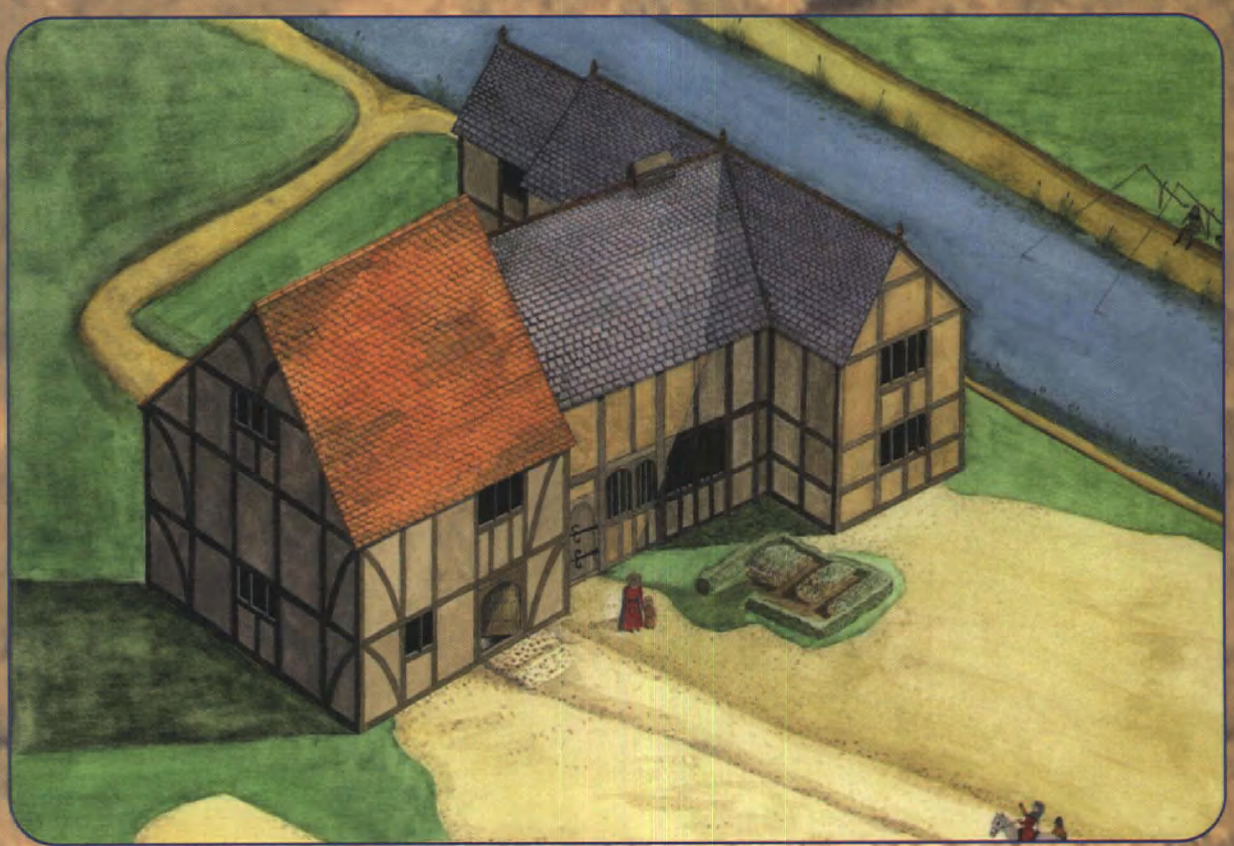
A Medieval Moated Enclosure in Tempsford Park



Anthony Maull and Andy Chapman

BEDFORDSHIRE ARCHAEOLOGY
MONOGRAPH 5

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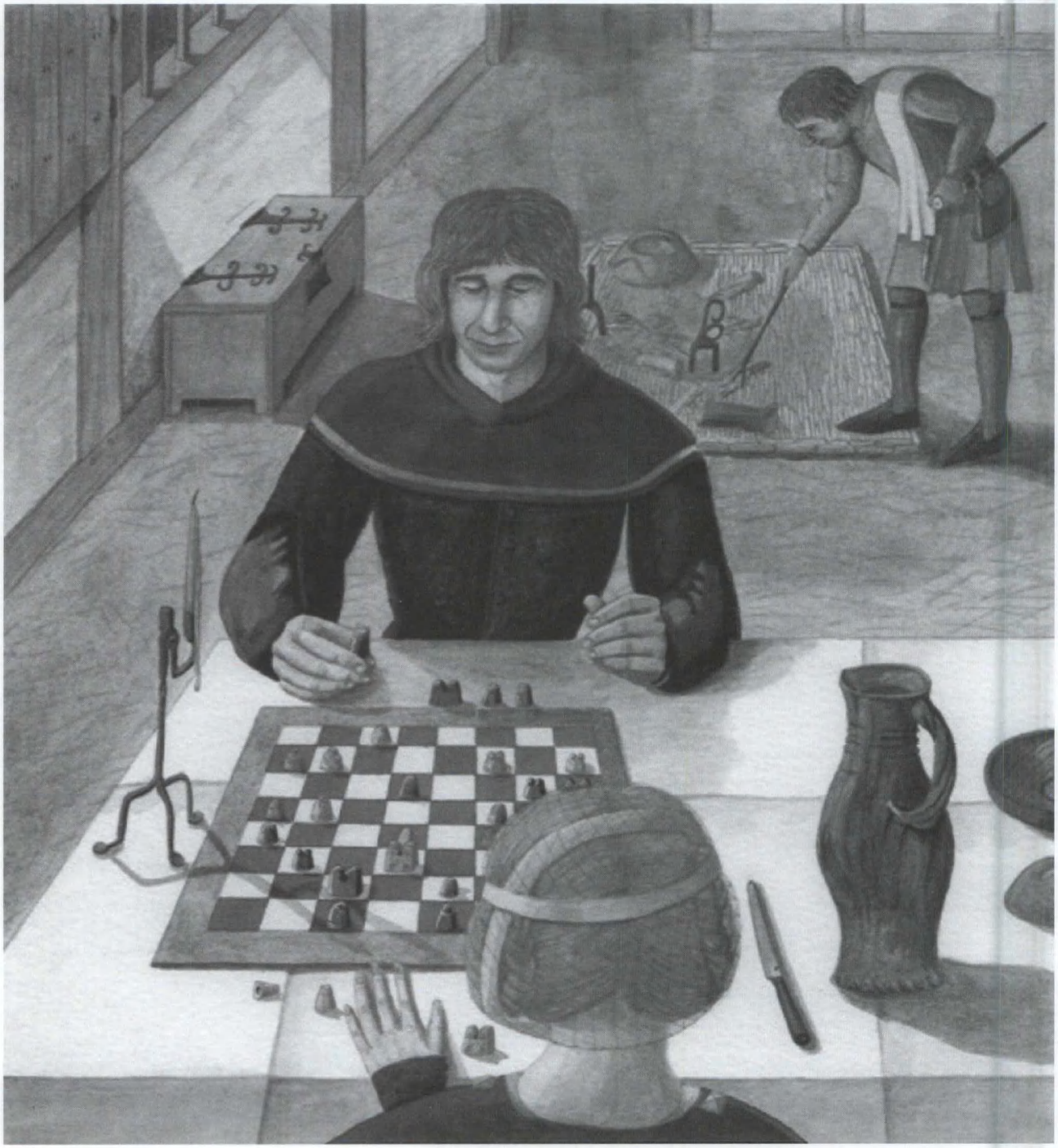

Playing chess within the hall of the manor house

Cover illustrations:

Front: Reconstruction of the medieval manor house, *c*1300

Back: The bone chess piece, a rook

A Medieval Moated Enclosure in Tempsford Park

by

Anthony Maull and Andy Chapman

Other major contributors
S Steadman (Post-excavation Project Manager, Editing and Discussion)
S Morris (Site supervisor, Analysis of site records and Descriptive texts)

Specialist contributors
T Anderson (Human bone), P Blinkhorn (Saxon and medieval pottery),
P Chapman (Fired clay and Stone roof tiles), E Hutchins (Faunal and Environmental evidence),
T Hylton (Roman and medieval finds), R Scaife (Pollen analysis),
A M Slowikowski (Ceramic building materials), I Soden (Post-medieval pottery and Glass),
C Stevens (Iron nails)

Illustrations by
J Harding, M Roughley and A Thorne

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The Editor, Michael Dawson, Ragsdale, 1 Church Lane, Great Cransley, Northants NN14 1PX

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CONTENTS

LIST OF ILLUSTRATIONS

LIST OF PLATES

LIST OF TABLES

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The post-excavation analysis and report preparation was carried out by Anthony Maull and Steve Morris, with assistance from Charlotte Stevens and Gary Edmondson and report editing by Sean Steadman. The Saxon and medieval pottery has been analysed by Paul Blinkhorn, and the Roman pottery and ceramic building materials by Anna Slowikowski. Other finds have been reported on by Tora Hylton, with contributions on individual finds groups from Pat Chapman, Mark Curteis and Dr Mark Blackburn, Iain Soden, Charlotte Stevens and Dr Diana Sutherland. Eden Hutchins has reported on the animal bone, the charred plant remains and the molluscs, while Rob Scaife has analysed the pollen samples and Trevor Anderson has reported on the human bone.

The final editing of the report was carried out by Andy Chapman, with proof reading and copy editing by Pat Chapman. The line illustrations are by Jacqueline Harding and Mark Roughley, and the colour illustrations for the cover are by Alex Thorne. Editorial comments were provided by Martin Oake, and Michael Dawson and Stephen Coleman for the Bedfordshire Archaeological Council.

1 INTRODUCTION

Summary

Open area excavation was carried out on the site of a medieval moated enclosure within the grounds of Tempsford Park in advance of a new highway. There was limited evidence for prehistoric and Roman activity. More intensive occupation began in the middle Saxon period, with a series of enclosures. The late Saxon period saw the formation of an organised landscape, with ditched boundaries defining a series of rectilinear plots. Finds of pottery and other domestic artefacts indicate the nearby presence of occupied tenements. The boundary ditches were recut and realigned during two hundred years of use and, in the late 12th century, a timber aisled hall was constructed together with a possible detached kitchen range. In the early 13th century a large moated enclosure containing a timber manor house was imposed onto the existing settlement pattern. The manor house comprised a hall with a parlour/solar range to the north and a service wing to the south, and it is presumed that the ancillary buildings lay to the east, beyond the excavated area. The building was extended and refurbished in the 14th century, and the pottery assemblage indicates that it was abandoned in the early to mid-15th century. The buildings appear to have been systematically dismantled, and small amounts of pottery dating to the late 15th to early 16th century may relate either to picking over of the debris or continuing occupation on nearby plots. In the late 18th century the moated enclosure was taken into the parkland of Tempsford Hall, and was landscaped. At the end of the 19th century it was partially filled with brushwood, soil and domestic debris from the house.

The Excavation

The parish of Tempsford is located in north-east Bedfordshire. It lies approximately 12km east of the county town of Bedford, 9km north of the market town of Biggleswade and 7km south of the market town of St. Neots, Cambridgeshire. It is situated within the valley of the River Great Ouse, which runs approximately 200m to the west, close to its confluence with the River Ivel (TL 1630 2537; Fig 1.1).

The moated enclosure lies within the north-west corner of Tempsford Park, which is bounded by the A1 road to the immediate west, Station Road to the north and the Everton-Potton road to the south (Fig 1.2). Sir Gillies Payne established Tempsford Park and Hall in the late 18th century, and through the 19th and early 20th century it was occupied by the Stuart family. The house is currently the corporate headquarters of the Kier Group Ltd.

The A1 Trunk Road Tempsford Junction Improvement Scheme was designed to allow for the closure of a number of gaps on the A1. Following a Public Inquiry in 1989 the route was confirmed along the western margins of Tempsford Park, directly across the earthworks. Accordingly, the Department of Transport commissioned an archaeological evaluation of the footprint of the proposed road, which was undertaken in 1993 by the then Bedfordshire County Council Archaeological Service (BCAS), now Albion Archaeology. The evaluation established that the earthworks represented a medieval moated enclosure containing one or more buildings with several phases of pre-moat occupation that extended beyond the confines of the moated area (Shotliff 1996b). Subsequently, provision was made for full archaeological investigation of the road footprint and associated works, with preservation of the remainder of the earthworks east of the road corridor.

In March 1994, the earlier road scheme was withdrawn following a review of the national road programme. However, in 1998 the road scheme was re-initiated by the Secretary of State for the Environment, Transport and the Regions, and tenders were sought for the archaeological investigation and recording of the moated site and associated areas during the summer and autumn of 1999. Northamptonshire Archaeology was commissioned by the Highways Agency to carry out the excavation prior to the road construction, working under the Babtie Group as consultants for the Highways Agency. The work was carried out according to a project design prepared by Northamptonshire Archaeology (NA 1999).

The excavation was undertaken from July 1999 to mid-December 1999. Following completion of fieldwork, an assessment report and updated research design was produced in April 2000 (NA 2000). Post-excavation analysis and report preparation was carried out through 2001 and 2002, and the draft report was completed by September 2002. The final editing of the client report was carried out between

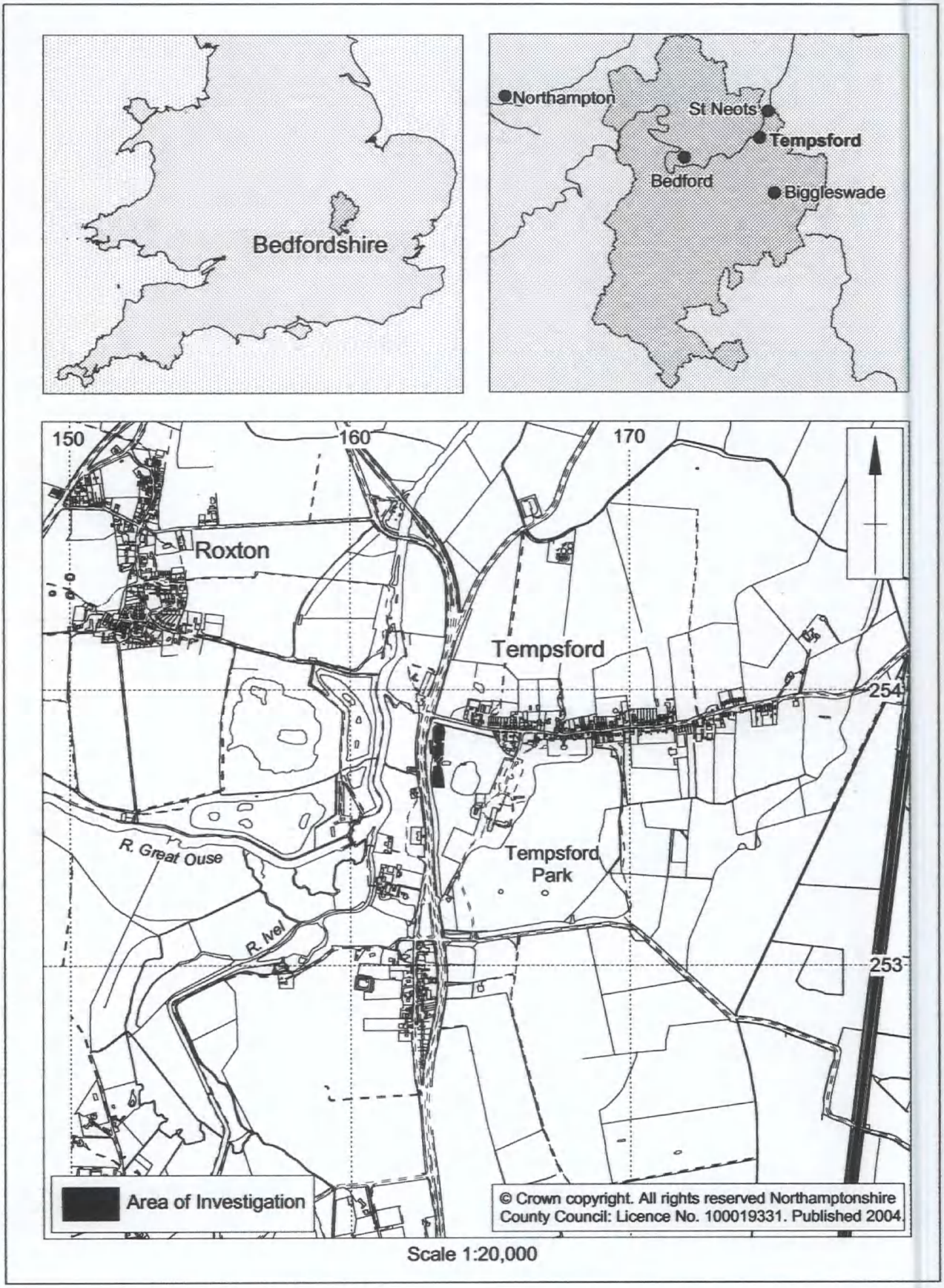


Fig. 1.1 General location plan.

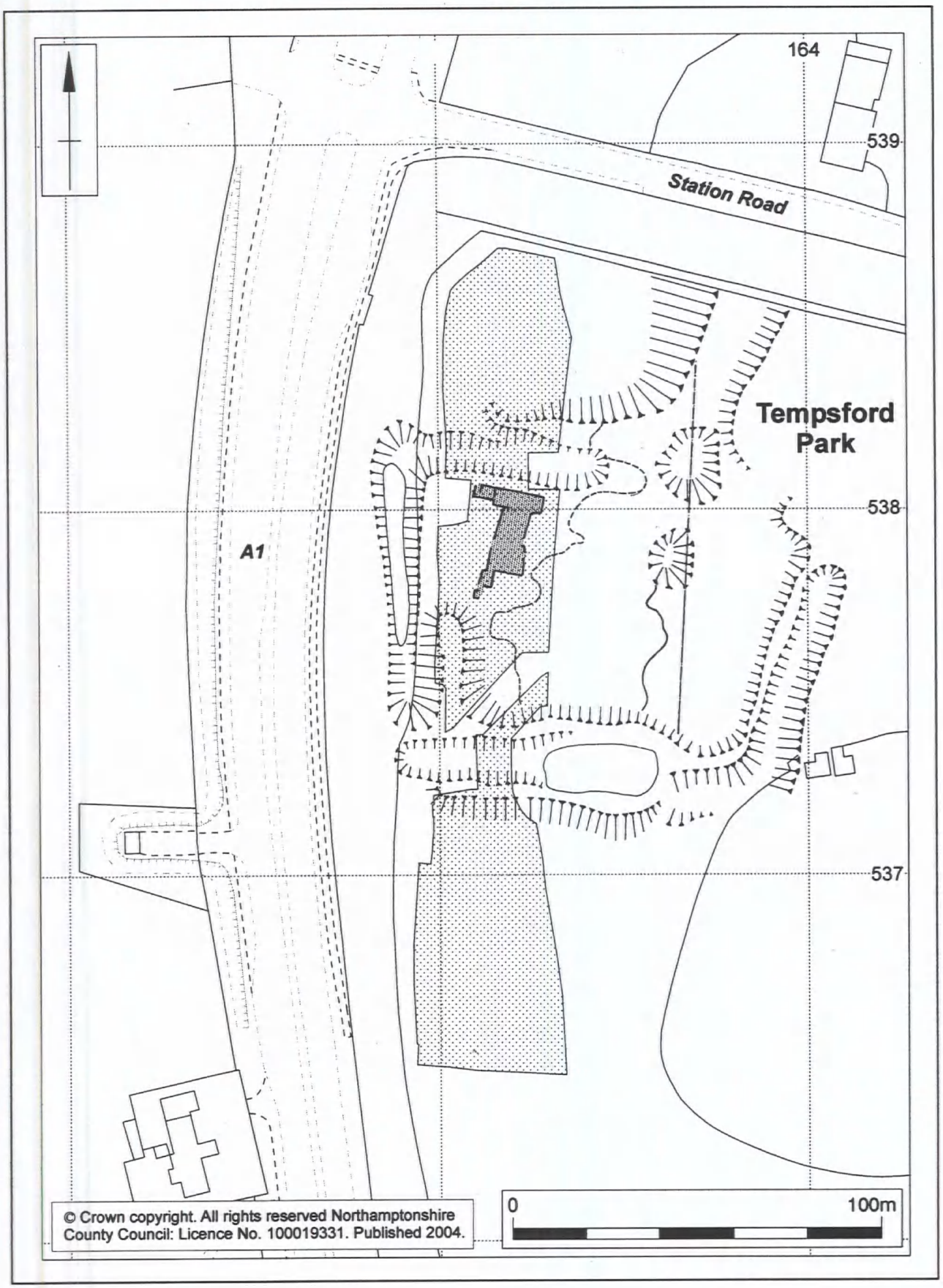


Fig. 1.2 Tempsford Park and the site environs.

July and September 2003. Editing of the monograph report was carried out between June and October 2004.

Topography and Geology

The moated enclosure is situated towards the northern end of a low north-south ridge formed from a localised deposit of Boulder Clay. The ground surface of the moated site slopes gently from 19.2mOD in the south to 17.4mOD in the north.

The British Geological Survey map shows gravel deposits of the 1st, 2nd and 3rd terraces close to the Rivers Great Ouse and Ivel with a tongue of river gravel extending away from the rivers to the east. The drift geology of most of the parish of Tempsford comprises Oxford Clay overlain by deposits of Boulder Clay, forming ridges of high ground east of Church End and north of Langford End close to the Little Barford parish boundary. The soils are recorded as imperfectly drained gleyed brown earths of the Milton Association (King 1969).

2 BACKGROUND

2.1 Archaeological Context

The Bedfordshire Historic Environment Record (HER) contains a large body of data for the history of the Tempsford area from the immediate post-glacial period through to the present day. A wealth of cropmarks in the immediate area and straddling the Rivers Great Ouse and Ivel define past landscape use (Figs 2.1–2.2).

The prehistoric landscape

The earliest finds recovered from the immediate area around Tempsford include a number of stone tools and other artefacts dating from the Palaeolithic, Mesolithic and Neolithic periods. A series of Bronze Age ritual monuments, including five ring ditches of former round barrows, was excavated to the north of the River Great Ouse at Roxton during 1972–74 (Taylor and Woodward 1985) (Fig 2.1, HER 617). Cropmarks of further ring ditch round barrows lie south of Tempsford Church End and east of the River Ivel (HER 1776). Other finds of prehistoric date from the immediate area include a series of Bronze Age flint scatters recovered from the fields north of the excavated ring ditches (Woodward 1978).

The Iron Age and Roman landscape

A series of rectilinear enclosures excavated with the Bronze Age ring ditches (HER 617) date from the 1st century BC-1st century AD, and appear to have been fields associated with a nearby farmstead (Taylor and Woodward 1985). The local landscape contains many similar cropmark sites of probable enclosures and associated fields that formed small farmsteads. These all lie close to a Romano-British villa (Fig 2.1, HER 801), where excavation in 1962 uncovered building materials including ashlar blocks, tesserae, and marble fragments along with large amounts of pottery and other artefacts (Simco 1984). Cropmarks of probable Iron Age/Roman enclosures lie both to the north-east and south of Tempsford Park.

These sites all lie within 4km of the course of a Roman road that forms the present eastern limit of Tempsford parish (Fig 2.2, HER 505). This road links the small Roman towns of (from north to south): Godmanchester (*Durovigutum*), Cambridgeshire; Sandy, Bedfordshire and Baldock, Hertfordshire, to the one of the major roads in Roman Britain, The Ermine Street. The villa estate, and its associated small farmsteads, would have presumably sold their surplus produce at the Roman small town of Sandy, where periodic excavations have uncovered substantial remains relating to both the Iron Age and Roman periods (Johnston 1974 and Dawson 1995).

The Saxon and medieval landscape

The Saxon and medieval period witnessed the foundation of a number of nucleated and dispersed settlements in the local area, primarily focussed around greens, roads or squares, including Tempsford itself (Fig 2.1). The two historic cores of Tempsford comprise Langford End, to the north and north-east, and Church End, to the south-west. Cropmarks of medieval earthworks lie both to the north and south of Langford End along the eastern end of Station Road (HER 1848), and include Mossbury Manor. To the west there is a possible ford across the River Great Ouse (HER 8803), which would have connected Langford End to the village of Roxton. Church End contains the parish church and, to the west, there is a small square moated enclosure known as Gannocks Castle (HER 761). There are also further earthworks (HER 17155) and former cottages (HER 9733) to the east of the A1 at the southern end of Tempsford Park.

Medieval moated sites

Moated sites were also a common feature in the medieval landscape. The HER lists no fewer than 22 definite or possible moated enclosures within an approximate 6.5km radius of the Tempsford moat, some of which are Scheduled Ancient Monuments (SAM) (Fig 2.2). The large number of moated sites in the immediate area of Tempsford are on all soil types and do not appear to conform to any distribution pattern. This is mirrored across Bedfordshire, although on the broader scale there is a preference for clay soils (Baker 1978). The moats which have been recorded, either through field survey (Brown and Taylor 1991) or from Ordnance Survey

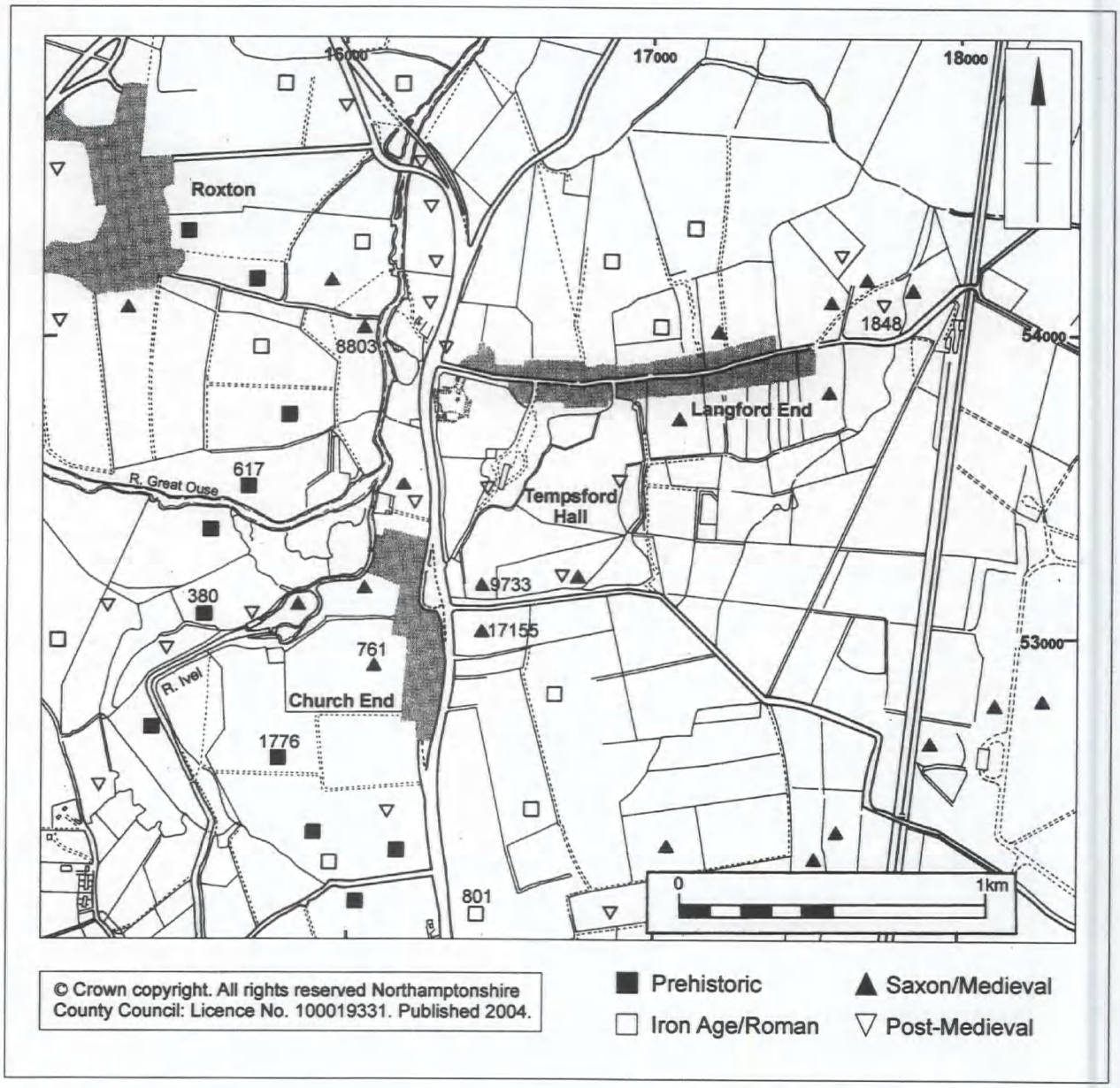


Fig. 2.1 Archaeological background: prehistoric to medieval.

maps, vary from irregular to square-shaped and it is not uncommon for the moats to contain either single or multiple earthworks. Some of these have been archaeologically investigated as for example at Stratton, Biggleswade (HER 518) (Shotliff 1996a) and Willington (HER 769, SAM 11535). Post-medieval debris was found within the moat ditch at Stratton (HER 518), but no interior features survived (Shotliff 1996). This is in sharp contrast to the moated site at Willington, where evidence for buildings dated to the 12th-13th centuries has been found within the moat interior (Hassall 1975 and Mudd 2004). Modern disturbance and rabbit burrowing within the moated platform and enclosing ditch of Story Moats at Everton, 4.5km south-east of Tempsford, uncovered pottery dating to the 13th-14th centuries and 16th-19th centuries, in addition to medieval roof and floor tiles (Brown and Taylor 1991). The moated enclosure at the shrunken hamlet of Wintringham, St. Neots was excavated in 1971–72 (Beresford 1977). Here there was a sequence of four superimposed houses and associated buildings, although only the final two periods were contemporary with the moated enclosure. In the moated enclosure phase, the house and ancillary buildings were set around a courtyard, with halls to the west, ranges to the south and east

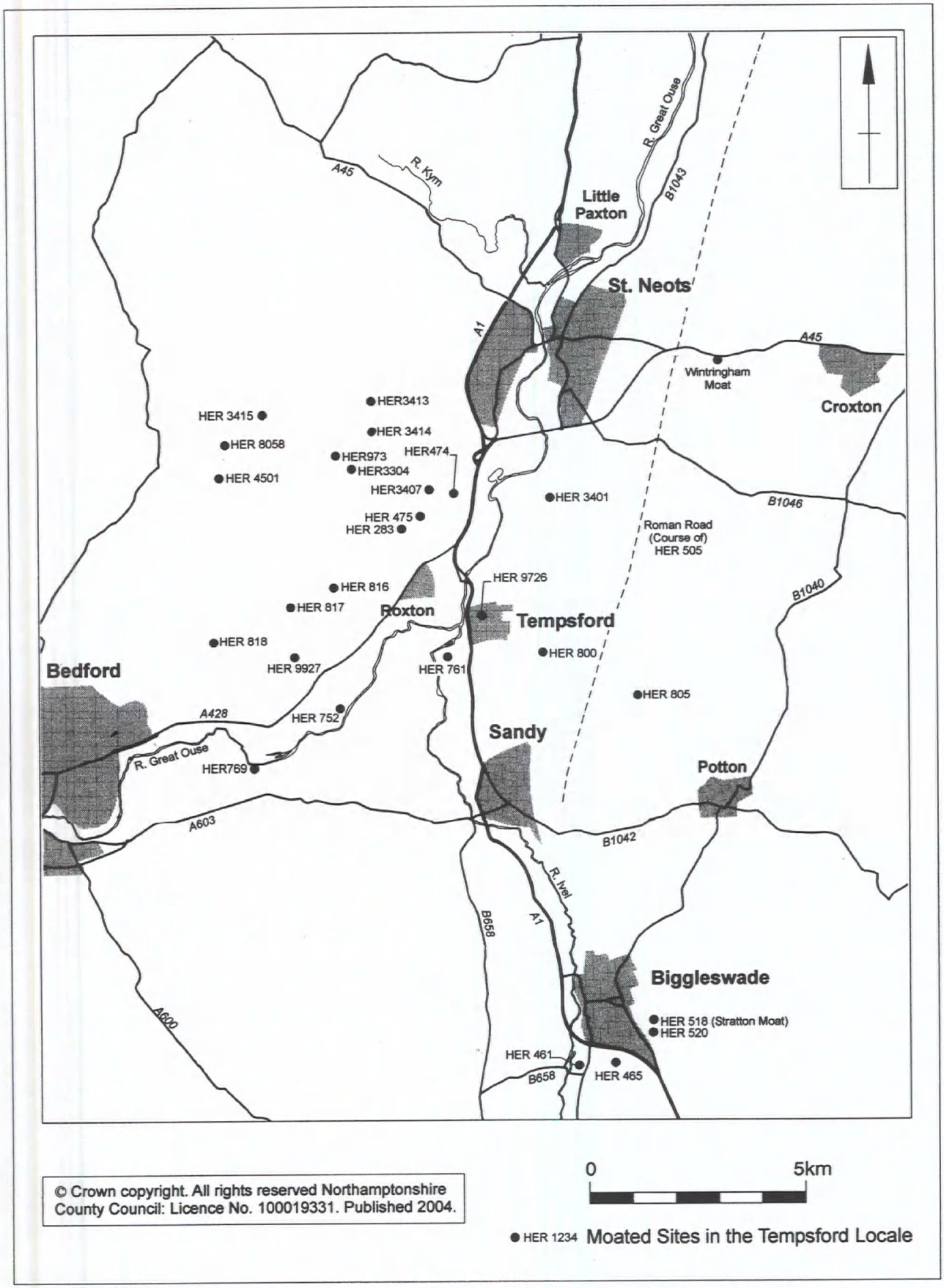


Fig. 2.2 Moated sites near Tempsford.

and a bridge access across the moat to the north; an arrangement very similar to that at Tempsford.

