would be expected given that about equal numbers are born and that few beasts died at an age before the acetabulum fuses. There is no suggestion here that supplies to Thetford were predominantly of milch cows nor of surplus oxen but a combination of the two.

The site produced a moderately large collection of complete metapodia. The size variation evident in the metacarpal was expected to include a component of sexual dimorphism due to the heavier fore-quarters of bulls in comparison with cows. Effects may also be expected due to differences in nutrition and perhaps type, and individual variation. Dimorphism is greatest in the width not the length of the bone (Higham and Message 1969). Histograms of distal width and, more strikingly, proximal width showed distinct groups of measurements (Fig.166), and these may be interpreted as showing cows, oxen (castrates) and a few bulls. Scattergrams of overall length against width measurements (Fig.166) proved less informative with no clear groupings as was found at Middle Saxon Hamwih (Bourdillon and Coy 1980). Possibly the Thetford cattle were of a type with smaller sexual dimorphism. On Fig.166 (proximal breadth) the probable cows are those with Bp less than 52 mm, the castrates 52–61 mm and the solitary very large bone is probably from a bull. The very great overlap in length measurement is consistent with data from the Kalmyk cattle quoted by Higham and Message (1969). Probable ratios based on Fig.166 (proximal breadth) are fourteen cows, six castrates and two ?bulls in Period III (with two small broken specimens which may be immature) and seven cows, eleven castrates and one bull in Period IV.

Metacarpal distal widths are shown for all the Thetford sites, including Periods III and IV of this site, Site 1092 (G.G. Jones 1984)

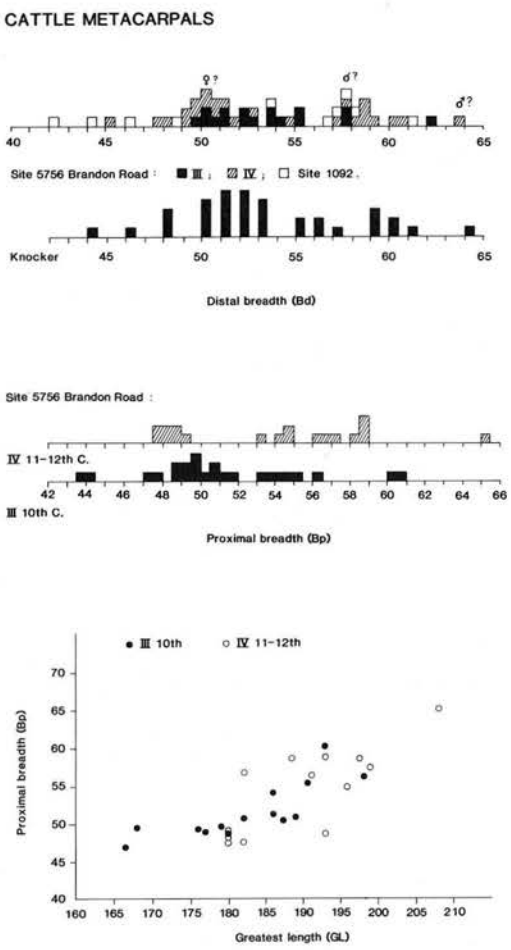


Figure 166 Brandon Road. Cattle metacarpals.

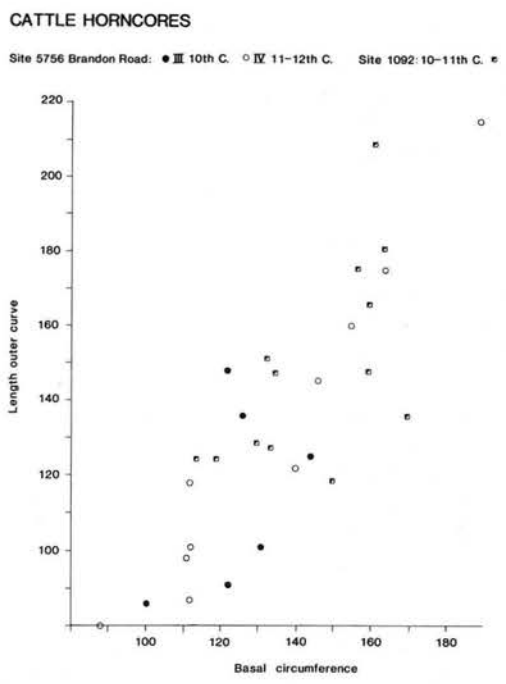


Figure 167 Brandon Road. Cattle horncores.

and the excavations by Knocker (data quoted in Clutton-Brock 1976, fig.9.2). There are a few small records, a large peak presumably of cows merging with a wider spread of probable castrates with a few ?bulls. The cattle are smaller than those from Middle Saxon North Elmham (Noddle 1980).

If the groupings are correct, it would mean that the greater size of many of the Period IV metacarpals is due to the presence of more males, not a real increase in size in the later period. This point is relevant in relation to the horncores (Fig.167) where the few Period III specimens fall in the lower left part of the graph and the Period IV examples show a great range of size and shape, *i.e.* the tenth-century group may be entirely from cows, with castrates and bulls also present in the eleventh to twelfth-century group.

Horncores from Site 1092 (tenth to eleventh century) are also plotted and these – from an area of horn and bone-working – fall in the middle and upper right of the graph. Horncores used for horn objects may, then, have been predominantly those from oxen (in the sense of castrated males) and bulls. Numbers of horncores found at Brandon Road Site 5756 were lower than expected (see Tables 36 and 37) and of those found, although many were chopped at the base, none were sawn in the manner observed frequently at Site 1092 (G.G. Jones 1984, pl.XX). Table 45 shows the numbers of horncores from the two sites. There could have been trade across the town in horncores from cattle, and also those from goat and, to a lesser extent, sheep.

Separation of the sexes on the basis of size was confirmed in the more upward direction of growth in the small horncores and the more outward and downwards curve of the larger ones. Basal shape, however, proved unhelpful: small specimens varied from 68%–82% and large ones 68%–90% (minimum/maximum basal diameter by 100).

Using measurements of the hind limb, which show lower sexual dimorphism (Higham and Message 1969), the distal tibia and astragalus show little variation over Periods III, IV and V, and confirm the slightly smaller size of tenth to twelfth-century Thetford cattle in comparison with Middle Saxon Elmham and Hamwih. Comparison of metatarsal lengths is much more variable, with Period IV specimens showing a very wide range and lower mean. Selection of bones for skates may have biased the results. Period V included one extremely large specimen (235 mm long).

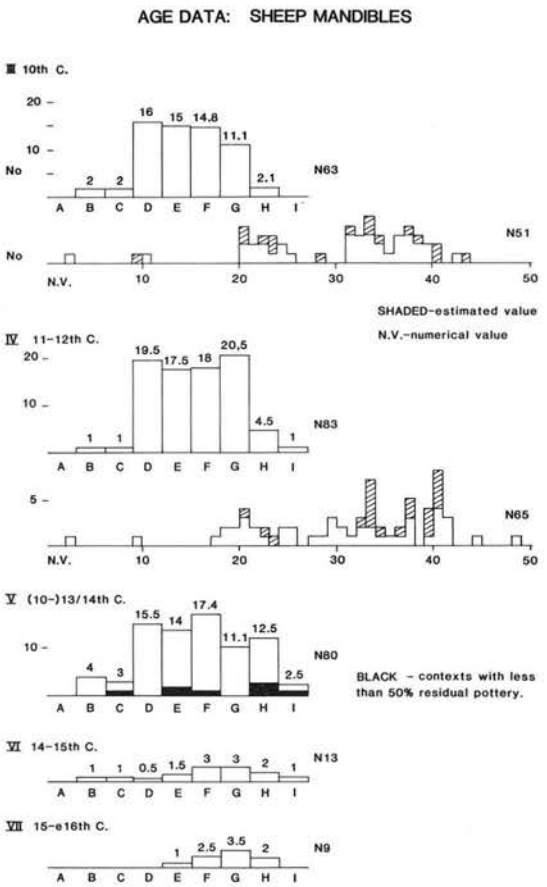
Withers heights estimates based on metapodials are 1.02–1.21 m (N30, Mean 1.14 m) for Period III (tenth century) and 1.01–1.27 m (N31, Mean 1.12 m) for Period IV (eleventh to twelfth century) (method of Fock in von den Driesch and Boessneck 1974).

The position of the nutrient foramen at the supracondylar fossa of the femur was as follows: Period III three cases within the fossa and five outside; Period IV – fourteen within and five outside; and Period V - two within and three outside.

Sheep and goat

The evidence suggests that few goats were kept. Most horncores were from sheep (see Tables 36 and 37); and goat horncores were absent from the Period V–VII bone groups. Horncores, although easy to identify, are problematic in the sense that they can be dispersed due to trade in horn, as was found at Thetford Site 1092, and at Dorestad (Prummel 1983).

Study of the mandibles with deciduous premolars present produced the following observations in using Payne's morphological distinctions were made (Payne 1985). The metaconids of dp_3 were sheep-like but the character was difficult to assess on the mostly very worn specimens. The mesial (anterior) parts of these worn dp_3's were well-developed and sheep-like. The mesio-buccal ridge was strongly sheep-like in twenty-one cases, and goat-like in one. In the dp_4's no interlobal pillars were observed (twenty-six cases); most of these observations were made without extracting the teeth, the cement-enamel junction being above the alveolar border. The angle of the distal cement-enamel junction was difficult to assess. The one probable goat (III, 2671) scored: *Ovis* 1 (½ + ½) (no interlobal pillar but one small irregularity at this point, intermediate enamel margin): *Capra* 3 (metaconid, bucco-mesial ridge, and the two intermediate characters); and the crown height index is within the range given for *Capra* (2.1, Stage d), *i.e.* the tooth is lowcrowned and goat-like. In all, twenty-six mandibles scored as sheep



Method of Payne (1973) and Grant (1982)

A m_3 unworn
B m_3 in wear, M_1 unworn
C M_1 in wear, M_2 unworn
D M_2 in wear, M_3 unworn
E M_3 in wear, 3rd unit unworn
F M_3 in wear on all cusps, pre □□
G M_3 □□, M_2 □□
H M_3 □□, M_2 after □□
I M_3 after □□

Figure 168 Brandon Road. Age data: sheep mandibles.

on at least two characters (and up to six characters) and seven scored as sheep on one character (all Periods).

There was no sign from other bones to contradict this predominance of sheep over goat. In the *Domesday* return for Norfolk, goat formed 6.1% (3020 goats, 46,458 sheep). None are mentioned for Thetford itself. In one older mandible P_4 and the anterior part of M_3 are both partially erupted and almost equally advanced (Period IV, and one similar case in V). This is unusual in sheep, where M_3 is normally in advance of P_4, but it is common in goats (Deniz and Payne 1982, fig.24). One Period III radius plus ulna was identified as goat using Boessneck's criteria (Boessneck *et al.* 1964). Scattergrams of metacarpal length against distal width (GL by BFd) and Payne's distal metacarpal ratio (1969) gave moderately homogeneous groupings suggesting that all were sheep. (The line which separates the Verroia sheep and goats would class all the Thetford Period III and IV metacarpals as sheep: Payne ibid, figs 6 and 7.)

Sheep

Interpretation of the age of the sheep which reached Thetford, and the results shown on Fig.168, raises questions about the supply and marketing of animals. There were ecclesiastical rights to sheep pasture within the town itself (see below, Documentary Evidence). Individual

land ownership and pasture rights by burgesses and by the church might tend towards a self-sufficiency in meat for some households, which would mean that the age structure found would relate fairly closely to the general culling practice. However, the presence of a large population would have affected sheep-keeping over a wide area, and many of the remains may be of sheep from quite distant villages where the age of sheep sent to market may be selective.

The general pattern of slaughter-age at Thetford suggests that during the tenth to twelfth centuries sheep were not normally killed during their first year. Surplus young animals were slaughtered during their second year. Thereafter there was a range of slaughter-age up to perhaps six or seven years old. The proportion of adult mandibles found, and within these adults the numbers in the latest age-stages, increases slowly through the thirteenth/fourteenth centuries. The Phase VI and VII samples suggest that a decreasing proportion of sheep were being slaughtered before two to three years old. (Ages are based on modern Soay, Shetland, Scottish Blackface and other sheep: Jones, work in progress.)

Looking at the Period III and IV data, no mandibles were found with the deciduous premolars unworn or at early wear stages (tooth-wear stage b or c: Grant 1982). Lamb losses at this age, from birth to over four weeks old, would certainly have occurred, and their absence rather suggests that lambing was not taking place in the immediate vicinity. There were a few stage B mandibles, aged two to three months. And there were a few very immature long bones (Table 40, microfiche), of uncertain age-at-death, some of which could be perinatal. (Bones from very young lambs might occur in urban deposits as a result of trade in lambskins.)

It is thought that most of the stage D mandibles were from sheep which died in their second year. Initial wear on the second molar has been observed at 10 – 13 months in modern Soay sheep; and the third molar was erupted into the mouth cavity (and usually in initial wear) at 21/25 months (sheep of various breeds including Soays and Shetlands). In a few of the Thetford Period III and IV mandibles, M_2 was only recently in wear (stage b) but in most it was at stage c, d or e and with the third molar crown below the alveolar border. These stage D mandibles appear therefore to be from sheep fattened in the summer and autumn of their second year. Presumably most of these were rams or wethers.

Complete, or almost complete, erasure of the infundibula of dp_4 was more frequent in the Thetford stage D mandibles than was observed on modern Soays and Scottish Blackfaces, *i.e.*, the teeth are more worn (two or all three infundibula erased; III 12 of 13; IV 6 of 10; V 1 of 3). Butser Soays are kept on downland grass with supplementary winter feed (hay and nuts) and the Blackfaces observed were kept on the Pentland Hills with extra feed (mostly hay) given only during bad weather (and at lambing). The main factor involved in fast tooth-wear is abrasion due to ingested soil (Healy and Ludwig 1965). So, if the eruption ages observed in Soay and other living sheep are taken to apply also to the early Early Medieval sheep, it may be suggested that ingestion of the sandy Breckland soil was fairly high. This would occur, for example, in pastures which were overgrazed during the winter.

Moderately fast wear-rates might also be expected in sheep folded on bare stubble or fallow ground. The folding of sheep was an essential element in the maintenance of soil fertility. The shepherd's work may have been as described in Aelfric in the tenth century: 'In the early morning I drive my sheep to pasture and stand over them in heat and cold with my dogs, lest wolves devour them. I lead them back to the fold and milk them twice a day, and make butter and cheese. I move the fold, and sleep in the sheepcote, which I keep in repair' (quoted in Ryder 1983, 186). Fold-soke, the customary service of folding sheep on demesne land, is mentioned frequently in the *Domesday* returns for Norfolk (Darby 1952, 145).

Mandibles with the posterior cusp of M_3 in wear (stage F and beyond) may be aged at about three years and over. They formed 44%, 53%, 54%, 69% and 89% of the samples in Periods III to VII. Already by Period IV there is an increase in adults suggesting a larger wether flock than previously. It is unfortunate that the sample sizes of the latest phases were small and that the dating of Period V is imprecise. But it appears that by the fifteenth to sixteenth centuries most sheep slaughtered were adults. Lambs of both sexes were being kept into adulthood, thus optimising the amount of wool produced.

Within the adult age stages, the proportions at the latest stages, H and I, also increases in the later periods. Stages G, H and I are defined by increasing wear, all cheek teeth being erupted. The finding of sheep with heavily worn teeth may indicate fast wear-rates or older sheep. Numbers of stage D mandibles in Periods VI and VII were not available for comparison but it may be noted that Period III teeth were relatively more worn than Period IV (or V) (see above discussion of stage D). Comparison was made of the stage F mandibles to see if M_1, was more worn in the later-period specimens, yielding the following results: M_1 at the mature-wear stage/anterior infundibulum partly or/fully erased/the posterior infundibulum likewise: III 3/3/2/1; IV 1/1/2/0; V 5/3/2/1; VI 0/1/0/0; VII 0/2/0/0. The case remains open because of the small sample sizes and the possible range of ages of the stage F sheep but it is suggested that wear-rates may have been no faster in the later periods, and that from the thirteenth/fourteenth century onwards, sheep were being kept to a greater age.

An intensification in wool production would coincide with the Late Medieval agricultural changes, for example in the enclosure of common lands for sheep pasture and the sale and export of wool where previously export had been primarily of cloth (Reynolds 1977, 46).

Finds of wool tools are described above and include six spindlewhorls, four made from bone and two from pottery.

The age structure found at nearby, rural North Elmham Park showed, as at Thetford, an increase in the proportion of adults in the medieval period. Differences in methods of recording make direct comparison inexact, but in both Late Saxon and medieval times the proportion of adults may have been higher at Elmham than Thetford. There may well be indirect evidence from this of the movement of younger sheep to market.

The horncores found were varied. They included some as large as those from Site 1092 (although none were so well preserved) and these are presumably from rams. The small and medium-sized cores may be from ewes and wethers, but separation is uncertain and would be influenced by natural variation and the age of the sheep. The form of the cores was similar to those from North Elmham (Noddle 1980). Plots of basal diameter demonstrate the range of size (Fig.169). Possibly the females separate from the males at below 27/40 mm and the rams from the wethers at above 41/55 mm. In comparison with the horncores from Late Saxon and Early Medieval Lincoln (O'Connor 1982), the overall range is similar but at Thetford there was a larger group of the moderately large cores (?wethers).

There was one case of hornlessness from Period III (identified as sheep from the shape of the parietal bone), one case from sheep (or goat) from each of Period IV and V and two (both sheep) from Period VI.

The size of the sheep appears to have remained unchanged through the main periods of the site, from the tenth to twelfth centuries. Measurements of sheep bones from Middle and Late Saxon North Elmham (Noddle 1980) and other sites in Thetford (Clutton-Brock 1976; G.G. Jones 1984) are similar. Detailed measurements of the metapodials were made, and are accessible in the archive. There was considerable variation in the length and robustness of the metacarpals but clear separation into groups was not obvious. Distal metacarpal measurements were more dispersed for Period IV than Period III (note the higher standard deviation).

The most striking aspect of the measurements was the smaller size of the sheep bones from the later periods. In general the Period V (thirteenth/fourteenth century) measurements are similar to Periods III and IV but there is a consistent tendency for a decrease in the lower range, *i.e.* some smaller sheep are present. The bones from Periods VI and VII include some very small, gracile specimens, *e.g.* a metacarpal 95 mm long, 15 mm shorter than any from Periods III to V.

The nutrient foramen of the femur was in the proximal anterior or mid-posterior position, with the latter being commoner (Period III 1,5; Period VI 2,2).

Pig

The proportion of pig bones found at Thetford remains fairly consistent through periods III to VI, at about 15% by fragment count and rather more, about one fifth, by other methods of calculation (see above). Fewer pigs were found at Thetford than at North Elmham and this is in accord with the greater amount of woodland recorded in *Domesday* for the Elmham area, and the generally high numbers of sheep recorded for much of West Norfolk (Darby 1952). No pigs or woodland are recorded in the Thetford *Domesday* return, which records only demesne land. Notwithstanding this, other evidence suggests that pigs were kept in herds depending on woodland pannage for fattening (Trow-Smith 1957; Wiseman 1986). Wiseman suggests that there was a decline in the importance of pigs during the medieval period, based on reductions in the time permitted for pannage. At Thetford a decrease in the proportion of the pig bones is not observed until the fifteenth to early sixteenth century (10%, the small period VII sample). By this time reliance on pannage and swineherding may be in decline with more pigs being raised domestically in sties. On the Peterborough Abbey manors, sty management existed by the fourteenth century, pigs being fed grains and legumes (Biddick 1984).

The mandible data are shown on Fig.170. The method follows that of Bourdillon and Coy (1980). Wear was defined as beginning when wear could be seen on the enamel: the thickness of the enamel in pigs

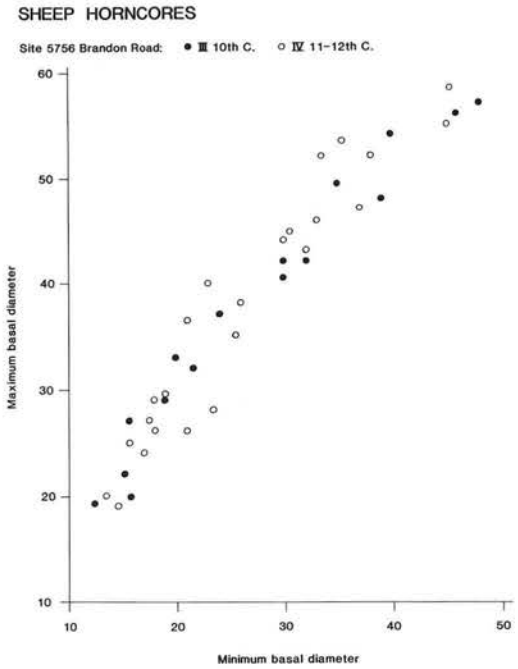
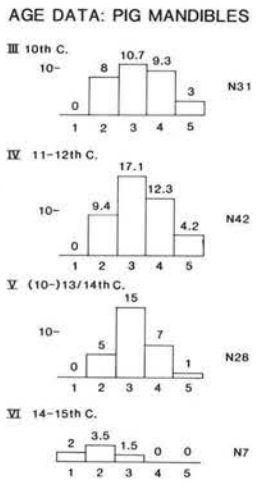


Figure 169 Brandon Road. Sheep horncores.



1 — birth to M_1 erupted, unworn
2 — M_1 in wear, M_2 unworn
3 — M_2 in wear, M_3 unworn
4 — M_3 in partial wear (Grant stages a,b)
5 — M_3 in wear on posterior cusp
in wear — for pigs, wear visible on the enamel.
Vertical axis shows sample number (with incomplete jaws allotted in proportion).

Figure 170 Brandon Road. Age data: pig mandibles.

and the different tooth morphology compared to cattle and sheep means that the enamel-wear-only stage lasts much longer in pigs. Stage 5 begins when wear is evident on the posterior part of M_3, *i.e.* the third molar has completed its long eruption and is fully in occlusion. No stage beyond stage 5 was used. With incomplete mandibles where the stage could be given only as a range of two stages, these were allotted to each stage in the proportion found in the more complete specimens (*cf.* Payne 1973 for sheep).

The mandibles were recorded using Grant's tooth wear stages (1982) and these data and records of the whole tooth row are preserved in the archive. M_3 stage b was taken to end when wear was visible on the enamel of the posterior cusp. Maxillae were also recorded, using the nearest equivalent lower jaw stages.

The tenth-century jaws included no piglets but otherwise showed widely varied slaughter ages with few fully adult pigs. The Period IV mandibles show a greater concentration at stage 3, probably animals mostly in their second year (Bull and Payne 1982), and this is even more marked in the Period V sample. The stage 2 and 3 pigs, although they may include some that have bred, may be considered as the pigs raised for market. The three phases show a continuing decrease in the proportion at stage 2 (about six to twelve months old) suggesting that a larger, more mature carcase was preferred. At the same time, the proportion of young adult plus fully adult pigs at stages 4 and 5 declines, with 40% in Period III, 37% in Period IV and 29% in Period V. A few pigs were elderly, *e.g.* one specimen in Period IV with M_3 very worn (Grant stage k).

The mandibles found, of course, suggest only the slaughter age of pigs eaten at the site, and the links between this and farming practice may be complex.

Comparison with North Elmham Park (Noddle 1980) is interesting, however, in showing a similar reduction in the proportion of adults between the Late Saxon and medieval and post-medieval periods. (Elmham was exceptional in the finding of a very high proportion of adult and aged pigs in the Middle Saxon period.)

The gradual changes seen from the tenth to fourteenth centuries suggest, then, the successful rearing of rather larger litters, and an increasing preference for slaughtering immature animals fairly late.

By the fourteenth to fifteenth century the few mandibles found show a marked change, most being piglets and young (stage 2) pigs, and no stage 4 or 5 jaws being found. These very young specimens could demonstrate a taste for sucking pig, which suggests a wealthy household. Or they may be natural deaths from pig-keeping in the immediate vicinity. (Three mandibles from Period VII were at stages 3, 3 and 4.)

The size of the pigs is similar to those from Elmham. Most measurements (Table 48, microfiche) are much smaller than the measurements given for wild boar (Noddle 1980) but as at Elmham a few specimens approach this size, *e.g.* a metacarpal III 89.3 mm long and an unfused abaxial metapodial 54.5 mm long without its epiphysis (both period III).

In the Period VI and VII sample of pig bones, most of which were similar to those from earlier periods, there were a few exceptionally large bones. They included an adult axis and 7th cervical vertebrae (see measurements Table 48, microfiche) and an immature metatarsal 104 mm long without the epiphysis, with an estimated length with epiphysis of *c.* 116. This compares with specimens from phase V of 74, 81 and 81, 73–92 at Elmham (all periods) and 95 from a wild male (Noddle 1980).

The large pigs are either from wild boar or from a new type of large domestic pig. Wild boar are rare in England by this date. References to their status in the Breckland have not been found. Circumstantial evidence is rather against the bones being from wild boar; hunting of other species does not increase, and the bones are chiefly immature.

If domestic, the bones are of some interest. The pig which is described as the old type of English pig at the time of the eighteenth-century improvements and the introduction of Chinese pigs was described as large, long-legged, usually white, with long, 'lop' ears and with no pronounced bristly spine (Wiseman 1986). This contrasts strongly with the small medieval pig with its prick-ears and bristles along the spine, but documentary evidence for its introduction is sparse. The bones found here would corroborate Trow-Smith's surmise that the larger, lop-eared pig was not present before the late Middle Ages. Presence of larger pigs is recorded for the sixteenth century at Exeter (Maltby 1979, 57).

The sex of the canine teeth was recorded and is shown on Table 41 (microfiche). The number of ageable jaws which could be sexed was very small.

Overcrowding of the premolar teeth in pigs was seen occasionally, viz. in three cases in Period III (two mandibles and a maxilla, in one mandible the first premolar also being absent); two cases in Period IV (one mandible and a maxilla where p^2 was rotated through more than a right angle); and one in Period V.

Absence of the lower first premolar was common (32%, N59, Periods III–V) and more frequent in males than females (41%, N17 and 24%, N29), with no noticeable difference through time (Table 42, microfiche). The character seems to be a useful one to record as it may show regional or temporal variation.

Horse

The horse bones were striking by their small number yet their relatively frequent occurrence over the site. They formed only 1.5% and 1% of the bones in Periods III and IV but were found in 15% and 21% of the features containing bone (Table 35; Table 43, microfiche). The finds were scattered and occasional, no horses being found as partial skeletons. Articulated remains occurred just four times, where a few vertebrae probably from one individual were found together (twice in each of Periods III and IV).

Other than one probable chopmark on a third phalanx, no butchering marks were observed on bones from the main phases; chopmarks were seen on a distal tibia from Period VI and a proximal metacarpal from Period VI, both of which may be skinning marks.

The real frequency of use of horses is uncertain. A single horse was recorded in the *Domesday* return for Thetford. The expectation is that the horse was not normally killed unless ailing, and that the carcase was useful only for its hide (Langdon 1982) and occasional use of bones for working (*e.g.* skates). The slaughter or death of a horse would not then have been an everyday event. Normally the carcase appears not to have been buried as a whole (as occurred for example at Aylesbury, Bucks: Jones 1983), but to have been disposed of, presumably to dogs, and perhaps to people too but without the breaking up for marrow which was the usual practice for cattle. One horse carcase might then have become dispersed over a whole neighbourhood. (A single horse bone bore gnaw marks probably from a dog.)

The small number of horse bones applies also to Period V, with a relative increase in the two later periods. In Period V the frequency per feature does increase (to 30%) but although the increase would be consistent with a real change, it may be a result of the re-working of the deposits.

Age data from teeth for Period III suggests at least two adult but not aged horses and three elderly ones. In one of these latter the crown heights of the anterior five maxillary cheek teeth were 15, 15, 16, 13 and 15 mm, *i.e.* extremely worn (Levine 1982, 228). All long bones were fused; in nine of fifteen vertebrae epiphysial fusion was incomplete. Similarly, all tooth data for Period IV indicates adults (at least six); unfused bone epiphyses included only late-fusing elements, *viz.* a single unfused distal femur and four of ten vertebrae incompletely fused. Full fusion of the vertebrae may not be completed until well into adulthood.