The Tempsford moated enclosure

The earthworks in the north-western corner of Tempsford Park had been depicted on early Ordnance Survey maps (Fig 2.3, Stew Ponds) and were listed in the County Historic Environment Record (HER 9726). As part of the site evaluation in 1993, measured drawings were made of the earthworks, and magnetometer and resistivity surveys were carried out (Shotliff 1996b, 99-101, figs 2, 4, and 5). A shallow ditch to the east may be the largely infilled eastern arm of the enclosure. However, on the basis of the geophysical survey the favoured interpretation was that a fully infilled eastern arm lay to the west of this in an area denoted by lower resistance readings, and in line with the end of the pond. This interpretation will be reviewed within the description of the excavated evidence.

2.2 Documentary Evidence

S Coleman and A Maull

The Tempsford place-name is first mentioned in the Anglo-Saxon Chronicle as *Taemeseford* and *Temesanford.* Mawer and Stenton (1926) suggest that the name may indicate that the Ouse at this point was once known as the Thames, but the name is not recorded anywhere else along the Ouse. In AD917 it is recorded that the Danish army travelled from Huntingdon and East Anglia to Tempsford, and constructed a fortress there. The chronicle goes on to relate that during the summer of the same year King Edward, after assembling a great host, journeyed to Tempsford where he besieged and stormed the borough, killing the king and various other members of the Danish army. Tempsford is not mentioned again until 1010 when the Danes sacked the settlement.

There are no direct documentary references to the medieval moated site in the County Record Office (Coleman 1996). However, an 18th century document (CRO: WY102-3) shows that Sir Gillies Payne purchased a considerable quantity of property in the vicinity of Tempsford Park, which included the Manors of Tempsford, Brayes and Draytons, in 1769. The purchase of Tempsford Manor also included its house, which was recorded as formerly standing near Tempsford lock at the confluence of the Rivers Ouse and Ivel.

The Victoria County History for Bedfordshire (1912, 251) records the histories of the Manors of Brayes and Draytons. The Manor of Brayes is recorded in the Domesday Book as a two-hide estate held by Richard Poynant for the king, with the land held prior to the conquest by three freemen. In sharp contrast, Draytons Manor was only established at the end of the 13th century, coming into existence in 1297 when the Manor of Tempsford was divided into two due to co-heiresses. The newly established manor may not have contained a capital messuage, as the site was possibly managed as a single economic unit from elsewhere. The Manor of Draytons was subsequently recorded as having been re-united with the main manor in 1565–6 under the sole ownership of George Keynsham, who also bought Brayes Manor in 1565. Tempsford was enclosed during 1778 and sometime before his death, in 1801, Sir Gillies Payne laid out Tempsford Park and built a mansion house on common land previously allocated to him, to replace the old manor house which stood adjacent to the river.

There is no surviving documentary record for how much of the park was previously given over to common land prior to its allocation to Sir Gillies at the time of enclosure, or how much was former medieval closes already held in his ownership. Historic map evidence does suggest that a number of former closes were incorporated into the park.

Former possible closes are visible on the 1st edition 6-inch Ordnance Survey map 1882, represented by long, narrow, partially tree-lined properties on both sides of Station Road outside the limits of the park. This area was previously known as Lambcourt or Lampitt End (Lambs sheds) in the medieval period. Rows of trees, forming a broken rectilinear pattern indicative of closes, are shown in the northern part of the park. One of these contained the moated site. At the time of enclosure Sir Gillies' allotments of common field land would have probably been consolidated around closes he already held in Langford End, which he had purchased in 1769, and included ". . . that close . . . called Brayes Manor Pasture . . .". It may be, therefore, that the moated site represents the capital messuage of Brayes Manor (Shotliff 1996b).

The earliest map of the area, an estate map of possibly 1829 (CRO: X 1/41), records the extent of Tempsford Hall Park and the individual field names within Tempsford parish. The moated enclosure is shown as two water-filled ditches, forming its northern and western arms, with a pond located to the south-east and additional landscape features set within the grounds of Tempsford Park.

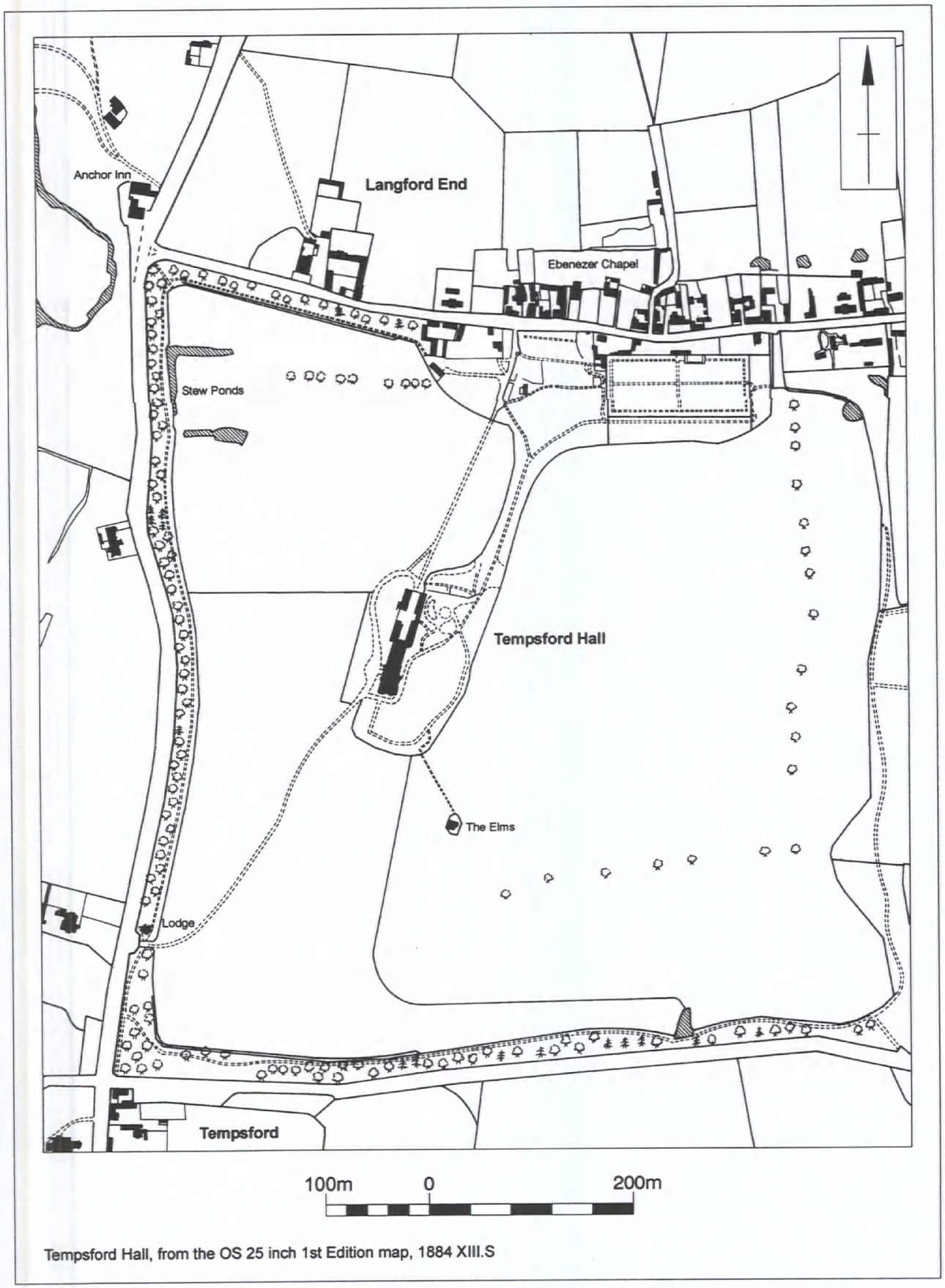


Fig. 2.3 Tempsford Hall, from Ordnance Survey 25" map of 1884.

The 1st edition 6-inch Ordnance Survey map of 1882 mirrors the details recorded on the earlier map, but also records the southern moat as a broad, water-filled ditch adjacent to the pond. The 1st edition 25-inch Ordnance Survey map of 1884 (Fig 2.3), records the same information in more detail. The 2nd edition 25-inch Ordnance Survey map of 1901, records the present pond as "Stew Pond" and shows the northern and western arms as linear marshy areas.

In 1824 the whole estate including Tempsford Hall was sold by auction to William Stuart, a grandson of the Earl of Bute who lived at Luton Hoo. The house was extensively re-built in 1874 prior to a devastating fire of 1898 (CRT 130). The present house was re-built in 1903, when the Stuart family returned to the estate. The hall is now the corporate headquarters of the Kier Group Ltd.

The main road through the parish of Tempsford is the Great North or York road, the current A1. However, in 1675, Ogilby shows the principal road through the parish further to the east, running from Royston to Huntingdon. The antiquity of the A1 road is uncertain, though it could have been a major route prior to the 10th century. An act for turnpiking the Great North Road was passed by parliament in 1725.

3 THE EXCAVATED EVIDENCE

3.1 Introduction

Original Objectives

The objective of the excavation was to investigate the nature of the pre-moat settlement and to determine the character of the moated enclosure through to its abandonment (Plate 1). The research themes included: impact of the construction of the moat on existing settlement; the possible manorial status of the site; the nature of the moated enclosure, including its internal organisation and function; and the settlement and landscape context of the moat. Other themes included building construction techniques; abandonment of the moat; subsequent landscape development; environmental studies, and regional artefactual and settlement studies.

Methodology

A 360° tracked, mechanical excavator fitted with a toothless ditching bucket was used for all topsoil and subsoil stripping, which commenced at the beginning of July 1999. The extreme northern end of the site was initially used as the site compound and was only stripped and excavated in November 1999. The spoil was removed by dumper truck to temporary topsoil and subsoil spoil heaps to the south of the excavated area. Tracking of plant across the sensitive area to the immediate east of the excavations was kept to a minimum to safeguard the upstanding earthworks. Due to the soft ground conditions some earthwork features were filled in temporarily, then reinstated later.

Plate 1. The earthwork of the southern moat before excavation, looking east.

Plate 2. The southern moat being stripped of soil cover, looking south-east.

Plate 3. Excavation of the northern moat in progress, looking east.

The excavated area was aligned north-south along the line of the new carriageway (Fig 1.2). As a result, the site was 226m long but only 30-40m wide, a total area of 0.64ha. An area partly over and to the north of the southern moat was left unexcavated due to the presence of a sewer pipe. The site comprised three areas: the moated enclosure and extensive areas to both the north and south. On the northern and southern areas both topsoil and subsoil were removed to expose the natural, which was cut by ditches and pits of medieval and earlier dates. Within the central area, across the moated enclosure, only the topsoil was removed as this directly overlay the demolition deposits and contemporary soil horizons of the manor house. The upper fills of both the northern and southern moats, which had been shown to be modern in date by the evaluation, were also excavated by machine prior to hand excavation of the lower deposits (Plates 2 and 3).

All discrete features were sectioned, and those forming parts of recognisable structures or containing significant artefacts or environmental assemblages were fully excavated. The stratified deposits within the moated enclosure were recorded and fully removed in sequence. Environmental samples were taken following advice from Peter Murphy, English Heritage Regional Science Advisor for East of England, and Helen Keeley, consultant environmental advisor. At best, the watertable fell to *c* 0.8-1.0m below ground level, but periods of heavy rainfall led to flooding of many of the shallower features. The excavation of the moats required constant mechanical pumping. However, apart from the moats, even the deeper features had only been seasonally waterlogged and they did not contain preserved organic materials.

In summarising the excavation evidence the following terms and abbreviations have been used to describe the principal feature groups. Structures (SG) are collections of postholes that may have formed buildings. Ditch Groups (DG) comprise lengths of probably contemporaneous ditches/gullies that have been assigned to an enclosure (E) or a plot (P). Pit Groups (PG) are clusters of physically associated and probably contemporaneous pits.

Summary of site chronology

The site chronology is summarised in Table 1 and illustrated in figure 3.1. The dating for the phases of activity is based on the recovered pottery and other significant finds.

3.2 Prehistoric and Roman Activity

Prehistoric activity

The natural chalky boulder clay was overlain by river gravel interspersed with sand and sealed by a layer of alluvium. At the northern end of the site a shallow, sinuous water-channel, aligned north-east to south-west, cut into these deposits (Fig 3.2 and Plate 4). The fill contained a variety of charred plant remains including wheat, rye, barley and flax, probably contamination from later phases of settlement (sample 53). Excavated evidence from the area suggests that diverse hydrological changes have occurred in this part of Bedfordshire since the post-glacial period. Similar channels have also been found to the south of Sandy at Warren Villas (Dawson and Maull 1996) and Banks Land, and at Biggleswade West (Dawson 1994).

A series of crescent shaped hollows, especially prevalent in the southern area, were probably tree-throw holes. At the Bunyan Centre, Bedford, tree clearance took place in the Neolithic and Bronze Ages (Steadman 1999).

A substantial assemblage of 194 pieces of worked flint was recovered as residual material in later features. Diagnostic items indicate that it ranges in date from the early Neolithic to the early Bronze Age (Fig 4.1, 2-5). The small number of cores suggests that no flint knapping was being carried out on site, and the material is best regarded as resulting from casual loss. However, a single large sherd of Neolithic pottery may hint at the presence of some more substantial local activity (Fig 4.1, 1).

Phase	Period	Description and structures
1	**Prehistoric activity**	Natural deposits, palaeochannel and tree throw holes Residual flint and pottery
2	**Roman activity**	Linear boundary ditch, other minor ditches and residual pottery
3	**Middle to late Saxon enslosures** (8th–mid/late 9th century)	Possible large oval enclosures with smaller domestic enclosures set between, and including three inhumation burials
4	**Late Saxon and medieval settlement** (late 9th/early 10th–late 12th century)	A structured settlement comprising a series of rectilinear plots that underwent later development. Finds indicate nearby presence of contemporary domestic buildings
5	**Medieval aisled hall** (late 12th–early/mid 13th century)	Construction of aisled hall and a detached kitchen range to the south, within the existing plot system
6	**Medieval moated manor** (early/mid 13th–late 14th century)	Construction of substantial manor house within a moated enclosure
7	**Medieval moated manor** (late 14th–mid 15th century)	Refurbishment of the manor house Abandonment of manor house
8	**Late medieval** (mid 15th–early 16th century)	Demolition of the manor house Picking over of debris or continuing nearby occupation
9	**Post-medieval**	18th century establishment of Tempsford Park Late 19th–early 20th century, infilling of moat with brushwood and dumped domestic debris.

Table 1. Summary of site chronology

Roman activity

A single linear ditch ran north-south across the southern area (Fig 3.2, DG1). Other ditches and gullies suggest the possible presence of a system of large-scale plots or fields. In addition, a scatter of Roman pottery and other finds was recovered as residual material from later features, and appears to come from a building probably somewhere in the immediate vicinity. The evidence therefore suggests that the site was on the periphery of a more intense area of Roman settlement, probably lying further to the south.

Ditch Group 1 comprised a north-west to south-east aligned ditch with evidence of intermittent recutting. This, and the other ditches, ranged from 0.35-1.0m wide by 0.08-0.45m deep, with U-shaped profiles and fills of mid to dark grey-brown silts containing few inclusions.

The dating evidence for this group is limited to three Roman pottery sherds. However, another 43 sherds of Roman pottery, and twelve finds including a bronze Hodshill type brooch, eight copper alloy coins, possible fragments of Roman brick or floor tile and three fragments of wall plaster were recovered from residual contexts. The pottery ranged in date from the middle 1st–4th century AD.

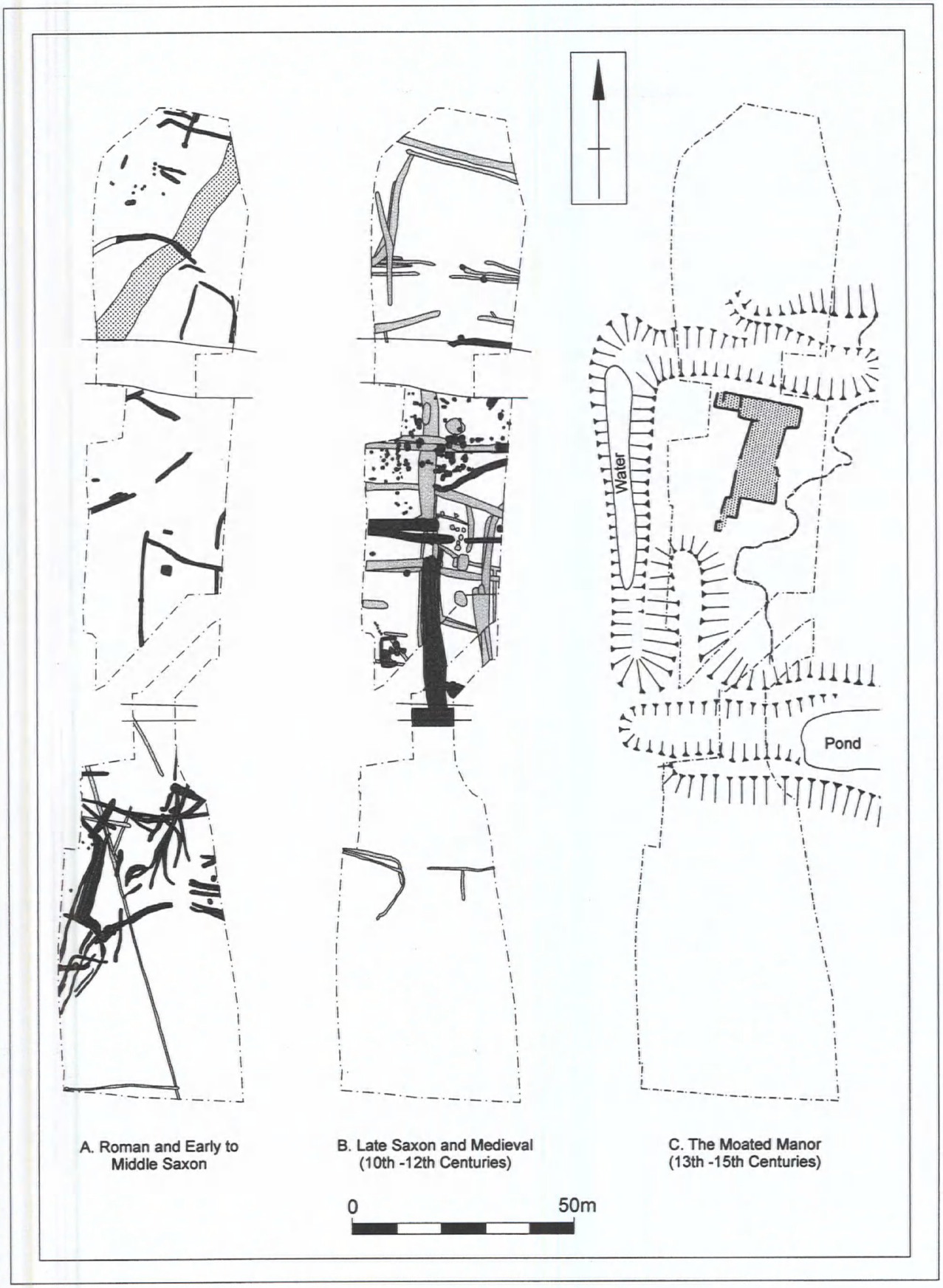


Fig. 3.1. The major phases of occupation.

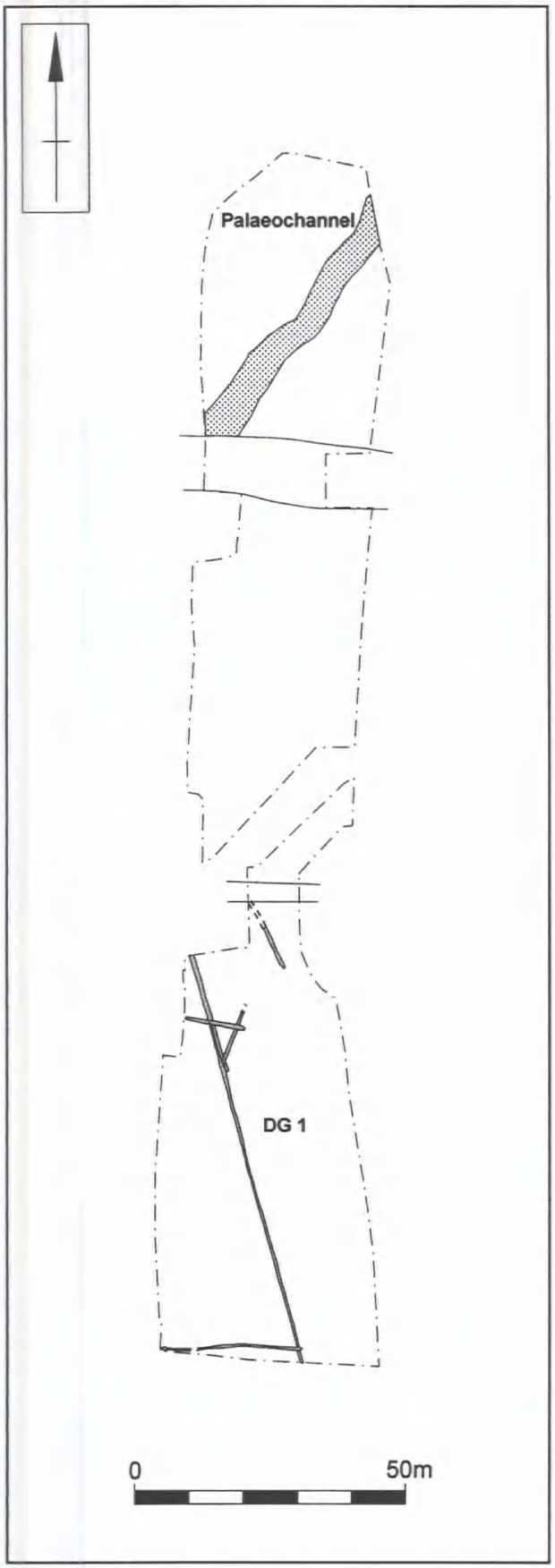
Plate 4. The northern area, showing the prehistoric palaeochannel, looking south.

3.3 Middle to Late Saxon Enclosures (8th century – mid/late 9th century)

Numerous lengths of linear and curvilinear ditch can be attributed to the middle to late Saxon period (Phase 3). The dating is based on a pottery assemblage that includes handmade Saxon pottery but also sufficient amounts of Ipswich ware and Maxey-type ware to confirm the middle Saxon origin of the settlement. It appears to have comprised two large enclosures with an area of domestic settlement set between them (Fig 3.3).

Lengths of curvilinear ditch to the south, **DG2** and **DG6**, and the north, **DG24**, are interpreted as forming the ends of two large oval enclosures, **Enclosure 1** and **Enclosure 2**. The northern enclosure would have measured 130m south to north. It appears to have had a 4m wide entrance to the north, with a number of associated minor internal ditches immediately inside this entrance. Ditch systems within the enclosure, **DG7** and **DG14**, may have been internal sub-divisions or later additions. A southern entrance, perhaps obscured by recutting, may be indicated by the presence of associated external ditches. The projected size of this enclosure and the paucity of internal features suggest that it would have been utilised for agricultural purposes, perhaps as a stock corral. The southern enclosure also had a northern entrance, 4.5m wide. There were no internal features within the small part excavated. Although large areas were enclosed the ditches were not substantial, and in some places they were little more than shallow gullies. Clearly these boundaries and any associated bank would not have been sufficient to restrain livestock, and would have required the addition of a fence or close-set hedge.

At their closest the enclosures were only 20m apart. An area of domestic settlement lay between them, although the main focus of occupation appears to have been further to the west and perhaps also to the east. Although the settlement area was centred on the space between the two large enclosures, elements of the settlement ditch systems cut across the ditches of both enclosures. This suggests that while the larger enclosures and the settlement were in contemporary use, and perhaps of contemporary origin, later use of the settlement encroached onto the larger enclosures, which therefore appear to either have fallen out of use or at least to have declined in importance.



The settlement area contained numerous curvilinear lengths of ditch forming several small enclosures. In particular, the ditches to the west, **DG 3-5**, appear to form the eastern side of a domestic enclosure system lying largely outside the excavated area. There were a number of associated pits, **PG 2-3**, a scatter of postholes, **SG3**, and an area of cobbled surfacing (Plate 5). These features produced a range of domestic finds including a complete Maxey ware bar-lug vessel (Fig 5.1, 7) and numerous fragments of lava quern. Ditches to the east, **DG10**, may form the south-western corner of a further enclosure, although this contained few internal features in the area excavated. Other shorter lengths of ditch, **DG11**, form no coherent structures and appear to date to the end of the period, cutting across the earlier ditches.

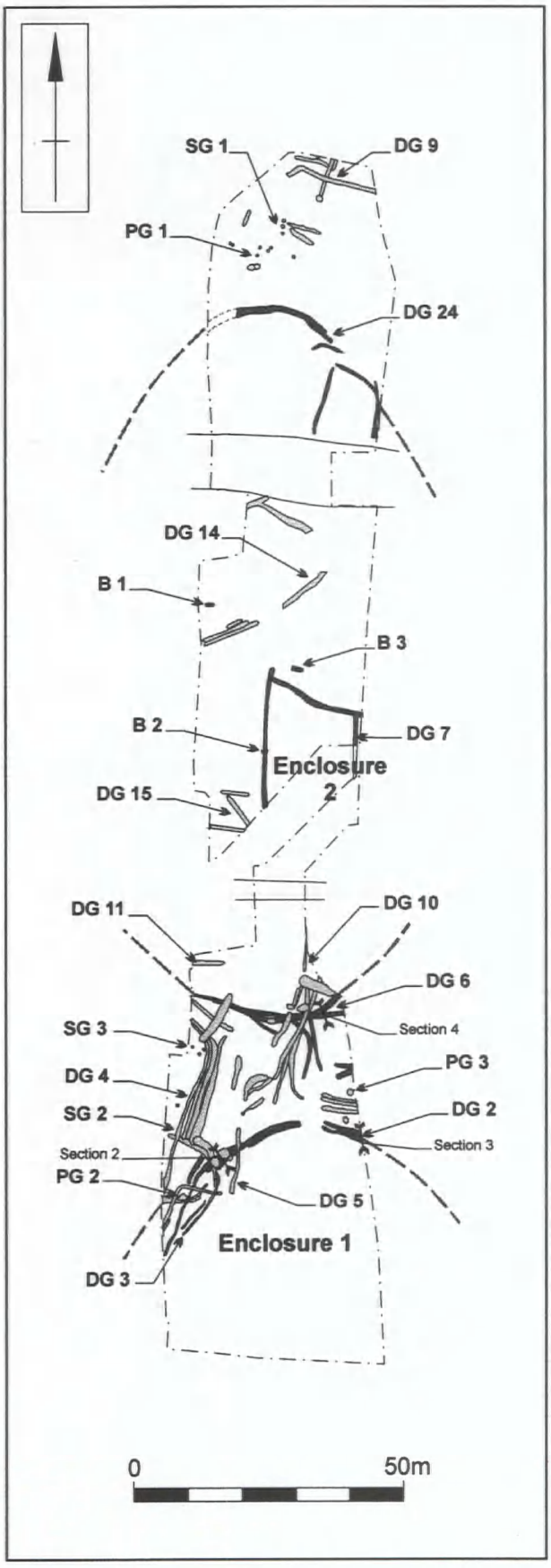
A further area of contemporary activity lay to the north of Enclosure 2, and comprised a series of shallow ditches, **DG9**, and some postholes and pits (**SG1** and **PG1**). The postholes may have been the remnants of a building measuring 8-14m long by 4-6m wide.

In addition, three inhumation burials within Enclosure 2 (Fig 3.3, B1-B3), beneath the medieval manor in the central part of the site, date to around the mid-8th century. They comprised two young women, aged 20-25 years, and an elderly woman, more than 45 years old. Only one of the burials was undisturbed, but they were all extended, supine inhumations. They all lay with their heads to the west, with no accompanying grave goods, suggesting that they may have been Christians. While they indicate that Enclosure 2 was used for burial, these appear to have been isolated instances as the graves were well scattered, lying 16m to 20m apart, rather than clustered, as would be expected in a cemetery.

The small animal bone assemblage from these features was dominated by cattle. While sheep and pig were also present, it appears likely that sheep farming was undertaken further afield on more marginal land. The evidence for slaughter and butchery on site substantiates the interpretation that animal herding in the large enclosures was a major activity. The lava quern fragments provide evidence for crop processing.

Enclosure 1, the northern arc of ditch, **DG2**, consisted of two parallel, curvilinear, discontinuous ditches, with a 4.5m wide entrance. The ditches measured 0.24-1.0m wide by 0.1-0.5m deep (Fig 3.4, Section 2 [344] and Section 3

Fig. 3.2. Prehistoric and Roman features.



[305] and [307]). Their fills comprised loosely compacted mid orange to dark brown silt with small stone inclusions and the occasional larger pebble deriving from the surrounding natural. The relationship of the two ditches remains uncertain. A single sherd of early- middle Saxon pottery and a single sherd of residual Roman pottery were recovered from the fills of **DG2**.

Enclosure 2, the northern enclosure, comprised ditch groups **DG6** and **DG24**. The southern arc, **DG6**, comprised a series of irregular, curvilinear, discontinuous ditches, with evidence of recutting (Fig 3.4, Section 4 [701] and [703]. There was also a series of linear southern extensions, running towards the entrance of Enclosure 1. The northern arc, **DG24**, was similar (Fig 3.4, Section 5, [9]). Both sets of ditches ranged from 0.25-2.5m wide by 0.08-0.64m deep with fills similar to those of Enclosure 1.

Ditch group **DG3** comprised a series of curvilinear ditches that formed the north-eastern corner of a small enclosure. They ranged from 0.22-1.20m wide by 0.05-0.41m deep (Fig 3.4, Section 2, [533]) with fills of loosely compacted mid orange to dark brown silts with occasional, moderate small flint gravel. The larger stone content was derived from the surrounding natural. These ditches enclosed a substantial metalled surface, 0.07m thick, comprising a single course of compacted irregular to rounded cobbles up to 0.05m in diameter set within compacted brown clay silt and covering an area of approximately 50m^2.

Ditch group **DG4** comprised a series of parallel curvilinear ditches that generally respected the northern edge of **DG3**. They ranged from 0.35-1.93m wide by 0.25-0.58m deep with fills similar to **DG3**. The stone content was derived either from the surrounding natural or from the stone surface enclosed by **DG3**. These ditches may have formed an extension to enclosure **DG3**. Six sherds of middle Saxon pottery and a single sherd of intrusive late Saxon pottery were recovered. Other finds include animal bone, fragments of two lava querns and a small quantity of fired clay.

Ditch group **DG5** comprised a series of discontinuous curvilinear ditches, with evidence of recutting, three of which post-dated elements of both **DG3** and **DG4**. They were 0.44-1.2m wide by 0.1-0.34m deep with primary and secondary fills of loosely compacted silts with rare charcoal flecking. A large number of pottery sherds, including a complete middle Saxon Maxey ware bar-lug pot (Fig 5.1, TP7), were recovered from the fills. Other finds included animal bone and a fragment of lava quern.

Ditch Group **DG7** comprised a series of narrow gullies forming an open-ended rectangle, at least 25m long, north-south by 17m east-west. They may have formed a small enclosure set within Enclosure 2. The gullies were 0.40-

Fig. 3.3. The middle to late Saxon enclosures.

Plate 5. The southern area, showing middle Saxon ditches and the metalled surface, looking north-west.

1.0m wide by 0.2-0.5m deep. A copper alloy object and a single sherd of early/middle Saxon pottery were recovered from the moderately stony silt fills of the gullies.

Ditch group **DG9** comprised ditches aligned east-west, close to the northern limit of the excavated area. They were between 0.6-0.9m wide by 0.11-0.37m deep and had fills similar to those of **DG3-DG5**. Dating for the group consisted of six sherds of early/middle Saxon pottery, the only other finds comprising animal bone.

Ditch group **DG10** comprised a series of parallel, curvilinear ditches located adjacent to the eastern side of the site. They measured between 0.48-1.2m wide by 0.17-0.5m deep. They all contained similar fills of loosely compacted silts with flint gravel inclusions. An ashy deposit recorded within the upper fill of one of the ditches probably represents secondary deposition and may have derived from a hearth. Two sherds of pottery dating to the 9th century were recovered from the fills of the ditches along with sherds of late Saxon pottery which were probably intrusive in these contexts.

Ditch group **DG11** comprised six discontinuous ditches of variable length and width, one of which truncated the ditches of **DG10**. They measured between 4m-10m in length by 0.7-2.2m wide and 0.16-0.85m deep. The primary and secondary fills were similar to those in **DG10**, but with greater concentrations of stone in the primary deposit. Two sherds of early-middle Saxon pottery and two sherds of late Saxon pottery were recovered from the fills of these features along with animal bone, fired clay, an iron knife and part of a pair of iron shears.

Ditch group **DG14**, within Enclosure 2, appeared to form two sides of a small enclosure, with an opening to the south-east. The ditches ranged from 0.35-1.48m wide by 0.12-0.44m deep (Fig 3.10, Section 24, [1682]), with evidence for recutting. Twenty-one sherds of pottery, mainly dating to the 11th century were recovered from their fills of loosely compacted silts with flint gravel inclusions. Other finds included animal bone, and a small assemblage of ceramic tile and shell.

Structural group **SG1** comprised ten sub-circular postholes forming two sinuous lines measuring up to 14m east-west and up to 6m north-south. The postholes measured 0.5-0.6m in diameter and 0.08-0.25m deep. A single sherd of early/middle Saxon pottery was recovered from the dark brown, silt clay fill of one of the postholes. The arrangement suggests that they formed the southern side of a possible rectilinear structure, including a possible internal sub-division.

Structural group **SG2** consisted of a series of postholes set 1-2m apart and arranged in two rough lines up to 4m in length. They measured 0.34-0.47m in diameter and 0.08-0.17m deep. No dating evidence was recovered from the

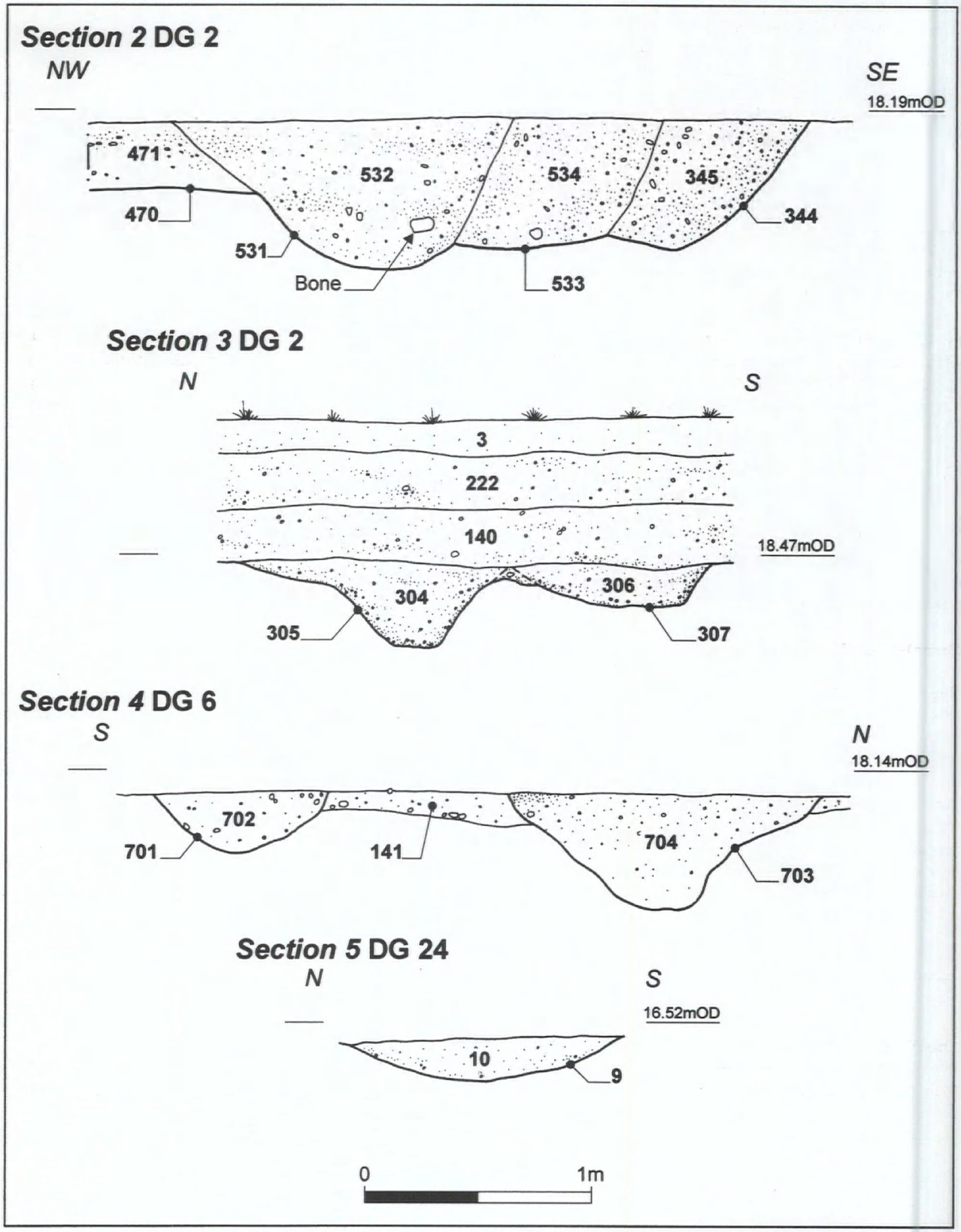


Fig. 3.4. Middle to late Saxon features: sections 2-5.

silt clay fills of any of the postholes. However, several of the postholes were cut the ditches of **DG3** and **DG5**.

Structural group **SG3** comprised six steep-sided postholes, which measured 0.3-0.7m in diameter and 0.12-0.36m deep. A single sherd of possible middle Saxon pottery was recovered from the clay silt fill of one of these ditches.

Pit group **PG1** consisted of four dispersed oval to sub-rectangular pits with concave bases, measuring 0.4-1.5m in diameter by 0.12-0.35m deep. They were all filled with similar deposits of dark brown, silt clay. A single sherd of early/middle Saxon pottery was recovered from one of these fills.

Pit group **PG2** comprised four irregular pits with steep sides and concave bases, measuring 1.0-2.2m in diameter by up to 0.7m deep (Fig 3.4, Section 2, [531]), Middle Saxon pottery and animal bone were recovered from the fills of grey brown silt.

Pit group **PG3** comprised widely scattered oval pits, with steep sides and uneven bases, measuring 0.9-3.6m in diameter by 0.25-0.57m deep, with fills similar to **PG2**. Mid to late Saxon pottery sherds, animal bone and fired clay were recovered from the grey brown silt fills. The largest pit in the group contained clay interspersed with burnt daub fragments.

Burials 1-3 (B1-B3) were inhumation burials recovered from the central part of the excavation, within Enclosure 2 (Fig 3.3, B1-B3). They were all in earth-cut graves, but two had been heavily truncated, so that the graves were only 0.07m to 0.18m deep. Burial 3 was undisturbed, while for Burials 1 and 2 only the torsos were intact along with disturbed remnants of the skulls and long bones. The three individuals, all women, were interred with their heads to the west. Bone samples from two of the burials, Skeletons 1 and 3, were submitted for radiocarbon dating, with the results clearly indicating that they belong to the middle Saxon period (Table 2).

3.4 Late Saxon and Medieval Settlement (late 9th/early 10th century – early 13th century)

Medieval tenement plots (late 9th/early 10th century – late 12th century)

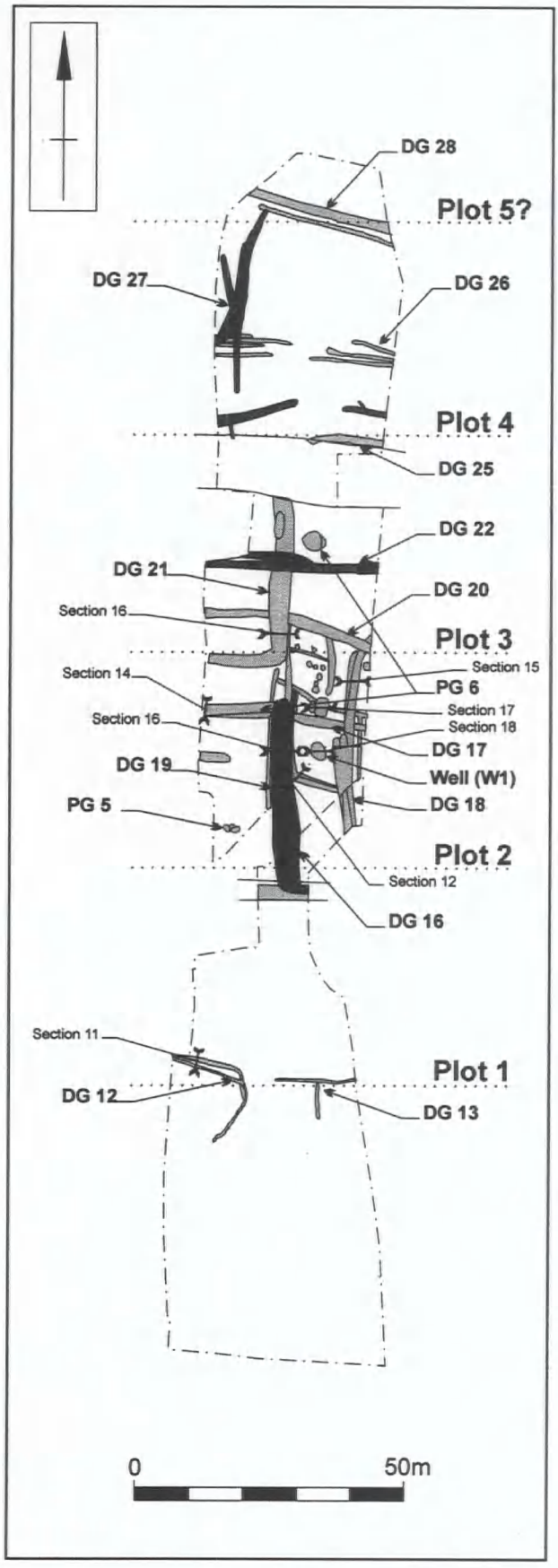
A settlement re-planning occurred in the late Saxon period, at around the end of the 9th or in the early 10th century (Phase 4). This is represented by a new system of linear ditches, aligned both east-west and north-south. While only a small area was excavated, these probably represent the late Saxon formation of an extensive system of regular rectangular plots (Fig 3.5). This system formed the basis for the next 300 years of settlement, through to the late 12th century, the longest single episode of activity in the occupation of the site. There were considerable modifications of the system: ditches were recut and new ditch systems were introduced, sometimes cutting across earlier boundaries, perhaps as the formal sub-division of plots into smaller units.

As the excavated site provided only a linear section across this system, it is impossible to fully reconstruct the plot layout and its subsequent development. However, a hypothetical model provides an indication of the basis for the establishment of the plots (Fig 3.5, Plots 1-5). The model is based on 1-acre units measuring 20 rods long (100.8m) by 8 rods wide (40.24m), using a 16.5-foot (5.03m) rod, which is half the length and twice the width of the statutory acre defined in later medieval documents as a field strip 4 rods wide by 40 rods long (Zupko 1968). The appearance in late Saxon settlements of such 1-acre plots has been demonstrated at West

Lab No's	Context	Sample details	Conventional radiocarbon age BP dC13	Cal AD 68% confidence 95% confidence
Wk-10649	Skeleton 1	Bone collagen	1273+/-60 -21.7 +/-0.2	660-810 650-890
Wk-10650	Skeleton 3	Bone collagen	1269+/-69 -18.8 +/-0.2	660-860 640-950

Radiocarbon dating laboratory, University of Waikato, Hamilton, New Zealand
Calibration: OxCal v3.5 Bronk Ramsey (2000)

Table 2. Radiocarbon determination for skeletons 1 and 3.



Cotton, Raunds, Northamptonshire (Chapman forthcoming). A model plot width of 8 rods (40.24m) provides close coincidence with many of the east-west ditch systems: **DG12/13**, the east-west arms of **DG19** and **DG21**, **DG23/25** and **DG28**. In addition, the northern end of Plot 5 would be close to the line of modern Station Road. It may also be noted that the central two plots, 2 and 3, span the same width as the later moated enclosure. This suggests that the enclosure may have been formed from the amalgamation of two pre-existing 1 acre plots.

No contemporary buildings survived within the excavated area. However, both the quantities and the nature of the recovered finds indicate the nearby presence of domestic settlement. Even allowing for truncation of deposits to the north and south, Plots 2 and 3 in the centre of the excavated area were clearly subject to the greatest activity in terms of sub-division and occupation. The finds from this area include quantities of late Saxon and early medieval pottery, dominated by St. Neots ware, Shelly Coarseware and the introduction of later local fabrics and also such types such as Lyveden 'A' ware, from Northamptonshire, and a single sherd of London ware. Other domestic items were also recovered from the ditches, and finds of late Saxon and early medieval types were also recovered as residual items within the medieval soil horizons inside the moated enclosure. These include two Anglo Saxon pennies, an unstratified example of Eadred (945-55) and a cut halfpenny of Aethelred II (AD 978-1016) from **DG18**. These are unusual site finds and suggest that the occupants were of relatively high status. There is also a range of domestic items including textile tools, a lock and knives. A quantity of ironworking slag, with a particular cluster from **DG17**, is indicative of secondary smithing being carried out nearby. The occurrence of several pits, **PG6**, and a well or water pit, **W1** (Fig 3.7, Section 18), in the eastern half of Plot 2 suggest that the related buildings may have stood immediately to the east of the excavated area.

Pollen recovered from the ditches of **DG19** on the edge of the southern moat, derived from plants generally associated with cultivation, habitation and other areas of disturbed ground close to the edge of agricultural areas. The apparent absence of wheat chaff suggests that crop processing, winnowing and threshing, was not undertaken within the excavated area. The recovery of plant species such as grass (*Gramineae sp.*), sedge (*Carex sp.*) and plantain (*Plantago sp.*), generally found on wet and marshy

Fig. 3.5. Late Saxon and medieval settlement.

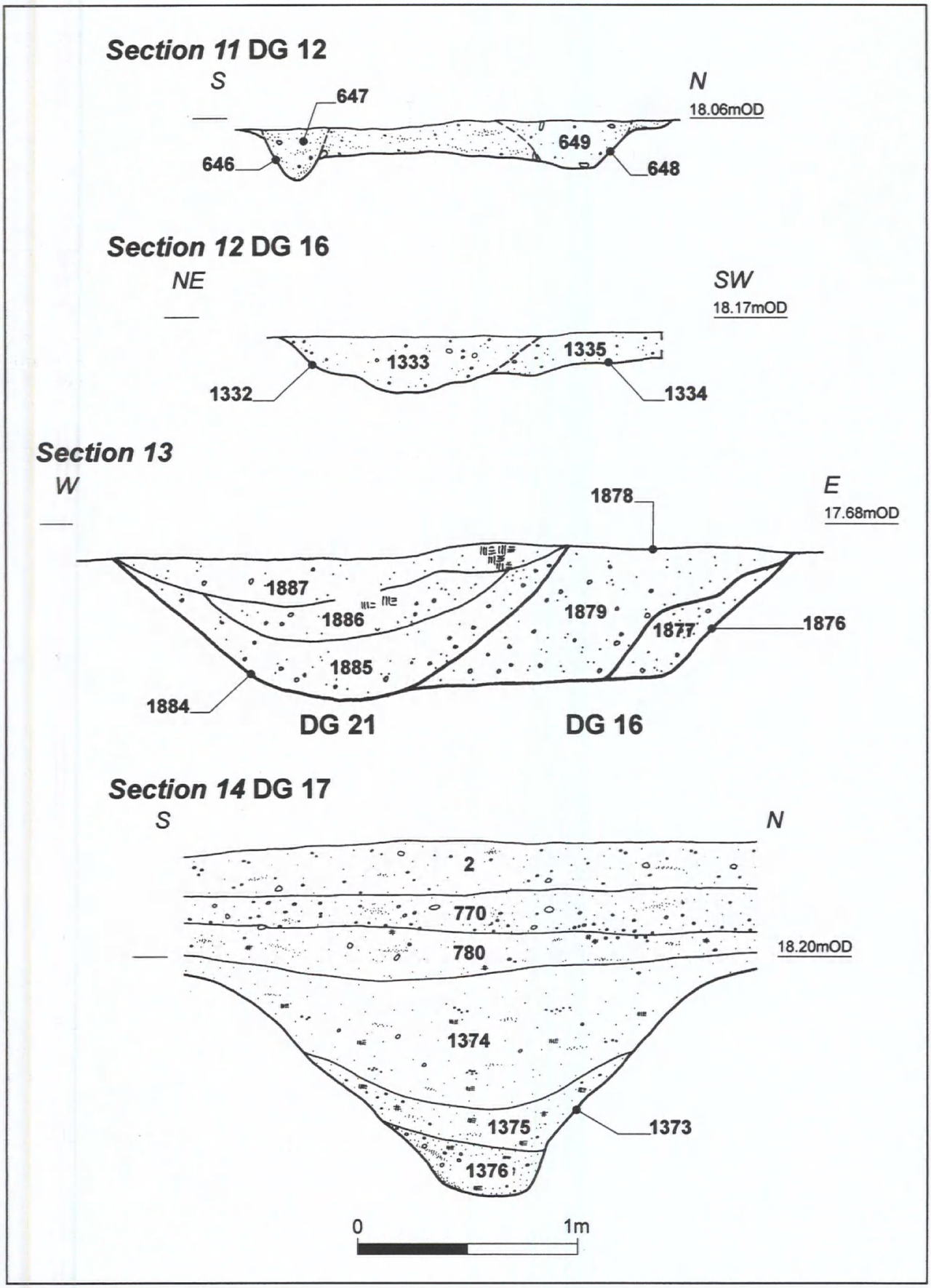


Fig. 3.6. Late Saxon and medieval features: sections 11-14.

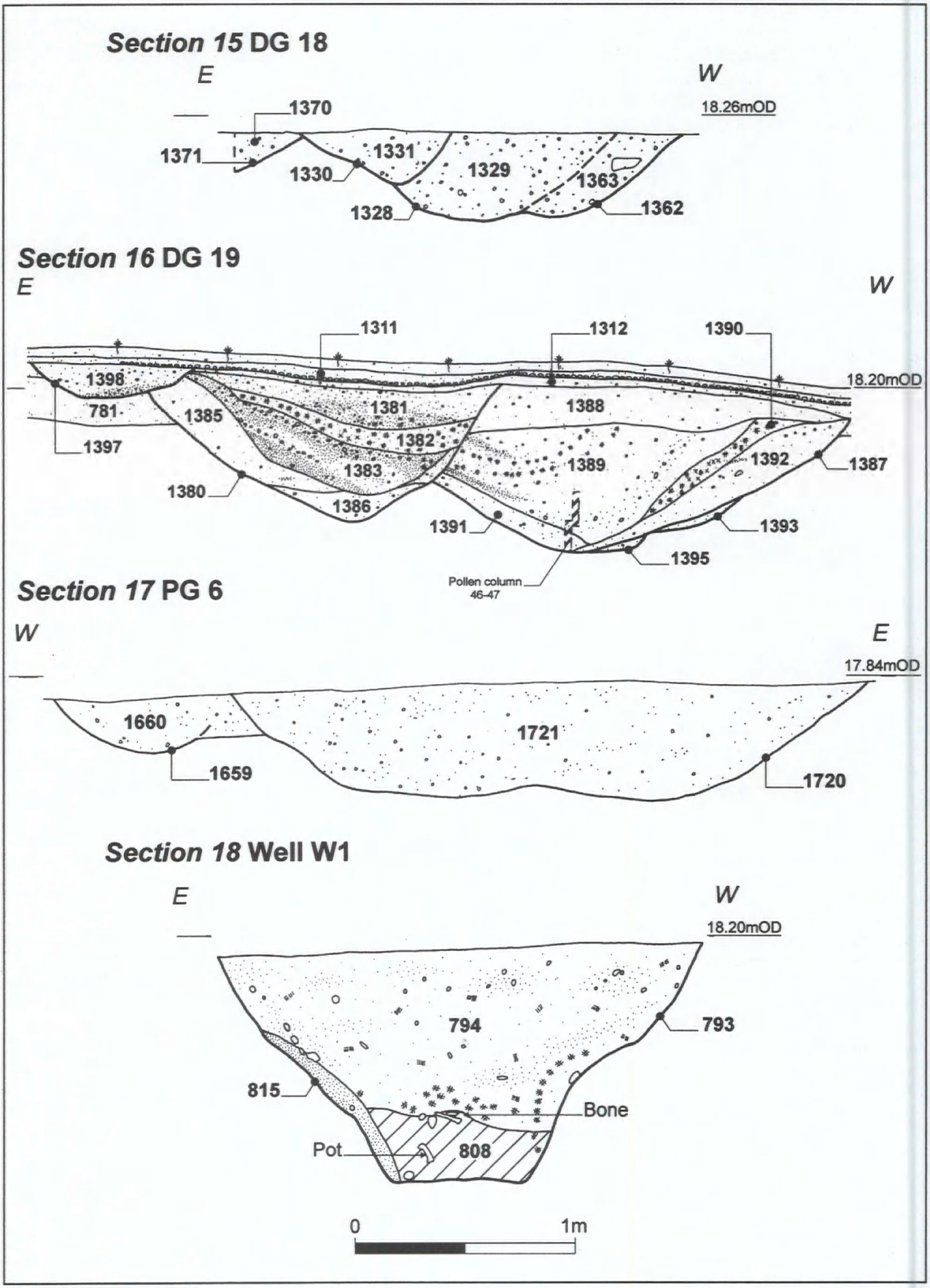


Fig. 3.7. Late Saxon and medieval features: sections 15-18.

areas, is not surprising given the site's proximity to the River Great Ouse. The mollusc assemblage contains *Pupilla muscorum* and *Cochlicopa lubrica,* which enjoy both dry and damp habitats, suggesting seasonal fluctuations in the water table. The animal bone assemblage shows an increase in the number of better quality meat cuts from sheep and a greater use of cattle, but the quantities are too small to claim a clear indication of a more dairy based economy.

The origin of the forerunner of the present A1 road is unclear, as the earliest reference is the Ogilby map of 1675. At the latest, it would appear likely to have been contemporary with, or closely following, the establishment of the late Saxon plot system, with Station Road, along the northern edge of the plots, appearing at the same time. Whether it also followed the course of an earlier road is unknown.

Ditch Group **DG12** and **DG13** measured 0.30- 1.40m wide by 0.13-0.50m deep (Fig 3.6, Section 11, [646] and [648]). They all contained similar fills of moderately stony silts flecked with charcoal and clay patches. Only three sherds of late Saxon pottery was retrieved from the fills.

Ditch Group **DG16** measured 0.40-1.40m wide by up to 0.5m deep. Clear evidence for recutting was recorded (Fig 3.6, Sections 12 and 13, [1332], [1334], [1876] and [1878]). Domestic refuse included 11th century pottery sherds, animal bone and tile fragments.

Ditch Group **DG17** and **DG18** measured between 0.50m-2.00m wide and had steep-sided, V-shaped profiles, 0.12-0.80m deep (Fig 3.6, Section 14 and Fig 3.7, Section 15; [1373], [1328], [1330], [1362] and [1371]). A large assemblage of late Saxon pottery (345 sherds) was recovered from these ditch groups along with animal bone, ceramic tile and shell. Five iron objects, a fragment of worked bone and two quern fragments were recovered from **DG17**, which also produced a quantity of iron-working slag. A silver coin, copper stud, an iron heckletooth used for weaving, a quern fragment and a small quantity of slag were recovered from **DG18**.

Ditch group **DG19** had been recut on at least three occasions, and the cuts all terminated to the north in rounded butt ends. A short section to the south, aligned east-west, was truncated by the later moat. The ditches measured between 0.50-2.00m wide and had steep-sided U-shaped profiles, 0.29-0.64m deep (Figs 3.7 Section 16 and Fig 3.15, Section 31). They all contained similar fills of moderately stony grey/brown silts flecked with charcoal and clay patches. Late Saxon and medieval pottery of the 11th and 12th centuries was recovered from these fills along with animal bone, fired clay and a small quantity of slag.

Ditch group **DG20** was up to 2.10m wide by 0.68m deep, with steep sides and a flattish base, and contained primary fills of coarse silt and secondary deposits of moderately stony silts flecked with charcoal and clay patches. Pottery dating from the 11th-12th centuries was recovered from the fills of the ditches along with animal bone, slag and a single bone object interpreted as a pin beater.

Ditch group **DG21** had been recut at least once. The ditch measured up to 2.50m wide by 0.9m deep, with a steep-sided, V-shape profile (Fig 3.6, Section 13, [1884]).

Ditch group **DG22** had been recut at least once. It measured up to 1.60m wide by 0.61m deep, with a steep-sided V-shaped profile. Pottery dating mainly from the 11th to the late 12th centuries was recovered from the grey-brown silt fills along with a small assemblage of animal bone.

Ditch Group **DG23** measured between 0.35-2.50m wide by 0.18-0.64m deep. Ditch Group **DG25** was 1.00m wide by 0.35m deep, with a steep-sided, V-shaped profile (Fig 3.15, Section 30). No finds were recovered from its moderately stony fill of mid to dark grey-brown silts.

Ditch Group **DG26** measured between 0.35-2.50m wide by 0.18-0.64m deep, with U-shaped profiles, and moderately stony fills of dark grey brown silt. Pottery dating to the early 12th century, animal bone, fired clay, slag, and a fragment of copper alloy sheet was recovered.