Height estimates using the method of Kiesewalter (in von den Driesch and Boessneck 1974) from the few complete long bones are 12 and 13 hands (Period III), 13 hands (IV) and 12 hands (V, 20% residual pottery) (1.24 m, 1.33 m, 1.32 m and 1.19 m). Measurements are given on Table 49 (microfiche) with tooth height and mesio-distal diameter recorded in the archive (defined in Levine 1982, 228). A few minor measurements from Period V contexts seem large (a radius Bp 85.4 and a 1st phalanx GL 82). Measurements of bones from Periods VI and VII include two bones giving height estimates of 13 and 14½ hands (1.35 m and 1.47 m, Period VI) and a scapula from a fairly large individual (Period VII). Remains of horses larger than the usual small horses typical of the Saxo-Norman period were found, then, in Period VI and VII, the Late Medieval and Early Post-Medieval periods, and possibly in Period V also.

Dog

Dog bones were commoner and found in more features (Table 35; Table 43, microfiche) in Period IV than III. With the dog, and also the cat, it was more common than with the horse bones for several bones from a feature to be probably from one individual. One partial skeleton and a probable second one were found in Period IV, but the majority of bones still occurred singly.

Measurements (Table 50, microfiche) suggest medium to large animals, within the size ranges found on the Anglo-Saxon sites studied by Harcourt (1974). Shoulder height estimates were as follows: 49 cm, 54 cm (III); 48 cm, 61 cm, 62 cm (IV); and 49 cm (V). A skull from Period IV (P21, F18, tenth-eleventh century) was smaller than the dog skulls found previously at Thetford (Harcourt 1974, table 12 and G.G. Jones 1984, table 11), though still within Harcourt's Anglo-Saxon range and not from a dog as small as the one whose very small, curved radius bone (GL 89) was found at Thetford Site 1092 (eleventh century).

The Period III bones included a puppy (M_1 unerupted), one less than a year old (unfused distal radius) and two adults (mandibles, one with dentine exposed on the teeth). From the teeth, all the Period IV dogs were mature (seven individuals, in six of which dentine was

exposed), and just four long bones were immature. Period V (all features) included a puppy and two adult mandibles and a maxilla. Immature bones were not so common as at Site 1092 where five out of eleven individuals were immature.

No butchery marks were observed and the bones were not fragmented – all the dog bones were on the zone list (see Method section).

No dog bones were found in Period VI and only two in Period VII.

Two cracked and healed ribs and three vertebrae where the spine was bent over (see Pathology) may be the result of harsh treatment. Injuries on the muzzle of a dog from Site 1092 suggested a similar interpretation, although dog-fighting or bear-baiting could have been involved.

The most likely uses of dogs within the town are as guard dogs, pets and scavengers.

Cat

Although the number of cat and dog bones is small and conclusions need to be drawn with care for that reason alone, it is interesting that the proportions of both are very similar. As with dogs, cats appear to be commoner in Period IV than Period III, less common in Period V and rare in the later Periods. They tend to mirror the general density of occupation.

Period III remains included two partial skeletons from L27 F6 and remains from at least four cats from J26 F34. Assuming that the bones of one cat were not spread among more than one feature, Period III produced ten cats, five of them with immature long bones; and Period IV sixteen, five of them young and two sub-adult (partially fused late-fusing epiphyses). The young cats were not kittens: immature long bones were near to full-size; and early-fusing epiphyses, which fuse at four to seven months (Smith 1969), were all fused (Periods III and IV).

Control of the numbers of cats was not done, apparently, at the kitten stage (or, the kitten bones have not survived and been recovered). This may be deliberate if the cat was valued for its skin, although no skinning marks were observed.

Catskins certainly were used in the Early Medieval period, and had minor status. The Saxon Wulfstan, bishop of Worcester in the eleventh century, was upbraided by his admirers who observed that even if he did not wear sable, beaver or fox as he ought to do, he might at least wear catskins rather than lambskins. 'Believe me,' retorted the Bishop, 'men sigh oftener of the Lamb of God than the cat of God' (quoted in Veale 1966, 4, and for discussion see Jones 1983, 38–9, 43).

The cats were varied in size, including one smaller than any found at Lincoln (O'Connor 1982) (see Measurements, Table 51, microfiche, Period III, individual A). Generally they were of similar size to those at Lincoln, with few as large as those found in fourteenth-century Aylesbury (Jones 1983). None approached the size of a female wild cat in the British Museum (Natural History).

Period V included at least two kittens (distal humerus unfused).

Other mammals

Bones from deer were rare. Period III produced a specimen of roe deer—part of a skull with antler attached (see measurements). A fallow deer humerus (BT 36.3) was found in K20 F10 (1381). The feature contained all Late Saxon pottery (113 sherds) but the feature was only 25 cm deep and the depth of bag 1381 within the feature is not known, *i.e.* it may be the upper layer with the possibility of later intrusion. The context is not sufficiently certain for the find to constitute a definite record of fallow deer in Period III. Single bones of red deer were found in Periods IV (a tibia) and V (high residual pottery, a scapula).

Antler fragments were not found in Periods III to V which is more unusual in a town site, where worked bones are quite common, than the rarity of the eating of venison. It is particularly surprising given the expectation that deer may have been fairly common in the Thetford area, both from the presence of deer in the Breckland in the present day and the generally sparse population shown in *Domesday* (Darby 1952). The lack of hunting evidence would be consistent with extensive use of the area for sheep pasture.

Two antler pieces were found in Period VI (M23 F101, 876, fifteenth-century feature but with residual earlier pottery).

Two fox bones from Period IV were found in grid squares O18 and P21, that is, away from the main areas of domestic occupation. The two bones are mute as to whether they are from hunted foxes killed for their fur or natural deaths of town scavengers. A pelvis from Period III may be from fox or small dog, and one bone of fox came from Period V.

Hare was present in Periods IV and V, with one and five bones (from five features) respectively. Hare may have been trapped or hunted. The bones could also be natural occurrences, with the greater frequency in Period V reflecting the fairly sparse occupation of the site in the thirteenth to fourteenth centuries. If so, the hare may have been displaced by rabbit warrening in the late medieval period, all lagomorph bones from Periods VI and VII being rabbit. No cutmarks were observed on the hare bones.

Hedgehog and black rat occurred in Period IV (both from grid square M19).

The likelihood of later burrowing into features is a problem in studying rabbit. No butchery marks were observed on any rabbit bones, so it is probable that no record can be regarded as dated with certainty. However, the frequency of finds may be a good indicator. A single rabbit bone was found in each of the large bone samples from Periods III and IV, and none was found from Period V.

Rabbit became fairly frequent by Period VI, forming 2.9% of the bone and occurring in three out of eleven features. By Period VII it was common, forming 3.8% of bone count but occurring in eleven out of the twenty-five features. The bones occurred singly, except for three partial skeletons from an oven (L22 F38, Period VI or VII), probably filled after *c.* 1500. No burrows in the feature were observed, but the possibility that they are later intrusions remains.

The rabbit bones came mostly from the five grid squares L22, N23/24, M23/24 (ten of the fourteen Period VI and Period VII features containing rabbit), so it is this area which may have been used as a rabbit warren in the Late Medieval and Early Post-Medieval period.

The rabbit would have been valued for its fur, supplementing skins available from lamb, cat, fox and hare (Veale 1966).

The suggestion that rabbits were being kept in the vicinity of the site in Period VII is strengthened by the find of a ferret (or polecat) skull, in grid square L 24 (F47, 2621), which is near the area where rabbit bones were most frequently found. The skull was identified as ferret (Mustela furo) and probably not polecat (M. putorius) on the basis of the narrow post-orbital constriction (13.6 mm and see Measurements) (Corbet and Southern 1977, 345), and comparison with material kindly provided by Peta Sadler, Bob Wilson and Jennifer Bourdillon.

The association between ferrets and rabbits is well established (Owen 1969). The earliest known reference to ferrets in England is for 1223. During the medieval and Early Post-Medieval period rabbits were confined to purpose-built warrens, often with walls and made-up banks, and the date at which they became feral is uncertain. An early fifteenth-century reference (Owen 1969, 490) mentions that no-one hunts rabbits except furhunters, *i.e.* it is the fur which is the important commodity.

Bird bones

The percentage of fowl bones remained close to 3% in all periods. The bone count shows a small relative increase from Periods III to IV (Late Saxon and Early Medieval) (3.1% to 3.7%). This increase appears to be a real change, as fowl bones were also found more frequently, occurring in 26% of Period III features against 42% and 44% in Periods IV and V. The minimum number based on the most numerous skeletal element is twelve and fourteen for Periods III and IV. Fowl bones were less common than at Site 1092, where they formed 7.2% (169, of 2334).

The bones appeared to have been scattered, rarely being found as partial skeletons as one usually finds.

The anatomical analysis shows an uneven distribution of bones. For example, in Period III no skulls, one carpometacarpus but twenty-seven tibiotarsi were found. Rather similar inequalities were seen for Period IV with the ulna, femur and tibiotarsus being far more common than other bones. These differences are probably mainly the result of survival and recovery and do not show, for example, the separate disposal of feet from the main carcase. Tibiotarsi, which are the bones usually broken if the feet are separated, were more broken than femora: combining the two periods, 67% of femora and 47% of tibiotarsi were found in a complete state. Two tibiotarsi bore knife marks on the distal articulation suggesting separation at the joint, not by breaking the bone.

Few fowl bones were immature. Taking the total of bones with at least one articulation, 5.3% (N95) were immature in Period III with rather more, 12% (N134) in Period IV. Allowing for half of births to be hens, between a tenth and a quarter of males may have been kill-

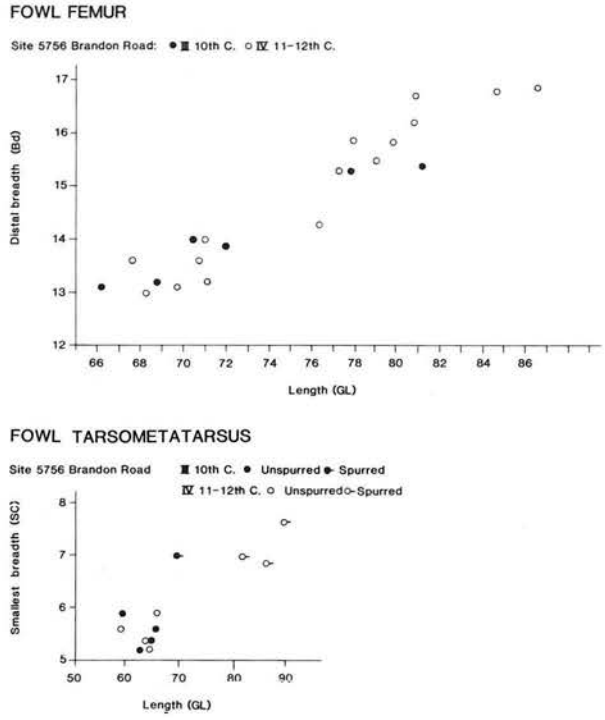


Figure 171 Brandon Road. Fowl: femur and tarsometatarsus.

ed before five to six months of age, with the majority being fattened at a greater age.

The measurements of the fowl bones show that two groups are present. Histograms and scatters of the humerus, ulna, femur and tarsometatarsals all showed a separation with roughly equal numbers of large and small bones. Tarsometatarsals were not numerous (twelve bones) but all the large group were spurred, which suggests that the large bones are from capons and cockerels, the small from hens.

Fowl, goose and duck were present in all periods, always in this order of numerical importance. The goose and duck are probably domestic, though the duck bones are little if any larger than wild mallard. Bones of both were mostly mature (immature bones, Period III: goose 0, duck 1; Period IV: goose 1, duck 0). There were more bones from the wing of geese, than would be expected, this part of the skeleton forming 70% and 80% of the samples from Periods III and IV. It could be that wings of geese were traded for their feathers, and see Fig.161, Nos 15 and 17, the bone flutes made from a goose ulna. (The wing bones of geese are also much larger than the leg bones, which would favour their preservation and recovery.)

A goose skull (IV 2598) bore a triangular hole 9 by 9 by 3 mm on the braincase, suggesting that it had been killed with a sharp instrument (*cf.* the rather larger, similar hole on a sheep skull, Site 1092: G.G. Jones 1984, pl.XXIII).

	Period	IV	V	VI	VII
Barnacle/ White-fronted Goose	*Branta leucopsis/ Anser albifrons*	1			
Red Kite	*Milvus milvus*	2			
Crane	*Megalornis grus*	1	(1)*		
Coot	*Fulicra atra*	1			
Rock/Stock Dove	*Columba livia/oenas*	1		1	1
Chough	*Pyrrhocorax pyrrhocorax*		2(1)*	3	
Jackdaw	*Corvus monedula*	1			
Rook	*C.frugilegus*				1
Rook/Crow	*C.frugilegus/corone*		1	1	2

* = dating uncertain

Table 44. Wild Bird

Remains from wild birds, though few, included red kite, chough and crane, which are absent from the area at the present time. The red kite, formerly a town scavenger, is probably a natural occurrence. Goose, crane, coot and dove may have been shot or trapped. The finds of chough at Thetford, 49 km from the sea, is of note as the bird is characteristically a bird of sea cliffs.

Plate XXXI Cattle rib fracture (Period III). Remodelling of the bone is well advanced but no fusion of the two parts has occurred. Either the condition has stabilised as a false joint or death occurred before fusion was complete.

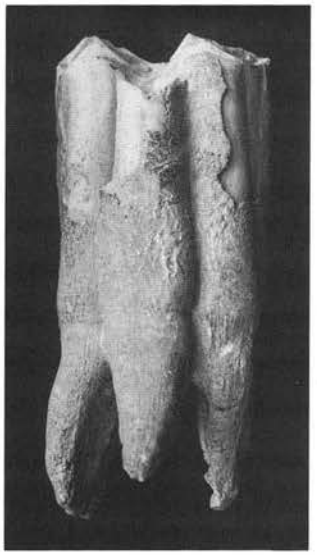


Plate XXXIII Cattle molar: (Period VI), with a very large bovine pillar, arising from a supernumerary root.

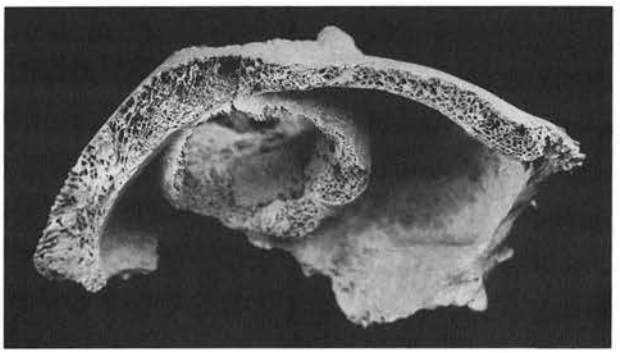


Plate XXXV Sheep skull: (Period V) the right upper part of the skull survives and there is a large abscess cavity at the base of the (missing) horn core 36 by 32mm and extending as much as 17mm into the cranium. The sheep was immature, the frontal suture being unfused and the frontal/parietal partly fused. Infection may have gained access through damage to the horn. The horn core base is quite small suggesting a ewe not a ram.

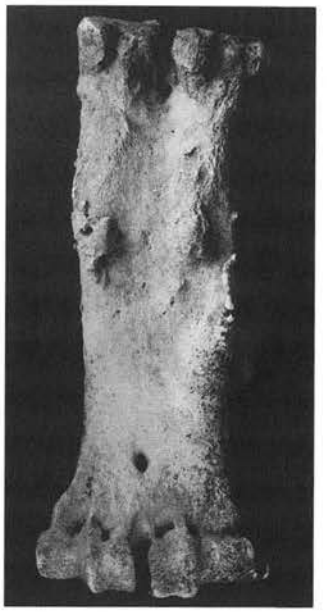


Plate XXXII Cattle metacarpal: (Period IV) a grossly deformed bone; the medial part of the bone (*i.e.* metacarpal III) is thickened, occupying ⅔ instead of ½ the bone. Most of the bone surface is smooth but there are three knobbly outgrowths on the posterior of the shaft. Radiography reveals that the bone cortex is thickened and less dense than normal (the cortex mid-shaft on the medial side is *c.* 16mm thick) and there is bone growth within the medulla.

Plate XXXIV Sheep elbow joint: (Period III), exostosis on the proximal lateral corner of the radius.

Plate XXXVI Dog lumbar vertebra: (Period III) the tip of the spinous process is bent 6mm out of true to the left and there is an extension of the left cranial articular facet.

Pathology

A record of the pathological bones and various anomalies is on microfiche and detailed records, sketches and photographs are held in the archive.

Pathological bones were not common. In cattle there were a few cases of periodontal disease and of bone changes resulting from injury, *e.g.* a broken rib (Pl.XXXI), stress or age, *e.g.* two phalanges with osteoarthritis, and disease during development, *e.g.* the metacarpal shown in Plate XXXII. Anomalies of form or development include a molar tooth with a very large bovine pillar arising from a supernumerary root (Pl.XXXIII).

In sheep, fairly frequent pathologies were periodontal disease in mandibles and a bony outgrowth on the side of the elbow (Pl.XXXIV). The only pathology almost certain to have been the cause of death was an infection within a cranium (Pl.XXXV).

Post-cranial pathologies in pigs affected metapodia and phalanges, many of them from immature animals, and possibly indicating tethering and confinement indoors. In other species, cases of spondylosis and spavin are testimony to the work done by riding or pack-horses, and in dogs, broken ribs and three cases where the vertebral spine is bent over (Pl.XXXVI) may mean that dogs were beaten. One bird bone was pathological.

Butchery

Butchery marks were recorded, but not in great detail. Cattle skull pieces were rather few. Horncores were often chopped at the base as expected. The occiput of one skull, the atlas and axis were chopped through roughly sagittally, from the ventral side (Period III). Long bones were very fragmented. Many showed heavy chopmarks and some knifemarks. One scapula blade piece showed a hole probably done when fresh, from which the meat may have been hung. Chopmarks were often heavy enough to show separation, *e.g.* behind the skull, and at the elbow and hock. Long bones were often chopped through the diaphysis. 34% of cattle bones were classed as fragments (III and IV). One deposit (III, in 019) contained remains of several broken-up skulls and fairly complete vertebrae, often chopped but not sagittally. Sometimes marks were seen on the distal condyles of metapodials, which may suggest use of the tendons (IV). A few vertebrae from later phases (V–VII) were chopped through sagittally, suggesting that splitting of the carcase occurred but not universally.

With the sheep and pigs, some vertebrae were chopped through sagittally and many long bones were chopped through the diaphysis (shaft), though the bones were less fragmented than with cattle (III–V). Chopping up of the skull was observed, usually breaking sheep skulls roughly along the midline (sagittally), and with pig skulls both sagittally and transversely. Most sheep horncores had been chopped through. Several sheep scapulae were chopped, from the medial side, *i.e.* after dismemberment. Chopmarks were seen on pig mandibles, which greatly reduced the data relating sex (from the canines) to the molar teeth. Male canines were usually broken.

III. Fish Remains

by Andrew K.G. Jones

Brandon Road

(Tables 54 and 55, microfiche)

The fish remains discussed in this report comprise a group of fifty-six bones collected from archaeological deposits excavated in Thetford between 1964 and 1966. At that time samples of urban medieval deposits were rarely sieved and it is not surprising that the present assemblage was collected by simply hand sorting excavated deposits. Sieving work at other sites in Thetford (A.K.G. Jones 1984) has shown that other early medieval deposits in the town do contain a large number of bones of small fishes in addition to the remains of large marine species which dominate the present assemblage. This strongly suggests that this assemblage consists of only a fraction of the fish remains present in the deposits at the time of excavation.

The deposits were assigned to periods, and the number of bones per period is very small. Consequently, few inferences can be drawn from the data.

However, it is clear that large marine fishes were imported into Thetford from the Late Saxon period until the sixteenth century. The presence of head bones and vertebrae in archaeological assemblages is normally used to indicate that whole fresh fish were present. This is at first sight surprising given the distance of Thetford from the coast.

The main value of the assemblage is that it contains remains from later medieval deposits in addition to Late Saxon material. As far as it is possible to judge from the small assemblages, there do not appear to be major changes in the kinds of large fishes brought on to the site from the tenth to the sixteenth centuries, although the tenth-century layers yielded only cod remains while later deposits, although dominated by cod, also produced haddock and ling bones. This result agrees with recent work on deposits from the Alms Lane site, Norwich (Jones and Scott 1985, 223–8) where an extensive sieving campaign recovered a host of bones from small and medium sized fishes as well as bones of large fish. This detailed investigation showed little change in the assemblages of fish remains from the twelfth to the eighteenth centuries and suggests that the various fisheries supplying the city were managed successfully for many centuries.

IV. Molluscs

(Tables 56 and 57, microfiche)

by Peter Murphy

Brandon Road

These were counted and then mostly discarded at the time of excavation. Table 56 (microfiche), based on material recorded as originally present, shows general types by quantity and by percentage. No shell was found in Period I, and only two oysters in Period II. In Period III, the largest quantity of oyster found (fifty-nine) was in pit M19 F38 which may belong to the early part of Period IV as it contained a high percentage of SN. The largest quantities of Period III mussel were found in pit K25 F8 (about 101) and in the top of gully O18 F34 (eighty). The largest amounts of shell in Period IV pits were in O22 F32 (forty-six oysters) and to some extent in O22 F2, K25 F16 and K25 F19. In Late Period IV, over forty oysters were found in pit N19 F4, and the total of mussels is inflated by a group of about 185 in the top of pit K25 F23; discounting these, percentages for Late IV are oyster 71%, cockle 18%, mussel 9%, land snails 2%. No large dumps of edible shell are evident from Period V features. In Periods VI–VII quantities increase and a number of pits contained edible shell refuse, particularly L24 F56 (VI?

predominantly oyster) L28 F53 (VI, over forty cockle shells), and the groups of pits in M23/N23 and M25/M26. Notable are M23 F11 (224 oyster, fifty mussel, one whelk), M23 F12 (nearly thirty oyster, some mussel), M25 F71b/M26 F79 (includes fifty-eight mussel) and to some extent M26 F79, M26 F100 which contained predominantly mussel.

Little can be made of the mollusca and the percentages of types are roughly similar for Periods III–IV and V–VII (Table 57, microfiche). The frequency remains oyster greatest, then mussel, cockle and few whelk.

V. Plant Remains

(Tables 58–60, microfiche)
by Peter Murphy

Methods

Samples collected during the excavations of 1964–5 and 1969–70 at sites 5756 and 5759 were received for examination. Most of these samples consist of large plant macrofossils, predominantly charcoal, collected by hand: no on-site sieving or flotation was undertaken.

The charcoal samples were graded into size fractions by dry-sieving before examination. Charcoal fragments larger than 6 mm were identified where possible and the finer fractions were scanned under the microscope, picking out any smaller macrofossils (*e.g.* shoots, seeds and seed capsules) which were present in the sandy matrix adhering to the charcoal. Plant remains were extracted from two small soil samples from Building J (K27 F15) at Site 5756 (Bag nos (2274), (2275)) by manual water flotation using a 0.5 mm collecting mesh.

Brandon Road

(Part II, above)

(a) Building J (K27 F15)

The samples from this cellared building fall into two categories: two small (300 g) soil samples and two charcoal samples from the fill of this feature (Bag nos (2274), (2275), (2260) and (2262)), and charcoal samples from post-holes. The fill samples provide some information on the superstructure of the building and where possible all plant remains in these samples have been identified. The post-hole samples were taken specifically in order to establish the types of timber used for the main vertical elements of the structure. Accordingly only charcoal from mature wood in these samples has been identified. Twigs and small branches of various species are also present, and in some cases make up the bulk of the sample, but these are clearly intrusive in the post-hole fills and consequently have not been examined in detail. Carbonised plant macrofossils in samples from Building J are listed in Table 58.

The soil sample from Bag (2275) was collected from a patch of charred material in the entrance of the cellar. It includes numerous rachis fragments of rye (*Secale cereale*), with some grains of rye, florets of oats (*Avena* sp), cereal and/or grass culm fragments, seeds of arable weeds, fragments of bracken fronds (*Pteridium aquilinum*) and heather shoots (*Calluna vulgaris*). This assemblage seems to represent rye straw from which the more-or-less completely threshed ears and other contaminants had not been removed, mixed with some bracken and heather. The location and composition of the sample suggest that it could represent charred remains of thatch: traditionally rye was considered the best straw for thatching, being both long and strong (Brown 1985, 249). Alternatively the sample could be from plant material strewn on the floor.

The charcoal from this sample includes mature wood of ash and oak (probably fragments of radially-split boards), as well as some hazel twigs, 16 mm in diameter, and unidentified fragments. Unlike the other samples from the cellar, however, Bag 2275 also contains some small worked pieces of wood (Fig.163). These include a lath-like piece of ash (SF764, No.2), about 24 by 5 mm in cross-sectional dimensions, with rounded edges, and a length of unidentified diffuse porous charcoal with a rounded quadrilateral cross-section up to about 20 mm across (SF763, No.1). This wooden object, which was cut from a piece of mature, non-twiggy wood, has a surviving length of about 80 mm, though other fragments in the sample, riddled with insect borings, indicate that it was originally longer.

The other soil sample from the cellar (2274), which came from the burnt layer on the mortar floor, is different in composition. Apart from a few grains and florets of oats (*Avena* sp) and young shoots of *Calluna vulgaris* it consists mainly of charcoal: twigs of hazel, 6–15 mm in diameter, fragments of ?birch and hawthorn-group charcoals, large fragmentary twigs of oak and large fragments of oak and ash wood. These seem to be fragments of radially-split oak boards and tangentially-split ash boards 20–25 mm thick. Similar board fragments of oak were collected by hand from elsewhere in the fill ((2260) and (2262)). The charcoal from the lower levels of the cellar fill thus appears to represent fragments of oak and ash floor-boards mixed with hazel twigs, presumably from wattle panels, and with some charcoal of other diffuse porous species, which were also perhaps structural components of the building.

Even after ignoring the twiggy charcoal from the post-hole fills several samples from these features include more than one species. In most samples oak is the main non-twiggy charcoal but samples (2263), (2264), and (2268) include some ash, and samples (2271), (2272) and (2273) contain some birch. It appears that all three species were used as constructional timber, though the post-hole fills evidently include charcoal introduced when the burning building collapsed. The single sample from a 'strut' (2267) was of mature oak wood with some twig fragments.

(b) Kiln N19 F7

Six small charcoal samples from layers (c) and (e) were collected for identification. The stokehole had been dug away by later pits and thus all samples came from the interior of the kiln. Identifications of fragments larger than 6 mm are given in Table 59.

Compared to the 'kiln-yard' samples, tree charcoals, including oak wood and hazel, oak and ash twigs, are relatively more abundant. Heather charcoal is, however, present in three of the samples.

(c) Pit M22 F48

(Periods IV–V)

This sample from the topmost fill of thirteenth to fourteenth-century date of a Period IV ?pit consists of 130 acorn cotyledons and fragments (*Quercus* sp) and a few small pieces of *Calluna* charcoal. The cotyledons are preserved in a mineralised state. Since only the largest

macrofossils from the deposit were collected interpretation is difficult, but it is possible that the acorns had been collected for their tannin content, for use in tanning leather or for some other industrial activity.

(d) 1966 Kilnyard

Charcoal samples from contexts E16 F33, D16 F46, D16 F61, D16 F97, D16 F115 and D16 F137 were received for identification. Most of the samples came from the stokeholes and interiors of the kilns and represent the remains of fuel, though charred fragments of rods forming the framework for the structure of kilns D16 F97 and D16 F115 were also collected. Identifications of fragments larger than 6 mm are given in Table 60. In addition to the identifications listed, most samples include young shoots of heather (*Calluna vulgaris*) with leaf bases and capsules containing seeds.

The two samples from the centering of the flue arches of kilns D16 F97 and D16 F115 are of hazel and hazel/alder. Charcoal samples from the stokeholes and the interiors of the kilns consist predominantly of heather (*Calluna*) and broom/gorse (*Sarothamnus/Ulex*) with relatively small amounts of hazel, oak and ash twigs and oak wood.