Ditch group **DG27** had been recut at least twice and was similar to **DG28**. Ditch group **DG28** measured up to 2.5m wide by 0.86m deep, with steep-sided, V-shaped profiles. Pottery dating from the 11th-early12th centuries was recovered from the grey brown silt fills along with a small assemblage of animal bone and slag.

Pit group **PG5** comprised a cluster of pits cut into the fill of gully **DG15**. They were sub-circular or oval in plan, 0.99m-1.70m in diameter by 0.06-0.53m deep. They were generally filled with sandy-silt or sandy-clay. One pit contained a yellowish-grey ashy silt fill, with frequent charcoal and fragments of fired clay, while another contained compacted clay and silty sand. Ten pottery sherds of 11th century date, animal bone and fired clay was recovered.

Pit Group **PG6** comprised 12 pits. They were all sub-circular or oval in plan, measuring from 0.75 to 2.00m in diameter by up to 0.50m deep (Fig 3.7, Section 17, [1659] and [1720]). Their fills comprised sandy clay silts with variable amounts of gravel, although one pit contained a deposit of ash and charcoal towards its base. Four larger pits, between 2.6m and 5.0m in diameter by 0.55m-0.64m deep, with steep sides and flat irregular bases, which lay 30m to the north, have also been assigned to this group. Pottery dating from the 9th-11th century was recovered, along with animal bone, fired clay and slag.

Well or water pit **W1** comprised an oval-shaped pit, 2.25m in diameter by 1.05m deep, with steep sides and a flat base

(Fig 3.7, Section 18, [793]). It contained a primary fill of yellow brown silt, and secondary fills of dark grey clay silts containing rounded cobbles. A large quantity of 11th century pottery was recovered, in addition to animal bone, slag and some residual flint.

The aisled hall (late 12th century – early/mid 13th century)

A reorganisation of the settlement (Phase 5) is characterised by a redefinition of the boundary system and the provision of a probable aisled hall, with a contemporary kitchen and workshop area to the south (Fig 3.8). It may denote the super-imposition of a small manor onto the existing tenement plots or a relocation of manorial buildings within an existing manorial plot. This building had only a short lifetime and can be seen as a precursor to the creation of the moated manor.

The southern boundary of the plot was probably still formed by **DG19**. The northern boundary is un-known but may have been **DG25** or a ditch to its south lost at the formation of the northern moat. This area was sub-divided by a further east-west ditch, **DG29**, with a narrow opening providing access between the two areas. Within the northern part there was a probable aisled hall, with a drainage ditch to its south and a scatter of postholes to the west and north, forming either fence lines or ancillary structures, small pits and a well or waterhole. In the southern area there was a series of ovens that formed a possible detached kitchen range, lying 40m south of the aisled hall. Three joining fragments of Millstone Grit from a broken up millstone suggest the nearby presence of a manorial mill.

The aisled hall

During excavation the postholes and pits on the northern part of the site were not all exposed simultaneously and at the time were not resolved into a building plan. It was only during analysis that parts of this complex, including a hearth, were identified as perhaps having formed an aisled hall. In part, the difficulty arose from the presence of many other pits and postholes, which both pre-date and post-date the aisled hall, with a particular concentration around the eastern side of the building (Fig 3.9).

As interpreted, the aisled hall comprised four opposed pairs of post-pits forming a three-bayed structure, containing a central hall, with an open

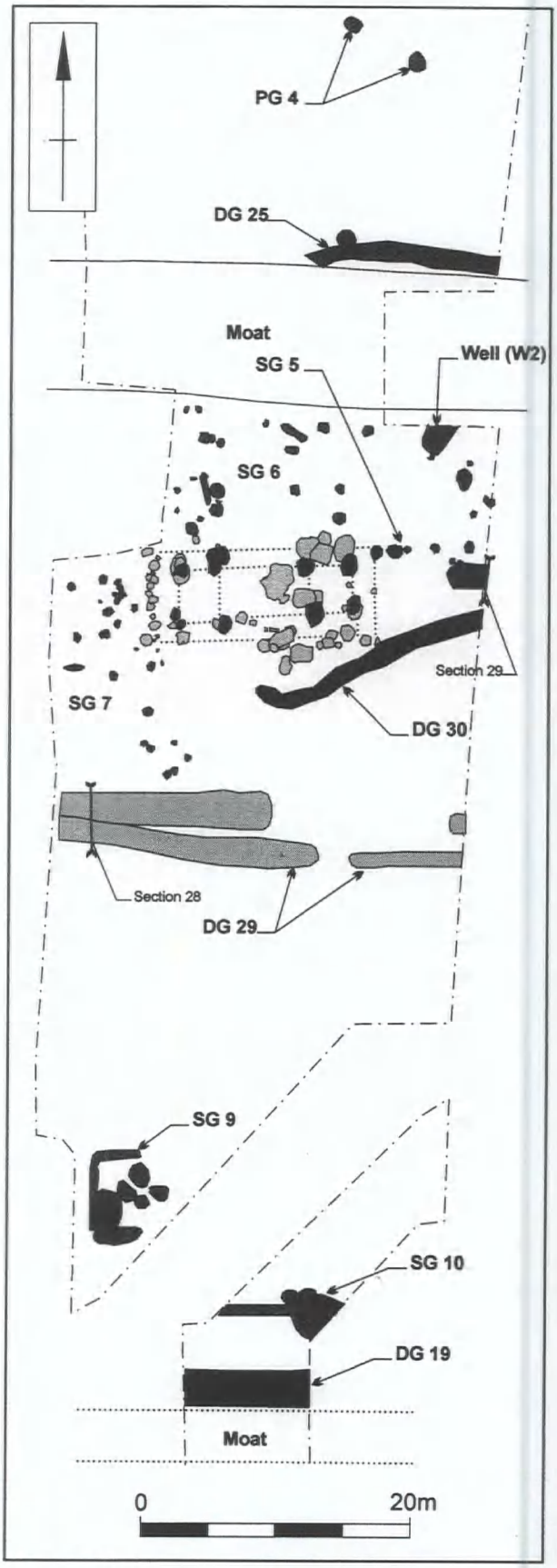


Fig. 3.8. The aisled hall and kitchen range.

hearth in the eastern part, and two smaller end bays. The building was aligned east to west and measured 18.6m long by 8.0m wide.

The aisle posts flanking the central bay were 7.0m apart, centre to centre, while the end aisle posts lay a further 3.3m to the west and east, giving a total length of 13.6m. A remnant of the western wall stood a further 2.5m to the west. The northern and southern aisle posts were set 4.0m apart, centre to centre, and a remnant of the southern wall stood a further 2.0m to the south.

The aisle post-pits measured up to 1.50m in diameter and were up to 0.55m deep (Fig 3.10, Section 23 [1978]). Traces of the external walls only survived intermittently. The western wall appeared to comprise more substantial corner posts, with smaller posts filling the intervening space, but set slightly inside the line of the corner posts. Some of the end wall posts appeared to have been replaced. The southern wall may have been constructed in a similar manner, although only an intermittent line of postholes at the eastern end had survived (Fig 3.10, Section 24 [1947], [1949], [1951], [1954] and [1956]). Little trace of the northern and eastern walls survived, but the building of the later manor house had extensively disturbed these areas.

An oval hearth, 1.5m long by 1.2m wide, lay in the eastern part of the central bay. It comprised cobbles set within a clay-filled hollow, 0.25m deep, with both scorched red. It is presumed that there would have been opposed doorways and, while no trace had survived, the location of the hearth suggests that they would have opened into the western half of the hall.

Other aisled halls of this period tended to be larger. Even the smaller examples, such as at Oakham Castle, Rutland; Farnham Castle, Surrey, and the later aisled hall at Goltho, Lincs (Beresford 1987, table 3, 114), which measured 20m by 13m were more substantial. The narrowness of the building presumably reflects the poor availability of the good

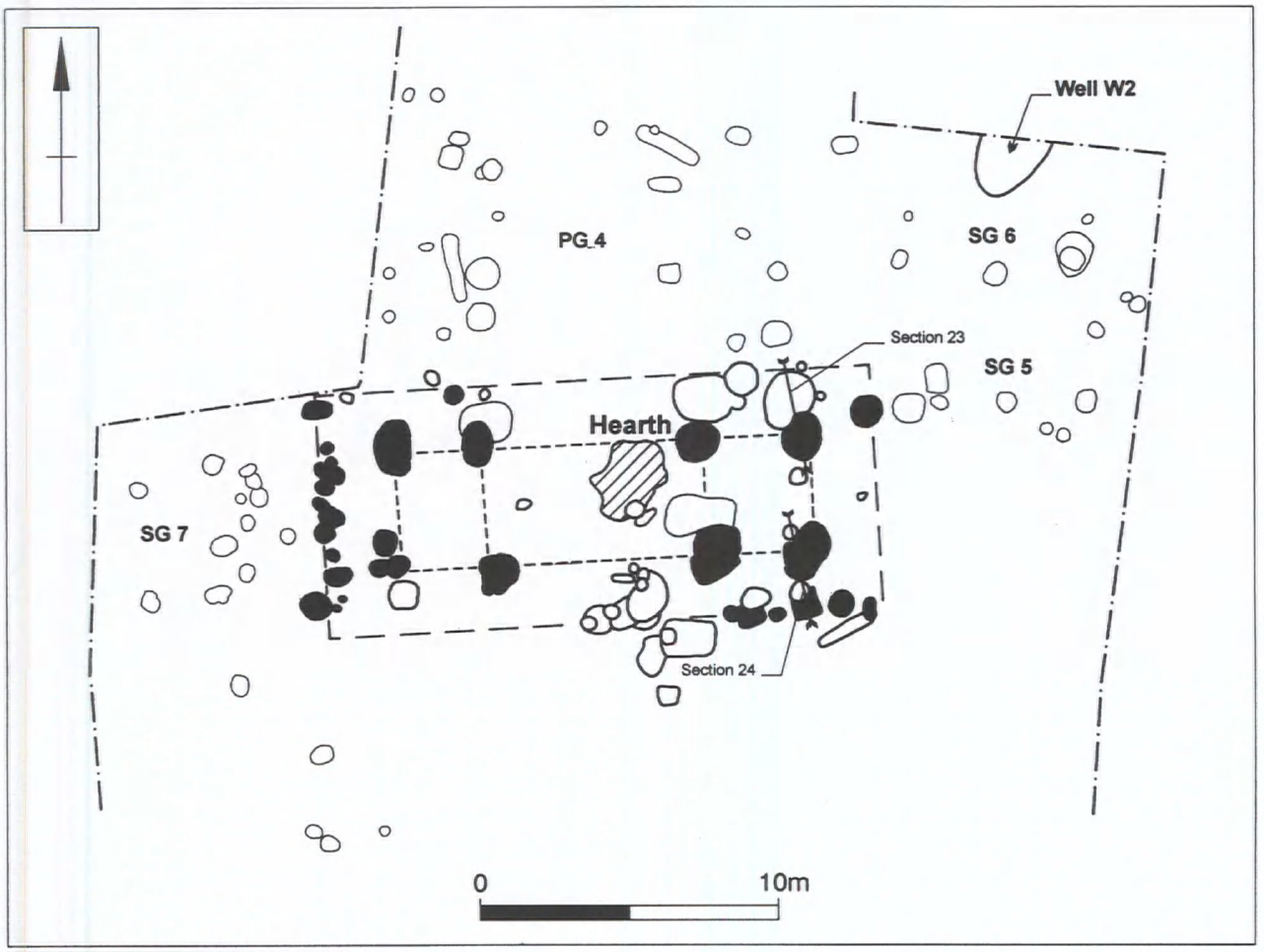


Fig. 3.9. The aisled hall.

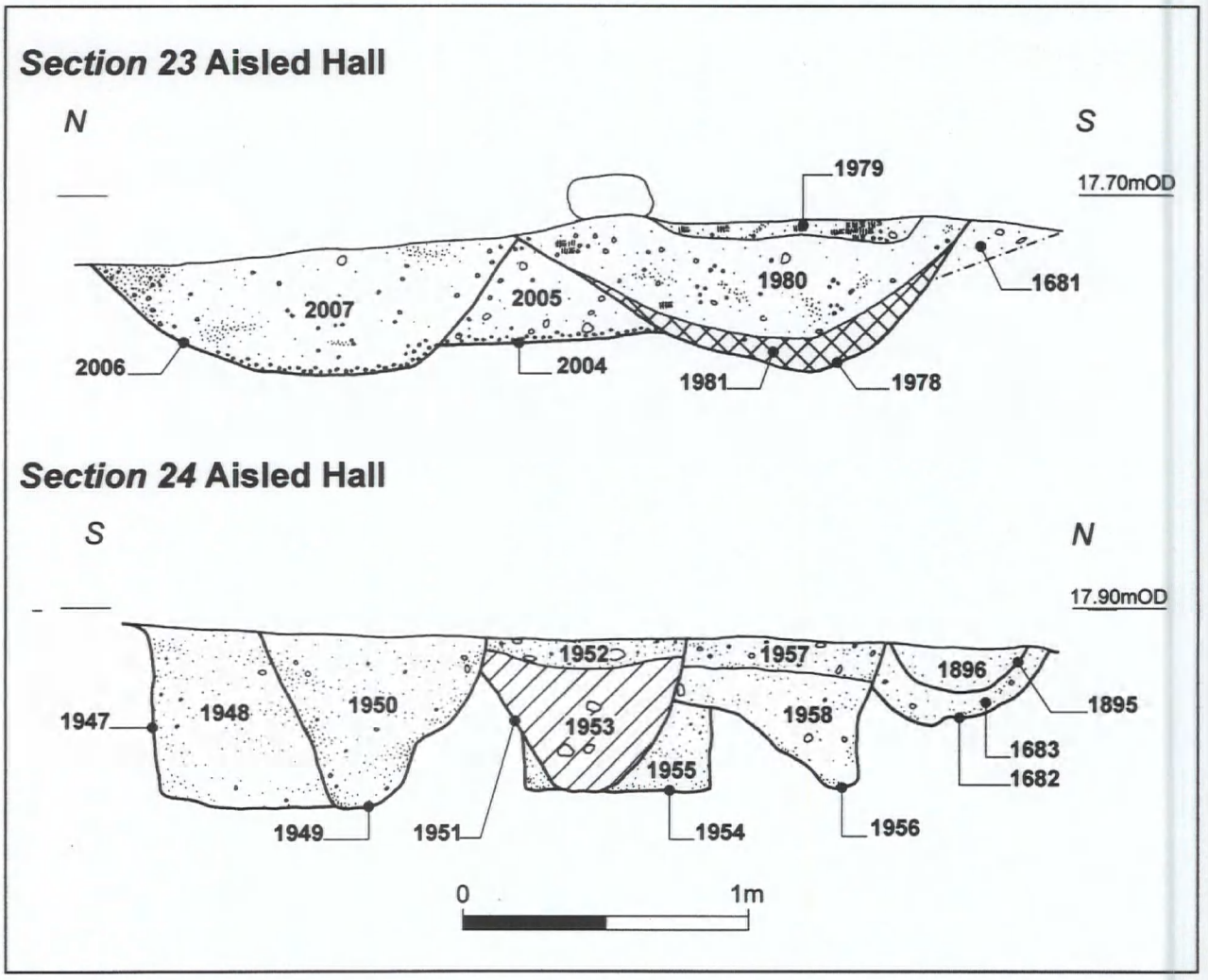


Fig. 3.10. Aisled hall features: sections 23 and 24.

quality long timbers required to span widths greater than this. Aisled buildings were generally built using the box-frame or post and truss method, and, as with the Tempsford example, the irregularly spaced timbers often necessitated "reversed assembly" (Smith 1974), whereby the tie-beam rested directly on the posts while the wall plate rested above the tie-beam.

Contemporary activity around the hall included groups of postholes and shallow, linear slots (Fig 3.8). A line of postholes to the east, **SG5**, appear to form a fence line running eastwards from the north-east corner of the hall. Further postholes to the west of the hall, **SG7**, may have formed a small ancillary structure, with a possible fence running southward towards the boundary ditch, **DG29**. The scatter of postholes and shallow linear slots to the north of the hall form no obvious groupings. However, a more substantial pit to the north-east, W2, contained fills that suggested that it had been wet if not water filled, indicating that it functioned as a waterhole. The worn area and the eroded sides of the feature were probably caused by trampling. A shallow ditch to the south-east of the hall and running obliquely to the plot boundaries, **DG30**, presumably functioned as a surface water drain. A pit or further drainage ditch to the north of **DG30**, at the eastern edge of the site, contained dumped burnt material that included large amounts of bread wheat, wheat, barley, oats and peas (Fig 3.11, Section 29, 1607). A small group of contemporary pits in the plot to the north, **PG4** were backfilled with soils containing domestic refuse (Fig 3.9).

Structural group **SG5** comprised seven sub-circular postholes measuring 0.45-1.05m in diameter by 0.180.40m deep. Two postholes retained remnants of a post pipe and possible post packing. Pottery dating from the 9th to the 12th centuries was recovered from the brown silt fills of the postholes.

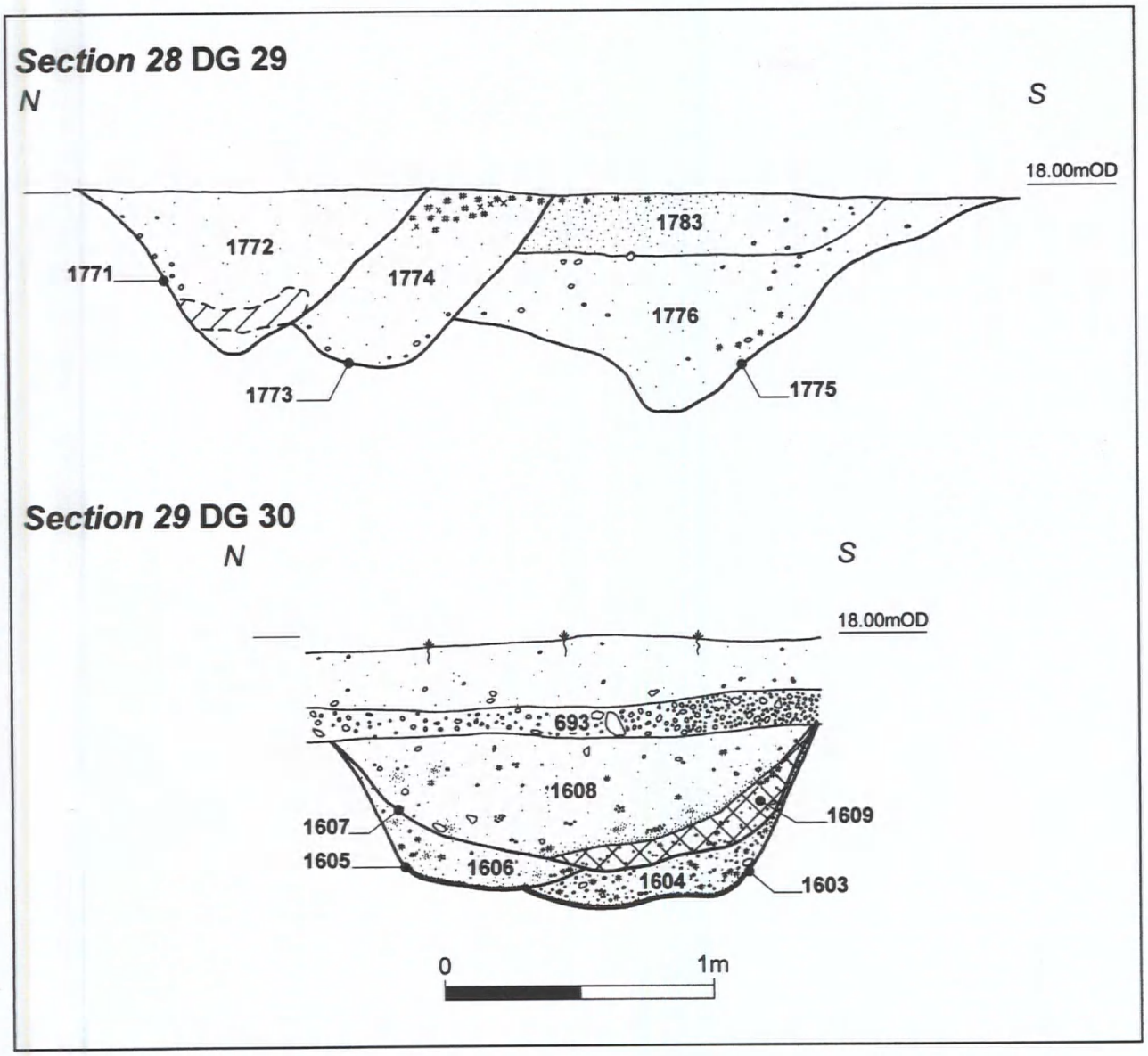


Fig. 3.11. The aisled hall and kitchen range features: sections 28 and 29.

Structural group **SG6** comprised a scatter of postholes, pits and slots. The postholes and pits were all sub-circular or oval, between 0.32-1.10m in diameter by 0.07-0.51m deep. The slots were up to 2.1m long and 0.53m wide by 0.23m deep, with steep sides and flat bases. All of the features contained brown silt fills, similar to those of **SG5**.

Well or waterhole W2 was partially excavated. It was roughly oval, measuring at least 2.60m across by 0.63m deep, with steep sides and a slightly concave base. Its eastern and southern edges had been broken back to an angle of *c.* 45°. The fill was a fairly homogeneous deposit of mid brown sandy silt: siltier in the base and generally sandier towards the top. A mixed assemblage of pottery was recovered from the upper fill along with animal bone, fired clay, shell and tile. A small posthole immediately to the south may have been associated.

Structural group **SG7** comprised an irregular group of postholes to the south and west of the aisled hall. They were all sub-circular or oval between 0.28-1.00m in diameter by 0.08-0.30m deep. Pottery dating mainly from the late 11th century to late 12th century was recovered from their brown silt fills along with a small quantity of fired clay.

Pit group **PG4** comprised a group of dispersed pits between 0.90-1.30m in diameter by 0.201.00m deep. Fired clay recovered from one of the pits may represent the remains of a hearth or oven. Small amounts of animal bone and shell were recovered from the sandy silt fills of the other pits.

Ditch group **DG29** was recut on at least occasions, with the entrance gap varying from 2.5m to 5.0m wide. The ditches

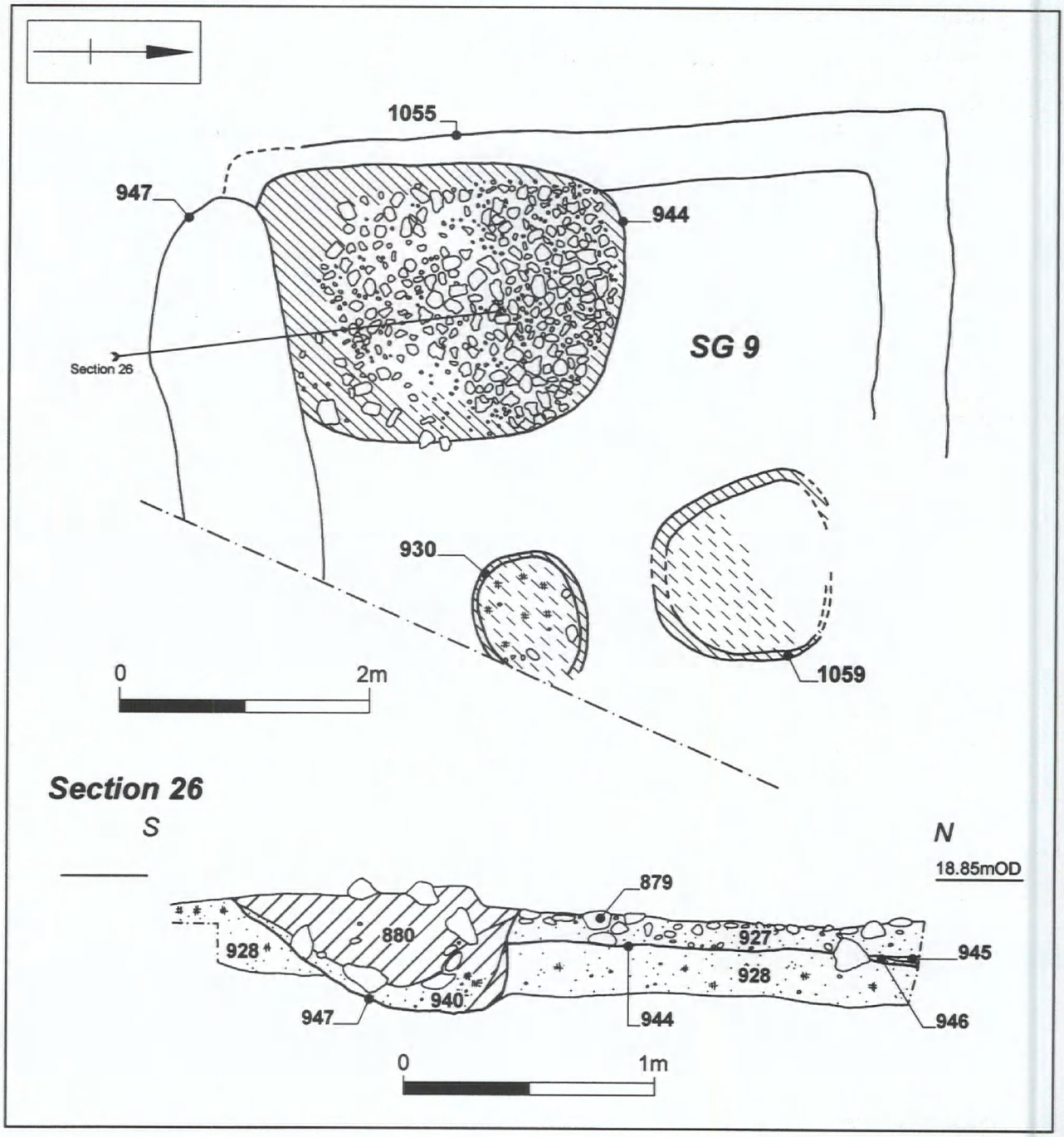


Fig. 3.12. The kitchen range: oven group SG9.

measured up to 1.6m wide by up to 0.61m deep, with steep-sided U- or V-shaped profiles (Fig 3.11, Section 28, [1771], [1773] and [1775]). Pottery dating from the 11th to the early 13th century was recovered from the grey-brown silty fills of these ditches, along with animal bone, ceramic tile and slag. Three joining fragments of Millstone Grit come from a broken up millstone, 850mm in diameter.

Ditch group **DG30** comprised a sinuous ditch 1.20-1.80m wide by 0.50m deep, with a V-shaped profile, Pottery dating from the 11th to the late 12th centuries came from the charcoal flecked silty fill, along with animal bone, slag and shell. The elongated pit or ditch at the edge of excavation was 1.80m wide and in excess of 5.0m long (Fig 3.11, Section 29, [1607]).

The kitchen and workshop ranges

In the southern plot two groups of hearth/oven structures appear to define contemporary kitchen and workshop facilities. To the west there were the remains of a circular oven within a detached kitchen range, **SG9**, while to the east there was a further hearth or oven base and a figure-of-eight shaped oven, **SG10** (Fig 3.8).

The possible kitchen range, SG9, was 4.9m wide and the building was certainly in excess of 5.0m long, but the eastern end had not survived as it lay within the area disturbed by a modern sewer pipe. The western and northern walls of the building were defined by an L-shaped construction slot [1055] up to 0.70m wide by 0.20-0.25m deep, with steep sides, a flat base and fills of light coloured clay silts with occasional burnt cobbles (Fig 3.12). Roman ceramic building material (*tegulae* and *imbrex*) recovered from the slot was possibly used as packing around the earth-fast timbers. The southern wall had been totally removed by a series of intercut robbing pits [947], one of which contained frequent burnt clay fragments, cobbles and some larger stones probably derived from the dismantling of the adjacent oven (Fig 3.12, Section 26).

The corner oven was sub-rectangular in plan, measuring 2.8m north-south by 2.2m west-east. It comprised a single course of burnt cobbles set in a gravel matrix, but any superstructure had been lost. However, the substantial quantities of fired clay from this area indicate that this had been a wattle and

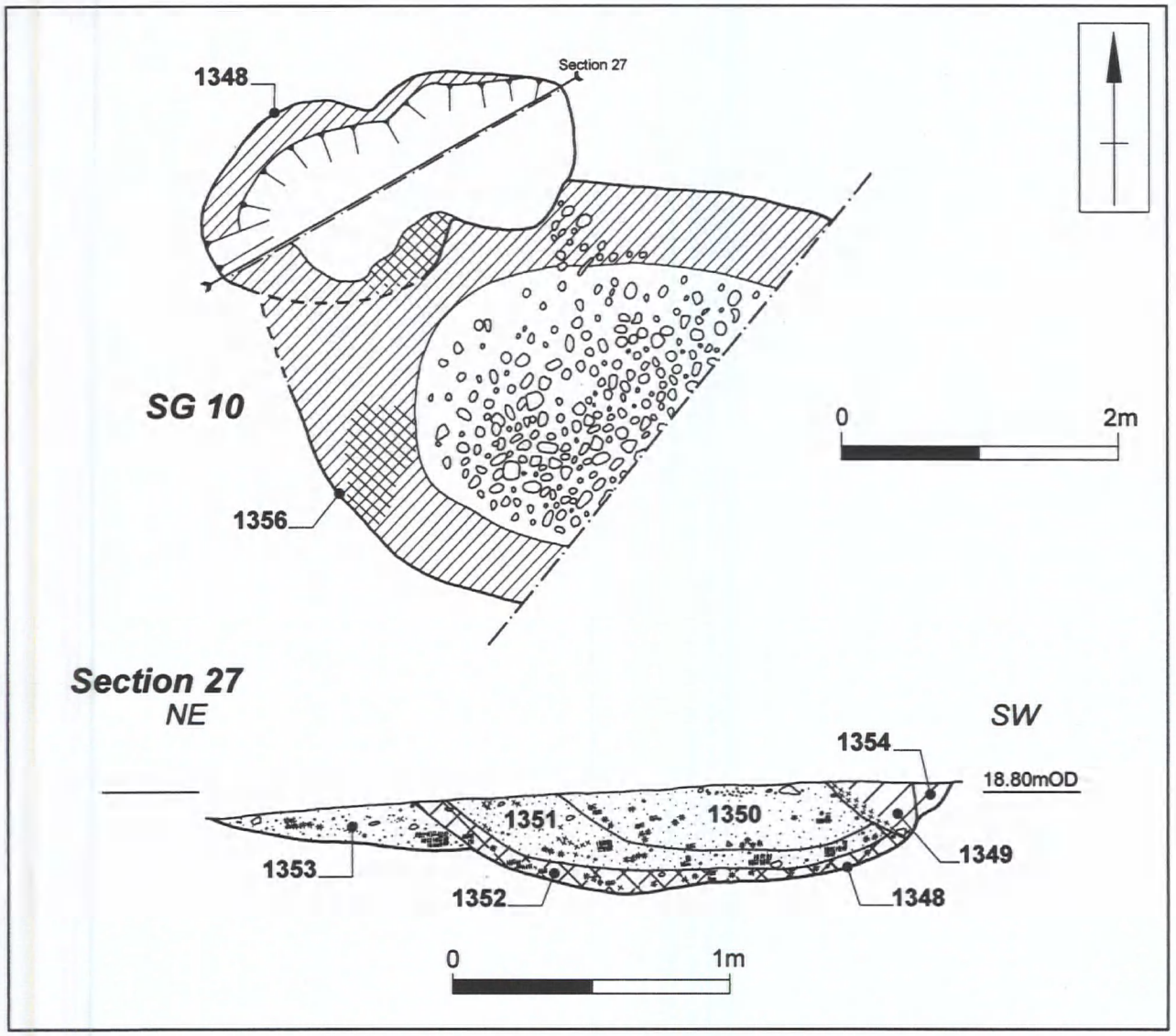


Fig. 3.13. The kitchen range: hearth and oven group SG10.

daub construction. Carbonised grains of Bread wheat (*riticum aestivum L*) and wheat (*Triticum sp.*) from the fills of the construction slot suggest this was a baking oven.

Immediately east of the oven there was an extensive area of scorched soils and burnt debris that overlay a possible hearth base and a deeper pit that also contained burnt debris. Pit [930] was sub-circular, up to 1.00m in diameter by 0.10m deep. The sides were scorched and the single fill comprised orange/red brown sandy silt containing burnt stones. Pit [1059] was 0.84m deep, with scorched sides and fills that contained quantities of burnt debris, presumably from the nearby oven. It seems unlikely that such debris would have been dumped within a pit inside the kitchen range, so it may relate to the demolition and levelling of the building. Pottery dated mainly to the 11th and 12th centuries was recovered from the construction slot and the pits. Other finds include fired clay, animal bone, ceramic tile and a small quantity of slag.

The features to the east, **SG10**, may relate to a small workshop area, although no evidence of a surrounding building had survived (Fig 3.13). Pit [1356] was 2.5m in diameter by 0.20m deep, and was lined with up to 0.15m of clay. This was light yellow- green in colour but the upper part was scorched red and was overlain by a single course of burnt pebbles and cobbles, apparently forming a hearth base. Above this there were further pieces of burnt clay within a charcoal flecked fill, perhaps suggesting that it had been an enclosed oven. The northern edge of the feature was cut by a figure-of-eight oven (Fig 3.13, Section 27, [1348]. The western clay-lined chamber was 2.0m long, 1.4m wide and 0.37m deep. It contained a deposit of burnt orange/red clay, 0.30m thick, from a collapsed superstructure. The stokehole was sub-circular, 1.2m in diameter by 0.16m deep.

3.5 The Medieval Moated Manor (early/mid 13th century – early 16th century)

Construction and early use (early/mid 13th century to late 14th century)

By the mid-13th century a rectangular moated enclosure had been constructed over the earlier plot system. Within it there stood a new timber manor house that replaced the aisled hall, which it directly overlay (Phase 6). This may well have been the principal residence of the documented Brayes Manor.

The moated enclosure

The Tempsford moat formed a large sub-rectangular enclosure that has partly survived as an earthwork to the present day. However, later alterations leave some aspects of its original form poorly defined. The northern, western and southern arms of the moat had all survived as well defined earthworks, which were surveyed as part of the assessment in 1993 (Fig 3.14 and Shotliff 1996, figs 2 and 3). However, part of the southern moat had been dug out to form a pond sometime prior to the late 19th century. Much of the low external bank along the southern side of this moat comprised recently deposited silts, and these were probably spoil from this digging out, and from subsequent silt clearance (Fig 3.15, Section 31). In addition, a modern sewer pipe ran diagonally across the enclosure from south-west to north-east, crossing the western end of the southern moat. At least some of the low internal bank in the south-west corner of the enclosure was probably spoil from this pipe laying.

The eastern arm of the moat survives as a much shallower earthwork, also recorded in the earthwork survey of 1993. However, the eastern part of the enclosure has been disturbed by a gas pipeline that runs across it from north-south, which dictated the eastern limit for geophysical survey. This survey therefore recorded what appears to be a continuation of the central metalled yard, but could not be extended further east onto the area that probably contained the kitchen, bakehouse, stables and other ancillary buildings required to service the manor house itself. These buildings have therefore been at least partly lost to the pipeline.

The geophysical survey also shows the metalled surfacing continuing northward across the line of the moat, indicating the presence of an entrance causeway with the surfacing running beyond this along a track continuing northward, presumably to join Station Road. While the western side of this entrance was well defined by geophysical survey, the location of the eastern side has been lost due to infilling and disturbance around the north-eastern corner of the enclosure, caused in part by the pipeline construction.

The moated enclosure has internal dimensions of up to 100m east-west by 70m north-south, enclosing 0.65ha (*c.*1.6 acres). It may be noted that two standard one-acre plots would measure 20 rods long (100.8m) by 16 rods wide (80.48m). As a rectangle of this size would fall within the compass of the moat, it can be suggested that the layout of the moated

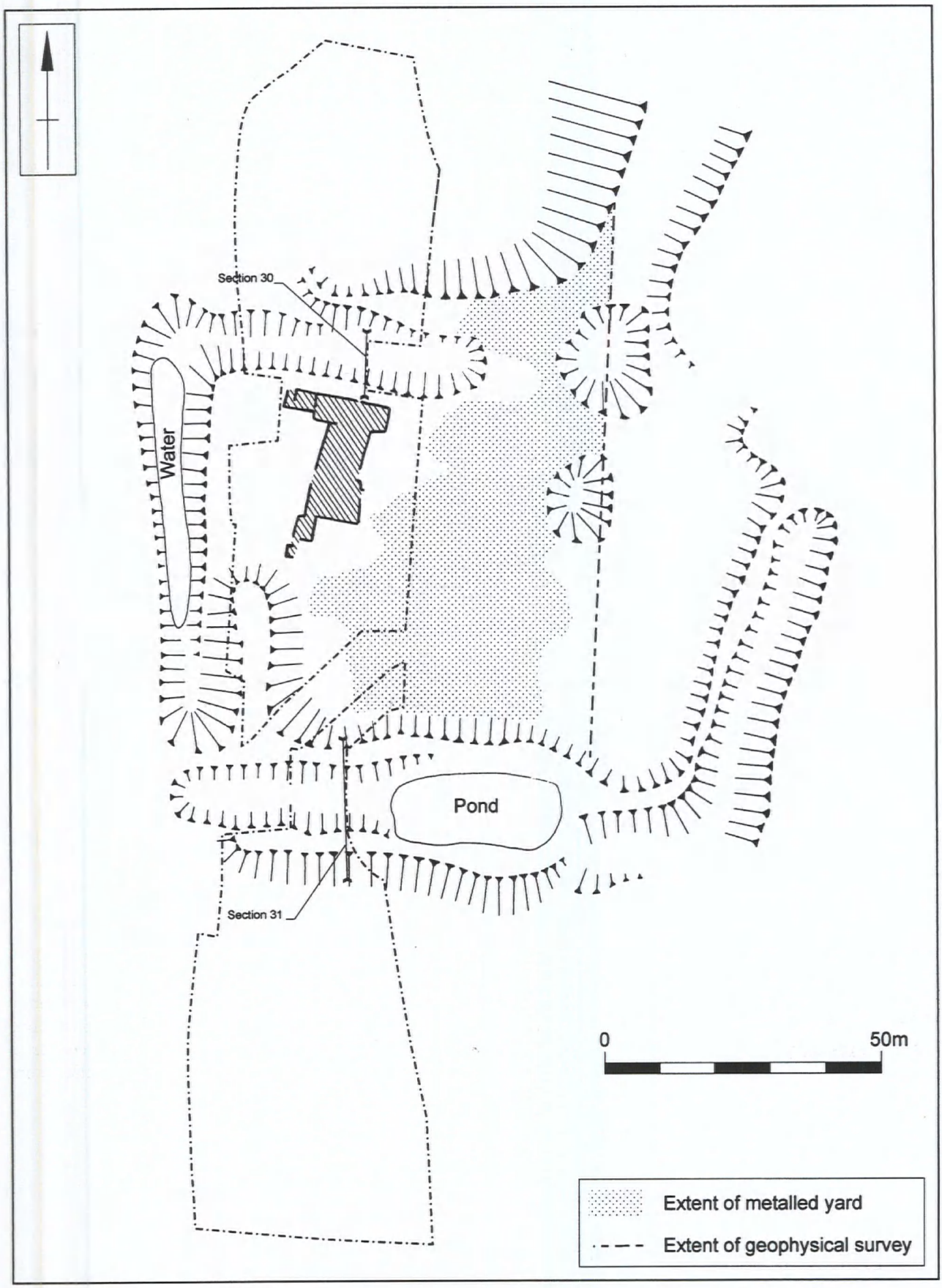


Fig. 3.14. The medieval moated enclosure.

Plate 6. The excavated section of the northern moat, showing brushwood deposits, looking east.

Plate 7. The southern moat partially excavated, looking south-east.

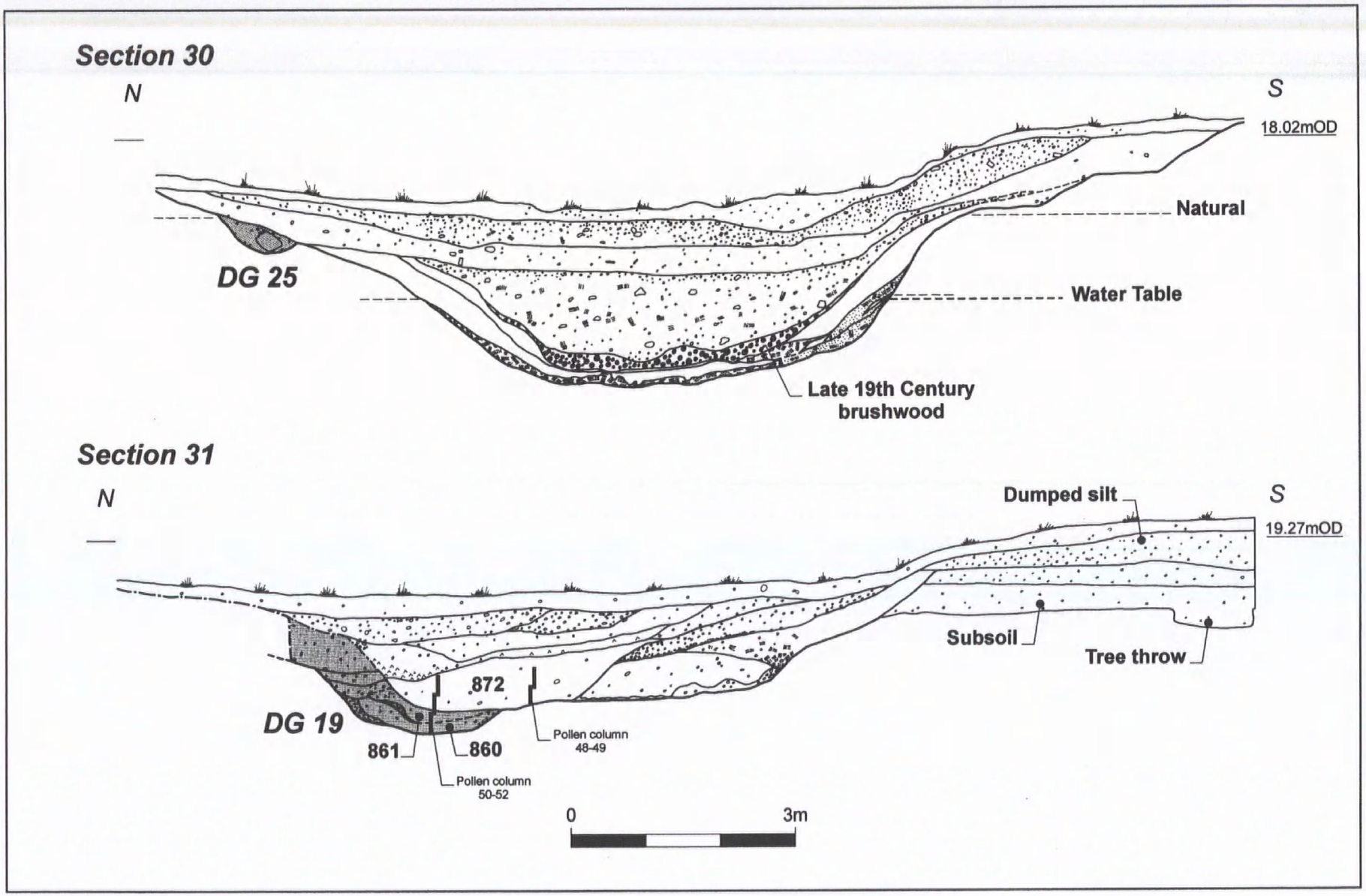


Fig. 3.15. The moat: sections 30 and 31.

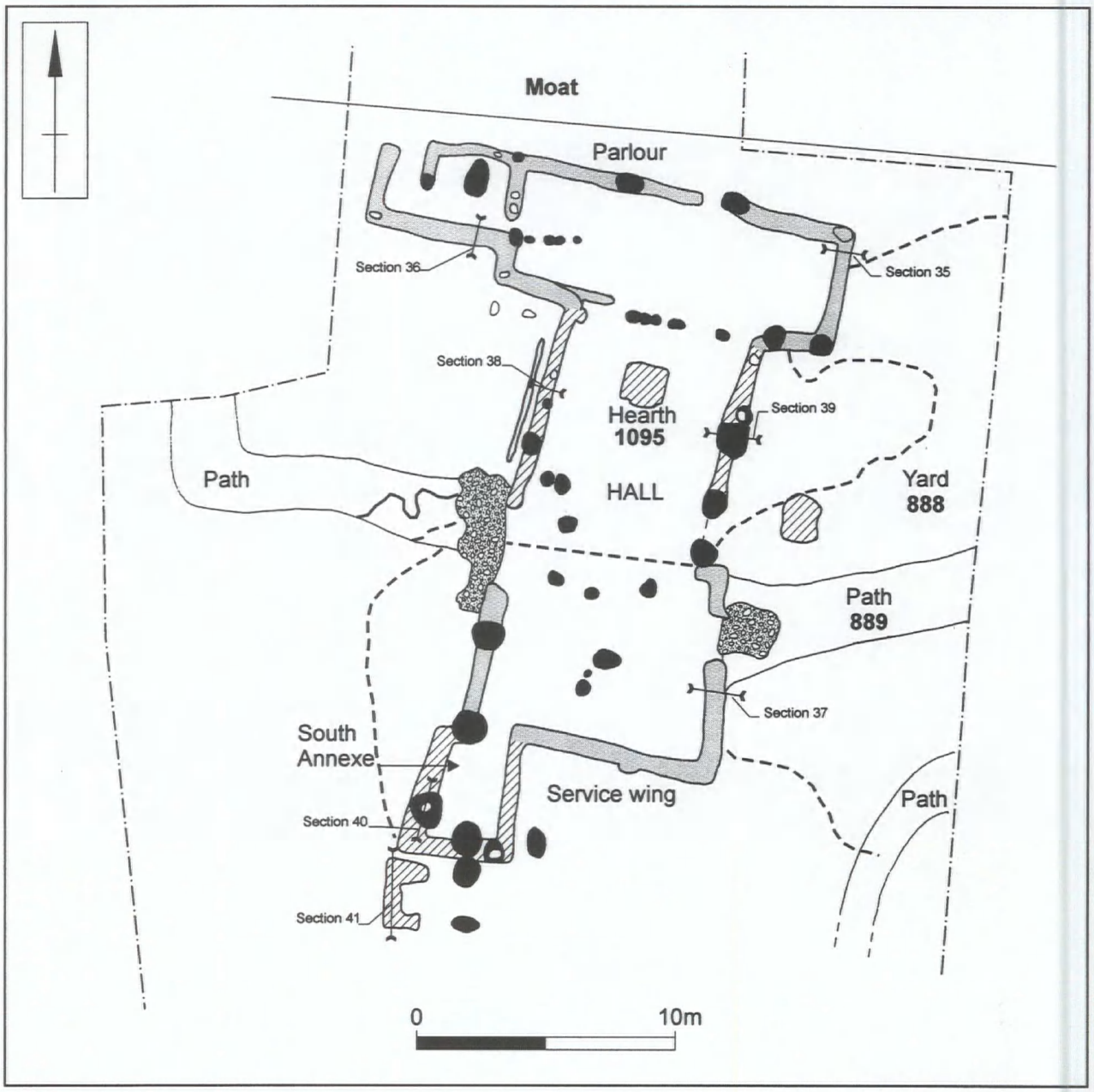


Fig. 3.16. The medieval manor house.

enclosure was perhaps based on a two-acre plot size. One possibility is that the new enclosure took up two existing plots, those occupied by the aisled hall and its ancillary buildings.

Both the northern and southern moat ditches had 20m-long sections cut across them (Plates 6 and 7). Unfortunately, both were shown to have been so extensively recut at later dates that no deposits contemporary with the use of the manor house had survived. The northern ditch was 12.0m wide by 2.3m deep with a broad U-shaped profile (Fig 3.15, Section 30). Deposits of pottery and glass dating from the late 19th century were recovered from the silts at the bottom of the moat. A later cut through these fills contained a substantial basal layer of brushwood and a further quantity of household pottery and glass of late 19th to early 20th century date was recovered from silty clay fills above this. It is therefore evident that all traces of the original northern moat had been removed by a major recut that may have been excavated to enhance its appearance as part of the landscaping of Tempsford Park in the 18th century. A stable soil horizon had

formed above the silts containing domestic debris, but there was then a phase of further infilling with stony soils, which were sealed by the modern turf line.

The southern moat ditch (Fig 3.15, Section 31) was 9.0m wide by 1.5m deep with a U-shaped profile. The excavated section showed that the moat had been fully recut to its base on the northern, inner side. Both re-cuts were around 5.0-6.0m wide. No datable artefacts were recovered from any of the waterlogged silts, sands and clay deposits, but the presence of species such as spruce in the pollen sequence from this ditch strongly suggest that the fills were also of relatively recent origin. Spruce is only likely to have been introduced with the creation of the park in the 18th century, suggesting both cuts derive from 18th century or later activity, similar to the northern moat.

The manor house

The material excavated from the moat ditches was probably used to raise and level the interior of the enclosure. However, these soils had all been thoroughly reworked during occupation so that they formed an amorphous brown loam containing residual finds of all dates through to the abandonment of the manor house. These are catalogued as *medieval soil horizons.*

The timber-framed manor house was fully excavated. It comprised a central hall, with a broader wing to the north that would have been the parlour, with a solar above (Fig 3.16). At the southern end of the hall, a path to the west and a pair of post settings to the east denote the position of the cross-passage. To the south there was a slightly broader service wing, which appears to have had its own doorways to both the west and east. A small annexe to the service wing was a later addition, along with a C-shaped stone foundation of uncertain function.

The hall

A line of postholes, 0.25-0.50m in diameter and 0.15-0.35m deep, backfilled with clean clay, lay partly beneath the eastern wall, and the heavily truncated remains of a few postholes lay beneath the western wall (Plate 8). The function of these features is unknown, but they are assumed to be short-lived and related to the construction of the building. In addition, a small bowl-shaped pit to the south-west of

Plate 8. The medieval manor: showing postholes under eastern wall of hall and the central hearth, looking west.

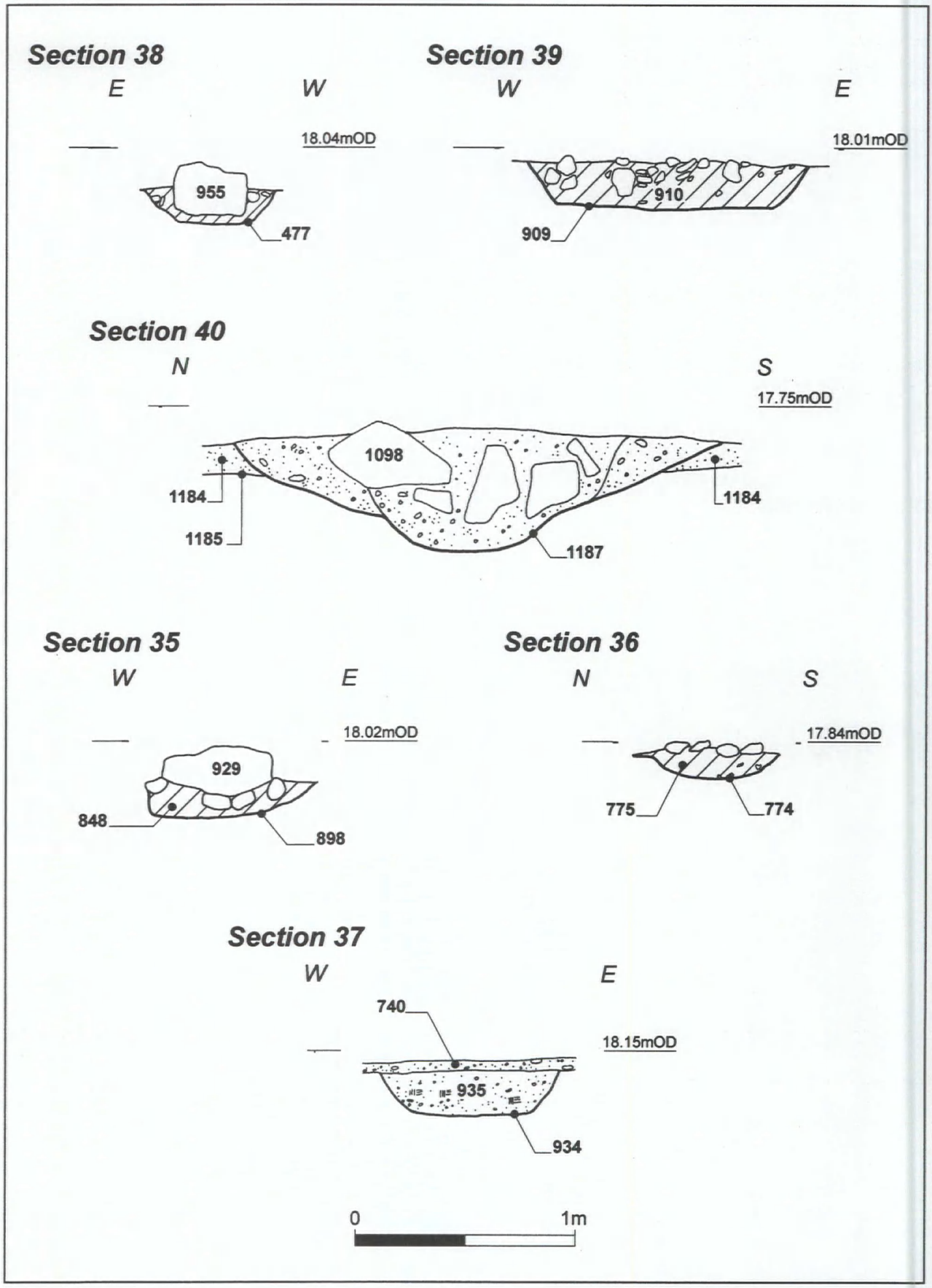


Fig. 3.17. The medieval manor house features: wall sections 35-40.

the hearth, 0.78m diameter by 0.27m deep, was lined with red/orange scorched clay, with patches of hard white material encrusted on the inner surface and a compacted layer of charcoal in the base. Lumps and strands of lead, as well as charcoal and burnt clay were recovered from its dark sandy loam fill indicating that it may have been used for lead working during the construction of the building.

The hall was 9.0m long by 6.5m wide, a floor space of 58.5 square metres. The western and eastern walls comprised broad flat-bottomed slots, up to 0.64m wide by 0.15m deep (Fig 3.17, Section 38 [477] and Section 39 [909]). Limestone post-pads, some of which remained *in situ*, were set in slightly deeper post-pits, and measured up to 0.50m by 0.35m and 0.18m thick. They indicate that the structure comprised principal posts set between interrupted sill beams. While the plan of the principal posts is incomplete, the hall appears to have been a three bay structure, with the northern and central bays 3.5m long while the cross passage to the south was 2.0m wide. Little evidence remained of the northern and southern end walls. To the north, between the hall and the parlour, a shallow slot on the line of the parlour wall continued partly across the western end of the hall and a number of shallow postholes suggest the provision of a lightly-built partition wall. A shallow external gully running parallel to the western wall of the hall, and remnants of a similar feature along the eastern wall, were probably formed by water running off the eaves of the roof. They were 0.50m from the walls and between 0.35-0.85m wide and up to 0.12m deep.

Opposed doorways at the southern end of the hall were defined in the western wall by a plain terminal to the wall slot, while to the east there was a pair of post-pits, 0.90-1.12m in diameter and 0.26m deep. They retained former packing in the form of large stones in a clay matrix. The eastern door opened directly onto the general metalled yard, while to the west there was a heavily metalled threshold and beyond this a metalled path.

No floor surface had survived within the hall, but the truncated bases of successive central hearths, set within the northern bay, had survived (Fig 3.18, Plate 9). The original hearth was near square, 1.60m east-west by 1.45m north-south, and comprised a clay base, with small areas of scorching, built within a shallow pit, 0.15m deep (1211). A later hearth lay slightly to the north-west, this too was near square, 1.7m east-west by 1.6m north-south, and was set in a deeper flat-bottomed pit, 0.30m deep (1095). The pit was lined with cream coloured clay into which were set pitched fragments of reused stone roof tile and large ceramic tiles. A central sub-square pit filled with a mixed burnt deposit of charcoal, scorched clay and tile fragments may have been the disturbed remnants of a third hearth base (1097).

The parlour/solar wing

The north wing lay perpendicular to the hall, and probably comprised a ground floor parlour and a first floor solar. The parlour was 12.5m long by 3.6-4.0m wide, being slightly narrower to the east, with a floor space of 47.5sq.m. To the west there was an additional room, measuring 2.8m east-west by 2.5m. The projecting porch on the north-west-side may have supported an external L-shaped stairway giving access to the solar above.

The walls, like the hall, probably comprised interrupted ground-laid sill beams between principal posts. They were founded on clay-filled slots, interrupted only by narrow door openings in the northern and western walls, and the more substantial opening into the hall. The slots were steep-sided and flat-bottomed, 0.50-0.90m wide by 0.10-0.30m deep. The fills of compacted grey clay were overlain in places by surviving cobble and stone foundations (Plate 10), especially along the northern wall and the southern wall of the western chamber (Fig 3.17, Section 36 [774]). Post-pits and pad stones were identified at most of the wall corners and close to the entrances and thresholds (Fig 3.17, Section 35 [898]). The pits were generally broad and shallow, sub-circular or oval, between 0.65-1.10m in diameter and up to 0.30m deep. Their fills were similar to the slots but they occasionally contained stone packing. Flat pad stones were formed from roughly hewn limestone blocks, averaging 0.6m by 0.3m and 0.2m thick. Two deeper post-pits, 0.15m deep, positioned roughly equidistant from the east and west corners of the north parlour wall, define the dimensions of the three-bay structure, with 4.0m long end bays and a central bay 4.5m long.

An opening in the northern wall, 0.8m wide, may have been an external doorway. A narrow doorway roughly in the centre of the western wall provided access to the attached chamber, and a line of five postholes may have been a partition within the western bay to the south of this doorway.

Two large roughly shaped limestone post-pads, 0.5m by 0.35m and 0.2m thick, set 1.4m apart and 1.4m south of the western end of the parlour might be the remains of an early, simple external stairway providing access to the first floor solar. This was perhaps replaced by a more substantial L-shaped stairway over sailing the small western chamber

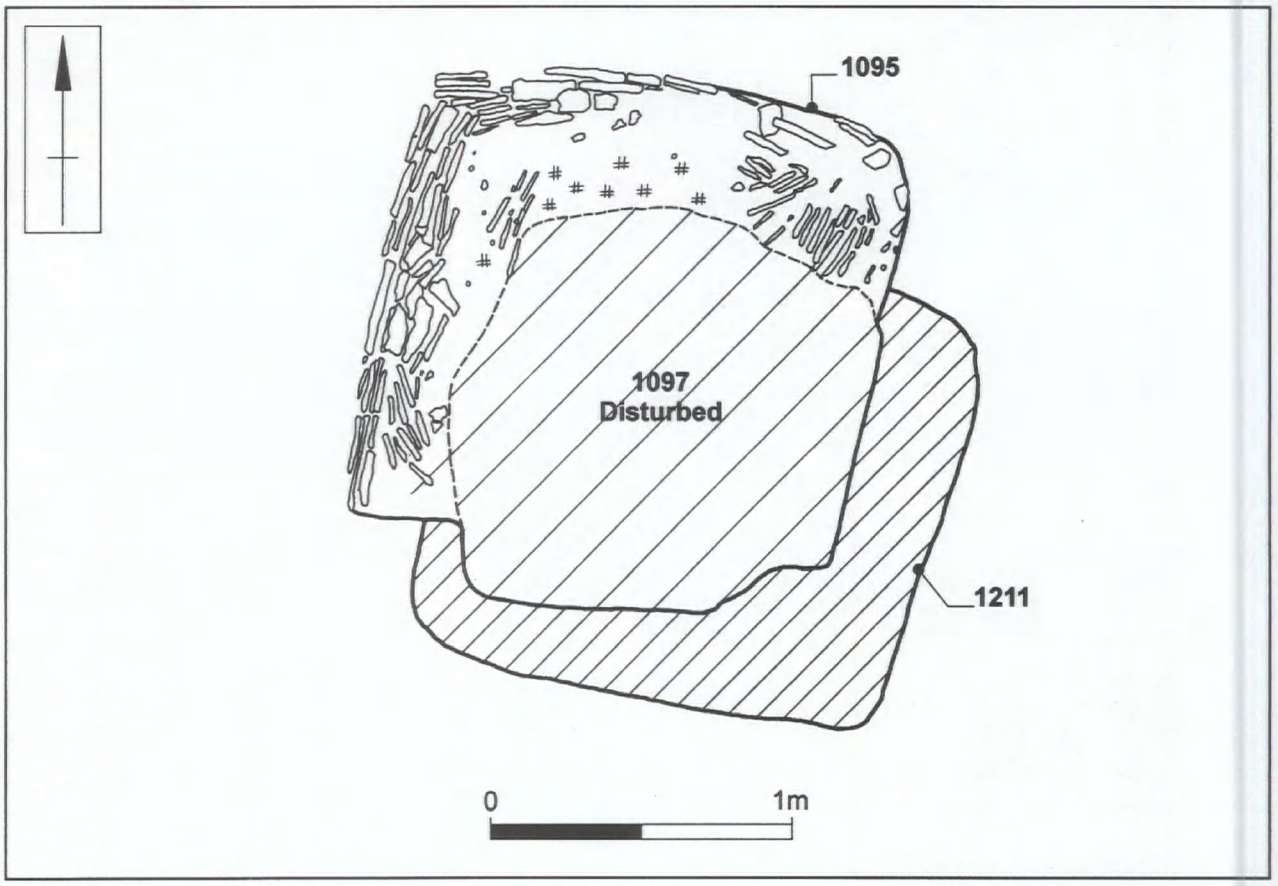


Fig. 3.18. The manor house: central hearth.