Discussion

The development of the Late Saxon town of Thetford would have resulted in a considerable demand for constructional wood and for fuel, both for domestic purposes and for use in the pottery industry. However, evidence from pollen analysis and other sources (Sims 1978; Bennett 1983) indicates that there were extensive prehistoric woodland clearances in the Breckland and it can be assumed that by the Late Saxon period large heaths existed in this area. The predominance of *Calluna* (heather) and *Sarothamnus/Ulex* (broom/gorse) charcoals in the pottery kiln samples implies that sufficient fuel could not be obtained from local woodlands and indicates that the fuel requirements of the industry were met, at least in part, collecting heather and broom/gorse in heathland areas. Whether the fuel was supplied as wood or as charcoal (produced perhaps in heathland clamps) cannot be determined. This activity would have had ecological effects of greater or lesser magnitude, depending on its scale: removing woody vegetation would have prevented regeneration of scrub on the heaths whilst any disturbance of the soil surface associated with this fuel collection could have resulted in instability and wind-blowing.

Interpreting the charcoal and other carbonised plant remains from the cellared Building J (K27 F15), in terms of their structural functions inevitably raises problems since clearly much of this plant material was not *in situ* but lay where it fell when the building burnt down. The following tentative interpretation may, however, be proposed:

Roofing	Thatch of rye straw, perhaps mixed with some bracken and heather (Sample (2275)).
Walls/partitions	Wattle panels, mainly of hazel (Samples (2260), (2262), (2274), (2275)).
Floor-boards (ceiling of cellar)	Radially and tangentially-split boards of ash and oak (Samples (2260), (2262), (2274), (2275)).
Main vertical posts	Oak, ash and birch (post-hole samples).
Struts/braces	Oak (Sample (2267)).

Abundant rye straw would have been available for thatching. The crop is known to have been widely cultivated in the Breckland from at least Middle Saxon times onwards (Murphy 1983).

Hazel rods were also used as part of the framework for the kilns. The acorns from the thirteenth to fourteenth-century context on top of pit M22 F48 give some indication of the uses of other woodland products.

Part VII
The Documentary Evidence
by Alan Davison

I. Summary

Domesday Book is sparing in its information about the topography of Thetford. Of the features named or listed only a few may be located with varying degrees of confidence. Of houses and streets and the disposition of the built-over areas in 1086 little can be said except that there was decay. Two churches, at least, on the Suffolk side, probably figuring in the *Domesday* account, had parishes extending into the eastern corner of the Norfolk portion of the town.

For later medieval Thetford sources are late but show, on the Norfolk side, a close pattern of lanes and streets between Bridge Street and the Castle Bailey where various markets were located. The pattern was notably close in the area which lay within the parishes of the south bank churches. The Grassmarket was where the Market Place is now and the King Street alignment seems to have been in existence. Raymond Street was also in being in medieval times. Slight information for the area between King Street, the modern White Hart Street and the northern perimeter suggests that it was probably built-over by the thirteenth century at the latest. There was possibly a projecting spur of development along Magdalen Street. The area to the west of the Bridge Street-White Hart Street (to St Andrew's Cross) line was also closely built over as far as the Priory precinct. The house of the Austin Friars was a late accretion to the eastern margin of the northern town.

On the Suffolk side urban survival was probably greater than has been previously suggested. Apart from the major monastic houses, there were important clusters of buildings around St Mary's and St Etheldreda's churches and along the Brandon Road near the Canons. Isolated churches and two hospitals, as well as the Nunnery, lay beyond these.

The limits of the northern urban area of medieval Thetford seem to have been quite sharply defined and to have survived virtually without significant encroachment or retreat, even well into post-medieval days, apart from the obvious decay of the Cluniac and Austin houses. A map of 1734 (TBA T/C1/10(c)) shows that even at that time there was open country beyond the northern end of White Hart Street. The southern portion of the town may have been affected more seriously by the events of the Dissolution and its aftermath. Evidence is scanty but further contraction seems to have occurred.

Overall it may be said that although there is no definite evidence of extensive development in pre-Conquest times north of the river, the existence of a church on the north bank named in *Domesday* (St Peter's) and the extension of the south bank parishes into Norfolk are significant pointers to pre-Conquest establishment on the Norfolk side. As Thetford is unlikely to have grown substantially in medieval times, it seems likely that, in the main, the street pattern of the core areas on both sides of the river is early post-Conquest or even pre-Conquest in date. The pattern of the streets suggests an organic growth focused on the 'Great Bridge' south of St Peter's rather than a planned development. There is, however, one possible exception and that is the very small grid pattern formed by Guildhall Street (Heathenman Street), Raymond Street and Nether Row with their connecting lanes and, possibly, Pike Lane. This is the area within the 'south bank' parishes. It seems likely that the southern portion of the town was a remnant of the original southern town, continuously occupied, and not re-colonised.

II. The Topography of Medieval Thetford

Introduction

Until twentieth-century town expansion, Thetford was substantially sited on the northern bank of the Little Ouse and Thet rivers, and only a limited area south of the rivers, focused on Little St Mary's church and on the Town Bridge, was built over. *Domesday Book* and the writings of Francis Blomefield and Thomas Martin, together with finds from archaeological excavations, all bear witness to a much greater presence on the Suffolk side. It has been suggested that by the early twelfth century the southern part of the town had been largely deserted (Dunmore and Carr 1976, 12) and that much of it was being farmed by the thirteenth century (Davison 1967). Subsequent consideration of the findings made in the Suffolk sector of the town has suggested that an examination of the documentary evidence for the topography of early Thetford would be valuable. It was hoped that there might be evidence for the pre-Conquest settlement north of the rivers and its possible boundary and also for the extent of any medieval occupation south of the rivers. It was also hoped that some information about St Michael's church might be obtained.

It is sad that so little documentary evidence of early Thetford remains. However, the original documents in the Borough archives, together with the later copies of medieval and early post-medieval texts which are contained in the Town Books* have thrown a little light on medieval Thetford though there are many obscurities remaining.

*Note: This term is used for convenience here. T/C1/10 is a book of sixteenth and early seventeenth-century copies of deeds and documents relating to the estates of Sir Richard Fulmerston. T/C1/11 is a book of ancient deeds, evidences and memorials relating to the Borough of Thetford, collected and arranged by G.B. Burrell in 1800.

The evidence of *Domesday*

There are four separate entries for Thetford in *Domesday* (folios 118b–119, 136, 137, and 173: Brown, P. 1984). Despite one entry of some length the information leaves much to be desired. Only a few topographical details of significance can be extracted.

Churches

There is mention of 12½ churches, though it is very likely that the figure should be 11½ because of apparent repetition in one entry associated with St Helen's church. Of these, six are identified by name. Great St Mary's church, the cathedral of the diocese for a brief span, stood on what is now the site of Thetford Grammar School (TL 8670 8305) and had four other churches attached to it. Three of these are no longer in existence – St John's, St Margaret's, apparently outside the old defences, and St Martin's. At least two of the three stood on the Suffolk side and evidence for their locations will be reviewed below. The fourth church, St Peter's, stands north of the river and significantly close to the northern end of the bridge. The other church mentioned by name was St Helen's which has long since vanished. Its site (TL 8395 8740) is very close indeed to the boundary of Thetford with Santon; excavation has revealed the remains of its foundations (Wilson and Hurst 1962–3, 320). This church appears in one of the smaller entries concerning Thetford as part of a large account of Methwold. It seems not unlikely that this church may have served the small population recorded with it (5 bordars, now 3, . . . two dwellings are empty. 1 Villein) and that these may have formed a distinct settlement away from the urban area.

Of the other churches (5½ or 6½) recorded in the *Domesday* account there are no firm indications of identity. The half church which was held by the Bishop may well have been Holy Trinity as suggested by Blomefield (1805, II, 71). This church stood close to the site of Great St Mary's, also within the grounds of the present Grammar School.

Of the identity and location of some of the other churches there is evidence of varied quality. It was suggested (Dunmore and Carr 1976, 18, citing Wormald 1934) that the dedications of St Cuthbert, St Lawrence, St Benedict (Benet) and All Saints might be pre-Conquest, although Whittingham (1967, 129) thought that the last two were probably twelfth century. St Etheldreda, whose site on the Suffolk side is known, seems likely to be a pre-Conquest foundation. Two sites, previously said to be those of St Michael and St Edmund, have been shown to be pre-Conquest by excavation: both are on the Suffolk side. The two dedications, wherever the churches so named actually stood, certainly fit pre-Conquest origins. Blomefield stated that a church of St George had been used by monks of the cell mentioned in *Domesday*, forerunner of the Nunnery of St George. The evidence for this and for the identities and locations of the other churches mentioned will receive full consideration elsewhere.

Perhaps the most interesting and significant fact is that there is evidence to show that two of the probable *Domesday* churches – Holy Trinity and St Etheldreda – had parishes which, in medieval times, extended north of the rivers, well into the north-eastern corner of the town (Fig.175). In medieval times the streets in this quarter formed a close rectangular pattern; these extensions and the bridgehead of St Peter's indicate the distinct possibility of a Late Saxon presence north of the river.

It is not safe to assume that *Domesday Book* necessarily records all the churches existing in Thetford at that time, or that the unnamed ones numbered in the entries should be equated with known churches of that period. There is a danger, too, in assigning to the *Domesday* list churches with dedications which could be either pre- or post-Conquest.

Mills

A total of 7⅔ mills is recorded. It is possible to place some of these with reasonable certainty from later sources. A confirmatory charter of Henry II to the Cluniac Priory mentions the mills which they had; one was the mill of Dodescros and another was the one '*quod vocatur Parvum*' (which is called 'the Little one'). It is not possible to suggest identities for them. They also had 5s 4d from the Brendemill; and the mill which was the bishop's; and the mill next the castle (Dugdale 1825, V, 150). The bishop's mill was the one on the Little Ouse also referred to as St Audrey's Mill in later times (NRO Frere MSS K9B (a deed of 1347) and CUL MS Add 6969). The Castle Mill on the Thet mentioned in 1391 (TBA T/C1/11, 55) seems to fit the description of another in the charter, while the Brend Mill was also known as the Nuns' Mill in 1606 and was, presumably, on the Little Ouse near the Nunnery (TBA T/NS1/19). A grant to the Cluniac Priory in 1396 (*Cal. Pat. Rolls*, 1396, 616) mentions a watermill with a pool and fishery and the fishery of a water called Nonnesdam. In 1338 the Priory of the Canons was receiving tithes of the Earl's (Warenne's) mills (TBA T/C1/10, 325); Earl Warenne gave them the tenths of the Pit Mill and of 'Hildensmilne'. The Pit Mill is the mill which lay to the north of the Bishop's Mill on the Thet; the other is unknown. Melford Mill on the Thet is mentioned in the early sixteenth century (CUL MS Add 6969, TBA T/C1/10, 50). The total of mills named matches the *Domesday* number: some of the unknown ones may merely be alternative names for known sites.

Monastery

The other topographical feature mentioned in *Domesday* was the monastery; this must have been the Benedictine cell of the Abbey of St Edmundsbury (see below, The Benedictine Nunnery).

Population

Of the physical extent of the town there is little other indication; 720 burgesses are mentioned together with the fact that 224 messuages stood empty. Whether this was a result of some temporary setback or whether it shows permanent deterioration cannot be ascertained. Certainly in the period since 1066 when there were 943 burgesses, the town had declined. Unfortunately it is an untidy survey in the way the details are presented. There were at least five other burgesses and two more empty messuages. Darby (1952, 140–1) considered that the population must have been at least 4000.

The Hundred boundary

Darby (1952, 141) commented on the importance of agriculture in the *Domesday* borough. Dunmore and Carr (1976) noted that Thetford had more agricultural land within its limits than Norwich, and Rogerson and Dallas remark (1984) that this activity must have been carried on largely outside the urban limits. That this is so can be partly affirmed by the presence of St Helen's and its possible community so far from the town, and partly by the existence of the Hundred of Thetford as a separate entity (Fig.175). In one of the Town Books (TBA T/C1/10, 4) there are copies of two accounts of the boundaries of Thetford. In one the boundary was said to begin at 'Millford (Melford) Bridge and so to Millford Mill and then by a causeway separating Kilverstone common and Bridgewong and then via two meres up to a stone or dole

in the way'. From there it passed along the south side of Magdalen Chapel (Magdalen Cross in the other account) and from that point it ran along the Norwich Way until a road from Kilverstone towards Brandon was reached, then it followed the road to Gallows Heath which was crossed as far as Croxton Field. It then ran 'down to Little Norwick' and followed Norwick Way till it passed Great Norwick (Croxton Park) by some three or four furlongs and reached a cross or dole mark. It then followed various dole marks towards Tofts Way until it came to Crankeld Bank 'like the Crank of a Spitt' and then on Tofts Way to a mere lying under Tofts Ground to Munfor(d) Way. It followed that way to a mere which led down to St Helen's Chapel and so to the river. According to the other account ('A Brief Boundary of the Franchise of Thetford Town') this last mere was called the Haye Mere. This other account has much more detail of the bounds on the Suffolk side. They are given as from a cross towards Barnham called the Fraunches Cross by a bank called the Buttlebank up to Elveden ground and then following the same bank separating it from Elveden to ground called Heyenge Meere towards (Santon) Downham. From that point it extended to a part of the river called St Edmund's Pond. This boundary of Thetford can still be traced fairly easily on a modern map. The place called Norwick is interestingly close to the boundary and its name aptly describes its northerly position in the territory of the borough. If it was a 'north farm' it could be sufficiently early to account for part of the *Domesday* population.

This is a substantial area of land (2872 ha) to support the population of the *Domesday* borough including the workforce of its industries.

It is regrettable that so little fresh light can be thrown on Late Saxon Thetford. Though the extension of ecclesiastical boundaries across the rivers (see below) is suggestive evidence for fairly extensive presence north of the river it cannot be more than that.

III. The Topography of Later Medieval Thetford

North of the river

On the north side of the rivers the Castle has for long lain against the eastern margin of the urban area. Built on the site of an Iron Age fort at some uncertain time after the Conquest (Green and Clarke 1963), it dominated not only a ford or fords but also a market-place within the town; there had been no significant occupation of the site since the Iron Age. A castle in Thetford – probably but not certainly this one – was demolished in 1172–3 according to Pipe Roll evidence. It appears that a castle had been constructed in Thetford at the some time after the Conquest and before 1088 (Renn 1968, 321). The market in this area was already in existence soon after 1139 since Earl Warenne, in founding the monastery of the Canons of the Holy Sepulchre, granted them, among other things, the tithes from the market customs and tolbooth pleas (TBA T/C1/10, 325). When the market extended into the area of the southern defences of the Castle is not clear.

Another focus on the Norfolk side was the area around St Peter's church. Already in existence in 1086, St Peter's church stood very close to the street of Briggegate which is first recorded, by the name of a witness, in a deed of 1291 (TBA T/C1/11, 9). Although the references are from later medieval times – fourteenth and fifteenth centuries – they suffice to suggest that a close-grained street pattern linked the area around St Peter's with the vicinity of the market. Immediately to the north of the bridge, according to Blomefield, stood the hospital of St Mary and St Julian, and the rest of Briggegate seems to have been bordered by dwellings with gardens of varying size—one called Carsey or Cattysted was a messuage with three acres, it had one head on the way leading from the great bridge towards the church of St Peter and another on the 'common water' and it lay between another messuage and the river (1413, TBA T/C1/18). A road is mentioned as leading from Briggegate to St Cuthbert's in 1493 (TBA T/C1/11, 102) and this is also the first record of an important building in this quarter called The Bell; there were two messuages and a shop immediately to the east of it. Another common way led from Briggegate towards Raymond Street which is described as 'forum', presumably a part of the market. Briggegate in 1444 was also referred to as the common way leading from the Great Bridge to St Andrew's Cross (TBA T/C1/11, 70).

Lanes or alleyways also appear to have crossed the north-west to south-east streets at various angles. In 1473 a messuage was described as having its head on the way from Briggegate to the market; it had a lane called Teynt Lane on one side and its southern head lay on another lane leading from a point called Stodmere Knoll towards the Pit Mill (1502, TBA T/C1/11, 108). One of these roads which also seems to have had a rough north-east to south-west axis was called Mylnegate in 1281 (TBA T/C1/10, 229) – it almost certainly led to the Pit Mill.

Of the town in the vicinity of the market and the market itself some details can be gathered. In 1290 (TBA T/C1/11, 9) a husgable agreement referred to a shop (property) in the market, by that time known as the Tollhouse, near the Earl Warenne's prison, and with another shop alongside it. In 1296 a grant of money from messuages in the Bailey was made to the Master of the Chapel of St Mary in the Bailey (see below; Secular Colleges); one of the messuages was in the corner of the Bailey next to the Chapel (TBA T/C1/11, 40). Late fourteenth-century sources refer to a royal way from the Chapel to the Corn Market; messuages facing north on to this way had southern boundaries on a common way variously described as being by the river bank, or next the stream running from the Castle Mill to the Cuckstool (TBA T/C1/11, 58). There was some indication of a northeast to south-west lane here too; in 1401 a messuage in the Bailey headed on a common street to the east. In the fifteenth century various markets are named; in 1467 the Chapel and a messuage had one head on the Fish Market and the other on the Castle Mill – Cuckstool common way. In the same year a messuage was said to abut north on the common market called 'le Tymbermarket' (TBA T/C1/11, 82, 84). In 1544, there was reference to the common way from the Tollhouse to the 'forum bladum' ('corn market'), a property facing this had its west head abutting on a certain part of the street called the Cheese Market (TBA T/C1/11, 171). A similar description of a few years later included the Fish Market.

Also in this area was a lane called Doggedrovestathe described as '*vicus*' ('street' or, possibly 'quarter') in 1349 (TBA T/C1/11, 43); a messuage there is recorded as property rented to the Monks by the Canons (TBA T/C1/10, 204). This curious name has some link with fishing (Clark

and Owen 1978, 62). Dr Sandred (1985, pers. comm.) has suggested that it might originally refer to a landing place for boats carrying some kind of food fish (*cf.* MED s.v.doggedrave, OED s.v.dogdrave). Martin's map of *c.* 1740 (Ancient House Museum, Thetford) shows it as a short lane terminating on the river bank not far from the market; associations must be with the fisheries in this area and also the fish market.

A much later source, James Parker's map of 1789 (TBA T/C1/10k), shows a re-alignment of the road from the Market to the Nuns' Bridges. This places the Old Market with a clump of trees in it, at the southern entrance to the present Castle Lane and shows, in addition, Market Street, Duckling Street and Back Lane entering the Old Market Place from the west, and also a 'road by the side of the river' (presumably the old medieval way by the river). The riverside road was finally removed in about 1806 at Enclosure; a surveyor's map (NRO BR 90/11/22) marks it 'to be sold'.

To the west of the market area lay a property called Pondyerde which was close to the Pit Mill since its western head lay on the way leading to that mill and had the river to the south: a sixteenth-century Court Leet verdict refers to common beside the river between it and Pondyerde (TBA T/C1/11, 196–7). A messuage in Nethergate is mentioned as early as 1338 in a list of properties of the Priory of the Canons of the Holy Sepulchre (TBA T/C1/10, 325); by 1520 this street bore the name Nether Rowe (and Nether Street in 1523)—a messuage built on it is said to be 'in vico vocato Balyende' (in the street or quarter called 'Balyende'). A later document of 1643 (NRO MC 114/1/23) concerning a messuage in Nether Row (in the parish of St Mary) describes it as 'the lane or king's highway leading from the barn called the Cuckstoole Barn towards the Pytmill'. Another street crossing the area at an angle in 1525 was one leading from St Cuthbert's church to the Pit Mill (TBA T/C1/11, 137): this was, in the fifteenth century (NRO Frere MSS K9B), referred to as the way from the Grass Market to St Audrey's church, the river-crossing must have been by the Small Bridges by the mills. That the small Nether Row should be described as a 'king's highway' and be part of the close-gridded street pattern within the northward extensions of the parishes of probable south bank *Domesday* churches may be significant (see below, St Etheldreda, and Holy Trinity).

In the survey of the property of the Canons of the Holy Sepulchre made in 1338 (TBA T/C1/10, 325) there is a reference to the Grass Market. It is clear that this refers to the area occupied by the present Market Place. Blomefield (1805, II, 64) said that it was so called because it was where 'herbs and garden stuff' were sold and that St Cuthbert's Cross was also sited here. For 1553, in the Court Book of the Manor of Halwick[6] (NRO MS 11299 T140B), there is a reference to a way leading from Grass Market Cross to the hospital of St Mary Magdalen; this must be the present Magdalen Street.

On the northern side of the Grass Market lay an ecclesiastical building which appears to have been the Hospital of St John the Baptist (see below, Hospitals), suppressed, apparently, as the town grew to engulf it. Its site appears to be mentioned (NRO Frere MSS K9B) *temp.* Edward III together with 'le Gresmarket' and Pykes Lane as part of a group of properties. Pykes Lane was recorded in 1333; possibly the name is derived from a personal one as, at that time, Agnes Pyk held a property there (Martin 1779, App 28).

In the earlier sources among the Borough archives no reference to any way leading from the Grass Market towards the Bailey appears to have survived. Heathenman Street (now Guildhall Street) appears as a name comparatively late. In 1506 (TBA T/C1/11, 114) a messuage was described as facing west on to the street called 'Hethen mannes strete' with messuages on either side of it and with another one behind it. The one behind could well have been a property on the western side of Pike (Pykes) Lane. However, Le Neve, in 1699, recorded (NRO Frere MSS K9B) seeing in the possession of the Duke of Norfolk some fifteenth-century deeds which mentioned, among others, a highway which can be identified as Heathenman Street leading from the Grass Market to Thetford Market, as well as a way from the Grass Market Cross towards 'the house of the Monks'. This seems to indicate that the Grass Market was an area quite separate from the other market(s) and not the same as the Corn Market. It was also a focus of streets; as already noted, other streets led towards Magdalen Hospital, towards the mills and St Audrey's (St Etheldreda's) church, and towards Briggegate. A road also led from the Grass Market towards Melford Bridge: a deed of 1308 (NRO MC 170/22/10) records a messuage, surrounded by other buildings and a yard, facing on to this way. The road was, presumably, what is now Castle Street.

The way towards 'the house of the Monks' (Cluniac Priory) seems not to have been the King Street alignment leading into the present Minstergate Street but Earls Street which, bounding the periphery of Late Medieval Thetford, led past St Andrew's church and, by way of other streets, to the Priory Gate. A copy of a deed in Le Neve's collection (NRO Frere MSS K9B), dated 1457–8, mentions a messuage next to demesne of the Duchy of Lancaster called 'Earles Barn' which abutted on the way from the Grass Market to the house of the monks. Blomefield (1805, II, 55) records that Earls Barn stood against Earls Lane, 'which is now' (*c.* 1730) 'corruptly called, Alice's Lane'. The Earl, according to Blomefield, was the Earl Warenne.

Little documentary evidence is available for the area of the town lying between the modern Earls Street, King Street and White Hart Street. The sites of St Andrew's church and St Giles' church are known (see below). St Giles was a popular post-Conquest dedication thus suggesting later infill, but St Andrew, near the important north exit from the town, could be earlier – though not necessarily so. Of St Giles and its parish, Martin (1779, 81) could find little information and there is just one general reference to property there (NRO Frere MSS K9B). Blomefield says (1805, II, 55) that the site of the manor 'being the Earl Warenne's seat in this town was where Sir John Wodehouse's House, commonly called the King's House, now stands'. The grounds of the King's House next to St Peter's church now occupy a not inconsiderable portion of this sector. Of the area of St Andrew's parish no medieval sources have so far come to light. However, there are sixteenth-century references (NRO MS 11299 T140B) to properties in this parish or 'former parish' – Shynnyngs messuage (1547) and a tenement called 'the doggs head in the pott' being named. The latter was most probably an inn with a mock sign to indicate a dirty slovenly housewife (Larwood and Hotten 1868, 443–4). Alternatively this could have been a variant for a 'Golden Dog' (inf. E. Rose); it might be

supposed, not unreasonably, to have been close to the roadway leading up from the Great Bridge to St Andrew's Cross and beyond. As Thetford was unlikely to have been expanding in later medieval or post-medieval times, it is reasonable to assume that these details are much earlier in origin.

One possible extension of the urban area beyond the Earls Street-to-Pike Lane boundary of the north-east sector is the line of Magdalen Street. In 1667 a will included a reference to a messuage with buildings, yards and garden adjoining near the northern end of Magdalen Street; it stood on a corner where the way from St Andrew's Cross to Melford Bridge (now Grove Lane) cuts across Magdalen Street and faced east on to the road which led north-east from the end of that street towards Kilverstone (NRO MC 114/1/24). Though late it may well be representative of other buildings of earlier date. A court roll entry of 1553 describes messuages in Magdalen Street one of which was on the western side and was on the opposite corner of Grove Lane to the south of the previous site (NRO MS 11299 T140B).

In the sector of the town west of Briggegate and north of the river there were further streets. On the west side of Briggegate there were buildings: in 1400 a messuage, with others on either side, faced east on to the street and had another messuage behind it (TBA T/C1/11, 55) and in 1399 another messuage on the western side had another messuage called 'the meteyard' immediately behind it (TBA T/C1/11, 52). However, nearer the Great Bridge the situation appears to have been different. Cattysted messuage has already been noted (above); as it had the river on its southern side and faced on to the street it must have been immediately beside the bridge opposite the Hospital of St Mary and St Julian. Its western end abutted on the river as well. Another messuage, with others on either side, also faced east on to the street but had the river at the western end. This can only mean a broadening of the river or, perhaps, an old, more northerly swing of the river channel from its present position. Some recent building operations on the north bank gave a hint of marshy conditions in the past at least, with the street approaching the bridge on a very slight spur of higher ground. A court leet verdict of 1550 concerning fishing 'with castings' and setting nets refers to St Nicholas Staithe and this suggests a bank at some point closer, perhaps, to that church than the present bank (TBA T/C1/10, 318).

The few references available show that the pattern of streets west of Briggegate in late medieval times at least, probably differed little from that which was in existence before the construction of the by-pass road.

A charter of 1475 (NRO MS 5474 5B.9) mentions a lane connecting Briggegate and Water Lane; this could well be the street now called Minstergate. This deed also describes a messuage in the parish of St Nicholas close to this lane which abutted east on to the way from Briggegate to Sheldhowe (the present St Nicholas Street). The name of Minstergate obviously dates from some time after 1114 at the very earliest when the Cluniac Priory was established on the northern site (see below). Martin showed a Minstergate *c.* 1740 (Ancient House Museum, Thetford) as the street leading to the northern side of the Priory, apparently on the alignment of Painter Street. In 1489 (TBA T/C1/11, 193) there was a reference to a common way leading from Thetford to Sheldhowe on the western side of a messuage; behind the messuage were a close belonging to the prior and Convent called 'Calkpityeerd' and the almoner's garden of the monks. Another messuage mentioned in 1570 occupied a corner site between the common way from St Nicholas' church to Sheldhowe and the common called The Monks Green, one head abutted on another messuage, the other on the way from Minstergate to the Priory (NRO MS 11299 T140B). The same source mentions messuages in Painter (Peynter) Street in the parish of St Nicholas and another messuage, in 1557, in the lane called 'le Water Lane'. A reference of 1538 (TBA T/C1/11, 157) to a messuage in the parish of St Nicholas in the street called Minstergate describes it as having another messuage on one side and one head abutting upon the street leading from St Nicholas' church to Sheldhowe. This sounds very similar to the property described in the charter of 1475. It is possible that some of the sites mentioned in these sources were outside the line of the suggested defences north of the river. The portions more distant from the Briggegate line may have developed rather later than other parts of the town; the church of St Nicholas may be no older than the Priory (see below).

There are a few streets of probable or possible medieval dating which cannot be precisely located on the evidence available. Martenstrete (1555) was somewhere in St Cuthbert's parish as was Joynss Lane (1539) (TBA T/C1/11, 207, 157). There was also Lymburnes (Limeburners') Street with which a messuage called Drynkemilke was associated in the fourteenth century (NRO 173/7), but its position is so far unknown.

It is unfortunate that the evidence for northern Thetford is not only rather late but also that it is patchy. Only glimpses of occasional single properties or small clusters of buildings are mentioned. It is impossible, therefore, to construct a property-by-property picture of any single street.

It is impossible, also, to offer any firm conclusions as to the existence or otherwise of a line of northern defences proposed by Green and Clarke (1963). This line runs from Water Lane in the west by Painter Street, the north end of White Hart Street, Earls Street, the Market Place and Guildhall Street to the southern end of Nether Row. Otherwise eminently plausible, this would have cut across the small area with the gridded street pattern between Nether Row and Pike Lane which seems to have lain, at least in part, within the parishes of Holy Trinity and St Etheldreda. A recent suggestion by K. Penn (1988, pers. comm.) is that the line ran from the present Market Place directly to the river close to the alignment of Well Street. This has the advantage of placing a possible Late Saxon gridded development outside an earlier defence line. The Grass Market could be seen as being outside an entrance close to St Cuthbert's church.

However, the evidence assembled, beside giving some account of the street pattern does emphasise the way in which activity appears to have become so thoroughly focused on the northern side of the rivers. This has contributed to an understandable assumption that the Suffolk section of the town had become virtually deserted by the early post-Conquest period. There is no doubt a good deal of substance in this if the supposed southern line of the defences is taken as the limit of the area under consideration. The periphery of the old town certainly saw little occupation in medieval times. However, a close review of the existing evidence does show that certain zones remained under varied forms of occupation. It is also

possible that, just as gaps in the record exist for the northern sections, that documentary evidence for Suffolk Thetford has been lost or awaits discovery.

South of the river

The Suffolk side of the Great Bridge was clearly a focus of importance at the time of the *Domesday* compilation. (Great) St Mary's church was briefly established as the Cathedral but, possibly because of the irregular status of the church and possibly because of the restricted nature of the site, the see was transferred to Norwich in 1094–6 (Dodwell 1957, 6–7). Events in the years following are summarised elsewhere. After the Cluniac monks had been granted the site the Prior, Stephen of Lewes, saw that the building, which had already been under construction for three years, was 'so much enclosed with the burgesses on all sides, that there was not room to build a convenient reception for them'. He sought and obtained permission to remove to a site just outside the west part of the borough north of the river (Blomefield 1805, II, 104). However, after a lapse of about two centuries the old site was granted to the Dominican Friars Preacher (see below) by the Earl of Lancaster, and this was confirmed in 1335. The strategic importance of the site for their purpose is revealed by the way in which they sought to extend their control of the frontage on the street. In 1338 they obtained a plot 300 ft long by 30 ft broad 'for the enlargement of their dwelling-place' (*Cal. Pat. Rolls*, 1338–40, 56). In 1348 they were granted the site of the Hospital called Maison Dieu (see below) (Domus Dei, certainly in existence in 1296) which stood at the west side of the Suffolk bridgehead (*Cal. Pat. Rolls*, 1348–50, 19). In 1369 they received the Royal pardon for obtaining without licence a plot of land 300 ft in length and 16 ft in width from Thomas Franceys (*Cal. Pat. Rolls*, 1369–70, 235) and the possession was granted. The purpose stated was 'for the enlargement of their manse'; the shape of the piece suggests a street frontage and this is the interpretation placed upon it by Blomefield (1805, II, 85). They thus gained access to the street and to the alms of the travellers making for the Great Bridge. That this was clearly regarded as a key site is emphasised by the Dominicans' anxiety to ensure that the Austin Friars, who came to the town in 1387, did not secure a rival position nearby but were deflected to a less important position near the Castle and Nuns' Bridges crossing. So far no other evidence of dwellings near the bridge has come to light but the fact that the Black Friars found themselves hemmed in, obtained land and, presumably, removed any buildings which stood there, suggests that there may well have been dwellings facing the monastery from across the street. The acquisitions, however, could be taken to indicate that formerly crowded plots had become vacant and ripe for picking. Immediately to the south-west of the Dominicans was Holy Trinity church and its churchyard which was to remain in use until the Reformation.

Much of what can be established about the Suffolk part of Thetford comes from the survey of the Canon's property in 1338 (TBA T/C1/10, 325): many of their holdings were on the Suffolk side of the rivers though they did hold some lands in Croxton and the North Field of Thetford. According to this survey the Canons had pasture held in severalty stretching from Westwick field up to the church of All Saints, and between the common fishery ('*vivarum*') or river and the town of Thetford on the one side and the chapel of St Margaret and London Way on the other. St Margaret's Chapel stood somewhere near, or within the grounds of the modern Cemetery (see below), All Saints' church stood close to, or within the Nunnery precinct (see below). This implies that much of the old town outside the built-up area so far suggested for medieval times was under pasture for sheep.

There seems to be little record of medieval occupation in the vicinity of the Nunnery although a church, St Benet's, may well have been sited in the area in early medieval times at least (see below, All Saints). A seventeenth-century reference (TBA T/NS/21) gives some indications of the topography immediately to the north-west of the site and around the southern approaches to the Nuns' Bridges. It is clear that this area was crossed by a variety of tracks. A close of six acres lay to the west of a way leading from the bridges towards Bury St Edmunds (clearly the road still in existence, or one close to it), on the other side of this close was a way from St Audrey's (Bishop's) Mill to Bury St Edmunds, and there was also a way from the bridges towards El(ve)den. This suggests that the area was clear of settlement at that time and may well reflect an earlier medieval condition. A map of 1790 (TBA T/C1/10(i)) shows another road from Euston, crossing the river just upstream from the Nunnery and the road from the bridges; this seems to indicate some former significance of the area of the Nunnery and of the south bank in general.

The area between Little St Mary's church and St Margaret's Chapel seems likely to have become field land by 1338 (see below).

In the arc of the old town between St Margaret's and the Nunnery there is little evidence of topographical detail except for the broad description given in the survey of 1338. There is a reference to an acre of pasture 'lyeing nighe' the Chapel of St Margaret (TBA T/C1/10, 243) and Sir Richard Fulmerston was granted, in 1567, among other possessions, the site of St Margaret's Chapel and one acre of pasture next to it (TBA T/C1/10, 243). The will of Robert Love, 1511, records seven acres of land purchased in the field 'by St Margaret's Chapel' (NRO NCC Wills, Johnson 108). In 1338, among references to lands held by the Canons in the fields of Thetford is one to 17 acres '*iuxta fondam*' against the Chapel of St Margaret. The word '*fondam*' or '*fundam*' is rather obscure – it could mean the bottom of something (Latham 1965, 204), that is a natural hollow, pit or ditch (?), or it could be a misprint for '*fundam*' meaning 'ground'. The difficulty is compounded because the source is not an original document but a scribe's copy. The mound near which St Margaret's foundations have been said to lie is still visible in the Cemetery. However, it may be significant that the remains of the town's defences are still visible near this site, so that '*iuxta fondam*' may indeed refer to them.

Of the area immediately to the east of the main road south from the Great Bridge it seems reasonable to assume that St Mary the Less (see below), the surviving church south of the rivers, might have been the focus of occupation surviving into medieval times. A very little documentary evidence does survive to lend support to this. A charter of 1347 mentions a messuage in the parish of St Etheldreda with another messuage on one side, and a way which led from St Etheldreda's church towards Bishop's Mill on the other, with one head abutting on the king's highway which led from (Little) St Mary's church towards the Nunnery, and the other head against the Earl

Warenne's demesne pool (NRO Frere MSS K9.B). One of these roads is apparently that known now as Mill Lane, the other appears to have crossed it; it seems to have been the one described by Blomefield (1805, II, 70) as 'the passage leading down to the paper mill'. St Etheldreda's church lay opposite the house which stood on the corner of this passage. A charter of the Cluniac Priory dated 1395, refers to a parsonage tenement in 1395 lying opposite the church of St Etheldreda (Oxford Bodl. Gough Norfolk 18 (SC 18074) f27v). There is a reference in a list of property belonging 'to the late Chanons and monks' to one in the parish of St Etheldreda next to St Etheldreda's Lane (TBA T/C1/10, 196). The same source also lists a courtyard or house next to (Little) St Mary's church. A number of documents concerns two properties called Ledenhalle and its neighbour 'le maydenshede'. A series of deeds ranging from 1417 to 1538 (NRO MC 114/1/22) clearly identifies their sites as those occupied by the present 'Trowel and Hammer', describing them as opposite (Little) St Mary's church, abutting on the king's highway ('street' in one) leading from the church to the Nunnery, and upon the Bury Road, variously described in this series as 'the king's highway which leads from Bryggegate towards Bury St Edmunds', 'the king's highway from Thetford to Bury' and 'a way from Thetford to Barnham'. Another charter of 1467 (NRO Thetford Reid Smith 18/2/74) refers to Ledenhalle and gives the abuttals with another messuage to the east, the common way leading from Holy Trinity church towards Bury to the west and the common way from (Little) St Mary's church towards the Pit Mill. There is another reference to a tenement in the parish of (Little) St Mary's which lay to the east of Ledenhalle and had to its east the way from 'Small Bridges' towards St Etheldreda's church. A messuage left to the Hospital of St Mary and St Julian was said to be between the road leading from the Canons to (Little) St Mary on the north and the lane leading from the Elveden road to the church on the south. There is also a reference, in a list of properties which had belonged to the Hospital of Domus Dei before its fusion with the Dominicans, to a mill and a messuage in (Little) St Mary's parish lying in the street leading up to Sagrindmill (?Togrindmill – Barton Mills?) (NRO 173/7).

St Etheldreda's church has long since vanished but the street pattern here has survived from medieval times; clearly the alignment of the innermost portion of the Bury Road from the junction with Mill Lane – as it was before modern diversion – is original. There was obviously a limited area of occupation in this sector of the southern portion of the town.

To the west of the road leading away from the Great Bridge there is also some evidence of continuing occupation south of the river. Excavation has suggested that parts of the site of the Priory of the Holy Sepulchre had been extensively occupied in Late Saxon times and that predating the Priory church were the remains of a possible earlier church (Hare 1979, 196, 198). The Priory was founded in the twelfth century (see below); a later confirmatory charter contains the phrase '. . . *locum et sedem ecclesie Sancti Sepultri de Thetford*' ('place' (or possibly, 'religious house') and site of the church of the Holy Sepulchre of Thetford) (Dugdale 1830, VIii, 729). It is not clear from this whether the site had been occupied by secular or ecclesiastical buildings when the grant was made. If the area was largely devoid of occupation when the Priory was founded the coming of the Canons may have stimulated some growth in the vicinity. The Survey and Valor of the possessions of this Priory in 1338 (TBA T/C1/10, 325) shows that it possessed a nucleus of messuages around it. A group of messuages is recorded beginning with one at the corner of 'Chanons Watereing' tenanted by Geoffrey Lound, and two others, tenanted by Thomas le Hoge and Geoffrey Bond, in a row next to it. A fourth messuage nearby was tenanted by the wife of Thomas Wright. Canons Watering was probably the name of a short way leading from Brandon Road to the river just to the west of the Priory (Fig.175).

More dwellings lay opposite the Priory; there were seven messuages tenanted by John Magges, Agnes Inshall, Walter Cokerell, William de Edesburgh, Helewis le Hoghde, Alexandere Coller (or Toller) and Adam Cokerell. They were apparently in a row; Simon Mason, a chaplain, paid rent to the Priory for a part of the messuage held by Magges. These must have been on the southern side of what is now called the Brandon Road, and very close to the area excavated by B.K. Davison. Other properties listed in 1338 included a number in St Audrey's parish which appear to have been on the Norfolk side, and others near or in the Grass Market. Among them, however, are several in Westgate. The position of the Cluniac monastery and the topography of the valley downstream from Thetford would have compelled traffic leaving the town north of the river to follow a north-westerly route – the Lynn or Mundford Road. Leaving the town in a westerly direction would entail travelling along a road towards Brandon. That this would be regarded as the west road is supported by the name of the area in which some of the Canons' lands lay which was Westwick (*cf.* Northwick or Norwick for the manorial cluster in the northern corner of the Borough territory). An account of rents paid by the Cluniac Priory records payment 'to the Chanons of Westwik divers lands for the which paying to the Prior of the Chanons yrlye 53s 4d' (TBA T/C1/10, 204). A sixteenth-century examination of witnesses concerning the rights formerly held by the Canons refers to a mere called 'Persones lyssons meare' which divided Downham and Westwick Warren (TBA T/C1/10, 320), thus locating the name as being associated with the area next to (Santon) Downham and astride the road towards Brandon. The survey of 1338 refers to the Manor of Westwyk. That this road towards Brandon was important in medieval times is shown by the undated grant of a messuage to the Hospital of St Mary and St Julian which was sited next to the king's highway leading from the Priory of the Canons up to (Little) St Mary's church (NRO 173/7). It seems very likely that Westgate was a name for a portion of the Brandon Road; this street has occasionally been stated as being on the Norfolk side of the town, but none of the sources which deal with Thetford north of the river mention it. The assumption seems to have arisen from the way that property was set out in the account paid by the Cluniac monks. This includes a statement about lands 'on the side of the water towards Suffolk' which is followed by one about lands 'on the side of the water towards Norfolk' and then, immediately, by a list of properties beginning with two cottages in Westgate rented at 4s 6d. Another version gives two cottages in Westgate 'super le corner versus cruce(?)' (the cross?) and abutting on water. As the list also includes a courtyard or house next to (Little) St Mary's church it should be clear that these properties are

not drawn solely from the Norfolk side. The 1338 Survey and Valor lists several messuages in Westgate; one occupied by William of London lay to the east of another occupied by John of Edesburgh. Another, occupied by Isabell le lambhde, lay between land of William heygh and the messuage of John le Gous or Gos. Heygh was not, apparently, a tenant of the Priory. John le Gous and Simon, his brother, shared the rent for their holding (Simon had a messuage opposite St Lawrence's church on the Suffolk side), and Richard the Shepherd, another tenant, had the messuage next to John le Gous. There is no indication where in the street these dwellings lay; it seems most likely that they were somewhere between the Canons' Priory and the main road leaving the Great Bridge. None of the other records mention Westgate so there is no means of ascertaining if there were other dwellings there but it seems quite possible that there were others for which no record survives.

A name which occurs in copies of lists of the Canons' lands (TBA T/C1/10, 204) is variously given as 'Insalsforthe' (or 'Jusalsforthe'), 'Inssleforthe' and 'Insthelseforde'; one entry refers to a yard close to it on the Norfolk side, another (177) refers to land close to the way leading from Insalsforthe towards Santon. Martin (1779, App. 28) gives a copy of the will of 'Symon le Goos' in which a yard called Berneyerd is said to be near the common way leading from the south towards 'Jusheleford'. There is also evidence in a list of demesne lands of the Duchy of Lancaster (NRO 173/7): several include Inselford in descriptions of abuttals, one piece lying close to the way from 'inssellsforthe towards Sheldhowe' – Sheldhowe lay to the north-west of the town, along the way to Lynn. In the list is a meadow of five acres called King's Meadow 'betwixt Insshellforthe and the medow of the monks perteyning to the manor called faverton'. A map of the Canons' Farm (NRO BR 90/11/12 and 24) made *c.* 1805 from an earlier eighteenth-century source, probably a map of 1720 (Arundel Castle MS P5/36), shows a King's Meadow of three acres at about TL 8585 8320. If the 'forthe' was to the east of this point as the description suggests, its location must have been close to Red Castle, possibly a little downstream where a higher terrace approaches the river from the north, so narrowing the marshy flood plain. The suggested site does appear to fit the various fragments of topographical description which survive.

The name 'Ditchenford' of 'Ditchingford' for the ford near Red Castle does not appear, on the evidence so far discovered, to have been current in medieval times. It was recorded in its two forms by Blomefield and Martin respectively in the eighteenth century. An undated document from about the same time (NRO NCC (Petre) Box 9e), a copy of an agreement between the Duke of Norfolk and the inhabitants of Thetford, refers to 'common pastures from Ditchingford to Croxton Wash'. Faden's Map (1797) shows a crossing called 'Ditchlingford' at a point much further downstream. He also shows a short link between the Brandon Road and the river a little way downstream from the Canons' Watering. It seems clear that Inselford was the medieval name for this ford and this has further implications which must be discussed below. The meaning of the name is uncertain. Dr K.I. Sandred (1985, pers. comm.) suggests that it might be derived from *'insegel'*, *-'segl'*, *-'seil'* meaning 'seal', suggesting that use of the ford might be confirmed by sealing or that it might be closed as with a seal. Alternatively and more plausibly in his opinion, it could incorporate a personal name to be compared with *Insall, Inseal* in Reaney's *Dictionary of British Surnames*, several old forms being genitival (*Insshelesford* 1334 and the like). One of the tenants mentioned in the Canons' survey of 1338 was Agnes *Inshel* who lived close to the Canons' Priory which was not far from the site of the ford and this offers some support to Dr Sandred's second suggestion. The fact that many of the references to Inselford are in later copies of original documents may account for the numerous variations in the form of the name. However, a lease of tolls of 1550, an original document (TBA T/C1/11, 191), refers to *'toluet transferens magni(?) ponte(?) de le Incellard alias Selford in Com. Norf. et pontes de Hewston et honeweton in Cm. Suff.'*. This has been interpreted as equating the ford with the Great Bridge, but George Bird Burrell, in translating, inserted a comma after 'bridge' and this is in agreement with a Bailiff's

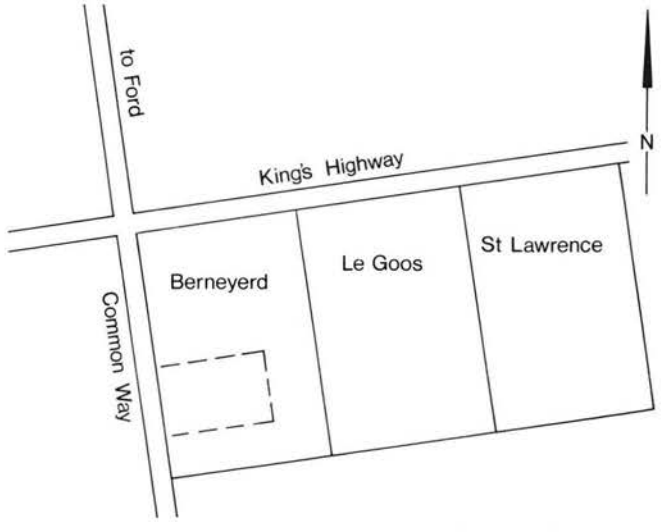


Figure 172 Diagram to show position of Berneyerd. Not to scale.

Account Roll for 1404–5 which records a sum of L12 from 'the toll and crossing of the Great Bridge of Thetford and Jussellford . . . and of the Bridge of Euston and Honeweton' (Honington) (Williams 1932, 7–12). 'Selford' does point to the derivation from '*insegel*'. A map of Abbey Farm drawn *c.* 1805 probably from an earlier original (Arundel Castle MS P5/36 of 1720), shows 'Dissilford Common' on the north bank of the Little Ouse near the Red Castle/King's Meadow site and with Potters Cross (mentioned in the list of Duchy of Lancaster demesne) a short distance away. Potters Cross Strip survives as a name on the modern map in a position very close to the early feature.

Dissalford Common is also recorded in a survey made by John Harrison in 1649 (Arundel Castle MS A943) together with Dissalford Meadow to the east of it and nearer to the town, and a large Dissalford Field somewhat to the north-east of the Common. This may be an intermediate form to 'Inselford' and 'Ditchenford' and may mean that the ford was a little closer to the town than suggested above.

Establishing the approximate position of Inselford reveals the existence of further occupation near the Brandon Road. It is clear that St Lawrence's church lay somewhere to the south of the ford near the Berneyerd and with granges or barns close by. The survey of the Canons' property (1338) records two messuages close to the church, one opposite and another in Lawrencecroft. The various possibilities for the exact location of this site are reviewed below.

It is thus possible to see that the Brandon Road may well have been the focus of some occupation up to at least the mid-fourteenth century. The green known as the School Plain and known as the School Green in 1807 (NRO P150 B/6) may have featured as part of this focus; in 1807 the Brandon Road was its southern boundary, at its western apex a track left the Brandon Road to form the northern boundary and a footpath continued its line to join the London Road before it crossed the bridge. This footpath has, at some time, been diverted to the south as the Grammar School buildings expanded.

There was a Grammar School in Thetford in medieval times; schools were first recorded in about 1114 when their separate status was confirmed by Bishop Herbert de Losinga. As this is the approximate date when the Cluniac monks moved to the north bank, the coincidence may imply that some scholastic function had been associated with the old Cathedral site (Goulburn and Symonds 1878, I, 173–4). From time to time installations of schoolmasters appear recorded in the Bishop's Registers, the earliest being that of the priest Edmund de Mendham in 1328 (NRO N.D. Arch., RegI, Liber II, f24). After the Dissolution Sir Richard Fulmerston maintained the school and, in 1566, left instructions in his will for it to be housed in the Blackfriars Yard or in Holy Trinity churchyard next to it (TBA T/NS1/1). It seems likely that Fulmerston chose the traditional site for the new foundation.

Other ecclesiastical buildings stood on the Suffolk side, probably in relative isolation, and their precise locations are arguable. These are St John's church (later a Hospital), St Edmund's church and St Michael's church. There is evidence to place at least two of these somewhere in the south-eastern quarter near a road leading to Bury St Edmunds, but the details concerning all three are reviewed below.

It is possible to give approximate locations for some of the field names mentioned in the Canons' survey of 1338 and other sources; most appear to have been outside the limits of the defences of the Anglo-Danish town (Fig.175). Only one other name of 1338 may have been related in any way to the town defences – Pulcrecroft was said to be '*subtus fossat(um)*'-'beneath the ditch' – but it is impossible to locate. Various references to 'le bergh', 'litlebergh' and 'le berghway' may, on topographical description contained in the survey, be related with some confidence to the modern Barrow Hill at TL 850 823, well beyond the limit of the old town. The only positive reference to the old town defences in any source dates from 1649 (Arundel Castle, MS A943) where a feature named The Long Bank is mentioned twice and from internal and external evidence is identical with the surviving bank close to the present London road. In 1649 it served as a convenient boundary in farming operations. A piece called Fayrescrofte (just over 1¼ acres) is listed in 1338 without locational reference. However, the 1649 survey describes the Fairstead showing it to have been a little to the south-west of the junction of Brandon and London Roads – an open space where the Canons' Fairs were held twice in each year.

The decline of Thetford

It is unlikely that Thetford was ever a prosperous place after the Conquest. A tax on the inhabitants of about 1326 (TBA T/C1/11, 24) shows that the religious houses were among the wealthier denizens of the borough; 114 other contributors were named, unfortunately without any indication of place of domicile within the town. A number of names seem to indicate migration, at some period, from surrounding villages, including several in Suffolk – Euston, Barnham, Weston, Hopton, Stanton and Lackford. Breckland was not a prosperous area and the growing dominance of Norwich cannot have helped Thetford. Of the three taxation boroughs assessed for the Lay Subsidy of 1334, Thetford (£16) was lagging well behind Great Yarmouth (£100) and Lynn (£50) (Glasscock 1975, 192). In neighbouring Suffolk, Bury St Edmunds was assessed at £24, but this was at the lower rate of $^{1}/_{15}$, since it was not considered a borough.

After the Dissolution, the sites occupied by the Benedictine Nunnery, the Priory of the Holy Sepulchre, the Dominican Friars, the Austin Friars, the Hospitals of Domus Dei, St John, St Margaret and, after a small lapse of time, St Mary Magdalen and the College of St Mary in the Bailey, with their lands, all passed into the hands of Sir Richard Fulmerston. This may well mark the time when there was further contraction of the area of occupation south of the river. Although there is no direct evidence of what happened to the secular buildings – houses and outbuildings – owned by the religious houses, the Hospitals of St John and St Margaret disappeared soon after, and Holy Trinity church was abandoned as there is the evidence of Sir Richard Fulmerston's will which made provision for the Grammar School in either Trinity churchyard or in the Blackfriars' yard. The will refers to the two yards as 'those peeces of ground and pasture' (TBA T/NS1/1). Among other activities of Sir Richard may be noted an award, dated 1546, between the Mayor and Commonalty of Thetford and Sir Richard which included a payment of £20 which he agreed to make in return for the lead and bells from Holy Trinity and St Nicholas' churches and

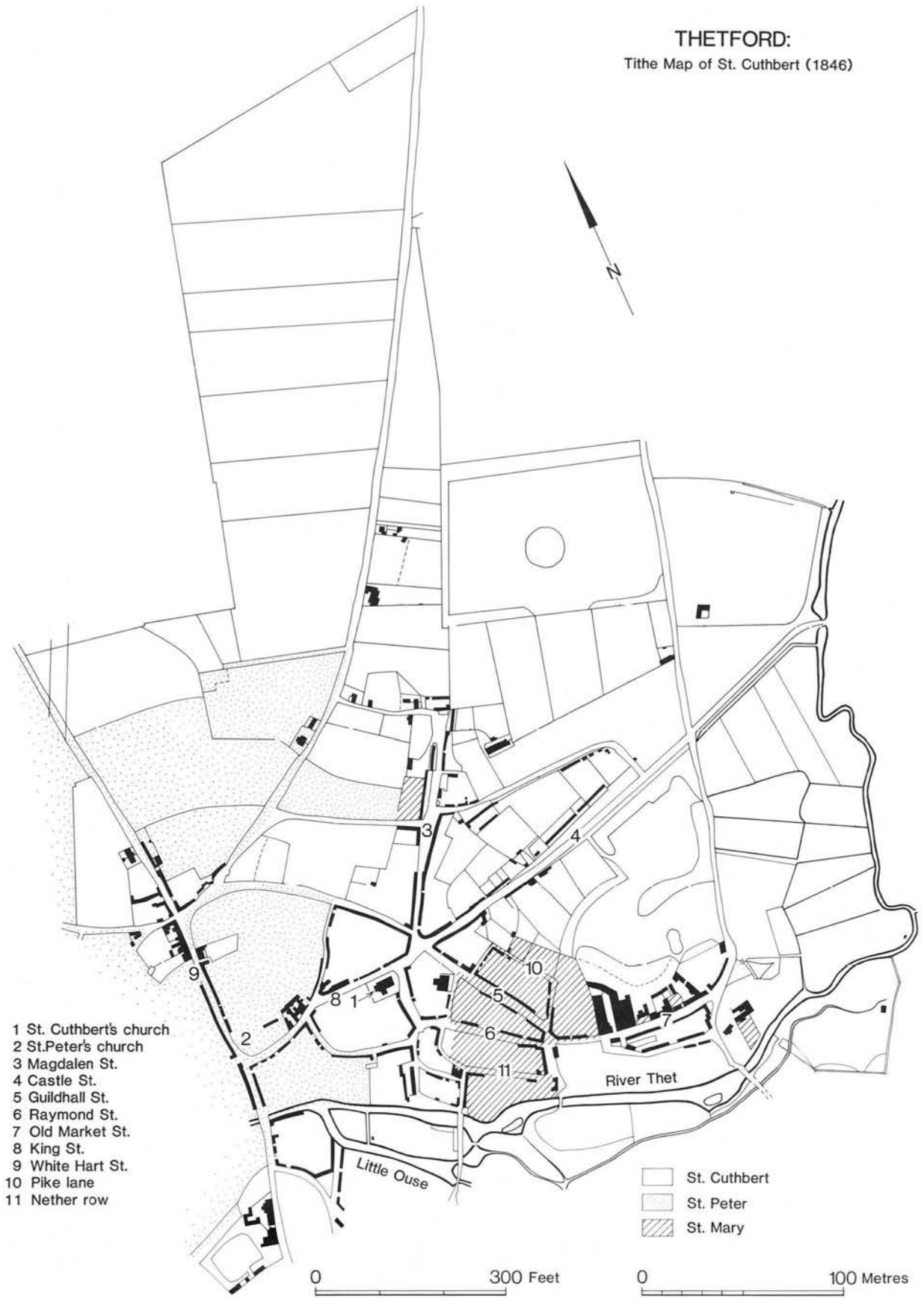
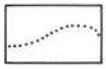
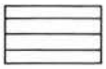
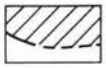


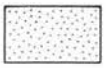
Figure 173 Tithe Map of St Cuthbert.