The service wing

The service wing was sub-square, measuring 7.5m north-south by 7.5-8.5m east-west, broadening gradually to the south (Fig 3.16). Its west wall was built in line with the hall, while to the east it stood 1.0m forward of the hall. The walls were founded in shallow slots, up to 0.80m wide by 0.20m deep, filled with dark brown silts (Fig 3.17, Section 37 [934]). A large limestone post-pad, measuring 0.5m by 0.4m and 0.17m thick, lay at the south end of the western wall, and a post-pit on the western wall slot contained a packing of compacted yellow clay and pebbles. There was no similar evidence in the eastern and southern walls.

A 1.60m wide doorway opening in the eastern wall had an external cobbled surface, possibly related to a porch, and a metalled path led away to the east. An opening in the southern wall may have been an original external doorway or just a later access to the attached chamber. Some internal postholes may relate to the provision of partition walls but the full arrangement is unclear.

The appearance of the manor house

Although only the floor plan survived, some attempt can be made at reconstructing the appearance of the superstructure of the manor house. The presence of intermittent post-pits indicates that it was a principal-post construction, using either the cruck or box-frame technique. Bedfordshire lies at the eastern extreme of the area in which crucks were used, although several have been recorded, such as Moat Farm, Marston Mortaine (Alcock and Woodward 1976) and the last phase building at Wintringham, Cambs, which seems to have been of base-cruck construction (Beresford 1977). The box-frame technique was the method generally used in the eastern counties (Brunskill 1978). The panels between the exposed timbers in these framed buildings were generally filled with wattle and daub, and wooden shutters would have protected the windows.

The original floors did not survive, but may have been beaten earth covered by rushes, or perhaps of clay, like the final floor. The large square hearth lay in the northern bay of the hall. One of the earlier

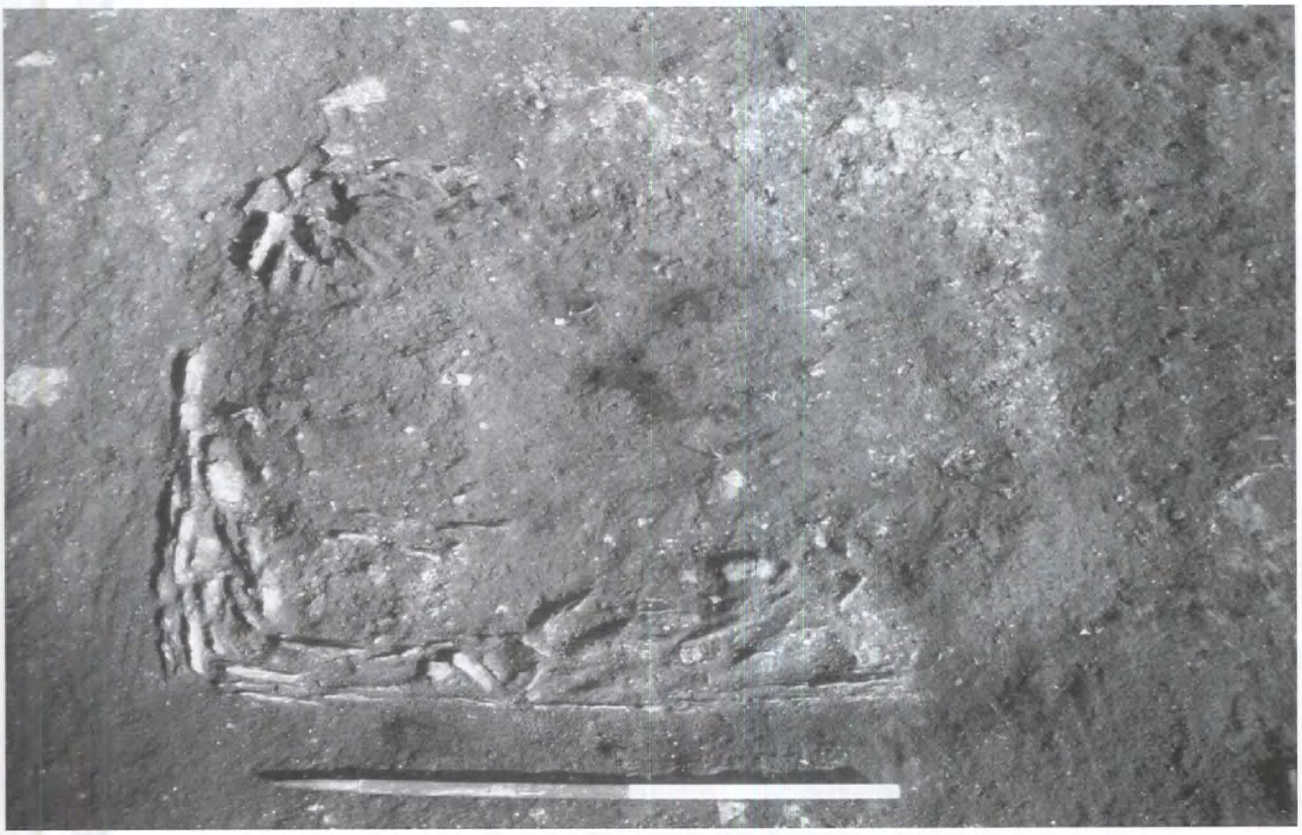


Plate 9. The medieval manor: the central hearths in the hall, looking east.

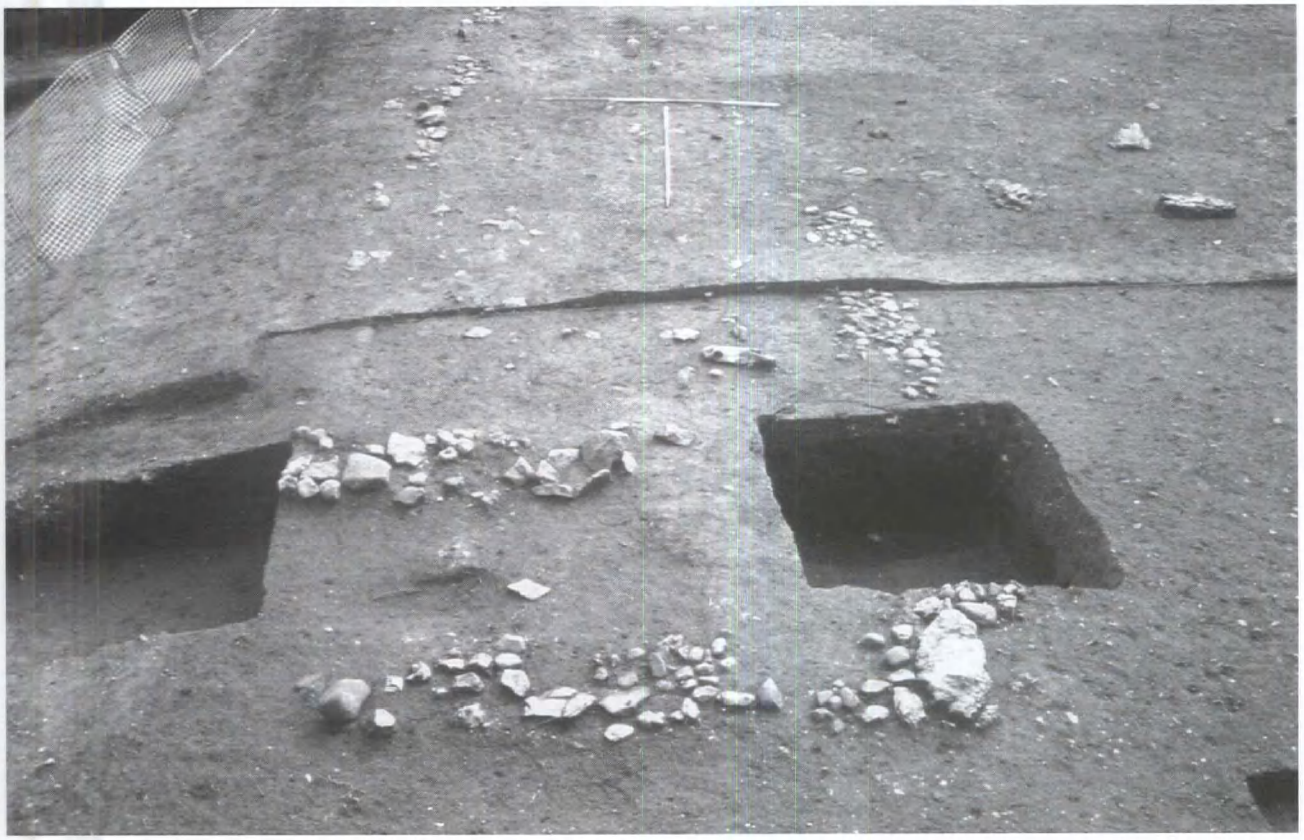


Plate 10. The medieval manor: the parlour range, showing stone-filled wall trenches, looking east.

hearths had a base of pitched stone and ceramic tile fragments, set in clay, while the final hearth base was of large, thick ceramic tiles.

The recovery of ceramic roof tile, dating mainly from the 13th century, reused in the western threshold and path, indicates the presence of tiled roofs glazed in green, brown and dark grey/purple, perhaps forming a decorative pattern. The roofs also had green-glazed ridge tiles with decorative crests and a decorative, spherical glazed finial had been set at a gable-end. Some of the ridge tile appears to be from a hipped roof and steeply angled ridge tiles might have been used on a thatched roof. In addition, a large quantity of limestone roof tile, with single perforations to hold the retaining nails, was also recovered from the thresholds, hearths and the demolition rubble. The variations in size indicate that these come from a graded roof, with small tiles at the ridge and the largest at the eaves.

The presence of both ceramic and stone tiles in contemporary contexts suggests that there was not a simple change in roofing material, but that roofing material may have varied between the separate wings, with the hall perhaps of stone tiles while the parlour was roofed with ceramic tiles, or vice versa.

The eastern yard surfaces and paths

To the east of the hall there was an extensive yard surface up to 0.15m thick formed by a layer of small stones and gravel (888). Outside the door into the service wing there was a well-laid cobble and limestone threshold roughly 1.6m square. The linear arrangement of the stones suggests the former presence of ground laid timbers, and it is possible that the surface lay partly beneath a projecting porch (Plate 11). To its east there was also a metalled path, distinguished from the general metalling by the presence of larger cobbles within the compacted gravel (889).

A less substantial gravel path, 1.5m wide by 0.15m thick, lay further to the south. It ran north-south, but turned eastward at its northern end. The area south and west of these paths and south of the service wing, comprised mixed brown loams that contained a scatter of pottery, animal bone and domestic artefacts, perhaps suggesting the presence of midden heaps in this area.

The western path

A path 2.0-2.5m wide ran westward from the hall for 11m before turning abruptly northwards. It comprised a compacted layer of gravel and small pebbles,

Plate 11. The cobbled threshold of the eastern doorway to the kitchen range, looking north.

up to 0.1m deep, interspersed with patches of cobbling. Adjacent to the hall there was a worn hollow up to 5.0m wide that had been repaired twice with a mixture of gravel, cobbles and ceramic and stone roof tile fragments. The exceptional width indicates that adjacent doorways opened into both the cross-passage and the service wing. Immediately south of this path, there was an area of patchily surviving metalling adjacent to the west wall of the service wing.

In the square area between the hall, the parlour and the L-shaped path, measuring 9.0m north-south by 11.0m east-west, there was a humic soil layer, perhaps suggesting that this was a private garden. The recovery of several copper alloy dress pins in the area may also indicate that the women of the household made use of it for recreational purposes.

Economic indicators

The moat could have contained a large quantity of water, both removing excessive rainwater and acting as a reservoir. There was no apparent means of diverting water into the moat, but during excavation it was observed to fill naturally with groundwater on this low-lying site, and so would probably have been permanently wet throughout the year. The water would have been used for both domestic and agricultural purposes and for any industrial processing within the site. The moat would probably also have been stocked with fish as a food source.

The remains of waterfowl, which may also have inhabited the moat, provide an indication of diet. Cattle remains dominate the animal bone assemblage, with sheep and pig also well represented. Horse, dog, hare, chicken, deer, rabbit and a variety of other mammals and birds were also present. The dominance of cattle over sheep may be considered unusual, as by this time the emphasis of pastoral farming had turned to high quality wool production. However, the cattle bone presence may reflect the diet for the inhabitants of the manor house rather than the local farming regime. Bones from 'poor' cuts dominate the assemblage, suggesting that the majority of the carcass was consumed on site. The incidence of hare, deer and some of the birds, probably derived from hunting, reflect the high status of the site, as does the occurrence of rabbit, perhaps reared in artificial warrens.

Plate 12. The medieval manor: the service wing and the stone-footings to its south, looking north.

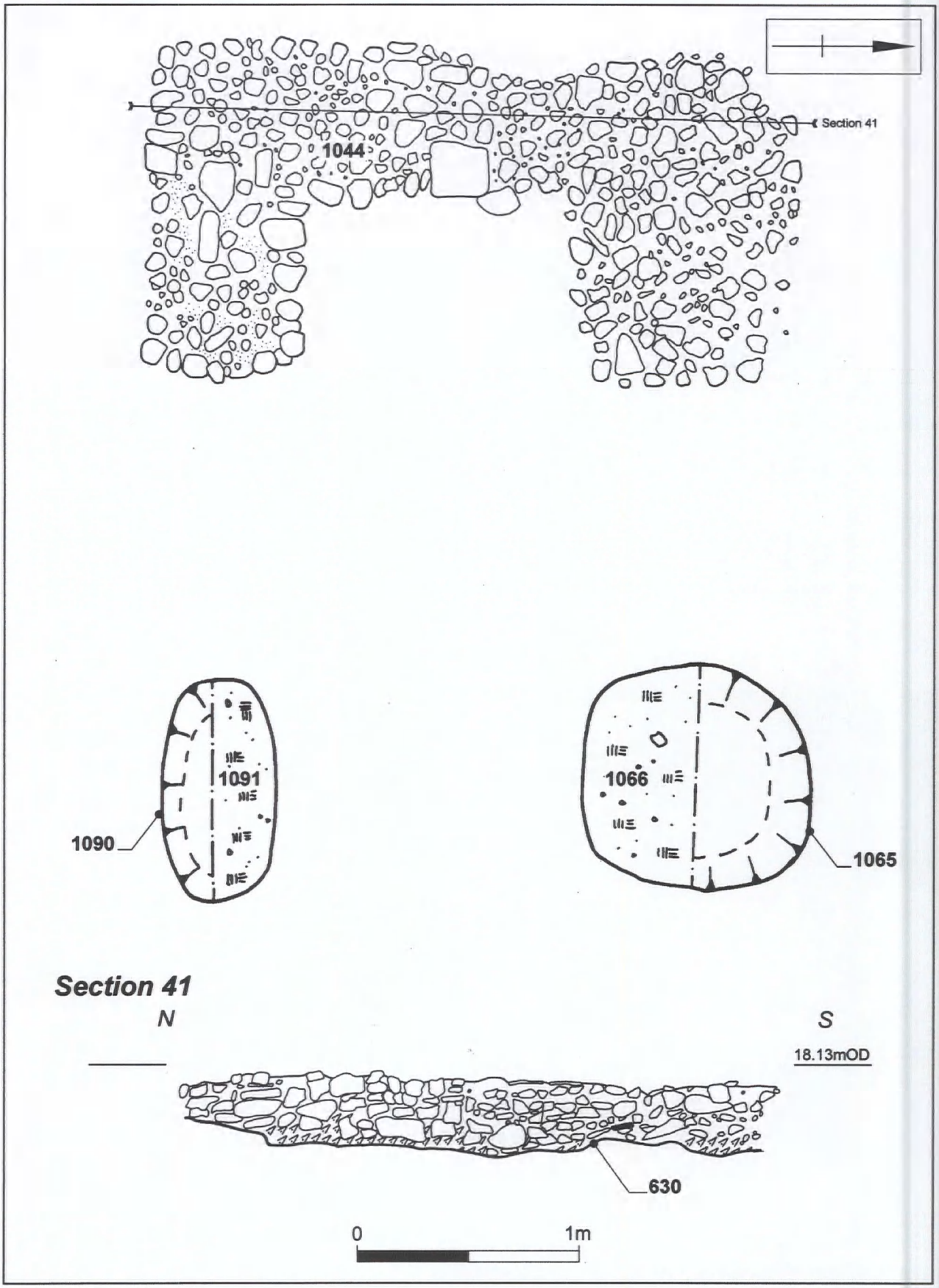


Fig. 3.19. The manor house: external structure.

The refurbishment of the manor house (late 14th century – mid-15th century)

The late 14th century saw further refurbishment of the manor house (phase 7). A small chamber was attached to the southern end of the service wing, and a C-shaped stone footing lay to the south of this (Figs 3.19 and 3.20). In addition, the second hearth in the hall probably dates to this phase along with the new doorway thresholds, the eastern yard surface and the paths, as already described. The incorporation of ceramic and stone roof tile fragments into these deposits may indicate either a complete re-roofing of the buildings, or at least extensive refurbishment of the roofs.

Perhaps into the 15th century, there was a final phase of refurbishment in which a thick clay floor was laid across the hall, the parlour and parts of the service wing, with a new hearth provided in the hall. This was accompanied by a further resurfacing of the yard. A line of elongated slots cut into the yard to the east of the manor house appeared to have held timbers, but the purpose of this structure is unknown.

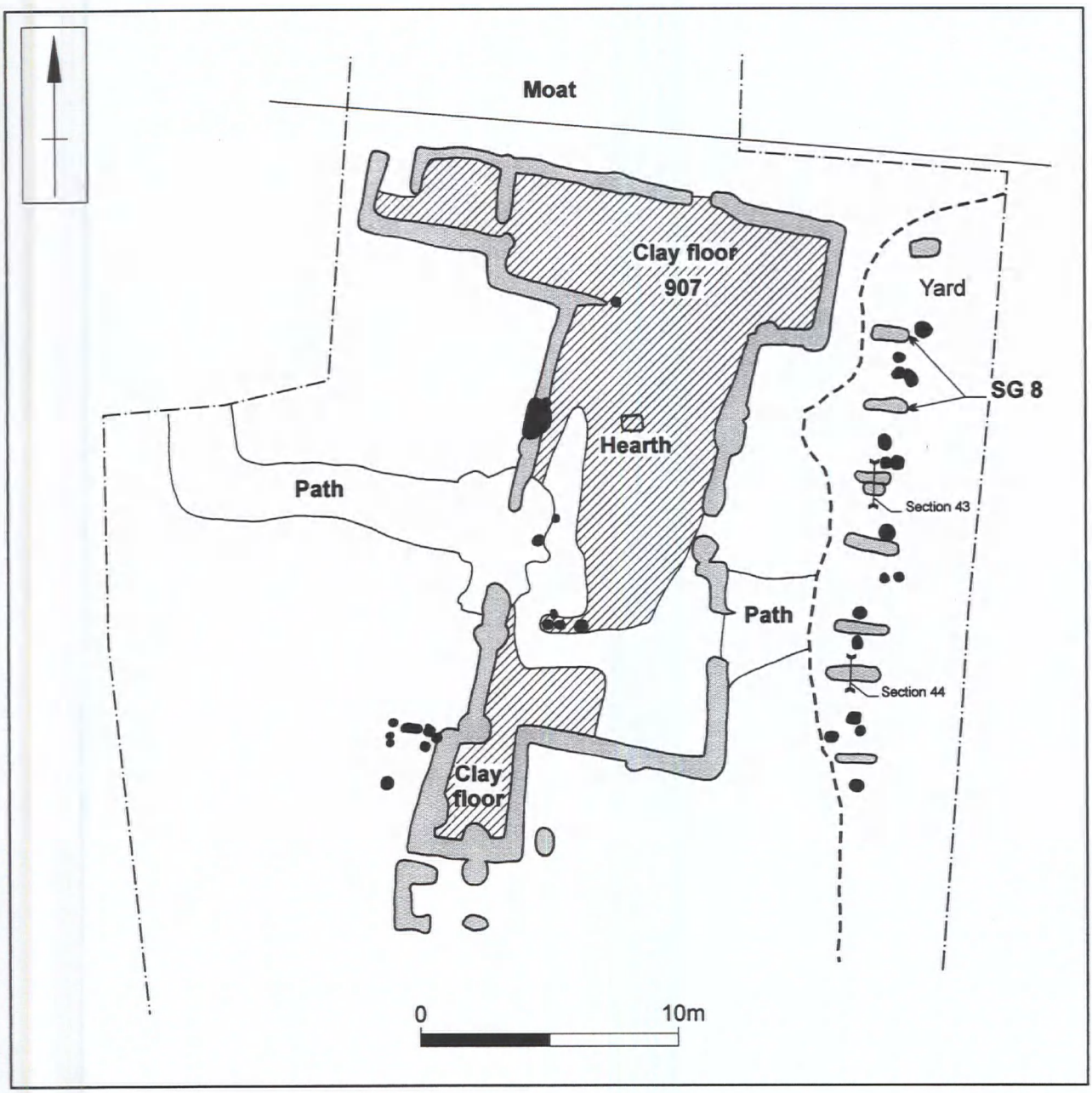


Fig. 3.20. The manor house: final refurbishment.

The southern chamber

A small trapezoidal room, 4.0m long by 2.2-2.6m wide was built onto the south-western corner of the service wing. The foundations were of similar sill beam construction to the rest of the manor, and a series of large sub-circular or oval shaped post-pits measuring up to 1.3m in diameter and up to 0.45m deep were incorporated into the wall slot (Figs 3.16 and 3.17, Section 40, [1185] and [1187]).

To the south of this chamber there was an angular C-shaped stone foundation (1044), measuring 2.8m north-south. The arms projected 0.70-0.80m to the east, flanking a central opening 1.2m wide (Fig 3.19 and Plate 12). It was built within a pit, 0.70-0.80m wide by 0.36m deep, and comprised up to six courses of large cobbles and faced limestone set within a soft sandy-clay mortar. Post-pits [1090] and [1065] lay in line with the two arms, 1.2m to the east. Both were sub-circular, measuring up to 0.85m in diameter and 0.26-0.48m deep. The function of this structure is unknown. A possible interpretation is that the solid foundation was to take the weight of a timber stairway, which would have provided access to an upper storey in the both the small chamber and, presumably, the service wing. However, this seems a very unusual location for a stairway and the structure may have served some role connected with the functions of the service wing.

The final floor levels

The final refurbishment of the hall was confined to the laying of a substantial new floor comprising a layer of compacted yellow sandy clay, on average 0.24m thick (Fig 3.20). Despite the thickness of this layer, it appeared to be totally homogeneous and a single deposit. As no earlier floors survived beneath, only the truncated hearth bases, it seems likely that the interior had been stripped of any earlier floor deposits prior to the laying of this final floor. Only a few minor features could be seen cutting through this deposit, leaving only sparse indications of the presence of the expected partition walls, and perhaps giving the false impression that the floor was carried through the parlour, hall and service wing as a single deposit.

A new central hearth was provided for the hall: it was exposed immediately under the demolition deposits and had been disturbed. It was rectangular, at least 1.10m long by 0.90m wide, and was constructed from flat-laid ceramic tiles, each measuring 0.30m long by 0.20m wide, which were burnt pink/red and heavily fire-cracked. They surrounded a central area of burning in which any tile base had totally fragmented through the prolonged exposed to heat.

Plate 13. The medieval manor: the slot and posthole structure east of the manor house, looking north.

The only area apparently not resurfaced was the eastern room of the service wing, unless the floor here was lost to intensive wear. Across the western room of the service wing and running northward inside the western doorways into the hall, the floor was eroded through intensive use. A line of postholes at the southern end of this area suggest the provision of a partition within the service wing south of the western doorway, with access at the western end of this partition. The evidence from the service wing at this stage therefore provides the best evidence for its arrangement, which comprised a single room to the north, with opposed doorways, and two chambers to the south, one of which had access into the attached chamber to the south west.

External features

A post-built structure, possibly a small lean-to shed, was added to the north-west corner of the southern chamber. The postholes were between 0.20-0.50m in diameter and up to 0.25m deep, and formed an

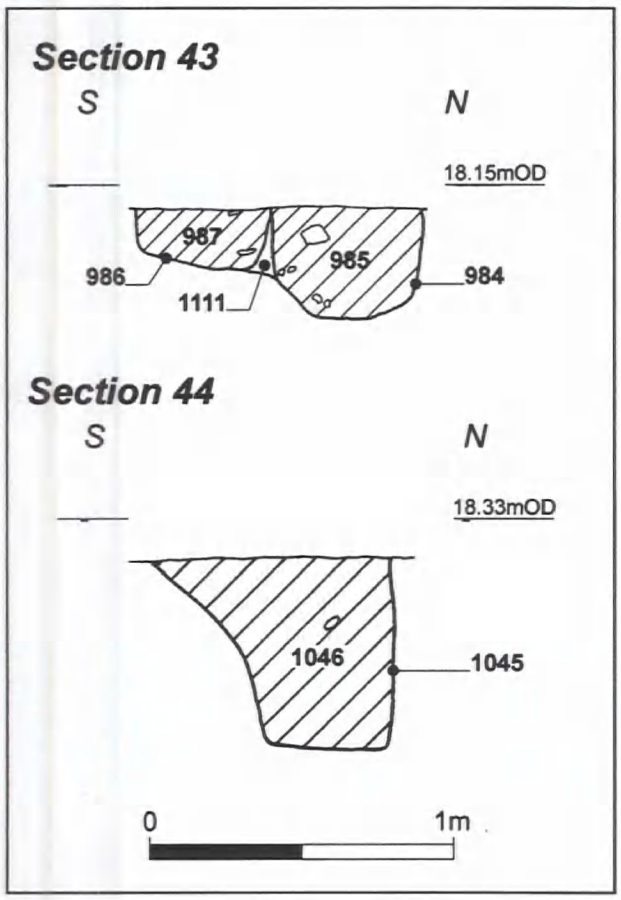


Fig. 3.21. The manor house: sections of timber structure, SG8.

L-shaped structure measuring approximately 2.5m north-south by 1.5m east-west.

The eastern yard was resurfaced with a layer of gravel and pebbles up to 0.20m thick, which sealed most of the previous paths and surfaces. This surface was cut by a line of seven slots, extending 15.5m south-north, at a distance of 1.5-4.0m to the east of the manor house walls (Fig 3.20 and Plate 13). A further, squarer pit at the northern end lay slightly further to the east, and extended the line to a length of 20m. The slots were all aligned east-west with some consistency in their spacing. The four pits spanning the service wing were set 3.4m apart with a narrower central gap of only 1.80m, which was in line with the eastern doorway of service wing. The four pits spanning the hall were spaced 2.6-2.8m apart. The two pits adjacent to the end of the parlour range were 3.4m apart, the same as those flanking the service wing.

Three of the slots were from 2.1m-2.2m long, while the others were shorter at 1.4-1.7m long, and the squarer pit at the northern end was only 1.2m long. They were 0.45-0.65m wide with vertical sides and flat bases, 0.35-0.50m deep, and were filled with yellow clay and gravel (Fig 3.21, Sections 43 and 44, [984], [986] and [1045]). A number of postholes, either as individual posts or in groups of two or three lay beside or between the slots. They were mostly circular in shape, between 0.26-0.54m in diameter and 0.10-0.47m deep, with vertical sides and flat bases.

The function of these features remains problematical. The slots probably held base plates supporting timber upright. However, it seems unlikely that they held raking timbers supporting the eastern walls of the manor as the slots lie in line while the respective lengths of wall were at varying distances from them. It is possible, and perhaps more likely, that the slots held the western side of a timber-built, covered walk-way, or pentice, contemporary with the final use of the manor house during the first half of the 15th century.

The demolition of the manor house (mid 15th century – early 16th century)

The paucity of pottery dated later than the mid-15th century indicates that the building had fallen out of use by this time (Phase 8). The demolition deposits above the final clay floor contained much broken limestone roof tile including a number of specific deposits. Within the hall a dump almost entirely of stone roof tile fragments was concentrated in a small area measuring 4.0m square. A less concentrated spread of stone roof tile fragments covered an area of 7.0m by 4.0m adjacent to the south chamber of the service wing. Adjacent to the parlour, a mixed layer of ceramic and stone roof tile fragments in a matrix of dark loam and gravel covered an area of 40sq.m. These dumps suggest that stockpiling and sorting of materials for re-use was undertaken in a number of specific areas, presumably close to where the material was being brought down during the dismantling of the roof.

In addition, a large number of discarded iron nails suggest that the timber framing had been dismantled on site before the timbers were carted away for re-use elsewhere. A large number of clenched iron nails were recovered from the area north of the parlour which suggests that work to salvage timbers for re-use elsewhere was carried out there.

The very small quantity of pottery dated to the mid-15th to early 16th centuries suggests either casual visits to the site of the levelled manor house, or

perhaps that occupation was still continuing on adjacent plots.

3.6 Post-medieval Activity

Evidence for activity following the abandonment of the moated enclosure all dates to the period following the establishment of Tempsford Park in the late 18th century (Phase 9). Part of the southern moat ditch was widened and deepened to form a "stew" pond and there was tree planting on the line of the western ditch. Other ground disturbances probably also date to this period. The geophysics survey suggests that the causewayed entrance to the moated enclosure was dramatically widened by infilling some 10m of the ditch to the west of the causeway.

The inclusion of both elm and spruce within the pollen samples taken from the southern moat would indicate that both species were to be found within the vicinity. Their introduction into the pollen record is probably contemporary with the enclosure movement of the 17th and 18th centuries, with the single grain of spruce pollen probably coming from an ornamental park specimen and the elm pollen a nearby associated hedgerow. The presence of marginal aquatic and aquatic landscape vegetation species such as pondweed, duckweed, water milfoil and water starwort, in addition to marginal sedges such as marsh marigold, bog bean, water plantain, marsh pennywort and possibly fringing willow suggests, not surprisingly, that the abandoned moat would have formed a semi-wet landscape feature.