Key


Probable Domesday Hundred (modern parish)


?Defended area north of river


Pre-Conquest defended area


Northern portion of 5 and 6 (?burh)

A	St Audrey's mill
B	Pit mill
St Peter	named Domesday church

C	Church in area (position uncertain)
C1	?St Lawrence
C2	?St John
C3	?St Michael

1-16	Church (1-3 site extant)
1	St Peter
2	Little St Mary
3	St Cuthbert
4	Great St Mary
5	Holy Trinity
6	St Etheldreda
7	?All Saints
8	St Margaret (later hospital)

9	?St Edmund
10	??St Benet
11	Unknown dedication
12	St Nicholas
13	St Andrew
14	St Giles
15	St Helen
16	Unknown dedication
	(site unknown for St Martin)

D	Red Castle
E	The Great Bridge
G	Castle

F	Friary
F1	Austin
F2	Dominican (on first Cluniac site, formerly 4)

H	Hospital
H1	St Mary Magdalen
H2	St John the Baptist
H3	St Mary and St Julian
H4	Domus Dei (absorbed by F2)

M	Monastery
M1	Benedictine nunnery (?St George)
M2	Canons of the Holy Sepulchre (St Sepulchre)
M3	Cluniac Priory
M4	Collegiate Chapel of St Mary in Balliva

Figure 174 Key to Fig.175.

THETFORD
Conjectural Saxon and Medieval Topography

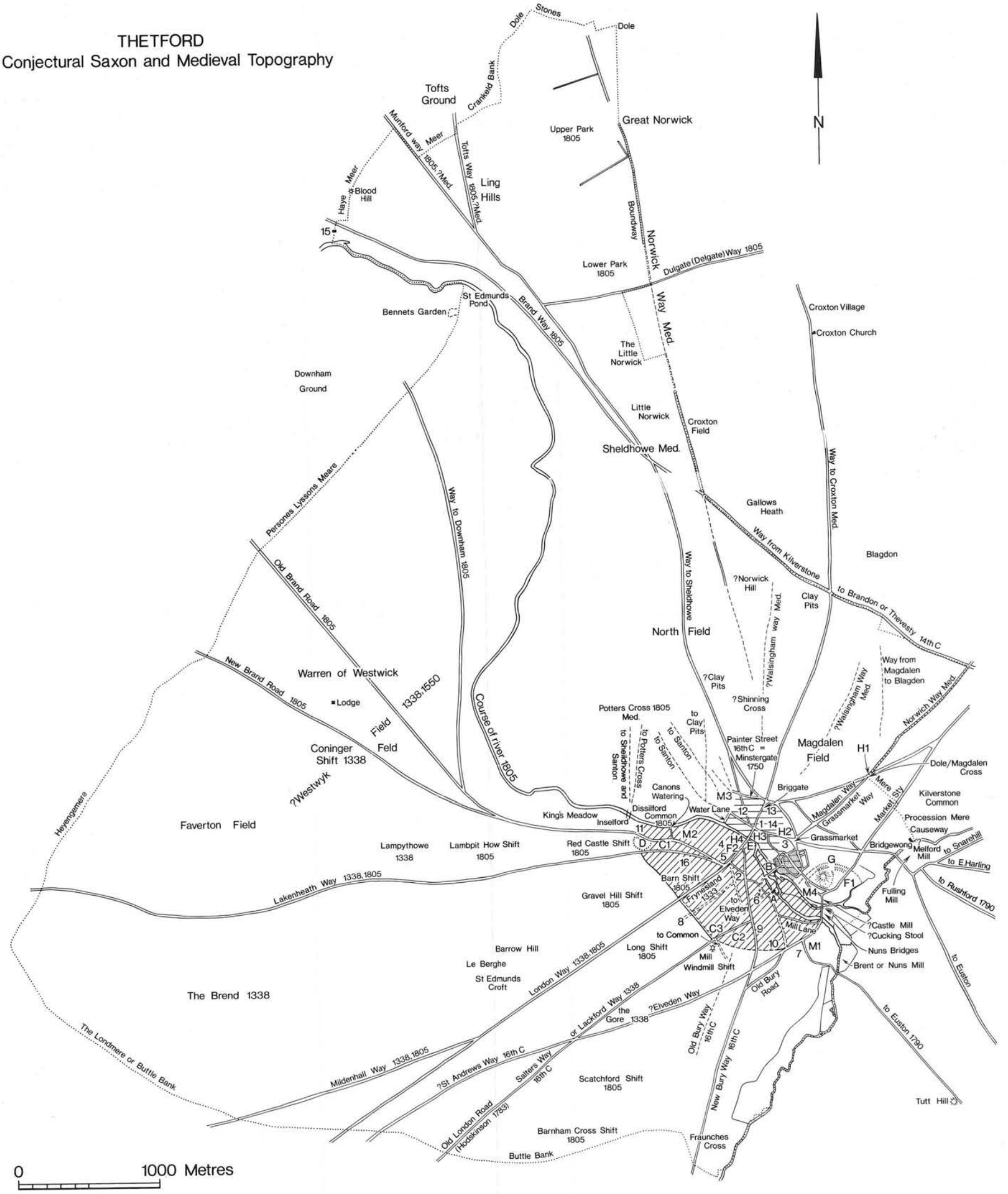


Figure 175 Conjectural Saxon and medieval topography. Scale 1:3500.

for both churchyards. St Andrew's church and churchyard were to lie as common and common ground to the town and St Peter's church was to take the tithes of St Nicholas and St Cuthbert, those of Holy Trinity and St Andrew's (TBA T/C1/10, 213–20). It may be that his plans, unrecorded, included the removal of houses from the vicinity of the Priory of Holy Sepulchre. In 1553 the Court Book of the Manor of Halewyk (NRO MS 11299 T140B) records an empty messuage of the manor, with appurtenances, which had land of Sir Richard Fulmerston on one side and which fronted on the way leading from Thetford to Brandon and Lakenheath. Sir Richard's piece was almost certainly one of the possessions acquired from the Canons and the entry shows that there were other buildings besides the Canons' property in the area, and that some decay was evident.

Writing in 1599 in his 'Lenten Stuff' (p.4) Thomas Nashe, whose father had been the parson of West Harling, near Thetford, claimed that without Great Yarmouth 'Gurguntus (Norwich), a head citty of Norffolke, and Suffolke, would scarce retaine the name of a Citty, but become as ruinous and desolate as Thetforde or Ely . . .'. Nashe may have been exaggerating for the sake of his argument, but contraction in Thetford after the Reformation must have been substantial.

IV. Thetford as a Focus of Routes

Situated at one of the main approaches to Norfolk, Thetford, with at least three major crossing-places of the Little Ouse, is notable for the number of important roads which converge, or which have converged in the past upon the town.

Although some traffic must have made use of Inselford and the Nuns' Bridges, the pre-eminence of the Great Bridge south of St Peter's church is obvious as it was at the heart of both northern and southern parts of the town.

A note about the map

(Fig.175, Conjectural Saxon and medieval topography)
The map is not intended to be of more than 'sketch-map' accuracy; the transfer of details from old maps and plans of varied scales, showing points of reference which have long been removed, however carefully it is done, cannot be achieved with complete confidence and accuracy. Some of the routeways – indicated by pecked lines – are known only from medieval or early post-medieval references and the map shows only the *general* direction in which they led. Others, where supporting evidence is a little stronger, are indicated in more definite fashion but with question marks to show that they are problematic. Many more tracks, mainly openfield paths and access ways, cannot be shown although their approximate locations are known.

a) Roadways south of the river. Taylor (1979, 196) has outlined the courses of the medieval roads which served the purpose now fulfilled by the modern A11. Beyond Newmarket the medieval road divided to cross the River Lark. The three main strands were the line of the present A11(T) through Barton Mills, a second went to Kennet, Herringswell and Tuddenham and crossed the Lark at Temple Bridge and the third followed the present B1506 (formerly A45(T)) route to Cavenham and crossed the Lark at Icklingham or Lackford. From these points the roads crossed Breckland to Thetford as Six Tree Road (TL 766 738–775 768), Seven Tree Road (TL 769 733–795 774), Pilgrims Road (TL 776 725–806 770) and Icknield Way (TL 789 712–846 808). These sought a crossing of the Little Ouse or Little Ouse and Thet in the vicinity of Thetford. It is possible, indeed highly likely, that alternative crossings might permit the by-passing of Thetford – for example, Barnham(ford) – Snarehill – Kilverstone(ford) – Norwich Road.

Of these, the London Way of 1338 seems to have followed virtually the same line as the modern A11 and crossed the Ouse by way of the Great Bridge and entered Briggegate. Mildenhall Way joined it from the south-west some distance beyond the limits of the old town (1338, eighteenth century (NRO BR90/11/24)). The Icknield Way, known in the fourteenth century as Lackford Way and in the sixteenth century, apparently, as Salter's Way (Clarke 1925, 120), approached the town on a roughly parallel course to the London Way and, after entering the town, followed a more easterly trend which brought it to a point from which the Nuns' Bridges or, possibly, the Small Bridges crossings could be reached. Hodskinson's Map of Suffolk (1783) shows Lackford Way as 'The Old London Road'. James Parker's survey of 1790 (T/C1/10(i)) of the road from Thetford to Bury St Edmunds shows a road from the general vicinity of St Audrey's Mill passing east of St Mary's church and going 'to Lackford and Icklingham'. A map of 1765 by J. Parker (John?) (NRO DS 321) gives Lackford Road a more easterly inclination as it reaches the town.

Of other roads which approached the town from this quarter the most significant are those which linked it with Bury St Edmunds. The sixteenth-century references to the Old and New Bury Roads (see above) show quite clearly that the old road lay to the west of the new one but was distinct from two other named roads – Salter's Way and St Andrew's Way. However, the road approaching the Nuns' Bridges, joined by Mill Lane and passing the Nunnery, could also be referred to as the Bury Road; presumably it provided a way into the Market in Thetford and, possibly, the mills and was, at least, of local commercial importance. It is possible that the New Bury Road of the sixteenth century (present Bury Road?) diverged from the Old Bury Road near the Mill Lane junction as the rest of the road, as it approaches the bridge over the Little Ouse (the Great Bridge via Bridge Street), is on the medieval alignment. There was also Elveden Way; the course of this road is not clear – there seem to have been ways to Elveden from the vicinity of the Nunnery and from the neighbourhood of Little St Mary's church. Possibly it joined St Andrew's Way (St Andrew is the dedication of Elveden church) and the Way was close to Salter's Way (sixteenth century); certainly Elveden Way crossed Lackford Way at an angle sufficient for a gore of land to be mentioned as being between them in 1338. From the more westerly direction roads approached from Brandon and (Santon) Downham as shown in the eighteenth century (NRO BR90/11/24), probably entering the town by Westgate and being joined by Lakenheath Way (1338, eighteenth century). From a fourteenth-century reference (quoted by Martin 1779, App. 28) it is clear that a road approached the Red Castle (Inselford) crossing from the south, cutting across 'the King's Highway' – presumably Brandon Road – (and Lakenheath Way?). It seems likely that there must have

been some connecting link with the London Way to reach this ford. A survey of 1649 (Arundel Castle MS A943) mentions a lower Brand Way and a higher Brand Way, Lakenheath Way being recorded quite distinctly in the same document. It may be that the lower way took traffic nearer the ford.

Of the crossing-places within or near the town, tolls were collected for the Great Bridge and Inselford, indicating their significance. The Nuns' Bridges must have carried traffic bound to and from the market, as well as through traffic, though little is said about this. The upkeep of the Nuns' Bridges was the subject of agreement between the town and the Cluniac Priory, the Priory being responsible for the southern bridge, the town for the northern one (T/C1/10, 335 of 1538). The Small Bridges are not mentioned clearly as a crossing-place in later medieval times though roads are described as approaching the mills from north and south. With the extension of St Etheldreda and Holy Trinity parishes on to the north bank it is highly likely that the link between the churches and the worshippers was maintained by this route. The two parishes of these Conquest or pre-Conquest churches seem to have lain in the closely-gridded area immediately to the north-west of the Castle (Raymond St, Nether Row, Guildhall (Heathenman) St, Cage Lane, School Lane); if this was an area of settlement on the north bank in pre-Conquest times, then the Small Bridges must have been the vital link with the established area on the Suffolk side.

Lastly and, perhaps, most interestingly in view of the decline of southern Thetford, a road approached from Euston passed Tutt Hill and crossed the Little Ouse close to the Nunnery as late as 1790. It is tempting to see this as a road which grew up to serve the nucleus of the Saxon town south of the river and which fell very gradually into disuse.

b) Roadways north of the rivers. Of the roads leaving the town on the northern side those leading from the upper end of the street by St Andrew's church and Cross must be considered first. From here Sheldhowe Way (Lynn Way) left in a north-westerly direction and was soon joined by a road which led up from the Great Bridge through St Nicholas Street (TBA T/C1/11, 157). Sheldhowe was, in 1338, above a point where a lower way (Netherway in a marginal note) led off for Santon (TBA T/C1/10, 325). A link road from Kilverstone (Thevesty) to Brandon crossed Sheldhowe Way and (West) Tofts Way left it near the bounds of the Borough.

Between Sheldhowe (Lynn) Way and the river there seems to have been a number of minor ways. Some greater importance may be attached to those which crossed the river at Inselford. Ways are recorded leaving Inselford, Minstergate (probably the Painter Street one), and the Priory for Santon and for Potters Cross. A Potters Way is recorded in the fourteenth century (NRO 173/7). The name 'Potters Cross' is intriguing; there were clay pits near the Lynn Road (Blew Clay Pitts Break, Clay Pitt Field and a Clay Pit Way in 1649 (Arundel Castle MS A943)). Blomefield (1805, II, 74) talked of St Nicholas' Church standing beside the street leading from the Bell Corner to the Brick Kilns (St Nicholas Street). There is no evidence for potteries in that area before the brick kilns – only the Potters name. The implications of a source of clay, a ford and early kilns on the south bank can be considered. A Gallows Way in 1649 in the same area has an obvious relationship to Gallows Hill.

From St Andrew's Cross important roads left for Croxton and, especially, for Norwich.

Two other roads are mentioned in medieval documents. One of these, now existing in part as trackways, was Norwick Way leading towards the modern Croxton Park. This may have been one of the northern continuations of the Icknield Way. The other, also mentioned in the Gough MSS (Oxford Bodl. Gough Norfolk 18 (SC/18074) f32v), is Walsingham Way which certainly left the town ('. . . ad capud ville iuxta Walsingham Way'; . . . at the edge of the town next to Walsingham Way); from the topographical evidence two courses are possible for this road and these are shown in speculative fashion. References to Grassmarket Way imply a road leading into the present Market Place and this would appear to have been Magdalen Way, the southern end of which is now Magdalen Street – still rather a broad street. From Kilverstone came Market Sty or Market Way, now known as Green Lane (one of the 'Thetford Roads' on Fousoe's Map of 1742 (NRO 173/7)). A document of 1596 concerning Kilverstone (NRO MS 15119 37 B4) refers to Market Way and Grismarket Way in that parish: from Fousoe's Map it would appear that Grismarket Way was the road shown diverging from the other 'Thetford Road' (Market Way or Green Lane) and joining the Norwich Road. It would then be possible for traffic from Kilverstone to turn from this into Magdalen Way. Blomefield (1805, II, 77 – 8) records this road from Kilverstone as joining the Norwich Road near St Mary Magdalen's Hospital, Magdalen Cross standing at the junction.

From the Grass Market a road called Rushford Way in 1649 (Arundel Castle MS A943) led to Melford Bridge, cutting across the Green Lane – Castle Lane route to the Market. The earlier name, Millford, suggests both a ford and an early watermill. This road had been recorded as early as 1308 (NRO MC 170/22/10). It seems to be this road which is referred to in a Court Leet verdict of 1564 (TBA T/C1/11, 198) as 'the cause that ledythe from the greyt bryge in to Snasell (sic) Warren'; the causeway was said to be in such sorry case that people could not have dry passage 'to the markete or to the Towne'. Another way led from St Andrew's Cross to Melford Bridge, this is now called Grove Lane and (after crossing Magdalen Street) Melford Bridge Road and is, at least, of early post-medieval date. Melford Bridge carried traffic over the Thet, and roads radiated from this point to Snarehill and Harling, to Rushford (a road no longer in existence) and, probably, by way of Calford Bridge (TBA NS1/28 of 1636) to Euston and Honington. Despite the apparent decline of Thetford by post-Conquest times, the sheer number of known roads of importance which led towards the town points to considerable early significance as a centre of land communications. Reference to a staithe somewhere downstream from the Great Bridge may reflect the importance of some form of water-borne traffic and the possibility of Thetford as the head of navigation on the Little Ouse. Local folk memories of past greatness seem to have lingered. The Suffolk poet Robert Bloomfield, writing soon after 1802, described a journey to Thetford on foot by way of Euston:

To where of old rich abbeys smiled
In all the pomp of Gothic taste,
By fond tradition proudly styled,
The mighty 'City in the East'.

'Barnham Water'

V. The Churches of Thetford

Only three of the many churches of Thetford remain and these have been much altered by rebuilding. Of the many vanished churches known by name, the sites of some are established with varying degrees of precision, some are much more problematic and others are still undiscovered. Burials found during town expansion may indicate the locations of some or they may have been associated with churches so far unrecorded. The topic is complex and, as the evidence for some suggested sites is in need of review, the subject has been treated separately. As the excavation of one of the lost churches has been analysed and discussed elsewhere in this volume the question of its identity must be examined in the light of what can be discovered about the churches of Thetford as a whole. In the following review churches are treated individually. Apart from *Domesday Book*, important lists of Thetford churches are given in the *Taxatio Ecclesiastica* of 1291 (1802, 80), the Inventory of Church Goods *temp.* Edward III (1368) (Watkin 1947–8, II, 141–5) and the Parish Tax of 1428 (Feudal Aids III, 609). Unfortunately, Thetford was omitted from the lists of the Norwich Taxation of 1254. For the sake of simplicity an abbreviated summary of information from these lists is given for each church. To give a complete picture, brief information about other ecclesiastical sites in Thetford is provided in an appendix; this is based mainly on details published by Knowles and Hadcock (1971) and the Victoria County History, except where otherwise stated.

NB: In 1428 a parish was exempt if it had less than ten households.

All Saints' *c.* TL 8720 8227
DB: Not named
1291: Not named
1368: Val. 2 mks
1428: Exempt

This church is mentioned *c.* 1160 (1176 is sometimes given) in the foundation document of the Benedictine Nunnery.

'. . . *concessimus etiam eis duas ecclesias parochiales quas habimus in villa de Thefford, unam viz. Sancti Benedicti, et alteram Omnium Sanctorum, cum omnibus pertinentiis earum* . . .' (Dugdale 1823, IV, 477–8).

('. . . we also give to them two parish churches which we have in the town of Thetford, that is to say one, St Benedict's, and the other All Saints with all their appurtenances . . .').

This passage in Abbot Hugh's charter is the first record, and in the case of St Benet (below), the only record of these parish churches.

The dedication could be pre-Conquest. The church is mentioned in the Canons' survey of 1338 as one of the limits of their sheep pasture; by reference to the other bounds it can be placed in the south-eastern margins of the town fairly close to the Nunnery. Among tithes pertaining to the Nuns was listed a piece lying by the churchyard of All Saints' (TBA T/C1/10, 177). Blomefield thought he could distinguish the foundations just within the outer gate of Sir Richard Fulmerston's house on the Nunnery site (1805, II, 72–3). Still in use in 1368 with the Prioress as Rector, it was sparingly furnished, may have ceased to be a parish church having no locked pyx, and may have been no longer in regular use (Watkin 1947–8, XV, lxxxi–lxxxii). It may have been a victim of contraction after 1349; it appears to have vanished from the record before the Reformation. The site is known, therefore, in general only.

St Andrew's TL 8700 8330
DB: Not named
1291: Not named
1368: Val. 10s
1428: Not named

A dedication which could be either pre- or post-Conquest; its position at the point where the road from the Great Bridge leaves the hypothetical northern perimeter would make it remarkable if it pre-dated the Conquest. It was listed in the Canons' survey of 1338 as being impropriated to them, and this was repeated in 1408 (TBA T/C1/10, 231). In 1368 it was not well-furnished and, having no locked pyx, may no longer have served as a parish church (Watkin 1947–8, II, lxxxi–lxxxii). In 1535 (*Valor Ecclesiasticus*) it was valued among the Canons' Spiritualities at only 14s 2d (*cf.* St Cuthbert 54s 8d, Holy Trinity 52s 8d) and its Rectory, before deductions, was valued at 50s 4d. It was amalgamated with the parish of St Peter after 1546 (Blomefield 1805, II, 74–5). There is also a record (TBA T/C1/10, 213–20) that the tithes were to go to the parson of St Cuthbert's and that the church and churchyard were to lie as common ground belonging to the town. St Andrew's seems to have been of relatively lesser significance in late medieval or early post-medieval times. There is an entry in the Canons' Account Roll for 1339–40 (TBA T/C1/10, 197) showing that they received 9s as a fixed payment from a chaplain for the churches of St Giles' and St Andrew's, possibly as they were insufficiently valuable to warrant separate arrangements.

There were still a few bequests to St Andrew's in wills as late as 1449 (NRO NCC Wills, Sayve 13–14) and 1513 (NRO NCC Wills, Johnson 255) and some Court Book references to the parish as late as 1547–50 (NRO MS 11299 T140B).

The site of the church is not in doubt. Both Blomefield and Martin described it with confidence. Blomefield (1805, II, 74–5) said that the glebe was hired in 1738 by Mr H. Cocksedge 'to whose garden it joins, the foundations being taken up, is made a pleasant plantation commonly known by the name of Wilderness' (the name is borne by a modern house on the site). Martin (1779, 82) described it as being buried in its own ruins. 'Mr. Cocksedge built a wall round his garden, this churchyard furnished him with materials for building'. It would thus appear from these witnesses of eighteenth-century activity that little archaeological evidence is likely to remain. According to Martin, St Andrew's Cross stood upon a little hillock near the church.

St Benet's (St **Benedict's**)
DB: Not named ??
1291: Not named
1368: Not named
1428: Not named

This church was first recorded about 1160 (see above, All Saints'). It must have been an early casualty of decay in the town. Neither Blomefield nor Martin had any inkling of a possible site. A suggestion made by Whittingham (in Knocker 1967, 129) that a Bennet's Garden (1a–3r13p), listed by Leigh Hunt and derived from Martin's list of lands from a survey of 1720 (1779, App. 60), might be a close near the Nunnery and, therefore, a possible site, can be discounted. A nineteenth-century copy of what appears to be the 1720 map (NRO BR90/11/24) shows that Bennet's Garden lay well beyond the known settled area, just outside the Hundred boundary at TL 847 868 (Fig.175). This is an extremely unlikely position, and given the lapse of time between 1160 and 1720, a connection between Bennet's Garden and St Benet's is improbable. Some faint credence might be given since St Helen's is in a comparable position and a part of the river nearby was known as St Edmund's pond, though this may be no more than a reference to the St Edmundsbury jurisdiction. It is probable therefore that, should the remains of an unknown early church, clearly abandoned by the late thirteenth or early fourteenth centuries, be discovered in Thetford St Benet must be considered a likely identification – especially if it should be in the south-eastern quarter of the town near the Nunnery. The identification of such a church as possibly St Michael's in 1912 may have been unwise.

St Cuthbert's TL 8713 8306
DB: Not named ?
1291: Val. L2
1368: Val. 40s
1428: Exempt

One of the three remaining churches, the dedication could well be pre-Conquest but no evidence for this exists. Having the third highest valuation in 1291 suggests relative importance and the impression is maintained in 1368 when it had the second highest valuation and was well- provided with goods. Medieval documentation mentions the church, and its wealth probably reflects a key position in the town at the focus of routes converging on the Grass Market. St Cuthbert's Cross was opposite.

According to Blomefield (1805, II, 76) it had absorbed the parish church of St Mary Magdalen (see Hospital) *temp.* Henry III; Martin echoes this (1779, 89) but so far there seems to be no evidence to support their statements. St Giles' parish appears to have been added before the Reformation. So much decline is remarkable in the later medieval years.

In 1338 it is mentioned in the Canons' survey as an appropriated church, in 1368 '*Prior canonicorum rector eiusdem*' (The Prior of the Canons is Rector of the Same) and mentioned again as appropriated to the Canons in 1408 (TBA T/C1/10, 231).

A will refers to a Chapel of St Cuthbert annexed to the church (1509, NRO NCC Spylltymber 159–160). In 1499 Richard Awngewell, a burgess, asked to be buried in the Chapel of the Trinity within St Cuthbert's (NRO NCC Cage 93).

After 1547 the parish included the former parish of Holy Trinity (TBA T/C1/10, 187).

St Cuthbert is an unusual medieval dedication for Norfolk. It is curious that the only other church of the northern English saint was in Norwich and that it lay close to the southern side of Tombland, the market centre of pre-Norman Norwich. If the suggestion for a revised northern perimeter is correct (K. Penn 1988, pers. comm.), then St Cuthbert's church, like that of St Andrew, could have been a church near an exit from the town. Like its namesake in Norwich it may also have overlooked the early market place.

St Edmund's

DB: Not named ?
1291: Val. L1 6s 8d
1368: Val. 2 mks
1428: Exempt

The dedication could be pre-Conquest. Sufficiently strong to be taxed in 1291, it appears to have been still in use as a parish church in 1368 when the Prior of the Canons was rector and it was modestly endowed with goods. In 1338 and in 1408 the impropriation is also stated as in other cases. Having less than ten households in 1428 suggests that a fifteenth-century extinction is likely as it is not mentioned in the Valor Ecclesiastica of 1535. Blomefield (1805, II, 73) claimed that in Henry IV's time the parish was united to some other 'for then it is called the Chapel of St Edmund'. It has not been possible to confirm this.

A site has been marked as that of St Edmund's church at TL 8690 8243 within the premises of the gasworks and some excavation has revealed part of the foundations of a church (Rogerson and Dallas 1984, 50). Martin's sketch-map of *c.* 1740 shows an unidentifiable church in roughly this position. However, in his text he states that he could find no record of a location for the church of St Edmund but thought that the Suffolk side was the most likely (1779, 81). Blomefield thought that it was on the Suffolk side 'but whereabouts I do not know'.

Although land 'apud Edmundescroft' is mentioned in the Canons' survey of 1338 it appears to have been well out in the open fields near Barrow Hill (le Bergh). The only guide to the location of the church is a reference to land ('terra', presumably arable land) which had been Hacon's between the churchyard of St Edmund and the water (river). Previous presentations of this information have quoted it as 'steeple of St Edmund' after a marginal note, but the word in the scribe's copy of the text is 'scimiterium' (*cimiterium*, churchyard or cemetery) (TBA T/C1/10, 231). This is sparse information on which to identify the gasworks site as that of St Edmund's; the slender description could fit other known sites as well. The authority for this identification is not apparent.

St Etheldreda's (St Audrey's) TL 8693 8269

DB: Not named ?listed under Abbot of Ely
1291: Not named
1368: Val. 20s
1428: Exempt

Blomefield (1805, II, 69) considered it to have been one of the unnamed churches mentioned in *Domesday* as belonging to the Abbot of Ely. The dedication suggests a pre-Conquest foundation and as St Etheldreda was the foundress of the first Minster at Ely the suggestion seems most likely. Some apparent corroboration is afforded by a reference of 1303 (NRO Frere MSS K9B) which records the institution of John de Gonthorp as rector of St Etheldreda's, the Bishop of Ely being patron. Martin (1779, 80) gives a list of institutions from 1303 to 1528 in which, excepting lapses, the Bishops of Ely were patrons. This is the church previously called, in error, St Ethelred's (Dunmore and Carr 1976; Carr in Rogerson and Dallas 1984); Martin (1779, 177) in one instance makes a similar mistake and it occurs from time to time in the literature.

St Etheldreda's church had vanished leaving virtually no trace by Blomefield's time; in 1515 there seems to have been some feeling in Thetford that the future of this church was uncertain. The will of Richard Cutler of Thetford (TBA T/C1/10, 112) records bequests to St Audrey's (Etheldreda's) church but twice mentions the possibility that the church might be united or annexed and provision was made for sale of the bequests in that event. St Etheldreda's may have been partly maintained by the fame of the relic of the Saint – her smock – mentioned in the 1368 Inventory. According to Thomas Beacon's 'The Reliques of Rome' of 1563 'The vertue of this smock was mighty and manyfold but specially in putting away the toothach and ye swelling of ye throte so yt ye pacience were fyrste of all shriven and hard messe and did such oblation as ye priest of ye church enjoyned' (NRO Frere MSS K9B).

Blomefield comments on the small parish belonging to this church. It is the extent of this parish which is most significant in the archaeology and history of Thetford. The survey of the property of the Canons of 1338 mentions a messuage and two shops in St Etheldreda's parish '*ad capud ville versus castrum*' (at the edge of the town towards the Castle) (TBA T/C1/10, 325). In 1473 a messuage lying in the parish of St Etheldreda on Teynt Lane was described as having one head on the common way leading from Briggegate towards the Market and another on a lane leading to the Pit Mill (TBA T/C1/11, 88). Later, in 1502 and 1510, this same property was described with the common way being named as 'Reymond Strete' (TBA T/C1/11, 108, 118). This places part of the parish very definitely on the north bank – towards the castle. The Tithe Map of St Cuthbert's parish (Fig.173) (NRO 872) shows portions of Little St Mary's parish on the north bank; St Etheldreda was united with St Mary in the sixteenth century. Watkin (1947–8, II, 143–4) thought that, as it had no locked pyx in 1368, it may not have been used as a parish church after the Black Death, but, obviously, the parish was still in being in the fifteenth century.

Its site is not seriously in dispute, as there is medieval documentation for the surrounding area above which confirms the site described by Blomefield and shown on maps from 1765 onwards. Blomefield's remarks about this site have been noted under St Margaret's (see below); Martin (1779, 80) commented that the site had been ploughed and turned to pasture many years. Ploughing may have removed archaeological evidence.

St George's

Blomefield (1805, II, 74) considered that there had been a parish church of St George's which had been used by the monks from the *Domesday* monastery; this too was dedicated to St George. According to Blomefield the church had been enlarged and rebuilt for the Nuns, becoming conventual. He said that the original church had been the one listed as belonging to the Abbot of Bury in *Domesday*. Martin (1779, 89) was in general agreement. Accordant with this is the likelihood (see above, All Saints') that All Saints' and St Benet's were twelfth-century foundations. Both could be pre-Conquest dedications.

The charter of Abbot Hugh (Dugdale 1823, IV, 477–8) refers to the cell as the monastery of St George and there is no reference to a separate church of that name. A description of the state of affairs in Thetford merely says that the goods of the church were reduced almost to nothing and the monastery appeared like the seat of desolation. Blomefield does not quote any source for his interpretation. An alternative might be that the entry for the monastery, which belonged to Roger Bigod, stood for the monastery and attached church of St George and that the church belonging to the Abbot listed separately could have been either St Benet's or All Saints'. The question of the church and monastery, separate or as one, must remain. If Blomefield's traditional account is the correct one, All Saints' and St Benet's could, nevertheless, be of pre-Conquest date (see also these). Alternatively, one church could have been in existence by 1086, the other soon after.

St Giles' TL 8705 8310

DB: Not named
1291: Val. 16s
1368: Val. 16s
1428: Exempt

St Giles was a popular dedication of post-Conquest times, and the appearance of the church in the very brief list of 1291 suggests that the area of the town in which it stood had by then attained some degree of importance – but it was the lowest valuation. In 1338 it was listed as an impropriated church of the Canons', in 1368, modestly endowed with goods, it was said '*Prior canonicorum est rector*' (The Prior of the Canons is Rector) and in 1408 impropriation to the Canons was again recorded (TBA T/C1/10, 231). Watkin (1947–8, II, lxxxi–lxxxii) thought that it might have ceased to function as a parish church by 1368 as it had no locked pyx. Blomefield states that it was annexed to St Cuthbert *temp. c.* Edward IV 'the church being let to a hermit who lived in it and performed service there for his own profit' (1805, II, 72). This is borne out by a record of the Canons' demise of St Giles to a hermit for an annual rent of 16 pence in 1508–9 (NRO 173/7). Martin (1779, 81) could find little about this church – a few acres in the North fields paid tithes to it and he had a record of one burial.

Documentary evidence for the parish is virtually absent: among a list of properties belonging to Domus Dei (see above) was a courtyard there (NRO 173/7) and in the Frere MSS (NRO K9B) there is a reference to property in the parish mentioning the yard of the Hospital of St John

the Baptist, Pykes Lane and the Grass Market. These date from the early fourteenth century.

The site is known, lying on the eastern side of St Giles Lane to the north of King Street; reused stone is evident in buildings nearby. Martin (Ancient House Museum) left a drawing of the remains of the south face of the church *c.* 1740 when, part thatched, part tiled, it was used as a wheelwright's shop. Blomefield (1805, II, 75) commented that the tower – if there had been one – was down and a new gable put in its place. There appear to be no standing remains now.

St Helen's TL 8394 8740

DB: Named, with lands of Stigand which Wm. de Noyers had charge in King's hand
1291: Not named
1368: Not named
1428: Not named

This church was far from the urban area; it was attached to an outlier of Methwold within the Hundred of Thetford (see above). After 1086 it disappeared rapidly from the record. According to Martin it was given by Warenne to the Cluniac Priory of St Pancras at Lewes by his foundation charter (1779, App. 133); this must have been quite soon after 1086. At some time the area in which it stood must have been incorporated within the parish of St Nicholas (NRO 767). Excavation revealed part of the plan of an apsidal church *c.* 28 m in length of about the twelfth century with some evidence of reused masonry of Late Saxon date (Wilson and Hurst 1962–3, 320). The twelfth-century activity would appear to coincide with the charter. The excavation revealed probable disuse by the fourteenth century – agreeing closely with the negative documentary evidence. Its site is not in doubt and is referred to in the account of the bounds of Thetford (see above); the parish boundary bank between Santon and Thetford runs obliquely across the site and foundations are still visible.

NB: In the entry concerning the Methwold portion in *Domesday* there is: 'One church. Also 1 church of St Helen with one carucate of land' (Brown 1984, 1, 210). The Inquisitio Eliensis refers solely to the church of St Helen. The 'one church' of the *Little Domesday* would appear to be a scribal error of repetition.

Holy Trinity TL 8675 8302

DB: Not named ?½ church of the Bishop's?
1291: Not named
1368: Val. ½ mark
1428: Not named

This may well be a *Domesday* church: Blomefield (1805, II, 71) thought that it was the ½ church recorded as belonging to the Bishop (Brown 1984, 1, 70) which was given as a parish church to compensate for the appropriation of Great St Mary as Cathedral of the Diocese. The date of the establishment of the see is 1071 (Dodwell 1957, 2). Blomefield believed that the parish of Great St Mary was 'laid to' Holy Trinity (1805, II, 60). Although supporting evidence is lacking, the suggestion appears reasonable. The church remained in use until the Reformation. In 1489 John Maynard left some money for the building of a new bell-tower (NRO NCC Wills, Woolman 73). By the early sixteenth century repairs were clearly needed; Robert Love, in 1511, left money (£20) for leading the roof if it could be done within five years (NRO NCC Wills, Johnson 108). Despite this dilapidation, it remained in use for divine service until 1547. Martin observes (1779, 88) that it was ruined after 1547. It is not recorded in the 1552 Inventory of Church Goods, but a certificate for *c.* 1547 survives: 'John Watman and John Walter church wardens do sey that wee by the consent of the parishioners ther have sold one senser of the weight of XXX onces at iiijs £6 of the which money we have bestowed about ye reparinge of ye churche XLs. The residewe of the money remaynes in oure hands to be imploied upon ye whitinge of ye church and glazinge thereof' (Walters 1965, Vol 33, 83–5). In 1368 the Prior of the Canons was Rector of the church which was well furnished; in 1408 it was appropriated to the Canons (N.D. Arch., Reg 30, 335). Its fate was probably sealed with the Dissolution of that house. In 1547 the parish was united with St Cuthbert's (TBA T/C1/10, 187). (For other details see St Cuthbert's, above.)

Its site is not in doubt; Blomefield described it as being 'over against the House that belongs to the Schoolmaster & usher of the free School' (Grammar School). He also stated that the School and House were built on the ruins of the old friars church (1805, II, 71, 129). This dispels any suggestion that the ruins in which the school stands are those of Holy Trinity. Two small pieces of Holy Trinity steeple (tower) remained above ground in his day (*cf.* Maynard's will). Martin's drawing of the area appears to show these pieces (Ancient House Museum). The Tithe Map of St Cuthbert's (NRO 872) shows the site of the church and its yard in a projection of the parish to the south-west of the Great Bridge.

Holy Trinity parish is important because, like St Etheldreda's, it extended north of the river. In 1525 a messuage with one head on Nether Row, the other on a way leading to the Castle Mill and described as lying in 'Bayle End', was said to be in Holy Trinity parish (TBA TC1/11, 137). In 1563 a messuage 'formerly in the parish of Holy Trinity and now in St Cuthbert's' had one head abutting on the Castle Ditch, the other on the way from the Tollhouse to the Corn Market. If Great St Mary's was, indeed, laid to Holy Trinity there are implications for the early development on the north bank; in any case Holy Trinity itself may well have been a Late Saxon church.

St John's

DB: Named, had always been attached to Great St Mary's
1291: Not named
1368: Not named
1428: Not named
(Initially a church, later a Hospital for lepers)

As the church was not mentioned in 1368 it must have ceased to be parochial at some quite early date. According to Knowles and Hadcock (1971, 398) the Leper Hospital of St John the Evangelist was recorded *temp.* Edward I. Cox (1906, 452) said that the Hospital was part of the donation made by John of Gaunt to the Austin Friars in *c.* 1387 (see below). However, in 1413, Henry V granted the chapel, hospital and hermitage of St John the Evangelist to the Austin Friars (*Cal. Pat. Rolls*, 1413–16, 23), 'the messuage and chapel called of old the Hospital or House of St John with 36 acres of land and a fair held by the messuage on the feast of St John the Baptist . . .'. It remained in the hands of the Friars until the Dissolution. The Nunnery was recorded as receiving Spiritualities (3s 1d fixed annual payment) from the Chapel of St John in Thetford in 1535 (*Valor Ecclesiasticus* 478). After the Dissolution the site passed to Sir Richard Fulmerston. Martin (1779, 97) gives references to the Hospital of St John *temp.* Edward I, II, III. According to Blomefield (1805, 71–2) the parish of the church of St John became joined to that of Holy Trinity soon after 1387 (see above).

The site of this church at first seems to offer no problem after reading the apparent definitive statements of Blomefield and Martin. However, these appear to be three possibilities:

a) Blomefield had visible foundations and, possibly, some surviving traditions from pre-Reformation days to guide him. He said that the foundations were '*very visible close by the road leading to Brandon on the left hand between the Canon's Barn and Red Castle*'. Martin repeats Blomefield's comments and supplies additional information. 'A stone coffin was dug up here about 20 years since by some men digging for sand' (1779, 68). 'St John's Hospital or Chapel was seated on the Suffolk side of the river, between the Canons and Red Castle *directly opposite to Mr. Cocksedge's meadow, adjoining to the Canons' Water Lane the road only dividing them*' (p.97). A map of 1734 'Showing Mr. Henry Cocksedge's Inclosed Lands and Grounds in Thetford' (TBA T/C1/10(c)) shows a small meadow between the Brandon Road and the river with a lane called Sluce Lane to the east of it. A map of the Canons' Farm of early nineteenth-century draughtsmanship but taken from an earlier source *c.* 1720 (NRO BR 90/11/24) (Fig. 176) shows what is quite clearly the Canons Water Lane but does not name it; on the western side of the lane is the meadow of 'Mr. Coxages'. The combination of two maps of contemporary origins and two precise verbal descriptions enables an apparently definitive grid reference to be given – TL 8630 8305. Martin's crude sketch-map of Thetford *c.* 1740–50 shows a stylised ruin of St John's near a bifurcation of roads on what must be the Brandon Road. His map shows obvious inaccuracies (Friary, Canons) in this area (Ancient House Museum, Thetford).

b) The site shown on Ordnance Survey maps at TL 8640 8293. It is not clear what evidence supports this site. It would have been on the southern side of Lakenheath Way (recorded in 1338) as shown on eighteenth-century maps. A map made by James Parker and John Kittle in 1765 (NRO DS 321(202) Cab.III) of the lands of Henry Thomson shows a rectangular piece called Barn Close in this position. The surrounding area in *c.* 1720 (NRO BR90/11/24) is marked as Barn Shift. The Enclosure map of 1806 (West Suffolk RO Q/RI 36; NRO Hayes and Storr 28/8/1974 No 177 P153a) also shows the rectangular piece of virtually the same acreage as that of 1765 but calls it the Walled-in-Pightle. In 1807 Burrell's conjectural map of Thetford in past times was produced (NRO P150 B/6) showing the enclosure as 'St John's Churchyard'.

c) The grant of the Nunnery lands to Sir Richard Fulmerston made by Henry VIII in 1539 (TBA T/NS1/33, summary of lands NRO 173/7) lists a piece of 4½ acres '*abutting upon the chapel called St John's Chapel towards the west and upon Newbery Wcy towards the east*' (translation). From internal evidence New Bury Way lay to the east of Old Bury Way and must have been close to, if not identical with the present road to Bury. This is clearly an entirely different quarter of the town and the

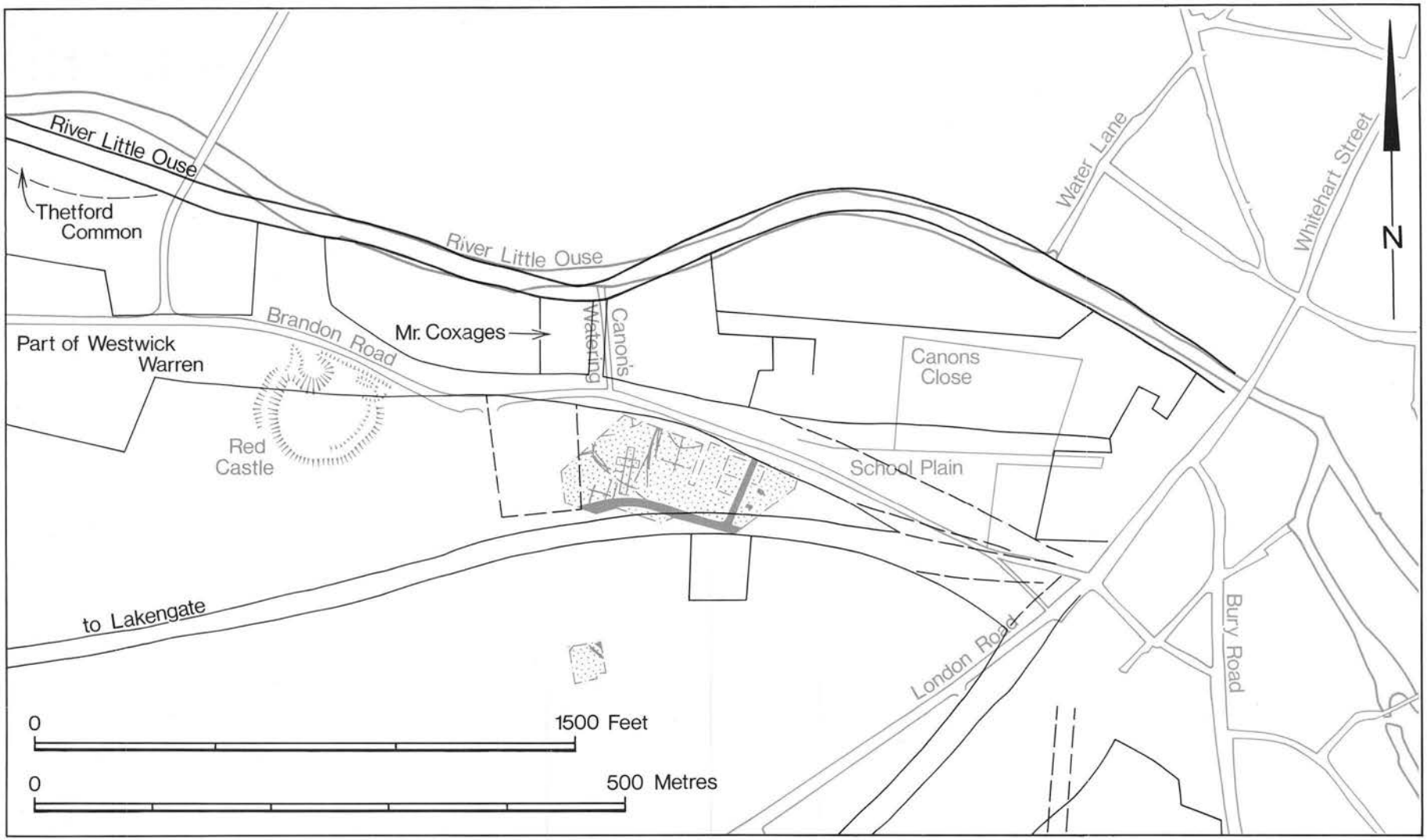


Figure 176 Part of surveyor's map NRO BR 90/11/12 and 24 copied and drawn 1805. Modern features and excavated area, Brandon Road 1964–6, (grey) in relation to the area depicted *c.* 1805 (NRO BR 90/11/12 and 24) from an earlier eighteenth-century source (black). Scale 1:5000.

chapel recorded must be a site hitherto not recognised as that of a church, to the west of the present Bury Road.

Discussion: Blomefield and Martin must have seen foundations which were recognisable as those of a church. They attributed them to St John, Blomefield offering the additional information that the Canons' Priory stood in St John's parish and was, sometimes, erroneously called St John's since it stood so near that church. Concerning union with Holy Trinity, it may be significant that the Tithe Map which shows the site of Holy Trinity in St Cuthbert's parish (a post-Reformation union) does not include land near the Canons as being in that parish. Almost 200 years had elapsed since the Dissolution, time for memories to blur on matters of precise identity perhaps.

There is a reference to land (2½ acres) '*ad oppositum*' (opposite) the hospital of St John on the Suffolk side (TBA T/C1/10, 204) which, though fragmentary, suggests an open location; it had 4½ acres to the east of it in 1539 and, at the Dissolution Fulmerston acquired the site with ½ acre of land attached lying and being in the field of Thetford (NRO 173/7). An isolated site would be desirable for a leper hospital; in the fourteenth century there is evidence that the Brandon Road was not an empty area, and the Priory of the Canons was, in Blomefield's phrase 'not far off the church' (Blomefield 1805, II, 100–1). If the Austin Friars obtained the site to provide them with much-needed income in 1413, presumably it would have advantages for them in their mendicant role. Each of (a) (Brandon Road), (b) (Brandon Road, Lakenheath Way, London Road) and (c) (Bury Road) would have offered a desirable vantage point from which to obtain alms from travellers. Geographically (c) would be closer to the Austin Friary and to the Nunnery to which an annual fixed sum was paid.

Site (a) has undergone much change during Town Development; there is only Martin's report to substantiate a graveyard. Excavation at Site (b) has shown it to be a place of burial. The general area in which Site (c) might be found has evidence for a number of burials.

A survey of the Canons' Farm of 1649 (Arundel Castle MS A943) reveals that there were then, as well as Lakenheath Way, a lower Brand Way and a higher Brand Way at a point close to Water Lane (Canons'). This is not evident on the eighteenth-century maps and so only one of these may have remained by then. It may, however, explain the indication of a bifurcation on Martin's sketch-map. The verbal site descriptions of Blomefield and Martin should probably be considered primarily with the contemporary maps. There was, also in 1649, a Fairstead at a little distance to the south-west of the junction of Brandon Road and London Road. Site (b) is closest to this and the grant of 1413 mentions a Fair on the Feast of St John the Baptist to be held by the messuage. However, the Fairstead was near the Canons' Farm in 1649 and in the 1338 survey of the Canons' property there is recorded a place of commerce which was called the Fayrescrofte. This was almost certainly the place where the Canons' Fairs, granted by their founder, were held on 3 and 4 May and 14 and 15 September—still kept in Blomefield's time. The fair granted in 1413 could have been held on the land which went with the Chapel of St John.

On the evidence that is available none of the sites can be decisively eliminated. It does, however, appear highly unlikely that a royal grant drawn up in 1539 when buildings were still intact and with each piece of land carefully described, should contain any fundamental error. It is difficult to understand why Site (c) has not been considered for St John's as the summary, at least, was quite possibly available in the eighteenth century. If Site (c) is St John's then the possible identities of (a) and (b) must be considered (see below).

St Lawrence's

DB: Not named ?
1291: Not named
1368: Val. ½ mk
1428: Not named

This could be a pre-Conquest foundation on dedication evidence. As it was not listed in 1291 it cannot have been wealthy by that time and its valuation in 1368 was one of the smallest which suggests that it was in an area of the town which was declining. Watkin (1947–8, II, xvi) thought that it appeared already to be falling into disuse though it did have a locked pyx. An addition to the 1368 entry made in a later hand says '*Prior canonicorum occupat eandem*' (The Prior of the Canons possesses the same); this may date from around 1408 when the church was recorded as impropriated to the Canons (TBA T/C1/10, 231). Not being named for exemption from parish tax in 1428 probably meant that it had ceased to be in use and not that there were more than ten households in the parish.

Blomefield did not know the site of St Lawrence although he considered it to have been on the Suffolk side (1805, II, 73–4). Martin also acknowledged some difficulty though he placed it 'near the lane called Earls Lane in the Norfolk part of the town' (1779, 77). He based his rather tentative conclusion on the will of Symon (Simon) le Goos (1334–5) which he reproduced. This includes a reference to a tenement belonging to Goos which lay in Thetford between the yard of the parish church of St Lawrence on the one side, his yard (*curia*) called Berneyerd on the other and which headed north on the king's highway. Martin equated Berneyerd with Earls Barn which was, indeed, on the northern side as has been noted elsewhere (see above). This seems to have been an incautious assumption as a discussion of the evidence in the will reveals. However, in about 1867, Leigh Hunt (1879, 96–7) had his attention drawn 'to the remains of a crypt' under a private house in the Market Place. He 'at once identified them as the ruins of St Lawrence church the site of which was already known to me as being near this spot'. He did not reveal the source of his knowledge and other writers have appeared to accept this. However, Watkin (1947–8, II, xvi) and Messent (1931, 36) both placed it on the Suffolk side though neither gives reasons.

The evidence of the will of le Goos as quoted (Martin 1779, App. 28) gives more locational information than Martin appears to have appreciated. Another property mentioned in the will was described as lying on the western side of Berneyerd between the common way leading from the south towards 'Jusheleford' on one side and the Berneyerd on the other. As already shown (above) Inselford was a ford on the western side of the town somewhere in the vicinity of Red Castle. It follows, therefore, that the church of St Lawrence was close to the intersection of two roads and to a property called Berneyerd which lay somewhere to the south of a ford. Being south of the river it was in Suffolk and this must dispose at once of any conjectural Norfolk site. An interesting confirmatory link with the will evidence is the entry in the Canons' survey of 1338 in which Simon le Goos is recorded as tenant of a messuage opposite St Lawrence's church. The disposition of the features mentioned in the will is shown conjecturally in Fig.172.

The identification of the east-to-west road presents certain problems. Its description in the will implies importance and two roads could fit. One survives as the modern Brandon Road, the other, Lakenheath Way, was still in existence in the late eighteenth century. However, Harrison's survey of the Canons' Farm of 1649 (Arundel Castle MS A943) mentions higher and lower Brand Ways as distinct from Lakenheath Way which is mentioned in the same survey. It would seem that a bifurcation of the road occurred somewhere to the west of the London Road junction, at least by the time it had reached the gate of the Canons. By the eighteenth century it appears likely that the Brand(on) Road had but a single course in this section.

There seem to be three possible sites for St Lawrence's church:
a) The church found at Red Castle; the relationship of the site to the road and the ford seems, at first sight, to correspond quite closely with the topography stated in the will. If the archaeological evidence does not agree with the documentary evidence of St Lawrence as remaining in at least limited use until the fourteenth century with some occupation nearby, then the foundations must be those of some other church. On balance the evidence provided by excavation points to an earlier abandonment (inf. N. Batcock) and so, on those grounds, the suggestion can be discounted. The opinion quoted elsewhere (Crosby 1986, 13) cannot be upheld.
b) The site described by Blomefield and Martin as that of St John's opposite Mr Cocksedge's meadow. As there is earlier documentary evidence for another site for St John's one obstacle to this interpretation is removed. One of the Brand Ways of 1649 could have been the east-to-west road, the other might have functioned as a back lane to the churchyard and other properties. This site might necessitate a more angled approach by the road from the south to attain the ford. As the area has been built over and a small under-pass constructed without any record of the foundations reported by the eighteenth-century writers, archaeological verification seems unlikely.
c) The Ordnance Survey site for St John's (TL 8640 8293). In this case the east-to-west road would be Lakenheath Way and the common way from the south would need to make an even more angled approach. The map by James Parker and John Kittle dated 1765 (NRO DS 321(202) Cab.III) records Barn Close in a seemingly appropriate position. In earlier days (NRO BR90/11/24) the area as a whole was Barn Shift. Neither name is recorded in the 1649 survey of the Canons' Farm. This illustrates the unwisdom of equating 'Barn Close' with 'Berneyerd'. Archaeological evidence would be valuable in assessing the value of the suggestion.

Discussion: The value of the investigation lies in its demonstration that the site near the Market Place on the Norfolk side cannot be that of St Lawrence. Such evidence for that site as exists points to it as being that of the Hospital of St John the Baptist (see below). St Lawrence must have lain in the south-western quarter of the town. Of the three sites considered (c) is the least probable because it is too far from the likely site of the ford. A fourth possibility remains, that St Lawrence lay in the general vicinity of (a), (b) and (c) on a site so far undiscovered.

A southern location for St Lawrence, a probable pre-Conquest dedication, rather than a northern one has implications in a consideration of the early history of the town.

St Margaret's *c.* TL 8637 8250
DB: Named, had always been attached to Great St Mary
1291: Not named
1368: Not named
1428: Not named
(Initially a church, later a Hospital for lepers and poor men)

As it was not listed in 1368 it must have ceased to be considered as parochial; Blomefield (1805, 72) states that its parish was annexed to St Mary the Less about the time of Edward III. In 1304 the Leper Hospital of St Margaret was robbed (Assize Roll 1234) and in 1390 the Bishop of Ely granted indulgence to those giving to the poor and the lepers there (VCH, II, 452). Between 1086 and 1304 no record exists. Blomefield thought that it might have belonged to Ely by gift or purchase after 1086. After the theft in 1304 the thieves set fire to the buildings. At the Dissolution its site passed to Sir Richard Fulmerston.

According to Blomefield 'it stood by the Elden road on the left had close by the City Ditch'; he also describes its site as being much higher than the adjoining ground 'and the great number of stones which came out of the building and lie scattered round the hill, will plainly direct any one to its site'. Martin (1779, 69) echoes these comments. However, elsewhere (p.9) Blomefield comments about this church and St Etheldreda (see above) whose sites were known; the churches were 'so far gone in such a time as 200 years or less, as not to have a stone remaining visible about the ground, and the very place they stood on but little higher than the rest of the earth'.

The site generally accepted for this church fits the description so far given; it is on a mound in the present Cemetery, close to the lefthand side of the London Road and just outside the old defences. Contemporary references seem to fit this also:
a) 1333 The will of Symon le Goos (Martin 1779, 69) mentions a piece of land called Frynesland lying between the road from Briggegate to Elveden and a way leading from Little St Mary's to St Margaret's.
b) 1338 A survey of the Canons' property (TBA T/C1/10, 325) gives the limits of their sheep pasture held in severalty as being the field of Westwyk (west), the church of All Saints' (east), the common water and the town of Thetford (north) and the chapel of St Margaret and London Way.
c) 1390 The grant of indulgence described the Hospital as being 'by Thetford' (*i.e.* peripheral to, or outside it).
d) In a list of lands once belonging to Domus Dei (NRO 173/7) a way is mentioned as leading up to the 'chapell of Beate Margaret'.
For other details of the landscape around St Margaret's, see above, South of the river.