In the later 19th century and perhaps continuing into the early 1900s, part of the northern moat was used periodically as a convenient rubbish dump for household pottery and glass from the nearby mansion house, then owned by the Stuart family. The pottery comprised a range of English stoneware, earthenware, polychrome and blue transfer printed wares, including a "James Keiller Dundee Marmalade" jar, with a commemoration medal in 1873. There were also wine bottles and German stoneware table water bottles. That it comprises material derived from the nearby mansion of the Stuart family is vividly illustrated by the presence of a dinner-plate and a side-plate transfer printed with the family motto and crest, "*Nobilis Ira*", (righteous indignation) over a lion rampant. These have a transfer-printed back-stamp of retailer T.Goode & Co, 19 South Audley St, London W., from whom the service was ordered on the 3 December 1869. A design number painted in red on the base is 5867. Factory records describe this as follows: Pattern number 5867, Tamworth Plates, Celest band over edge with Marone line. The crest is entered in records as 2467. (Iain Soden would like to thank June Bonell of the Wedgewood Museum for her help in providing this detailed identification.)

In addition, a layer of brushwood was spread across the entire excavated length of the northern moat, both overlying and overlain by some of the late 19th century rubbish deposits (Fig 3.15, Section 30). It comprised small roundwood from a range of hedgerow plants, including sloe/ hawthorn, and blackberry thorns were also present (Robinson 1996b), suggesting that it represents the disposal of hedge trimmings and undergrowth clearance, probably from adjacent woodland.

4 THE PREHISTORIC AND ROMAN FINDS

4.1. The Prehistoric Finds

A Chapman

The Neolithic Pottery

A single large body sherd is from a later Neolithic impressed ware vessel decorated with rows of bird-bone impressions; four complete rows and a fragment of a fifth row survive. It comes from a Peterborough ware vessel, most probably of Mortlake style, but there is insufficient surviving to be certain (Fig 4.1, 1).

The fabric is hard and well fired with a reduced, dark grey core and inner surface, and an oxidised, orange-brown, outer surface. It has dense inclusions of angular, crushed flint, with pieces measuring from 1-7mm across. The fabric is identical with much of the large assemblage of Peterborough ware largely recovered as residual finds during the excavation of an Iron Age settlement at Salford, Bedfordshire (Anna Slowikowski, pers comm). This site lies some 17 miles (28 km) to the south-west of Tempsford, adjacent to a tributary feeding into the River Great Ouse.

The Worked Flint

A total of 194 worked flints was recovered. All were residual in contexts ranging from middle-Saxon to medieval in date. The overall composition of the assemblage is summarised below and a full report is included in archive (Table 3).

The small number of cores suggests that flint knapping was not being carried out on the site to any significant degree, with the assemblage probably largely derived from casual loss during exploitation of local resources. Two small blade cores are likely to be early Neolithic in date, as are the soft hammer struck blades, including blades with extensive edge damage utilised as cutting blades, and a large serrated blade (Fig 4.1, 2). The leaf-shaped arrowheads may also be early, although these can appear in later Neolithic contexts. The remainder of the group is characteristic of the later Neolithic and early Bronze Age, and includes a barbed and tanged and a transverse arrowhead (Fig 4.1, 3 and 4). The presence of only a single discoidal scraper in a group including several composite scrapers/knives, the end/side scrapers, may favour a late Neolithic rather than an early Bronze Age date, and this would be in keeping with the single sherd of Peterborough type ware recovered from the site.

The flints are usually of fresh appearance and typically comprise a vitreous flint of good quality, most commonly grey-black or brown, but poorer quality grey to brown opaque flint is also represented. The cortex is typically white to pale brown. It is likely that the raw material comprised nodules derived from the local gravel, and this is reflected in short and squat nature of the typical flakes. However, the presence of some flakes and blades measuring 40-60mm in length indicates that there was access to larger nodules of better quality flint. Many of these finer flakes and blades show edge damage consistent with use as cutting tools. This appears to contrast with the largely Bronze Age material from the nearby barrow cemetery at Roxton, less than 1km to the west, where the raw material is described as "composed almost entirely of small, water-rolled gravel nodules" (Taylor and Woodward 1985, 128).

There is a single serrated implement, formed on an exceptionally large and fine blade, 27mm wide with a surviving length of 52mm. It has regular serration's along one edge and these appear to be unworn (Fig 4.1, 2). A large flake with invasive retouch on the dorsal face may be part of a plano-convex knife, but is too incomplete to be certain. Thirteen scrapers were recovered, of which three had been discarded during manufacture. Seven arrowheads were present including an unusually large and fine barbed and tanged arrowhead (Fig 4.1, 3). The transverse arrowheads are all fine examples, and one is unusually large and well finished (Fig 4.1, 4). It is notable that the single leaf-shaped arrowhead and the small barbed and tanged arrowhead are in fine vitreous flint, while the large barbed and tanged arrowhead and all of the transverse arrowheads are in poorer quality, opaque flint. There is a single example of a "fabricator", formed on a large and thick cortical flake, a small area at the bulbar end has been polished smooth. A single piece from a small flint axe retains the ground cutting edge and part of one side (Fig 4.1, 5).

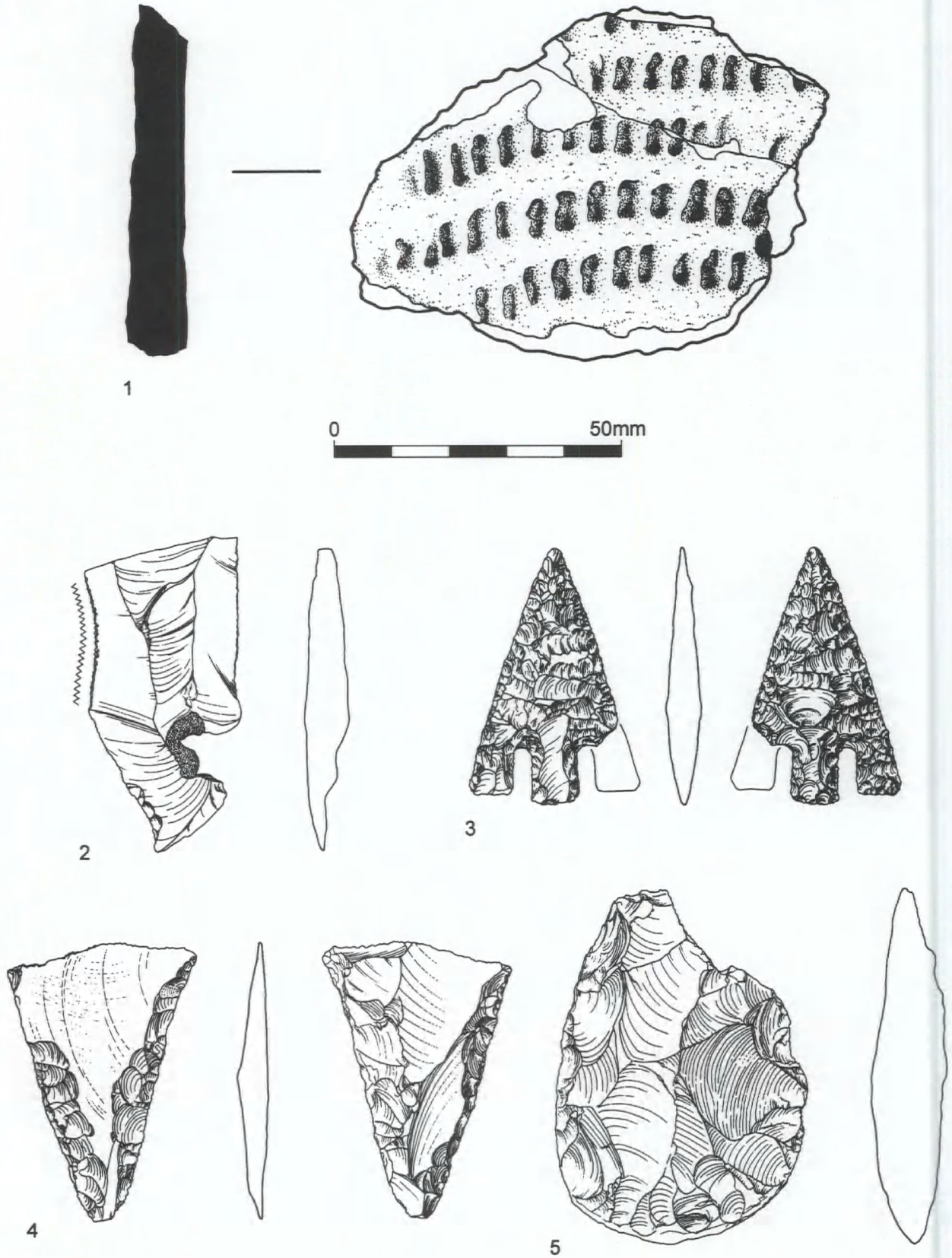


Fig. 4.1. Neolithic pottery (1), and worked flint, (2-5).

Type	No
Cores	5
Shattered pieces	6
Flakes	103
Blades/bladelets	6
Cutting flakes	11
Cutting blades	14
Serrated blades	1
Knives (plano-convex?)	1
Scrapers	13
Leaf arrowheads	1
Unclassified arrowhead (leaf or transverse)	1
Transverse arrowheads	4
Barbed-and-tanged arrowheads	2
Fabricator	1
Notched flakes	6
Piercers	2
Misc. retouch1	4
Flint axe (fragment)	1
Burnt	2
TOTAL	194

Table 3. Composition of the flint assemblage

Catalogue of illustrated prehistoric finds (Fig 4.1)

1 Body sherd, Peterborough ware, probably a Mortlake-style bowl, Context 575, Phase 4, DG13
2 Flint, serrated blade, Context 771, Phase 8, demolition layer
3 Flint, barbed and tanged arrowhead, Context 2086, Phase 5, PG6
4 Flint, transverse arrowhead, Context 412, Phase 3, DG24
5 Flint axe, Context 83, Phase 4, DG27

4.2. The Roman Finds

The Roman Pottery

A M Slowikowski

The Roman pottery assemblage comprises 46 sherds, weighing 757g. The pottery was recorded and analysed using Bedfordshire's Ceramic Type Series (CTS) codes, and the assemblage is summarised below (Table 4). Full fabric descriptions are not given as all fabric types are well known and have been described and discussed elsewhere (eg Slowikowski 2000). The pottery is in a poor condition, abraded and fragmentary, with no vessels represented by more than one sherd, often undiagnostic of form. The assemblage ranges in date from the mid-1st century to the 4th century AD.

Most of the pottery occurred as residual fragments in later contexts, with only seven contexts containing no later pottery. The poor condition of the pottery from these contexts indicated that it too could be residual. This suggests that activity in the Roman period was concentrated elsewhere, and that this site formed the periphery of Roman occupation.

Very few sherds in pre-Conquest fabric types were recovered, two in total, all grog-tempered and very abraded. The shelly wares probably originated in the kilns at Harrold, north Bedfordshire (Brown 1994) which, although in production throughout the Roman period, had

CTS Fabric Code	Common name	Sherds	Weight (g)
F06C	Coarse grog-tempered	1	70
F09	Grog and sand	1	5
R	Unidentifiable, probably Roman	4	36
R01	Samian	3	17
R03	White ware	1	17
R03B	Verulamium Region ware	1	13
R06	Miscellaneous grey ware	4	38
R06B	Coarse grey ware	8	118
R06C	Fine grey ware	9	73
R06D	Micaceous grey ware	2	71
R06F	Grey ware with grog and sand	1	12
R11D	Oxford colour coat	1	22
R12B	Nene Valley colour coat	5	102
R13	Shelly ware	5	163

Table 4. Roman Pottery Types by sherd and weight.

their widest distribution in the 4th century. Samian, Nene Valley and Oxford colour coats are the only finewares. A single sherd of Verulamium Region ware was found. The majority of sherds are in a variety of grey wares or miscellaneous sandy wares. Forms are principally jars and bowls. Tablewares occur in Samian only, and there are no flagons, mortaria or amphora present.

Other Roman Finds
T Hylton

The fifteen other Roman finds comprise eleven coins spanning the 2nd to 4th centuries (Table 5), three brooches and a pin head. With the exception of one brooch fragment, the entire assemblage was residual or intrusive within a disturbed natural horizon.

Phase	Identification	Date	Context
1	Antoninianus, (radiate head) Theodora, (2nd wife of Constantius I) Constans, (pre-reform bronze issue)	Mid/late3rd century AD337-340 AD 337-348	781, disturbed natural horizon
4	Constantine I, (commemorative issue)	AD 330-346	1550, Phase 2, DG16,
6	Constantine I, (commemorative issue)	AD 330-346	1298, Phase 6, medieval soils
8	Antonius Pius, (sestertius)	AD 138-161	907, Phase 7, clay floor, hall,
9	Hadrian (dupondius) Constantine I Valens Illegible	AD 117-138 AD 334-337 AD 365-378 3rd/4th century	135, Phase 9 Post occupation layer
U/S	Tetricus I, (barbarius radiate)	AD 270-273	Unstratified

Table 5. Catalogue of Roman coins.

5 THE SAXON AND MEDIEVAL POTTERY

P Blinkhorn

The Saxon and medieval pottery assemblage comprised 8,794 sherds with a total weight of 113,180g. The minimum number of vessels, by measurement of rim sherd length, was 87.35. The range of pottery types present indicates activity at the site from the middle Saxon period through to the mid-15th century, with minor disturbance during the late15th and early 16th centuries.

The pottery assemblage was generally fragmented, and had been subject to considerable disturbance, with over 15% of the Saxon and medieval pottery occurring in the post-medieval soil horizons, and a large proportion of the Anglo-Saxon assemblage was redeposited in medieval features. Full quantification by fabric type per phase is available in the archive report.

Fabrics

Where appropriate, the codings and chronology of the Bedfordshire County Type-Series (CTS) are used.

The following wares were not covered by this:

Middle Saxon handmade wares

?7th – 9th century. 116 sherds, 1408g, MNV: 0.39. All rims from jars.
Undecorated, handmade wares, in a variety of sandy and/or mineral-tempered fabrics. No decorated sherds were noted.

Fabric 1: Fine quartz. Moderate to dense sub-rounded quartz up to 1mm. 39 sherds, 430g, MNV = 0.23.
Fabric 2: Crushed sandstone. Moderate to dense angular clear sandstone up to 1mm, many free grains. Occasionally sparse sub-angular ironstone up to 1mm. 60 sherds, 849g, MNV = 0.16
Fabric 3: Ironstone. Moderate to dense rounded red ironstone up to 1mm, sparse quartz and calcareous material up to the same size. Four sherds, 18g, MNV = 0.
Fabric 4: Chaff-tempered. Moderate to dense chaff voids, sparse quartz and /or calcareous material up to 1mm. 12 sherds, 96g, MNV = 0.
Fabric 5: Granite temper. Sub-angular grano-diorite up to 2mm. 1 sherd, 15g, MNV = 0.

The range of fabric types is typical of the south-east midlands, and can be paralleled at many sites, such as those from Bedford (Baker and Hassall 1979, 151-5). The fact that the majority of the assemblage is mineral tempered, with chaff-temper very much a minority ware, is also very much what would be expected. Chaff-tempered pottery is considerably more common at sites to the east and west of the region, such as Mucking in Essex (Hamerow 1993) and in Oxfordshire (Mellor 1994), although some sites in the Oxford region favour sand-tempered wares. The presence of granitic pottery is also worthy of comment. The nearest outcrop of such material is in the Charnwood Forest region of Leicestershire, but such material is found throughout eastern and southern England, suggesting that there may have been organised trade in pottery before the trade 'boom' of the middle Saxon period (A Vince pers comm). The assemblage is very fragmented, so it is difficult to discuss vessel forms to any great extent, although there was no evidence for anything other than fairly simple rounded forms. A few upright lugs were noted, but these appear to have been common throughout the life span of the Anglo-Saxon handmade tradition.

Illustrations (Fig 5.1)

TP1	Rim sherd, F1. Uniform grey fabric, some scorching on inner surface. Phase 6, medieval soil horizons
TP2	Rim sherd, F1. Uniform grey fabric. Phase 9, Topsoil
TP3	Rim sherd, F2. Uniform dark grey fabric. Phase 6, External surface to manor house
TP4	Upright lug, F2. Uniform dark grey fabric. Phase 6, medieval soil horizons

Ipswich Ware

725/740AD – mid 9th century. 56 sherds, 1062g, MNV: 0.29. All rims from jars.

Slow-wheel made ware, manufactured exclusively in the eponymous Suffolk *wic*. There are two main fabric types, although individual vessels that do not conform to these groups also occur.

Group 1: Hard and slightly sandy to the touch, with visible small quartz grains and some shreds of mica. Frequent fairly well-sorted angular to sub-angular grains of quartz, generally measuring below 0.3mm in size but with some larger grains, including a number which are polycrystalline in appearance. 26 sherds, 458g, MNV = 0.22.

Group 2: Like the sherds in group 1, they are hard, sandy and mostly dark grey in colour. Their most prominent feature is a scatter of large quartz grains (up to c 2.5mm)

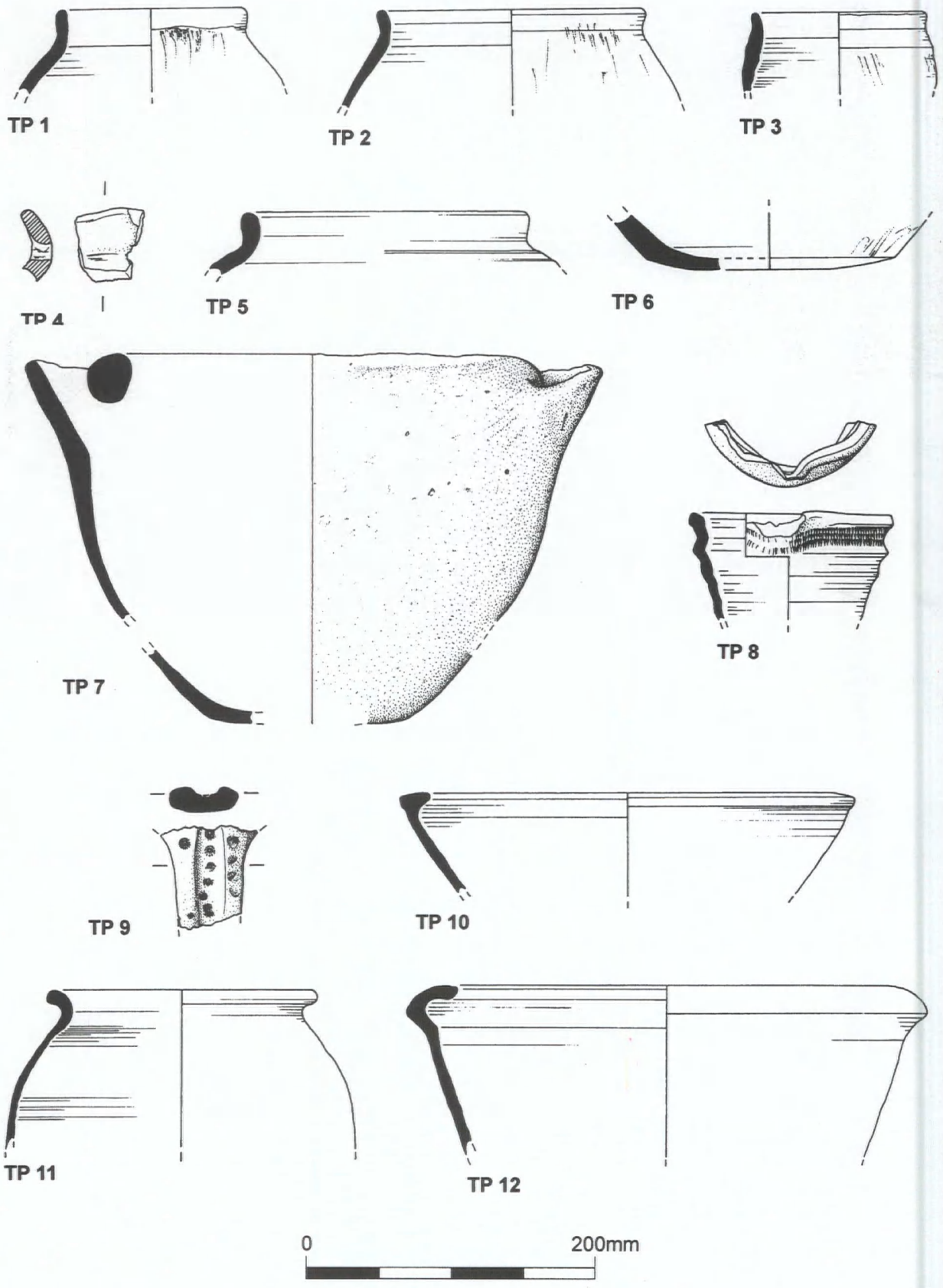


Fig. 5.1. Middle and late Saxon pottery (1-12).

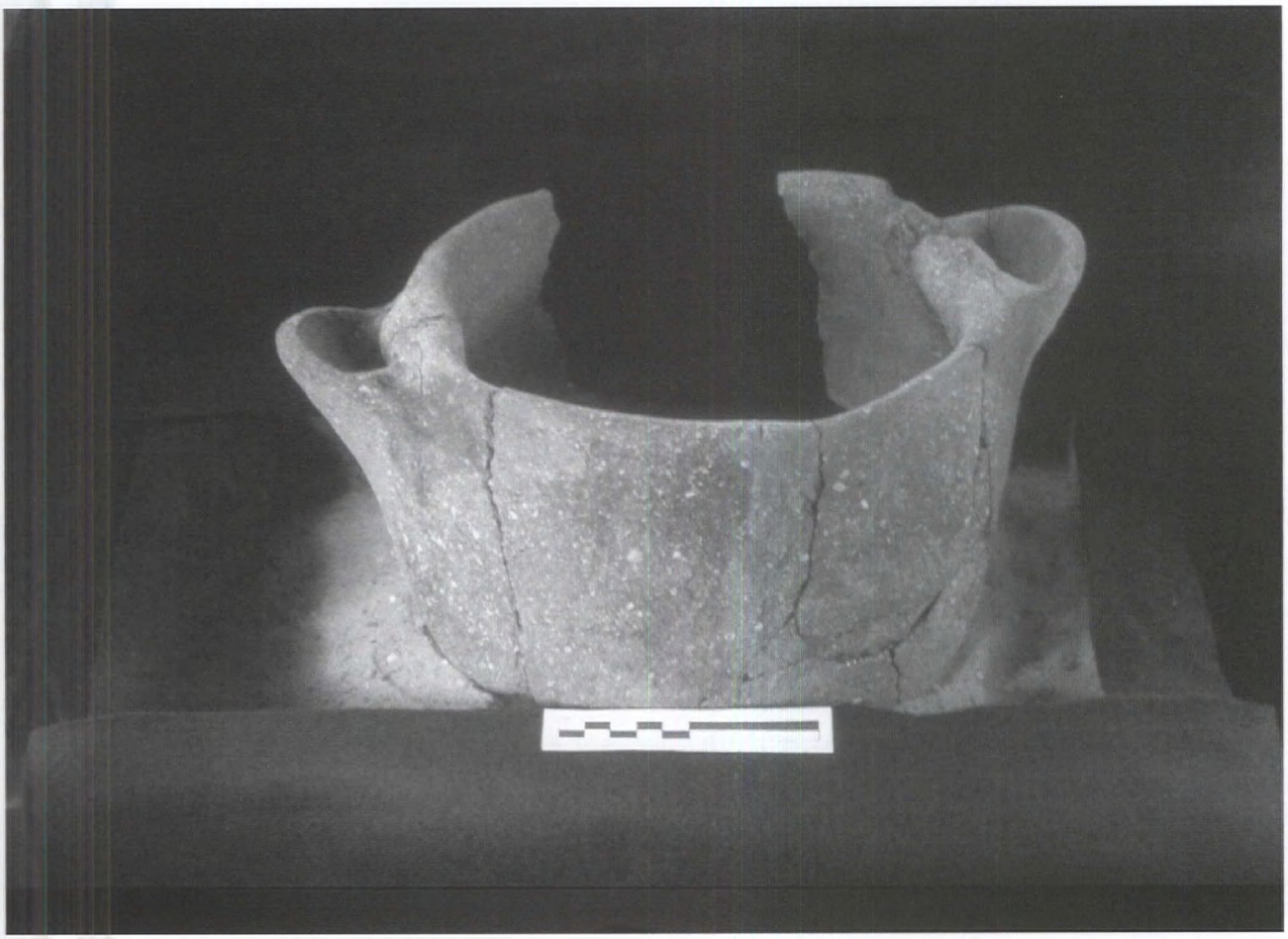


Plate 14. Middle Saxon pottery: the Maxey-type ware bar-lug vessel.

which either bulge or protrude through the surfaces of the vessel, giving rise to the term "pimply" Ipswich ware (Hurst 1976). This characteristic makes them quite rough to the touch. However, some sherds lack the larger quartz grains which are characteristic of this group, although chemical analysis suggests that they are made from the same clay. 30 sherds, 604g, MNV = 0.07.

Ipswich ware probably had a currency of 725/740AD–850AD at sites outside East Anglia (Blinkhorn in print a). The large mean sherd weight for the Phase 4 material suggests that Ipswich ware and St.Neots ware were briefly contemporary at some point around the middle of the 9th century. The latter post-dates Ipswich ware in the Suffolk town, but does not appear to have started arriving there until around the middle of the second half of the 9th century. However, Ipswich ware is very thick-walled and generally robust, which may distort the data. This group is one of a growing number of finds of Ipswich ware from the county in recent years. Fourteen sherds were recovered from Bedford (Baker and Hassall 1979, 154), and a few sherds are known from Eaton Socon, Medbury Lane and Stratton (Blinkhorn in print a). This may be indicative of site status, but it is more likely to be due to the proximity of each site to the River Ouse. The national distribution of the ware indicates that the major rivers were the main trade highways of the period, although it is possible that this may be due to the bias of excavated sites. Evidence from other sites suggests that most Ipswich ware assemblages found outside East Anglia comprise a greater than expected number of large jars and pitchers. The assemblage from this site is fragmented and scattered, with most sherds appearing to have originated from individual vessels, but the majority of sherds are of a thickness and curvature which suggests that they are from larger than average pots. Some idea of the amount of disturbance can be gained from the fact that the only one vessel was represented by three sherds, all of which were from contexts dated to Phases 5 and 6.

Illustrations (Figs 5.1 and 5.6)

TP5 Rim sherd from large jar, Group 1. Pale orange with a light grey core and dark grey surfaces. Phase 3, metalled area within DG3

TP6 Base sherd from large jar, Group 1. Orange fabric with dark grey surfaces. Vertical burnishing strokes on the outer body. Phase 4, part of DG21

TP47 Stamped bodysherd. Group 1. Uniform grey. Phase 6, medieval soil horizons

Southern Maxey-type Ware

155 sherds, 4507g, MNV: 2.50 (jars 0.75, bar-lug vessels 1.75).

Exact chronology uncertain, but generally dated *c* 650-850AD (Hurst 1976). Wet-hand finished, reddish-orange to black surfaces. Soft to fairly hard, with abundant Jurassic fossil shell platelets up to 10mm. Vessels usually straight-sided bowls with simple rims, and/or 'bar-lugs'. Differs in form from Lincolnshire Maxey-types, which tend to have upright, triangular, rim-mounted pierced lugs. Such vessels are found on many sites in Northamptonshire, Bedfordshire and Cambridgeshire.

Illustration (Fig 5.1 and Plate 14)

TP7 Near-complete bar-lug vessel. Dark grey fabric with abraded reddish-brown and dark grey surfaces. Phase 3, DG5

?South Lincolnshire Oolitic Ware

c 1100-1300AD. 19 sherds, 403g, MNV: 0.58 (jars: 0.18, jugs: 0.40)

Slow-wheel made. Pale grey fabric with abundant greyish limestone ooliths up to 2mm, rare to moderate limestone up to 1mm, sparse flint and/or haematite up to 0.5mm. Ooliths on surface often white in colour. Vessels are usually jars with thickened everted rims. Fabric tends to be grey with brown, red or orange surfaces. Main form jars with simple everted, sometimes triangular rims, sometimes thumb-impressed. Wavy line decoration is not uncommon. Some bowls are known, usually shallow, often with internal wavy line decoration. Source unknown, but appears likely to have originated in the region around Peterborough (Blinkhorn in print b). A single sherd of South Lincs Oolitic Ware (9g) occurred in a Phase 4 context forming part of DG21, and small amounts of the ware were noted in most of the succeeding phases, but seemingly went out of use before Phase 7.

Illustrations (Fig 5.1)

TP8 Rim and neck of jug. Dark grey fabric with variegated light grey and orange surfaces. Triangular-notched rouletting below the rim. Phase 5, aisled Hall and Phase 6, medieval soil horizons

TP9 Stamped jug handle. Fabric as TP8. Same vessel? Phase 6, medieval soil horizons

Lyveden/Stanion 'A' Ware

c 1150-?1400AD (McCarthy 1979). 599 sherds, 11,838g, MNV: 5.04 (jars: 4.2, bowls: 0.84).

Handmade/wheel finished. Moderate to dense, ill-sorted shelly limestone platelets up to 3mm, sparse to moderate red ironstone up to 10mm, occasional quartz, ooliths, black ironstone. Produced at numerous kilns in the villages of Lyveden and Stanion, in north-east Northamptonshire. Fabric is usually grey with blue-grey or brown surfaces, although other surface colours, such as buff, red, purple or orange not uncommon. *Lyveden/ Stanion 'A' Ware* occurred in all phases from 4 onwards, and appears to have been used throughout the period of medieval occupation at the site, perhaps going out of use during Phase 8.

Illustrations (Fig 5.3)

TP19 Jar rim. Dark grey fabric with orange outer surfaces. Phase 5, aisled hall, post-pit

TP20 Jar rim. Dark grey fabric with orange surfaces. Phase 6, medieval soil horizons

TP21 Bowl rim. Uniform dark grey fabric. Phase 6, medieval soil horizons

Sandy buff ware I

9 sherds, 201g, MNV: 0.

Fine, quartz-tempered fabric, buff with a grey core. Occasional calcareous inclusions. Earliest find from Phase 5, kitchen range SG10, probably ceased to be used in the later stages of Phase 6.

Sandy buff ware 2

13 sherds, 256g, MNV: 0.15 (all jars).

As sandy buff I, but considerably coarser. Chronology appears very similar, and the two types appear likely to be different fabric versions of the same ware.

Calcareous Sandy ware

44 sherds, 1796g, MNV: 0.40 (jars: 0.13, jugs: 0.14, curfew: 0.13).