However, Elden Way (or Elveden Way) was the name for another road leaving Thetford, although London Way does also lead to Elveden. With this in mind it is not impossible to visualise another site at some remove from the accepted one which still harmonises with the description of 1338, being, perhaps, near another portion of the ditch still in existence at the time when Blomefield was writing. Nevertheless, the traditional site does seem to be convincing.

St Martin's
DB: Named, had always been attached to Great St Mary
1291: Not named
1368: Not named
1428: Not named

Domesday is the sole record of this church; it must have been abandoned very early. Its location is unknown although Martin (1779, 69) thought the Suffolk side most probable. It must be considered a possibility for any unknown Late Saxon church which did not remain in use for any length of time after 1086. Whittingham suggested that the unknown church of Red Castle (TL 8607 8306) might be St Martin's on the basis of elimination but this is on the assumption that the sites of named churches are all certain and that no unrecorded churches exist. Brame's reference to this church (MS Chron. Corpus Christi C. Cambridge) is anachronistic.

St Mary the Great *c.* TL 8677 8306
DB: Named, held by sons of Bishop Erfast in 1086
1291: Not named*
1368: Not named
1428: Not named

This church was specially mentioned in *Domesday* as having four other churches attached; it thus appears to have possessed the characteristics of a minster. From 1072 to 1094 or 1095 it served as Cathedral of the diocese. Blomefield (1805, II, 60) says that its parish was 'laid to Holy Trinity'. After a brief interlude the site was granted to the Cluniac monks by Roger Bigod but because of its constricted nature it was abandoned in favour of the Norfolk side *c.* 1114. Later the Dominicans were given the site remaining there until the Dissolution when it was acquired by Sir Richard Fulmerston. Despite the lapses of time between Cluniac and Dominican occupation and again in the sixteenth century before the building of the Grammar School in Blackfriars and Holy Trinity yards, there seems little cause to doubt that the church lay within the Grammar School premises; it may even have occupied the same site as the Dominicans' church, remnants of which can be seen outside and within the old school building.
* A church of St Mary was listed in 1291; that it was St Mary the Less appears virtually certain.

St Mary the Less (Little St Mary's) TL 8677 8283
DB: Not named. Belonged to Roger Bigod?
1291: Val. £3
1368: Val. 60s
1428: Not named

The one church remaining on the Suffolk side: medieval documentation shows it to have been within a built-up area at that time. Although not named in *Domesday*, Blomefield considered it to have been the church which belonged to Roger Bigod, the founder of the Cluniac Priory (1805, II, 66). If true it would explain the link with that Priory which remained until the Reformation (NRO N.D. Arch., Reg 30, 335). It is virtually certain that it is this church which was valued in 1291; it was the highest valuation in Thetford. The furnishings in 1368 were ample and the valuation then was the second highest and it must have remained a relatively prosperous parish in 1428. Repairs are recorded for 1517–18 and 1529–30 in the Priory Register (Harvey 1973, 507). According to Blomefield the church was in some decay after the Dissolution of the Priory but was saved by Sir Richard Fulmerston who wished to be buried there. In the Commonwealth period the church became a stable and was defaced and unroofed; after the Restoration repairs were made by the Corporation, the Duke of Norfolk providing some of the money needed.

The only evidence for definite existence before 1291 is the Norman work visible in a much altered building. A property in the parish of (Little) St Mary in 1504 was described as abutting on the common way leading from Briggegate towards Reymond (Raymond) Street—some indication of another early church—if Blomefield is correct—with a parish extending on to the northern side (TBA T/C1/11, 110).

St Michael's
DB: Not named?
1291: Not named
1368: Val. ½ mk
1428: Exempt

The dedication could be pre-Conquest. The details summarised above suggest that the church, though probably still parochial in 1368 as it had a locked pyx (Watkin 1947–8, II, lxxxi–lxxxii), stood in an area in decline. Its status changed at some subsequent time since the comment '*Prior monachorum occupat eandem*' (The Prior of the Monks possesses the same) had been added, in a later hand, to the entry for the church made in 1368 (Watkin 1947–8, II, 144). This may have happened after 1428 when the parish was still obviously recognised for exemption. The Register of the Cluniac Priory (CUL MS Add 6969) does not record any repairs to St Michael's. The accounts are for the years 1483–5 and 1498–1540 (Harvey 1973, 505–10). As repairs to three other churches are recorded it seems likely that the fabric of St Michael's, if still in existence, was being allowed to decay. Synodals for St Michael's were paid (CUL MS Add 6969, f41v) in the year 1499–1500 and, spasmodically, thereafter but it would not be unknown for such payments to continue long after the church had vanished (D.M. Owen, pers. comm. 1986). The *Valor Ecclesiasticus* of 1535 does not mention the church. It seems likely that it was abandoned in the fifteenth century or very early sixteenth century as Blomefield suggested (1805, II, 73).

Of its site Blomefield 'could never make out whereabouts it stood'. Martin (1779, 70) could see no surface remains but quotes an old deed, a copy of which exists in a book which he is thought to have consulted (NRO 173/7). This is an undated deed, a grant to the Cluniac Priory by Ralph, son of John de Wadeton, containing a sentence 'Item on the other part of the town towards Black(ins?) a piece (of land) which lies next to the church of St Michael of which one head abuts upon Livermereway' (translation). Livermere Way must have been an alternative name for a road to Bury St Edmunds. From the description the church could have lain either to the east or to the west of such a road. Identification of the road itself presents problems as there were at least two and probably three roads which could be described as 'ways to Bury'.

It is clear from topographical descriptions of field land in 1539 (TBA NS/1/33) that there was an Old Bury Road with a New Bury Road to the east of it. As names were, on occasion, transferred from old documents to new ones the New Bury Road could by this time have been already quite old. In 1613 (TBA NS1/21) roads 'from the Nunnes Bridges towards Bury St Edmunds' and 'from the mill called St Audries or Bishops Mill to Bury St Edmunds' were also mentioned.

Part of the foundations of a church with associated burials were discovered during alterations, made by the Thetford firm of S. Holden & Sons, to the sewerage of the Workhouse. Details of the finds were given in 'Jottings from Breckland Finding a "lost" Church', an article in the *Thetford and Watton Times* of 25 May 1912. The author of the article reviewed, briefly, the evidence for All Saints', St Benedict's (Benet's), St George's, St Martin's and St Michael's and quoted the old deed. He considered that there was a 'strong probability' that the present Bury Road was Livermere Way and, therefore, that the site 'might reasonably' be that of St Michael's. A suggestion thus made seems to have been developed, through usage, into certainty. The evidence reviewed so far demonstrates the insecurity of the attribution.

The first documentary record of this church appears to be that of The Canons' survey of 1338 where there are some fragments of description. '*Item iuxta ecclesiam Sancti Michaelis una pecia ulterior (or possibly 'ultra') fossatum que continet V acras dimidiam*' ('next to St Michael's church a piece of land beyond the ditch which is of 5½ acres'). Whether this is a late reference to the remains of the town defences is doubtful, by this time silting and infilling must have removed most signs of what was left of the ditch unless, in the vicinity of a churchyard, it survived longer. It is not impossible, also, that a form of words was copied from some much older survey in 1338 and, in any case, it is also quite likely that the ditch was no more than a much smaller and later feature than the town defences.

The 1338 survey tells us that the general area in which St Michael's stood was part of the sheep pasture belonging to the Canons; another entry concerns 'Sheephouscroft' which contained two acres and three roods valued at 2d per acre and which lay next to St Michael's church, by this time, at least, standing virtually by itself with only the priest's house and a shepherd's dwelling and fold close by.

A misleading passage in Martin's account of the Canons (1779, 177) has sometimes been quoted as further evidence in the quest for a site for St Michael's. This is an account of a licence by the Abbot of St Edmundsbury, dated 1392, to the Prior of the Canons to purchase a tenement called Playford in Barnham 'near the rectory house of St Michael's parish'. Playford was the name of a manor in Barnham and Copinger (1905, I, 271) gives the text of this licence showing that the parish was that of St Martin, a church in Barnham now ruined. Blomefield (1805, II, 99) gives it as St Martin in his account. It has therefore nothing whatsoever to do with St Michael's in Thetford and appears to be the result of a mistranscription.

The site of St Michael's church was on the Suffolk side somewhere near a road to Bury. It is clear that either the church referred to as St Edmund's or that excavated at TL 870 823 and tentatively identified in 1912 as St Michael's would fit this very vague description and, indeed, may even be considered as interchangeable. 'A position near a road to Bury' could also fit some of the burials to the west of the modern Bury Road not so far identified with a church. For an excavated church to be considered as likely to be St Michael's there would have to be convincing archaeological evidence of use continuing into the mid-fourteenth century and even, possibly as late as the early fifteenth century. Only very limited evidence of surrounding occupation should be present to fit the picture of 1338. Whether the site at TL 870 823 fulfills these requirements is an interesting question.

St Nicholas' TL 8685 8322
DB: Not named
1291: Val. £2 6s 8d
1368: Val. 3½ mks
1428: Exempt

Although there is no evidence, it would appear that this church could have been given to the Cluniac Priory on its foundation. By 1291 it had become substantial, having the second highest valuation; its valuation in 1368 had fallen to third highest after St Peter and St Mary. By 1428, decline within the parish is obvious. 'Appropriated to the Monks of Thetford' (NRO N.D. Arch., Reg 30, 335). '*Prior monachorum rector*' (The Prior of the Monks is Rector) 1368; it was comparatively well-furnished with goods. The Priory paid for repairs to the chancel in 1527–8 (Harvey 1973, 507). It is mentioned in a number of fifteenth-century wills. Demolished after 1547 when its parish was united with St Peter (TBA T/C1/10, 189), the site passed to Sir Richard Fulmerston (see above).

The site is not in doubt; the tower still stood in 1738 (Blomefield 1805, II, 74) 'on the left hand side of the street leading from the Bell-Corner to the Brick-Kilns which is still called St Nicholas's Street'. It is in the angle formed by the junction of that street with the present Minstergate.

The extent of its parish can be seen from the Tithe Map and Schedule of St Peter's and St Nicholas' (NRO 767).

St Peter's TL 8693 8317
DB: Named, had always been attached to Great St Mary
1291: Not named
1368: Val. 5 mks
1428: Exempt

St Peter's remains as a standing church with much evidence of rebuilding. Its position is recorded in medieval times; a charter of the Cluniac Priory, dated 1413, describes a messuage heading on to the common way called Bryggegate leading from the Great Bridge towards the church of St Peter (TBA T/C1/8, 30). Martin (1779, App. 133) printed part of the foundation charter of Lewes Priory in which William de Warenne gave, among others, the church of St Peter of Thetford; Blomefield (1805, 60) records that the Institutions were made by the Prior of Lewes until the Dissolution. The Valor of 1535 shows the connection. It was well furnished in 1368. In 1501 the will of William Tyllys (NCC Popy 68) mentions a chapel of St Katherine in this church 'quoche newly I have beginne to make ye wich chapell I wyll Y^{t} be made up and fenyshed'. Blomefield (1805, 60) mentions a Chapel of Our Lady and St Katherine; Martin (1779, 65) mentions a Chapel of St Ann.

The processes of change within Thetford are clearly visible in a study of the churches. The initial signs are provided by the differences between the list of names in *Domesday* and that of 1291. Of those in the earlier list not one was named in 1291; by then the rise in significance of the northern part of the town is visible in the valuation of St Cuthbert's at the 'commercial' end of Thetford, St Nicholas' close to the Cluniac Priory and belonging to it, and St Giles', probably indicative of the filling-up of the northern perimeter. St Mary the Less on the south bank appeared in name for the first time and was obviously of considerable importance, even allowing for the questionable accuracy of the *Taxatio* totals. The only other Suffolk church in the 1291 list – St Edmund's – has long since disappeared.

There is one other very important feature of some of the churches very probably in existence in 1086 and, in at least one case, before 1066, and that is the considerable extensions of their parishes from the south bank into the northern part of the town. This, taken with the existence of St Peter's by 1086, points strongly towards a shift to the north bank before *Domesday* and the likelihood of a Late Saxon presence there.

An examination of the Inventory of Church Goods of 1368 gives some appreciation of the changes in economic gravity within the town as the medieval period advanced. Little St Mary's and St Peter's, with high valuations, stand out at the cores of the southern and northern foci of activity. In the northern area St Nicholas' and St Cuthbert's were also valued quite highly, but St Giles' and St Andrew's were much more lowly, indicating the beginnings of contraction there. Later, in 1428, there was evidence of population decline in the northern parishes; St Giles' never recovered and the church was let by the Canons. However, St Nicholas', St Andrew's and St Giles' survived until the Reformation when the first two were demolished and St Giles' passed into lay hands and a variety of uses. When the houses to which they belonged were dissolved these churches probably suffered the final blow to their continued existence. By the 1540s activity in northern Thetford centred around Briggegate and the markets where the two remaining churches were.

Of the other churches of southern Thetford listed in 1368, four had gone by the Reformation. Only the two nearest to Little St Mary's were still in use at that time; they were Holy Trinity and St Etheldreda's, part of the remaining core of activity on the south bank. Neither was highly valued and both had parishes which lay substantially north of the river. It may be chance survival of evidence which makes these two the only churches whose parishioners appear to have exhibited, in some way, a desire to safeguard their continued existence – to no avail.

It is obvious from the foregoing analyses that the identity of the church excavated is far from certain, that the evidence for the sites of St Michael's, St Edmund's, St John's and St Lawrence's exhibits varying degrees of possibility and that certain previous attributions have been treated with a confidence which may be unwarranted. It is clear that the question of the exact locations of some of the churches may never be decided for lack of sound evidence. The shift of economic emphasis within the area of the Borough and the progress of decay does give some guidance for speculation. If the southern bridgehead may be regarded as the centre of a contracting ring of occupation in which the outer portions were first to fade then it might be supposed that the earliest churches to disappear would be in the outer-most portions. Two of the early churches were kept as leper hospitals in relative isolation from the shrinking town. St Martin's and St Benet's may also have been in this outer part, as was All Saints' which survived until the fourteenth century, possibly because it was virtually within the Nunnery precinct. If St Benet's, also a Nunnery church, was, perhaps, a little further away, it may, as a second near-superfluous church, have been dispensed with. St Lawrence's and St Michael's had low valuations in 1368 and could have been nearer the bridgehead than those which had disappeared earlier; St Michael's certainly appeared to be isolated in 1338. St Edmund's – more highly valued – could have been sited still closer to the margins of the surviving built-up area.

This is nothing more than rule-of-thumb reasoning, telling only at what distances from the Great Bridge lost churches might be expected to be. It can, of course, take no account of the unexpected decision to build elsewhere for reasons unknown. Much of the potential area for consideration has been subjected to agricultural activity for centuries and, with a premium on good building stone, traces of even the foundations may have been removed long ago.

Appendix:
Other Ecclesiastical Foundations

1) Priory of the Canons of the Holy Sepulchre TL 8645 8305
Founded by William de Warrene, Earl of Surrey, on lands granted him by King Stephen soon after 1139. The Order stemmed apparently from the Crusades; in 1114 regular canons were instituted in the house of St Sepulchre at Jerusalem. The first English house was at Warwick, founded by the Earl of Warwick and connected in some way with the First Crusade. The Thetford house seems to have been associated with the Second Crusade. The English houses never became large, possibly the revenues suffered after the loss of the Holy Land. By the end of the thirteenth century they were distinguishable only in name from other English houses of Regular Canons (Robinson 1980, 58). Thetford came under the Augustinian General Chapter by *c.* 1260. Income in 1291 *c.* £20. Probably for nine Canons at most.
1347 Received endowment of Hospital of Domus Dei.
1381 Seven Canons.
1492 Visitation: Prior and seven Canons.
Subsequent visitations revealed fluctuating numbers indicating a general downward trend.
William Worcestre: 'The Church of the Canons of the Holy Sepulchre at Thetford is ninety paces long and the nave is fifteen paces wide' (Harvey 1969, 162–3).
1535 Net Income £39 6s 8d.
1536 Commissioners reported only one religious present, two priests, four children and ten servants; the buildings were in decay.
Site granted to Sir Richard Fulmerston.

2) The Cluniac Priory TL 8645 8340
1103 or 1104 Roger Bigod established a monastery at Great St Mary's (see above) on the Suffolk side of the river which was colonised by a Prior and twelve monks from the Cluniac Priory of St Pancras, Lewes.
1114 Work started on a superior site on the Norfolk side and the move was complete by this year. The dedication was to St Mary the Virgin.
1262 In this year there was a Prior with twenty-one monks.
1381 Numbers declined to twelve monks after pestilences.
Thereafter numbers remained in the 20s.
1535 Net Income £312 14s 4½d.
1539 A proposal to make the church collegiate with Prior and monks as Dean and Chapter was discarded.
1540 Surrender by Prior and sixteen monks.
Site granted to the Duke of Norfolk.

3) The Dominican (Black) Friars or Friars Preachers
TL 8677 8306
1335 The Great St Mary's/First Cluniac site was granted to the Order by Henry, Earl of Lancaster, Henry III granting confirmation in the same year.
1347 Hospital of Domus Dei granted to Friars on condition that three poor men were maintained therein during the six winter months.
For details of enlargement of site see above.
Full complement of the Friars was six.
William Worcestre: 'The Church of the Friars Preachers at Thetford is thirty-six paces long, its breadth is – paces' (Harvey 1969, 164–5).
1538 Surrender by Prior and two others.
Site granted to Sir Richard Fulmerston.

4) The Augustine (Austin) Friars TL 8755 8267
c. 1387 John of Gaunt made a donation and was therefore accounted founder.
1389 Friary actually established when Sir T. Morley and Simon Barbour granted land for the building of a church and other monastic buildings.
1413 Building the church proved beyond their means so Henry V granted the Friars the chapel, hospital and hermitage of St John the Evangelist (see above).
(There is disagreement on this: Cox (VCH, II, 452) contends that the hospital had been part of the donation of 1387 and that it continued under the rule of one of the Friars until the Dissolution.)
1424 Prior-General of the Order permitted the house to accept four Friars to undertake the begging so allowing fourteen boys accepted by the Order to concentrate on their studies. The school for candidates may have been in St John's Hospital.
1538 Surrender by Prior and two Friars; the house by then was very poor.
Site granted to Sir Richard Fulmerston.

5) The Benedictine Nunnery TL 8730 8230
This began as a Cell for monks from St Edmundsbury (recorded in *Domesday*). The circumstances under which it became a Nunnery were laid out in the foundation charter of Abbot Hugh and have been frequently recounted (Dugdale 1823, IV, 477–8). The date of foundation of the Nunnery variously given as 1160 or 1176: Abbot Hugh of Bury St Edmunds (1156–7, died 1180) brought Nuns from Lyng in Norfolk at the time of William Turbus, Bishop of Norwich (1146–75 (died)).
Thirteenth century. The convent housed at least twenty-six nuns.
1291 Temporal Income £72.
Numbers dropped after the Black Death; until the Dissolution the strength was barely into double figures.
Temp. Henry VI: the convent was excused from the tax imposed on religious houses because revenues in East Anglia had decreased because of mortality and because its possessions in the Deanery of Cranwich had suffered greatly from inundations (Martin 1779, 106).
1535 Net Income £40 11s 2½d.
1537 Dissolved.
Site granted to Sir Richard Fulmerston.

6) Secular Colleges
a) St Mary (The Great) TL 8677 8306
After Herbert Losinga moved the See to Norwich (1094–6) it is possible that secular Canons may have continued there for some time – at most until 1103–4 when the Cluniacs arrived. The authority for this is Leland's Itinerary.

b) St Mary-in-Balliva (Bailey End St Mary) or Chapel in the Bailey TL 8726 8272
Temp. Edward I a guild chapel with a fraternity under a warden was founded.
1368 Goods listed but not taxed (Watkin 1947–8, 145).
1389 As it was some distance from a parish church it had three priests.
1392 Royal licence to Mayor and Commonalty to alienate property in Thetford and elsewhere to find a chaplain to say Mass in the Chapel for the souls of the departed.
1416 Revenue £40.
1443 Called a College with two additional chaplains.
Blomefield gives evidence of burials, sometimes of persons from a distance.
In 1420 John Gillet (NRO NCC Wills, 60 Hyrnyng) asked to be buried there and left money to its repair and to the altar.
1535 Net Income at this time was over £23 14s 0d.
1547 Granted to the Duke of Norfolk, later, after Norfolk's attainder, passed to Sir Richard Fulmerston.

7) Hospitals (For **St John Evangelist** and **St Margaret** see p210 & p213).
a) St John the Baptist TL 8718 8308
The history of this house is obscure. It was founded for lepers (male) under a master at some time in the twelfth century. As the town grew it was suppressed and amalgamated with St Mary Magdalen.
1229 The Leper Hospital of St John of Thetford was granted a licence to beg for alms (Cal. Pat. Rolls, Henry III, 261).
1232 The master of the Hospital of St John the Baptist was granted a charter for an annual Fair at the hospital on the vigil and feast of the Decollation of St John the Baptist (Cal. Ch. Rolls, Henry III, 163).
It was suppressed at some time before 1272.
Site: It stood at the corner of Earl's or Alice's Lane (Blomefield 1805, II, 78). A reference to Edward III's time mentions the parish of St Giles with property near Pykes Lane, the Grass Market and the yard of the Hospital of St John the Baptist (NRO Frere MSS K9B). The 'crypt' under a private house, identified by Leigh Hunt as that of St Lawrence, must have been close to this site, but has recently been shown to be a fourteenth-century cellar (inf. Stephen Heywood).
NB: There has been some confusion of references between the two hospitals of St John. However, St John the Baptist was suppressed at an early date and was on the Norfolk side; St John the Evangelist was on the Suffolk side and was in existence at a much later date. There are references which simply mention 'The Hospital of St John' while the Austin Friars, in 1413, were granted the Hospital of St John the Evangelist and the right to hold a fair next to it annually on the Feast of the Decollation of St John the Baptist (see above).

b) St Mary Magdalen TL 8790 8375

Founded before 1272 ('*temp.* Henry III') by John Earl Warenne for a master and male lepers, and for poor people.

1535 Net value only 33s 6d, yet it had quite good endowments of land. Granted to Sir William Fermour on Dissolution in 1550, who released it to Sir Richard Fulmerston.

Site: See Hundred boundary (above).
Blomefield (1805, II, 77–8) 'it being some distance beyond the present Lime Kilns: . . . right before it at the conjunction of the three roads stood Magdalen Cross'. The three roads were the one to the Fleece Inn (opposite St Andrew's church), to Norwich and to Kilverstone. Blomefield reported seeing only one piece of foundation 'which the plough hath not yet conquered'.

Little archaeological evidence can have been left.
6 July 1559 Inquest on a man thrown from his horse as he rode from Thetford towards Croxton Post 'near the Chapel of Blessed Mary Magdalen in the King's highway leading from Thetford towards Norwich' (TBA T/C1/11, 211).

NB: Both Blomefield and Martin (1779, 89) state that this foundation began as a parish church, later absorbed by St Cuthbert's parish.

c) Domus Dei, Maison Dieu or God's House TL 8684 8305

Uncertain date of foundation: authorities give dates from before 1100 to before 1296 to 1319. It was for a warden and poor people.

Site: Not in doubt; at the southern end of the Great Bridge on its western side contiguous with the Blackfriars by whom it was absorbed (see above).
A deed (NRO 173/7) mentions Domus Dei '*ad ponte Thetford*' (at Thetford Bridge).

d) St Mary and St Julian TL 8688 8308

Uncertain date of foundation *temp.* Henry I for the poor, travellers and pilgrims.

Site: Not in doubt; at north end of the Great Bridge, on the eastern side of Briggegate. A deed of Sara Sothery mentions it '*ad ponte Theford*' (at Thetford Bridge) (TBA T/C1/10, 105). Blomefield (1805, II, 79) said that the hospital house was still standing 'at the bridge foot' but that the chapel was demolished, the exact site being unknown.

Part VIII
General Discussion

Introduction

In the conclusions to the report of Knocker's excavations, the topography and development of Thetford were considered, using the historical and the increasing archaeological evidence. Those conclusions rested on Knocker's work and also drew upon the efforts of Davison, presented fully here; they need not be repeated, but it is worth stressing that many uncertainties remain and may never be resolved. In the search for the beginnings of Thetford we are faced with the difficulties of assigning close dates and historical contexts to archaeological materials and features and have to be content with processes rather than events.

The great change which took place in Thetford in the twelfth century, the decline on the south bank to industrial and then agricultural use, meant the complete survival of archaeological evidence of Late Saxon Thetford and allowed Davison to conduct a very large open-area excavation. Thus a remarkable plan of a three-acre area was obtained. However, if the archaeology was intact, the street pattern and urban topography had disappeared, not fossilised by continuity of occupation, but gradually lost so that even the positions of known churches are uncertain. The reverse is true in most other early towns, and also on the north bank of the river in Thetford, where the street pattern, the line of the probable defences and the positions of churches are known, but little of the archaeology (Figs 2, 175).

The early history of the town has much to do with the date and relationship of the defences and occupation north and south of the river. The defences on the south bank and their general line have long been known and have been shown to enclose dense occupation of tenth to twelfth-century date. Since the probable line of the north bank defences was first recognised, in 1963, it has been almost assumed that they were secondary and that they were connected to a migration from the south to the north bank. Their relationship is obscure but remains a central problem; in the absence of acceptable dating (the northern circuit has never been investigated) the evidence is mainly circumstantial. It is possible to reverse the accepted sequence of the two circuits and suggest that the northern line preceded the southern line, which was built perhaps to enclose a sprawling and crowded town. That Thetford began as a Danish fortified camp is a tempting idea but not easily demonstrated from the sources; the Anglo-Saxon Chronicle *sub anno* 866 states only that 'a great heathen army . . . took up winter quarters in East Anglia'; *sub anno* 870 it tells us that 'the raiding army . . . took up winter quarters at Thetford'. It is Aethelweard in his version of the Chronicle (a hitherto unnoticed reference), written in the later tenth century who adds that they 'laid out a camp in the winter season at Thetford, and King Edmund decided on war against them' (Campbell 1962, 36). We know from the Anglo-Saxon Chronicle that when Swein's Vikings came to Thetford in 1004 and ravaged the town, that army 'remained inside . . . and burnt the *burh*'; this implies some obvious defences, although the archaeological evidence suggests that the southern ditch had by then silted up and been built over, at least in places (Rogerson and Dallas 1984, 55); the northern circuit may be implied in these entries.

The two circuits are quite different in outline and, as far as is known, in internal topography. The suggested northern circuit is quite regular, a semicircle, and is focused on the single river-crossing which also determines the simple street pattern (Fig.2). Perhaps this circuit has strategic origins; it may have been laid out on open ground which allowed a very regular and efficient line to be taken enclosing an important river-crossing at its centre (a bridge is sometimes a defensive element in *burhs* from the start: Brooks 1971, 72).

The streets, converging on the crossing, may have been laid out at the same time; they change direction slightly at the probable gates to north and east; the approach roads (of unknown date) also converge to enter at these probable gates. Inside, the property boundaries appear to reflect the line of the defences. All this seems to point to the priority of the defences over settlement on the north bank. The positions of churches on the north bank are interesting; St Peter's was clearly the major church and set at the crossroads (perhaps in an empty plot, very little pottery has been found in building works nearby); it too may be an original feature, with a parish stretching beyond the defences (Fig.173); one might expect St Peter's to have been a minster but it was subsidiary to St Mary the Great in *Domesday Book*. The medieval manorial centre is thought to have stood just to the east of St Peter's (Crosby 1986, 34) and it is tempting to suggest that it succeeded an earlier official residence here. If so, new light is thrown on the character of the north bank occupation. It is possible that St Andrew's and St Cuthbert's were 'gate' churches, dominating entrances to the town; St Cuthbert's had a large parish, stretching beyond the defences, like St Peter's, with which it is mixed (Fig.173), and this could hint at early origins; it may have been associated with an extra-mural market. St Andrew's church was set back a little from the gate; human skeletal remains found just outside the gate, at St Andrew's Cross (Norfolk Archaeological Unit records: Site 5922), tempt speculation on their relationship to the town entrance and this church.

If the northern circuit did have deliberate, military origins, these may lie in the period 870–920, either a Danish creation as a winter camp, or perhaps a creation of Edward the Elder after the campaign which saw the submission of East Anglia to Edward in 917.

This campaign led to the construction of new *burhs* at strategic points, rivers and estuaries, or sometimes a second *burh* facing an earlier *burh* across a river, *e.g.* Cambridge, Stamford and Nottingham; we may compare Thetford with the undated circuit at Sudbury on the River Stour, also semicircular, which is possibly a new *burh* of Edward the Elder (Haslam 1985, 46).

The southern circuit is rather different, in outline, in enclosing a huge area (some 60 hectares), and,

doubtless, in its origins. It seems too big to have been a fortified camp, unless it was intended to take in the ford at each end, and was possibly built to enclose existing settlement. If the latter, it must belong to a time in the tenth century when Thetford had already reached great size, but before its disuse, around the end of that century. The probable disuse of the southern defences, taken with the Chronicle reference to Sweyn's activities, could point to the northern circuit as the subject of the 1004 entry. The excavated evidence is not compelling, but from a section across the southern ditch, objects found in the lowest filling, leather fragments, a bone skate and occasional human and animal bones (Rogerson and Dallas 1984, 57), must suggest occupation nearby in this peripheral location at the time the ditch was dug. What little is known of intra-mural topography here fits this possibility; Thetford was a sprawling and loosely planned town, with several churches by *Domesday Book*, some recorded in that survey, others possibly indicated only by the groups of burials (revealed by excavation) which must represent graveyards.

Domesday Book records that St Mary the Great, on the south bank, had four named subsidiary churches including St Peter's and was thus clearly a minster church. This suggests that the ecclesiastical focus was then on the south bank and not on the north bank, although that appears to be the deliberate creation. Late Saxon carved stones found in Thetford (Margeson forthcoming) point to an important stone-built church here, possibly St Mary the Great (see Fig.157, No.2).

The south bank defences had gone out of use by the end of the tenth century, covered by eleventh-century industrial activity and cut by a ditch of possible eleventh-century date (Rogerson and Dallas 1984, 55). We may suppose that Thetford was still growing and had extra-mural suburbs with their own churches, such as St Margaret's (mentioned in *Domesday Book*) and two churches in the south-east part (St George's and ?All Saints'). The lines of the major modern and medieval roads (if they represent earlier routes) could suggest that the southern circuit is secondary to them since the roads pass through the bank without altering course and no roads converge on a gateway; it is, of course, also possible that these roads pre-date the Late Saxon period and were ancient routes across the river. The only road which perhaps respected a gateway was the minor road found in Knocker's Site 6 (Rogerson and Dallas 1984, 47) which heads for an entrance on the Bury Road.

The excavation of the church revealed that when the first timber church was built around the mid-eleventh century just inside the line of the defunct defences, the site had already been occupied, suggesting that little open space remained here. The identity of this church, in its own graveyard, remains uncertain.

It is likely that many Anglo-Saxon towns, especially in Eastern England, had more churches than even *Domesday Book* mentions, but that they fell out of use or were later replaced in stone and remain unknown, except when uncovered by excavation, like the timber church in Norwich (Ayers 1985, 24). *Domesday Book* does make clear that Thetford was still of the first rank; a very large Late Saxon town at the centre of its own hundred with a population counted in thousands, 943 of whom were burgesses in 1066; land tenure was probably complex, with individuals holding land in separate properties, and also urban 'manors' held by large landowners who sometimes built churches on these manors for their tenants. Roger Bigod had one church, that Archbishop Stigand held St Mary the Great and its four dependent churches (St Peter, St John, St Martin and St Margaret), that the Abbot of St Edmund's had one church (possibly St George) and the Abbot of Ely had three churches here (doubtless including St Etheldreda). Other houses have interests here; a writ (of 1041×2) to 'Aethelwig and all the burgesses of Thetford' confirmed the abbot of Ramsey in his possession of a mansus in Thetford (Harmer 1951, 257).

Domesday Book is silent about industry here, unless we count the mills and the mint and accept that renders of goat skins and ox hides imply tanning. However, excavation has shown that the crowded south bank was home to industry and commerce, even if the only structural evidence is of Late Saxon pottery kilns and Structure G, which may represent tentering frames for textiles, around 1200. Even in peripheral locations there is evidence of industry, and Site 5759 Trench 1 hints at pottery and metalworking nearby. Before these excavations, Thetford was already well known as the production centre of pottery; the group of kilns of late tenth-century date, reported here, were part of a large industry, but it is clear that pottery and its manufacture leaves behind a disproportionate amount of evidence in relation to the importance of the industry. The battery of kilns, could, it seems, have been run by a very small group of potters; other important activities might leave little or no trace.

Both Knocker and Davison produced some slight evidence for other industries, which might almost be assumed in a town the size of Thetford. The town must have held every sort of craftsmen, their workshops and their stalls. The *Domesday Book* account of Bury St Edmunds offers a rare glimpse of the people 'who daily serve St Edmund, the Abbot and the brethren'. It tells of almsmen, priests and nuns of course, but also gives a vivid description of seventy-five bakers, brewers, tailors, washers, shoemakers, robemakers, cooks and many others in this wealthy abbey town.

Of Thetford's many craftsmen and tradesmen, little is known; the *Domesday* entry may imply tanning, but the excavated evidence for many crafts is often slight and only a few might leave any physical evidence of their activities.

Bone and antler-working were evident from the excavations at Brandon Road, and here too were found the tools of some crafts, blacksmith, smith and carpenter amongst them. This was perhaps to be expected.

Textile manufacture took place but left little evidence. The sheep recorded in *Domesday Book* in Thetford and locally were mostly kept for their meat and slaughtered quite young; it may be assumed that wool was nevertheless a valuable product and the tentering frame, Structure G, is an unusual example of structural evidence for textile manufacture; more common are the remains of tools, comb teeth, needles and shears.

Metalworking must have been necessary but also left few traces except its residues which demonstrated merely that bronze, copper and iron were worked. Even without this evidence, it seems safe to assume that a town of Thetford's size had the full range of Late Saxon occupations.

One may be less confident about the scale and character of Thetford's commerce. The results of these

excavations reinforce earlier warnings (Rogerson and Dallas 1984, 199) that there is still little evidence for any large overseas trade, although this is often assumed. Thetford is convenient for land routes and for cross-fenland traffic, but is virtually land-locked and reached only by a tortuous route from the open sea via Wisbech.

If Thetford had been a port of any consequence then the absence of continental pottery from all the excavations here would be remarkable. However, other Late Saxon ports have a lack of ceramic evidence of trade; recent excavation in York recovered a few sherds only of Rhenish pot, honestones from Norway and quernstones from the Rhineland from a riverside context (Hall 1984, 87), rather like the evidence from Brandon Road.

It is possible that the significance of pottery is overestimated because of its survival in the archaeological record; if imports/exports left any tangible evidence it might not be identified as such, unless something easily recognised, like quernstones, were found.

Thetford may have had a textile industry with markets far beyond East Anglia but if so, any surviving evidence is not to be found in Thetford, even if it could be recognised.

Thetford's pottery industry is well known because of the survival of the kilns and the pottery itself. Similarly, St Neots Ware and Stamford Ware are the major identifiable imports. However, it is likely that a large part of any town's trade came from local fields and flocks, carried on carts or brought in on the hoof; the *Domesday Book* mills may also be part of the trading pattern. In return went Thetford's manufactures, perhaps cloth, metalwork and the pottery found in excavations across East Anglia and beyond.

The ubiquitous evidence of Thetford's rise in the tenth century is matched by signs of decline in the twelfth century on the south bank; this part of the town was not entirely abandoned but probably contracted around the central road junction and the religious houses established later on the south bank, perhaps attracted by pilgrim trade through Thetford. The establishment of the Priory of the Holy Sepulchre *c.* 1139 on the riverside suggests that its site was then unoccupied, although excavation here hints at eleventh-century activity (Hare 1979). Churches on the south bank gradually fell out of use, including the church excavated by Davison, turned over to periods of casual use and its graveyard ignored.

The causes of the decline on the south bank are elusive; perhaps the growth of Norwich with its new 'French borough' (by 1086), Bury St Edmunds new town (1080s) and the creation of yet another new town, at Bishop's Lynn (*c.* 1100) reduced the importance of Thetford, and robbed it of its ecclesiastical and commercial importance; *Domesday Book* records that the numbers of burgesses had fallen from 943 in 1066 to 720 in 1086 with 224 empty messuages. Thetford also lacked a great patron, the Bigods and Warennes having too many other properties to be especially concerned with Thetford, although they each founded a house here. In the eleventh century there was also a shift of pottery manufacture away from towns to rural sites; this move is evident too at Norwich in this general period.

In spite of this apparent decline, it is clear from topographical evidence that Thetford north of the river contains a third element, between the defences of the town and the castle. Alan Davison has hinted at a possible pre-Conquest origin for the simple grid of streets here, which may represent a deliberate creation. Post-Conquest origins as a 'planned town', so typical of the twelfth and thirteenth centuries, are also likely. Its position between town and castle suggests it post-dates them; its main streets were laid out to converge upon a probable entrance in the castle defences and also the town gate by St Cuthbert's church. It appears to have had no defences of its own nor any church (unless entirely lost, which would be unusual on the north bank), but it appears to have been 'parochial', its parish coinciding neatly with its street plan (and possibly cut out of the old parish of St Cuthbert), with no 'rural' element, except for a small area along Magdalen Street. Later medieval references show it to have then been a detached part of St Etheldreda's and Holy Trinity parishes (both of possible pre-Conquest origins) and Late Saxon pottery has been found in building work in Guildhall Street (5882). However, the layout here, between town and castle, suggests that the streets are medieval, unconnected to the undoubted early roads, and the other evidence also points to late origins. The castle was probably taken out of use (following a rebellion) in the later twelfth century, releasing the bailey for other uses. By the later middle ages it was thoroughly colonised, with a market place, houses, and a friary. The establishment of the chapel of St Mary in the Bailey a little before 1300 may be significant and may mark a manorial initiative in establishing a new suburb (the 'planned town') with a large market place, later infilled, with an associated gild chapel, within the bailey sometime in the late thirteenth century. In 1387 the Augustinian friary was established here.

All this suggests that Thetford on the north bank continued to expand, receiving a major blow from the changes following the Dissolution in the sixteenth century.

Postscript

Current discoveries (1988–9) both in excavations near Redcastle and metal-detecting finds made between Redcastle and the route of the new by-pass may shed further light on Thetford's antecedents.

Excavations between Redcastle and Davison's Brandon Road site have revealed further Early Saxon occupation, including five sunken-featured buildings, which indicates a settlement running from the west end of Davison's site at least as far west as Redcastle with a total of nine sunken-featured buildings excavated to date. Middle Saxon activity also appears to be very extensive, stretching westward from Redcastle about 1 km to the line of the new by-pass. This activity is represented by excavated finds at Redcastle and metal-detecting finds (coins, metalwork and pottery) elsewhere. Late Saxon material was largely absent; the excavation revealed a Late Saxon road and ditches but no structures. There thus appears to be no overlap between the Middle and Late Saxon activity, either in date or in location. Middle Saxon occupation west of Redcastle had probably ceased by the time Thetford became established and had expanded toward Redcastle. Redcastle itself is an earthwork of medieval date; an examination of the pottery found there by Knocker in 1959 (Site 8) suggests it was constructed in the twelfth century, probably during the Anarchy (inf. A. Rogerson).

Appendix: Excavations by Thetford Grammar School 1955 and 1957 – 8

1. Excavations by Thetford Grammar School 1955

Five small trenches were dug by hand in the school playing field on the west side of London Road (Fig.2, part of County Site 5756) by teachers and pupils of the Grammar School in July 1955. Assistance, particularly with the finds, was given by Group-Captain Guy Knocker. The finds mentioned below were examined by the author, and are in the Ancient House Museum, Thetford.

Trench 1. At a depth of *c.* 4'6" (1.32 m) a soil-filled feature aligned east-north-east by west-south-west was found cut into clean (natural?) sand and gravel in the southern third of the trench, beneath layers of sandy soil. Aligned on the north edge were two U-shaped post-holes *c.* 8" – 9" (20 – 22 cm) in diameter and 1' – 1'6" (30 – 45 cm) deep, packed with flints. They slanted northwards away from the feature but possibly were associated with it to form a revetment or structure. The filling of the feature had a level upper layer of 'thin and hard' packed earth, interpreted as a floor. The south-west corner of the trench was deepest, and the dark soil of the feature ran to 7' (2.13 m) below the modern ground surface. It is not clear if the underlying gravel was natural. Finds from the soil-filled feature comprise seven TH, with some charcoal and burnt clay, probably daub. This feature would seem to have been tenth-century, although it is not certain whether it was a hut or pit(s). Finds from the overlying soil layers comprise twelve TH, two SN and one EM?

Trench 2. An original trench 2 measuring 6' by 4' (1.82 by 1.21 m) was extended in right-angle stages; north-east for 12' (3.65 m) areas B – D, then south-east for 15' (4.57 m) areas G, H, K, N, and south-west for 14' (4.26 m) areas A, E, F, J, then north-west for 18' area H(a), I, L, M, O (5.48 m). Except for the end of the south-west extension and the northern corner of the north-west extension, this area was covered by packed flint at a depth of 1'5" (43 cm). In places this appeared to drop to 1'10" – 1'11" (55 – 58 cm) and in the north-west extension another flint layer was found above this at 1'1" (33 cm) depth. The higher flint layer was mixed with ash and comprised more loosely packed smaller flints: it seemed to end at the same point as the main flint layer in the northernmost corner. This corner contained soil not bottomed at 2'6" (76 cm) depth. The south-west area beyond the flint layer contained dark earth with loose flints and chalk to a depth of 3'8" (1.11 m), below which lay sand. The flint layer was only removed in one area—half of the original trench. Two post-holes appeared cut into the flint, both round, 10" (25 m) in diameter, 7" (17 cm) deep. The flint layer was 6½" (16 cm) thick. Beneath it lay black soil containing bone, a layer of ash at 2'1" (63 cm), dirty sand, and gravel at 2' 3½" (70 cm). These lower layers produced three handmade, probably Early Saxon, potsherds from the same vessel although it cannot be safely argued that this then dates these three layers. The flint layers are best interpreted as a road, probably of Late Saxon date, with later patching or remetalling. Its general position has been indicated on Dunmore and Carr 1976, fig.3, and may include a junction with another road running at right angles. Above the flints lay at least two areas of chalk rubble associated with thirteenth to fourteenth-century pottery. Late Saxon sherds (TH, SN, ST) and medieval sherds were found in equal quantity (eleven of each) but no local eleventh to twelfth-century pottery.

Trench 3. This contained a layer of flints (road?) at the south-east end, which lay beneath soil and over sand. At the north-west end a small pit 8" (20 cm) deep was cut into sand in the north corner. The trench was dug to 2'6" (76 cm) and the pit may have been cut from a depth of 1'11" (58 cm). One EM sherd was found in the 'surface layer' with an ST, but below this lay four SN and nineteen TH, one of which is oxidised.

Trench 4. No record of trench. Finds were LS with two EM in topsoil; described to 1'6" (45 cm).

Trench 5. No record of trench. Finds to 2'8" (81 cm) include Med and EM as well as LS.

Conclusions

Although evidence from these small trenches is meagre, some suggestions may be made. Late Saxon features, possibly tenth century, seem to have been found in Trenches 1 and 3. The flint layer in Trench 2 and possibly 3 is likely to have been Saxo-Norman road metalling, and there was possibly Early Saxon (or Iron Age?) occupation in the area of Trench 2. The Medieval pottery in Trench 5 and Trench 2 (associated with chalk rubble above the flints) indicates medieval occupation near the London Road and Brandon Road on the south side of School Plain.

2. Excavations by Thetford Grammar School 1957 – 8

Two trenches were dug in 1957 and three in 1958 in 'St John's churchyard' centred at TL 8640 8295 (County Site 5755, Fig.2). Advice and assistance were again given by Group-Captain Knocker. The finds have not been seen by the author.

Trench 1. Flint layer at 4'4" (1.32 m) depth; below this was pure sand tested to 7' (2.13 m) and probably natural.

Trench 2. The first 1' – 1'8" (30 – 50 cm) comprised soil with pieces of chalk, flint and charcoal, with pottery and bones. Few finds were noted between depth 1'8" (50 cm) and 2'4" (71 cm) in a layer of hard packed earth, below which more pottery and bone was found. At 3'10" (1.16 m) a flinty layer was encountered which contained four burials at a maximum depth of 4'9" (1.44 m). Below this was natural sand. The burials lay with heads to west and were extended on their backs where intact. Burials 1 and 2 had heads propped up between chalk blocks, which had large flints placed on top of them in Burial 2. Burial 2 partly overlay Burial 3. Burial 4 consisted only of a damaged skull. An oval area of dark soil due east of Burial 1 continued downwards into natural sand and was possibly a pit.

Trench 3. At a depth of 1'5" (43 cm) a layer of chalky soil was found. Soft dark soil lay below, containing pottery, bone, burnt clay and some charcoal. At a depth of 3'5" (1.04 m) clean flinty gravel was found, probably natural. Two 'softer' areas in this were interpreted as postholes.

Trench 4. Layers of soil with chalk and flint contained sufficient chalk lumps to suggest walling. At a depth of 3'8" (1.11 m) occurred a layer of hard gravel with three irregular holes 'padded at sides and bottom probably to hold posts'. A piece of human bone was found over the gravel. The grave was sectioned and sand (natural?) was found at 4'6" (1.37 m) depth.

Trench 5. At a depth of 3'6" (1.06 m) a layer of flint and gravel was encountered. Beneath this were gravelly layers containing some potsherds. At 4'6" (1.37 m) there was another flint layer and sand at 5'6" (1.67 m). The sand was tested to 7' (2.13 m) and seems to have been natural.

Conclusions

The most important finds of these excavations were the burials in Trench 2, demonstrating that this area, called 'St John's Churchyard' was indeed a churchyard, although the dedication is not clear (see above, Documentary Evidence). As well as the identification of associated Late Saxon pottery by Group-Captain Knocker, the practice of propping up the head of the body with chalk blocks and flint occurs in tenth to eleventh-century graves, and is known locally at Thetford at Red Castle (Knocker 1967) and The church described here (Part IV above), and in Norwich (Ayers 1985). Architectural fragments recovered just north of these trenches in 1966 (see Stone Architectural Fragments, above) if from this church, suggest a rebuilding in the early thirteenth century although Norman fragments were also found.

It remains unclear, however, why there were so few graves and why none was found in the other trenches. It is possible that the 'hard gravel' in Trench 4 (if it was not natural) and the flint layers in Trench 5, all described as difficult to excavate, were structural in nature, *e.g.* flooring or pathway, but this is not clear. Little can be made of the chalk deposits in Trench 4, thought to be walling by the excavators.

Endnotes

1. These instruments are the subject of an ongoing national archaeological survey by the present writer, the East Anglian material making up the first volume of publication, now in preparation (Cambridge Music-archaeological Survey).
2. The fragile quality of both of these features lends powerful support to arguments for confining practical tonal experiments strictly to replicas, avoiding the kind of damage caused in the past to fine detail of many original finds through direct musical experimentation (for further discussion see Lawson 1987).
3. In the convention adopted here, a' (the a below middle c) = 440 c.p.s., a'' is one octave higher, and so on; 00 and 00 denote variations up to a quarter tone. These results assume equal breath pressure throughout. Reconstruction of the missing block was in wax, softened for ease of adjustment: in each case the surface of the duct was moulded *in situ* using a narrow-bladed knife.
4. For recordings of examples of each of these types see Lawson 1985 and Lawson 1987.
5. In a second experiment a tentative reconstruction was produced of Fig.161, No.15, using a bone length of 156 mm estimated on the basis of both modern and medieval comparative material. Assuming full utilisation of available length, which is clearly evidenced at the distal end, a pipe of 126 mm could be produced with an air-column length of 113 mm from sound-hole to tip. From this emerged a sequence of e00''', g00'''', b♭0000'''', c♯00'''', e00'''', representing intervals of 1½, 1½, 1½ and 1 tone respectively. The upper part of this is remarkably similar to No.17.
6. According to Blomefield (1805, II) Halwick Manor was given to the Cluniac Priory of Thetford by Roger Bigod; in 1286 it had an annual value of 20 marks. He also states that Norwick and Brayes were members of Halwick Manor. Halwick is mentioned in the Register of the Cluniac Priory (CUL MS Add 6969); in 1528–9, there was a payment for 'le makyng of the causey at Alwyk' (Harvey 1973, 510). In 1535 the Manor of Halwick was shown (Valor Ecclesiasticus, 310) as consisting of 200 acres of arable land with liberty of fold for 400 ewes (*oves matrices*) and was valued at £41 1s 6d. The Manor of Norwick had 60 acres of arable with foldage for 600 ewes and was valued at £16 13s 4d.
7. The confusion regarding 'St John' in Thetford: some speculations

   By 1086 'St Sepulchre' (*i.e.* St John de Sepulchre, a reference to St John the Baptist, often known as St John of Jerusalem) as a church dedication was known in Norfolk as shown in the *Domesday* entry for Norwich (f118): 'Two of Early Ralph's men took 2 acres of meadow from St Sepulchre, later the priest regained it by grant of the Sheriff' (Brown 1984, i, 64).

   A) It can thus be suggested that a church of St John the Baptist or 'St Sepulchre' might have been present in Thetford and given to the Canons of the Holy Sepulchre by Warenne with the site of their monastery – hence the possible earlier structure noticed on excavation.

   B) Even if this supposition is erroneous there could have arisen a confusion in the minds of Thetford people. The little-known Order of the Canons of the Holy Sepulchre was absorbed into the body of the Augustinian Order and became largely indistinguishable. By the late medieval period the original significance of the name may have been only hazily understood by lay people. This may have led to a confusion between the original name and St John the Baptist as St John de Sepulchre. Further scope for confusion are the two medieval hospitals of St John – the Evangelist and the Baptist, the latter being extinguished in favour of the Hospital of St Mary Magdalen. In 1282 the Master of the Hospital of St John the Baptist was granted a charter for an annual Fair at the hospital on the vigil and feast of the Decollation of St John the Baptist (Cal. Ch. Rolls Henry III, 163). In 1413 Henry V granted the Hospital of St John the Evangelist to the Austin Friars, including in the grant a Fair held by the messuage on the Feast of St John the Baptist (Cal. Pat. Rolls 1413 16, 23). St John the Baptist was obviously very familiar in Thetford.

   In this light Blomefield's remarks about the Canons are interesting (1805, II, 100–1): '... it is said by Mr. Weaver to be dedicated to St Mary and to St John and to be founded by a Bygod: which mistake was occasioned by his confounding it with St John Baptists hospital though it is sometimes called St John's because it stood in that parish and not far off the church'. Although Blomefield himself knew the fact about the original Order (1805, II, 95–6) it is interesting that he corrected another authority about St John the Baptist. In the town the belief that a St John had something to do with the Canons may have induced Blomefield to identify the neighbouring remains of a church with the dedication. That it may all have come from a misconception about the meaning of 'de Sepulchre' cannot be proved but offers a plausible explanation based on established fact. If A) is correct then the reasons for calling the Canons St John in error is even strengthened.

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Q 17 18 19 20 21 22 23 24 25 26 27 28 29

P

THETFORD 1964-6 BRANDON ROAD

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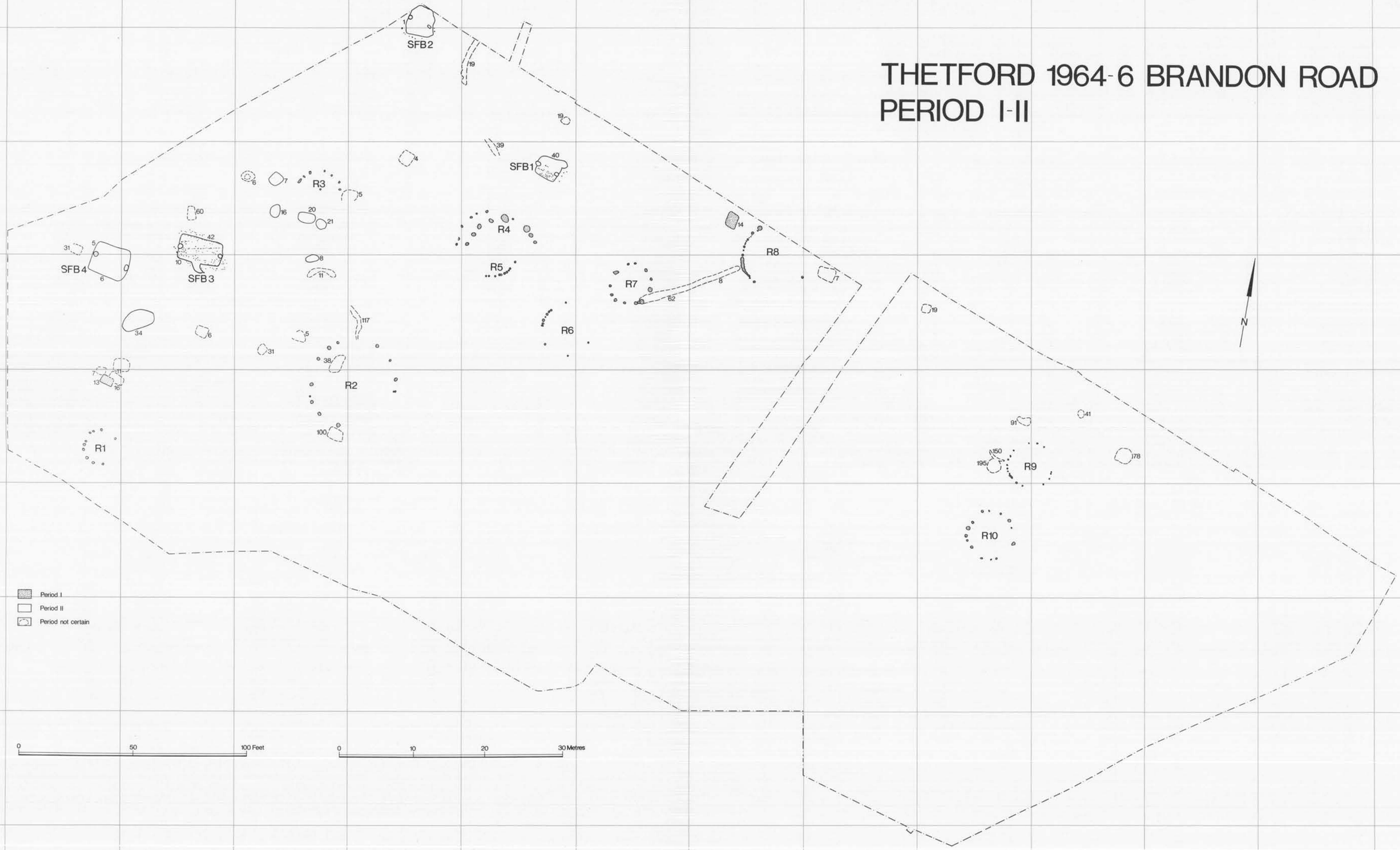
THETFORD 1964-6 BRANDON ROAD
POSTHOLES, SFBs & BUILDING A

THETFORD 1964-6 BRANDON ROAD
PERIOD I-II



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THETFORD 1964-6 BRANDON ROAD
PERIOD III

Period III

Period not certain

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0 10 20 30 Metres

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THETFORD 1964-6 BRANDON ROAD
PERIOD IV

Q P O N M L K J

17 18 19 20 21 22 23 24 25 26 27 28 29

Period IV
Late Period IV
Period not certain

0 50 100 Feet

0 10 20 30 Metres

N

THETFORD 1964-6 BRANDON ROAD
PERIOD V-VII

Q P O N M L K J

17 18 19 20 21 22 23 24 25 26 27 28 29

Early Period V
Period V
Period VI
Period VI-VII
Period VII
Period not certain
Uncertain
Chalk blocks

0 50 100 Feet

0 10 20 30 Metres

N

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