Grey sandy fabric with sparse to moderate calcareous material. A few sherds were noted in Phase 5 contexts, with the material then occurring in all later phases, but may have gone out of use during the early part of Phase 7.

Illustration (Fig 5.7)

TP52 Upper part of curfew. Dark grey fabric with orange-brown outer surface. Phase 6, medieval soil horizons

Lyveden/Stanion 'D' ware

c 1400-?1500AD. Four sherds, 47g, MNV: 0.

Later medieval, wheel-thrown version of the 'B' ware (Beds fabric B09), but with far sparser inclusions, less non-calcareous material and clearly wheel-made. Slip decoration less common, usually plain olive green glaze externally. Mainly jugs, but bifid jars known from Stanion kiln-site (Blinkhorn in print b). All the sherds from Tempsford are glazed, and likely to have originated from jugs. First noted in Phase 8 contexts.

The rest of the assemblage is coded according to the Bedfordshire CTS. It should be noted, however, that the St. Neots ware is dated according to the system defined by Denham (1985).

B01: T1 (1) type St Neots Ware

c 900-1100 AD. 1319 sherds, 11051g, MNV: 12.49 (jars: 9.27, bowls: 3.22).

Probably only in use during Phase 4. Three small sherds, which appear in Phase 3 contexts are highly likely to be intrusive. Over 70% of the material (by weight) occurred in

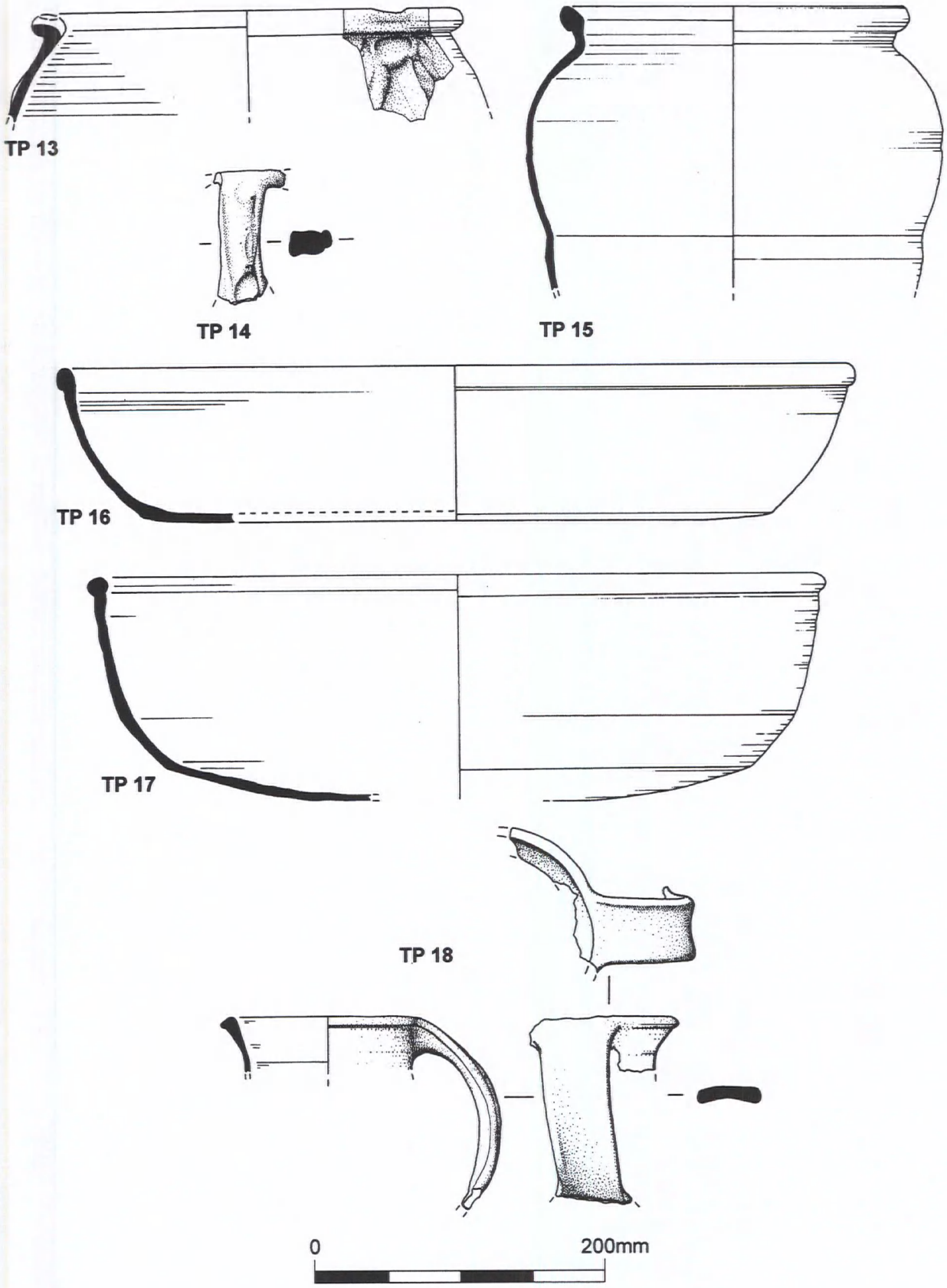


Fig. 5.2. Middle and late Saxon pottery (13-18).

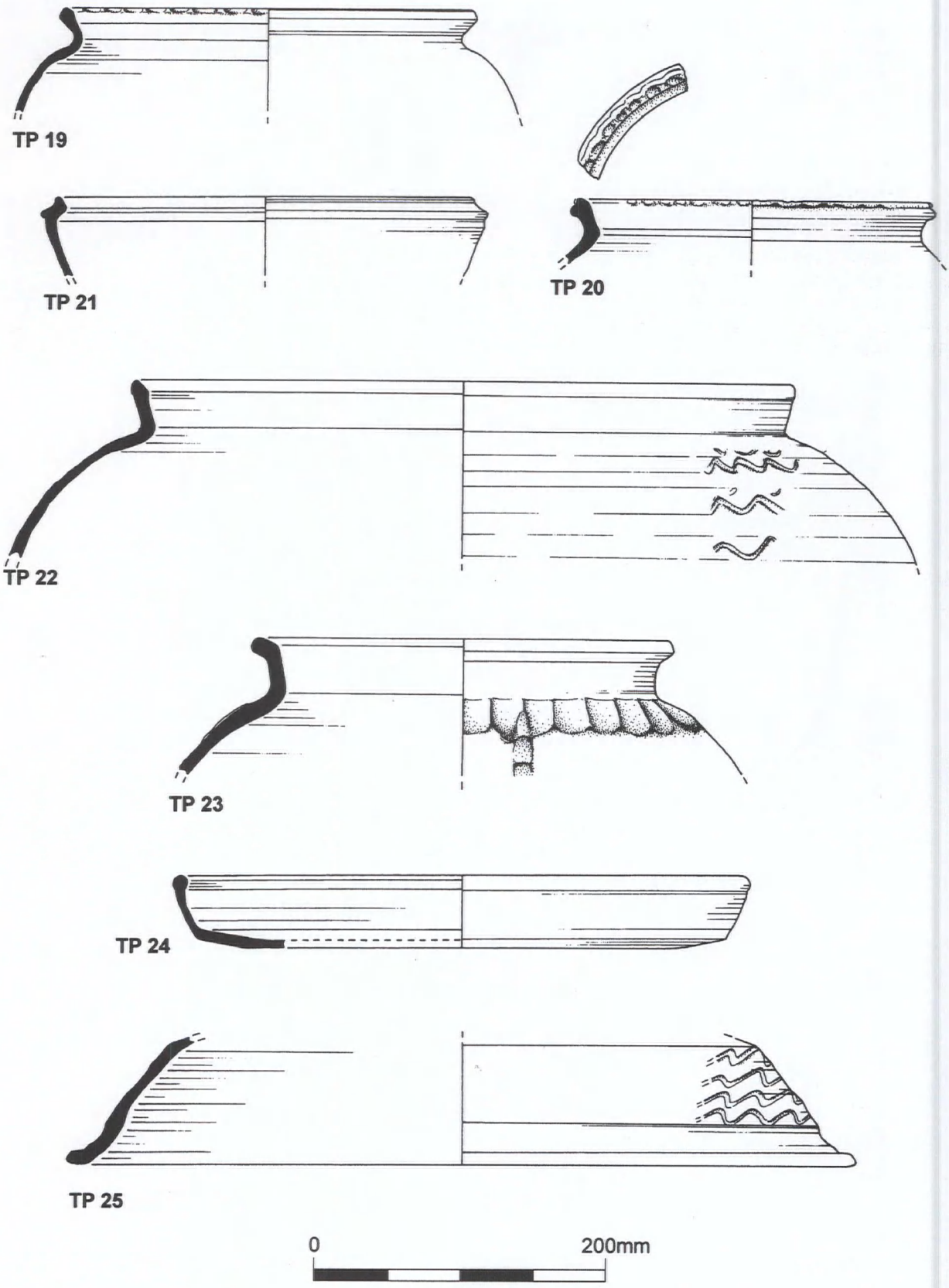


Fig. 5.3. Medieval pottery (19-25).

Phase 6 or later, demonstrating the degree to which the medieval occupation impacted on the earlier phases.

Illustration (Fig 5.1)

TP10 Bowl Rim. Dark grey fabric with black and greyish-purple surfaces. Phase 4, DG28

B01A: T1 (2) type St. Neots Ware

c 1000-1200 AD. 1711 sherds, 17967g, MNV: 20.59 (jars: 13.19, bowls: 5.7, jugs: 1.7).

Although a few very small and almost certainly intrusive sherds were noted in Phase 3 contexts, St. Neots Ware was first used during Phase 4. Probably remained in use until Phase 6, although a considerable portion of the assemblage of that date is likely to be residual, as suggested by the data for BO1 (above).

Illustrations (Figs 5.1 and 5.6)

TP11 Jar rim. Dark grey fabric, greyish purple inner surface. Phase 4, DG17

TP12 Bowl rim. Dark grey fabric, reddish-brown inner surface. Phase 6, medieval soil horizons

TP48 Uniform grey fabric. Post-firing graffito on outer surface. Phase 6, medieval soil horizons

B07: Medieval Shelly Ware

1100-1400AD. 1531 sherds, 23623g, MNV: 20.81 (jars: 13.44, bowls: 4.19, jugs: 3.18).

Two large sherds noted in Phase 3 contexts, both forming part of DG9, were probably intrusive, deriving from their close spatial relationship to later Phase 4 ditches. Otherwise, the ware seems to first come into use towards the end of Phase 4, and continues throughout the medieval period, perhaps going out of use during Phase 8.

Illustrations (Figs 5.2 and 5.6)

TP15 Jar. Grey fabric with reddish-brown surfaces. Phase 5, SG7

TP16 Bowl. Grey fabric with reddish-brown surfaces. Phase 4, DG20 and phase 5, DG30 and SG6

TP17 Bowl. Dark grey fabric with dark brown surfaces. Phase 5, DG30

TP18 Rim and handle from jug. Dark grey fabric with orange surfaces. Phase 9, post-occupation layer

TP49 Grey fabric with dark brown surfaces. Post-firing graffito on outer surface. Phase 7, clay floor

B09: Lyveden/Stanion 'B' Ware

*c*1200-?mid14th century. 54 sherds, 1478g, MNV: 1.05 (all jugs).

Two sherds occurred in a Phase 5 context deriving from the aisled hall, and this material was represented in all of the succeeding phases, perhaps going out of use during Phase 7.

Illustration (Fig 5.4)

TP26 Jug. Grey fabric with orange surfaces, dull green glaze on outer surface. Phase 6, medieval soil horizons and service wing; Phase 8, demolition material; and Phase 9, post-occupation layer

C03: Fine sandy reduced ware

12th-13th centuries. 842 sherds, 7517g, MNV: 6.03 (jars: 3.88, bowls: 0.51, jugs: 1.53, dripping dish not measurable, curfew: 0.11). Seems likely to have been first used towards the end of Phase 4, and gone out of use during Phase 6.

Illustrations (Figs 5.4, 5.5 and 5.6)

TP31 Jar rim. Uniform grey fabric. Phase 5, aisled hall

TP34 Partially complete jar. Thick limescale on lower inner surface. Phase 7, pit within annexe and Phase 9, post-occupation layer

TP42 Jar rim. Grey fabric with browner surfaces. Phase 9, post-occupation layer

TP43 Rim and handle of jug. Uniform grey fabric. Phase 8, demolition layer

C04: Coarse sandy ware

12th-13th centuries. 471 sherds, 4767g, MNV: 3.91 (jars: 1.91, bowls: 0.94, jugs: 1.06).

A single, small and presumably intrusive sherd was noted in a Phase 4 context. Five sherds occurred in Phase 5 features, then this material is found in all of the succeeding phases, probably going out of use in the late part of Phase 6 or the earlier part of Phase 7.

Illustration (Fig 5.4)

TP33 Jar rim, uniform grey fabric, red margins. Incised way line and vertical applied strip. Phase 8, external yard surface.

C05: Sandy reduced ware

Red margins, 12th-13th centuries. 10 sherds, 54g, MNV: 0.04 (jar).

This ware was noted in contexts dating to Phases 5 and 6 only.

C08: Thetford-type ware

10th-12th centuries.225 sherds, 4374g, MNV: 0.55 (jars: 0.28, storage jars: 0.27).

First noted in Phase 4 contexts, and appears to go out of use before the end of Phase 6.

Illustrations (Fig 5.2)

TP13 Storage jar rim. Uniform blue-grey fabric. Phase 7, manor house clay floor

TP14 Storage jar handle. Uniform blue-grey fabric. Phase 8, demolition material

C09: Brill/Boarstall Ware

Mid 13th-15th centuries. 97 sherds, 1447g, MNV: 0.59 (bowls: 0.20, jugs: 0.28, cups: 0.11).

First appears in Phase 6 contexts and is present in all subsequent phases. The assemblage includes a 'Tudor Green' type cup, probably of late 15th century date. A

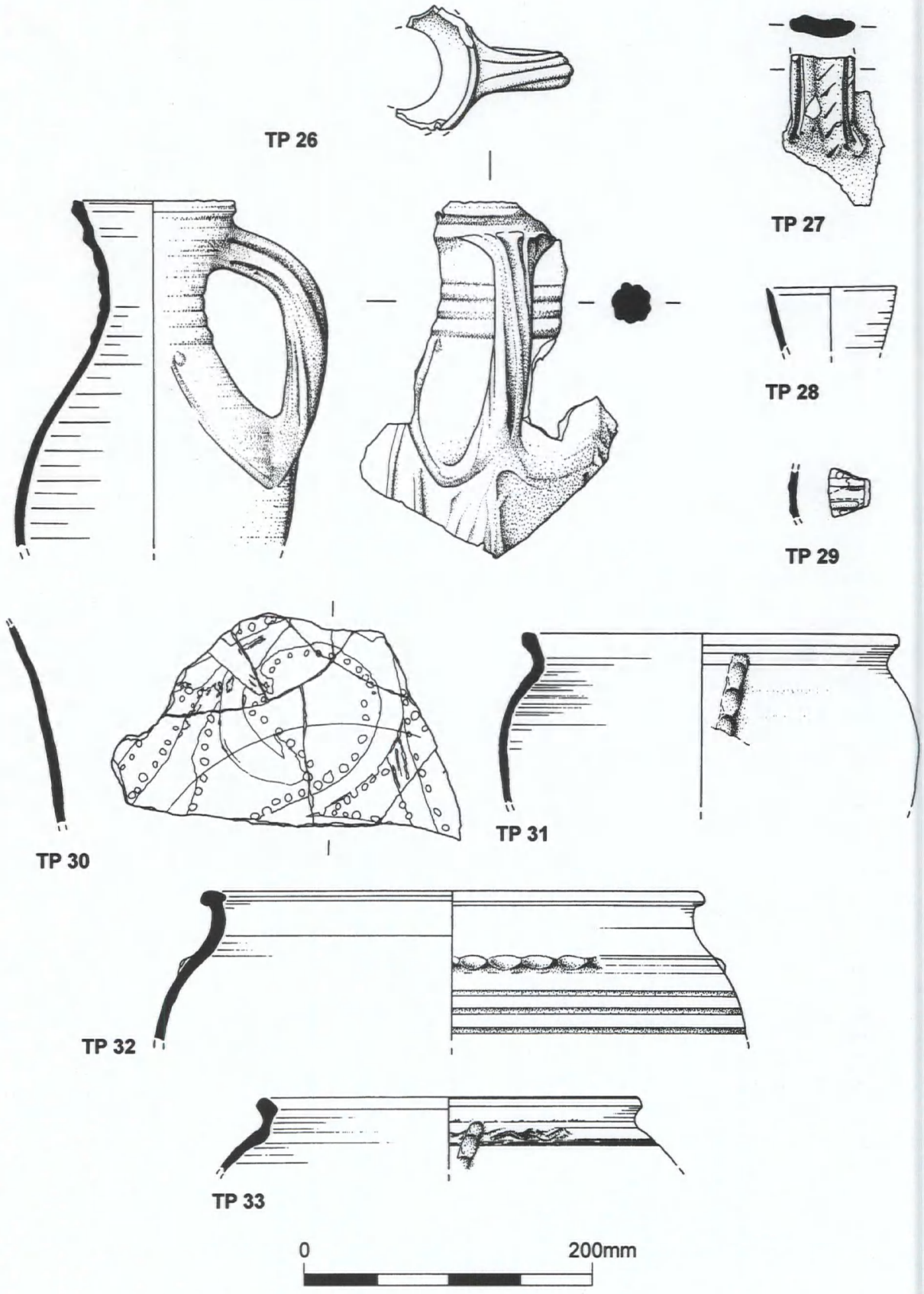


Fig. 5.4. Medieval pottery (26-33).

group of kiln waste including vessels of this type was recently excavated at Ludgershall in Buckinghamshire (Blinkhorn in print d), and such vessels are known from Oxford in contexts of the 15th–mid 16th centuries (Mellor 1994, fig 53).

Illustrations (Fig 5.4)

TP27 Jug handle and body fragment. Buff fabric with copper-spotted yellow-green glaze on outer surface. Phase 6, external surface

TP28 'Tudor Green' cup rim. Buff fabric with copper-spotted yellow-green glaze on outer surface. Phase 8, demolition material

C10: Potterspury Ware

Mid 13th-15th centuries. 125 sherds, 1361g, MNV: 1.48 (jars: 0.63. bowls: 0.50, jugs: 0.35).

First noted during Phase 6, and present in all subsequent phases.

Illustrations (Fig 5.5)

TP35 Jar rim. Grey fabric with orange-pink surfaces. Phase 7, pit within annexe and Phase 9, post-occupation layer

TP36 Bowl rim. Grey fabric with orange-pink surfaces. Phase 6/7, West threshold of manor house

TP37 Neck of jug. Incised wavy line, splashes of poor-quality green glaze on lower part. Phase 6, west entrance

C12: Stamford Ware

c 900-1200AD. 11 sherds, 64g, MNV: 0.

First appears during Phase 5, and seems to go out of use before the end of Phase 6.

C12a: Developed Stamford Ware

12th century. 2 sherds, 18g, MNV: 0.

Only one sherd, from Phase 7, may be stratified.

C17: Hedingham-type ware

13th–15th century. 1 sherd, 12g, MNV: 0.

Sherd occurred in a Phase 6 context

C18: Grimston Ware

13th-15th century. 59 sherds, 1213g, MNV: 0.

First appears in Phase 6 contexts, and appears to go out of use some time during Phase 7.

Illustration (Fig 5.5)

TP38 Body from drinking jug. Grey fabric with orange-brown surfaces, thin white slip on outer body, glossy olive-green glaze on shoulders and neck. Phase 7, pit within annexe

C57: London Ware

12th-14th century. 15 sherds, 400g, MNV: 0.06 (jug).

A single sherd was noted in a Phase 4 context. London ware is thought to have been first produced around 1140AD (Pearce et al 1986, figs 8 and 9), and while this may appear a little early it may well be contemporary. Other wares of a similar date were noted in a ditch fill forming part of DG21. The Phase 6 material is also likely to be contemporary. The only closely dateable sherd of this type (Fig 5.4, 29), a fragment of an early–mid 13th century imitation Rouen-style jug (ibid, figs 25–32), was redeposited in a Phase 8 context (771). A large sherd from a slip-decorated cistern was noted from a Phase 6 context (Fig 5.4, 30). The fabric and decoration appear fairly typical of London ware, but a published parallel could not be found. Cisterns are, however, extremely rare in this fabric, with only a single example published from the city (ibid. fig 8), and dated to around 1380. This falls into the very end of the dating for Phase 6 at Tempsford (see below).

Illustrations (Fig 5.4)

TP29 Body sherd from imitation Rouen ware-style jug. Brick red fabric with grey core. Thick applied strip and dots in a white-firing clay, body painted with iron-rich slip. Stripe and dots appear yellow under glaze, the body slip appearing reddish-brown. Phase 8, demolition material

TP30 Large body sherd from ?cistern. Brick-red fabric, white slip decoration appearing yellow under the clear glaze. Phase 6, medieval soil horizons

C58: Hertfordshire Glazed ware

13th-15th century. 3 sherds, 76g, MNV: 0.

It appears likely that the only securely stratified sherd is from a Phase 6 context.

C59a: Coarse sandy ware

12th-13th century. 22 sherds, 969g, MNV: 0.74 (jars: 0.15, bowls: 0.36, jugs: 0.23).

A single fairly large sherd was noted in a Phase 4 context. This material appears to have its *floruit* during Phases 5 and 6, but is likely to have been residual by Phase 7.

Illustration (Fig 5.3)

TP24 Bowl. Dark grey fabric with brown surfaces. Phase 5, kitchen range SG9

C59b: Sandy ware

12th-13th century. 376 sherds, 5503g, MNV: 3.10 (jars: 1.41, bowls: 0.43, jugs: 0.78, storage jar: 0.09, 'ginger jar': 0.13, curfew: 0.26). Four sherds were noted from Phase 4 contexts. This material was present in all later phases, and was possibly still current during Phase 7, although this is considerably later than the accepted dating.

Illustrations (Figs 5.3, 5.6 and 5.7)

TP22 Decorated jar. Dark grey fabric with orange surfaces. Phase 6, medieval soil horizons

TP23 Decorated jar rim. Dark grey fabric with orange surfaces, applied strip of body clay. Phase 6, west wall of service wing and west threshold

TP25 Curfew. Dark grey fabric with brown surfaces.

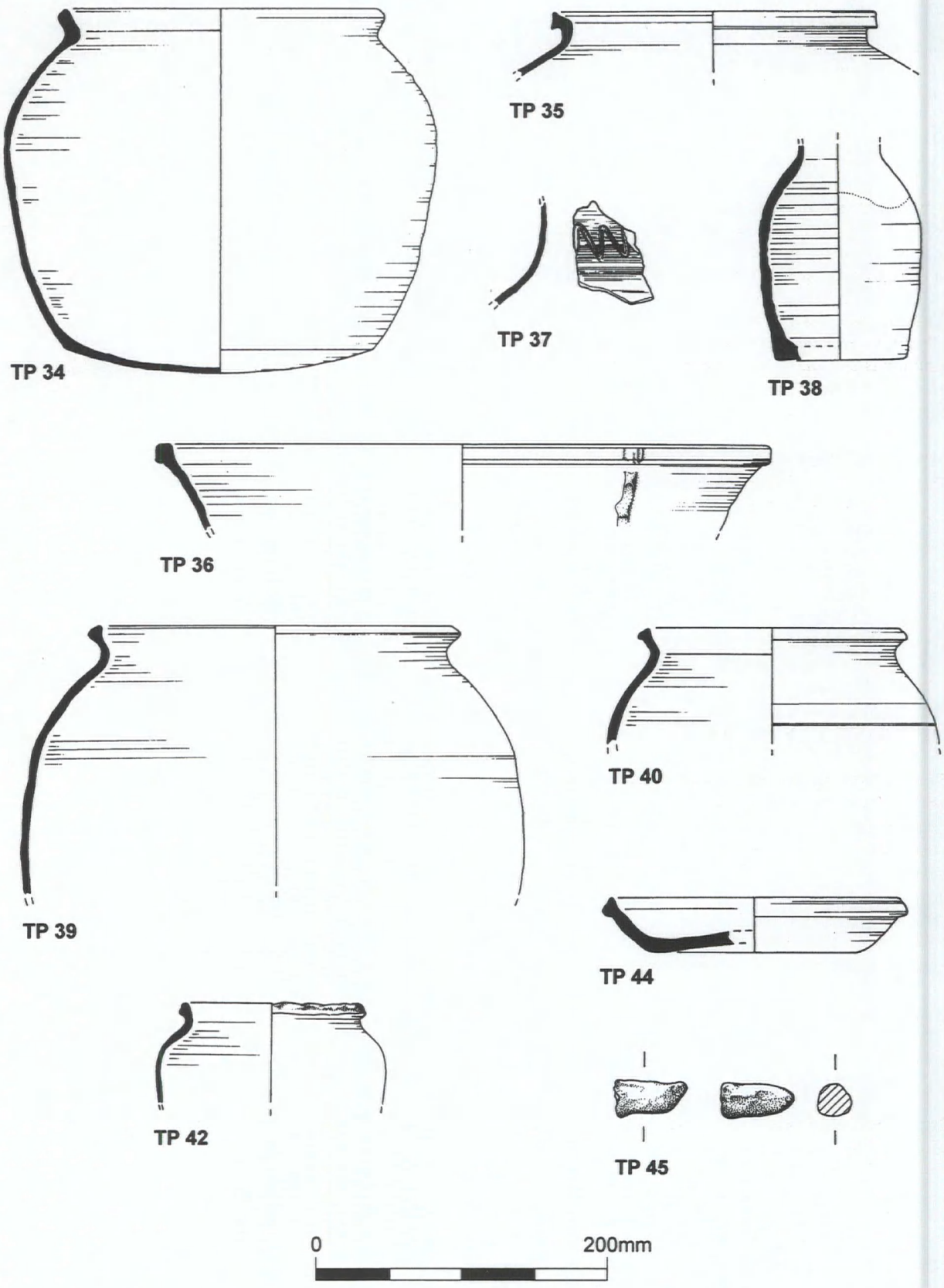


Fig. 5.5. Medieval pottery (34-40, 42, 44, 45).

Phase 5, aisled hall and Phase 6, medieval soil horizons

TP46 Stamped bodysherd. Grey fabric with orange outer surface. Phase 9, post-occupation layer

TP50 Curfew rim. Dark grey fabric with browner outer surface. Phase 8, demolition material

TP51 Curfew rim, dark grey fabric with browner outer surface. Phase 4, DG16

C60: Hertfordshire-type greyware

13th-15th century. 91 sherds, 1637g, MNV: 0.66 (all jars).

This ware first appears in two Phase 4 contexts, both of which appear reliable. This has several implications. Either the start of the ware is a little earlier than generally accepted or Phase 4 continues into the early 13th century. Another possibility is that the sherds identified as C60 are in fact an earlier ware from a different source with a very similar petrological composition. The material appears to fall from use during Phase 6, which again appears rather early, and potentially questions the provenance of the material, although it is possible that it may have been supplanted by the local wares (such as E02) which came into production at that time.

Illustration (Fig 5.4)

TP32 Jar rim. Uniform grey fabric, incised cordons and applied strip. Phase 9, post occupation layer

C70: Gritty glazed ware

12th-?14th century. 6 sherds, 33g, MNV = 0.
All the sherds were residual in Phase 9 contexts.

C71: Buff-Grey cored oxidized ware

12th-14th century. 234 sherds, 2477g, MNV: 2.23 (jars: 1.91, bowls: 0.05, jugs: 0.27).
Two large sherds were noted in Phase 4 contexts, and appear reliably stratified. The material appears to decline during Phase 6.

Illustrations (Fig 5.5)

TP39 Jar rim. Grey fabric with reddish-brown surfaces. Sooting on outer lower body. Phase 5, kitchen range SG9

TP40 Grey fabric with reddish-brown surfaces. Sooting on outer lower body. Phase 5, kitchen range SG9

E01c: Vesicular late medieval reduced ware

Mid 14th-16th century. 280 sherds, 2550g, MNV: 1.66 (jars: 0.85, bowls: 0.5.1, jugs:= 0.22, curfew: 0.08).
A single sherd of this material was noted in a Phase 5 post-pit forming the western wall of the aisled hall. The material first appears in quantity during Phase 6, and appears to be residual before the end of Phase 8.

E2: Late medieval Oxidized ware

Mid 14th-16th century. 267 sherds, 2824g, MNV: 1.33 (jars: 0.48, bowls: 0.27, jugs: 0.58).

A single large sherd from a Phase 4 ditch forming part of DG17 must be intrusive despite its size, especially as no pottery of this type occurred in Phase 5 contexts. The earliest reliably stratified groups are from Phase 6, and this material appears to continue in use throughout the medieval period.

Illustrations (Figs 5.6 and 5.5)

TP41 Rim, handle and upper body of jug, horizontal incised cordons on body. Hard grey fabric with orange-yellow surfaces. Phase 7, west threshold of manor

TP45 Skillet handle. Uniform orange-buff fabric. Phase 8, demolition material

P01: Glazed Red Earthenware

16th century? 1 sherd, 169g, MNV: 0.25 (bowl).
The sherd occurred in a deposit assigned to Phase 6 and would therefore appear to be intrusive in these mixed soil horizons.

Illustration (Fig 5.5)

TP44 Bowl. Brick red fabric with orange glaze on inner surface. Phase 6, medieval soil horizons

P12: Cistercian Ware

c 1470-1550AD. 1 sherd, 2g, MNV: 0.
The sherd occurred in a Phase 8 context associated with the desertion of the manor house.

P13: Tudor Green Wares

c 1380-1500AD. 31 sherds, 142g, MNV: 0.22 (bowl: 0.11, cup: 0.11).
A single small sherd (1g) noted in the mixed medieval soil horizons (Phase 6), and a sherd from a Phase 7 context is likely to be intrusive. This ware appears in very small quantities in all of the later phases.

Chronology

Dating of the phases of occupation is as follows:

Phase 3: Middle to late Saxon, 8th century – mid/late 9th century
Phase 4: Late Saxon and medieval settlement, late 9th/early 10th century – late 12th century
Phase 5: Medieval aisled hall, late 12th century–early/mid 13th century
Phase 6: Medieval moated manor, early/mid 13th century – late 14th century
Phase 7: Medieval moated manor, late 14th century – mid 15th century
Phase 8: Late medieval, late 15th century – early 16th century
Phase 9: Post-medieval

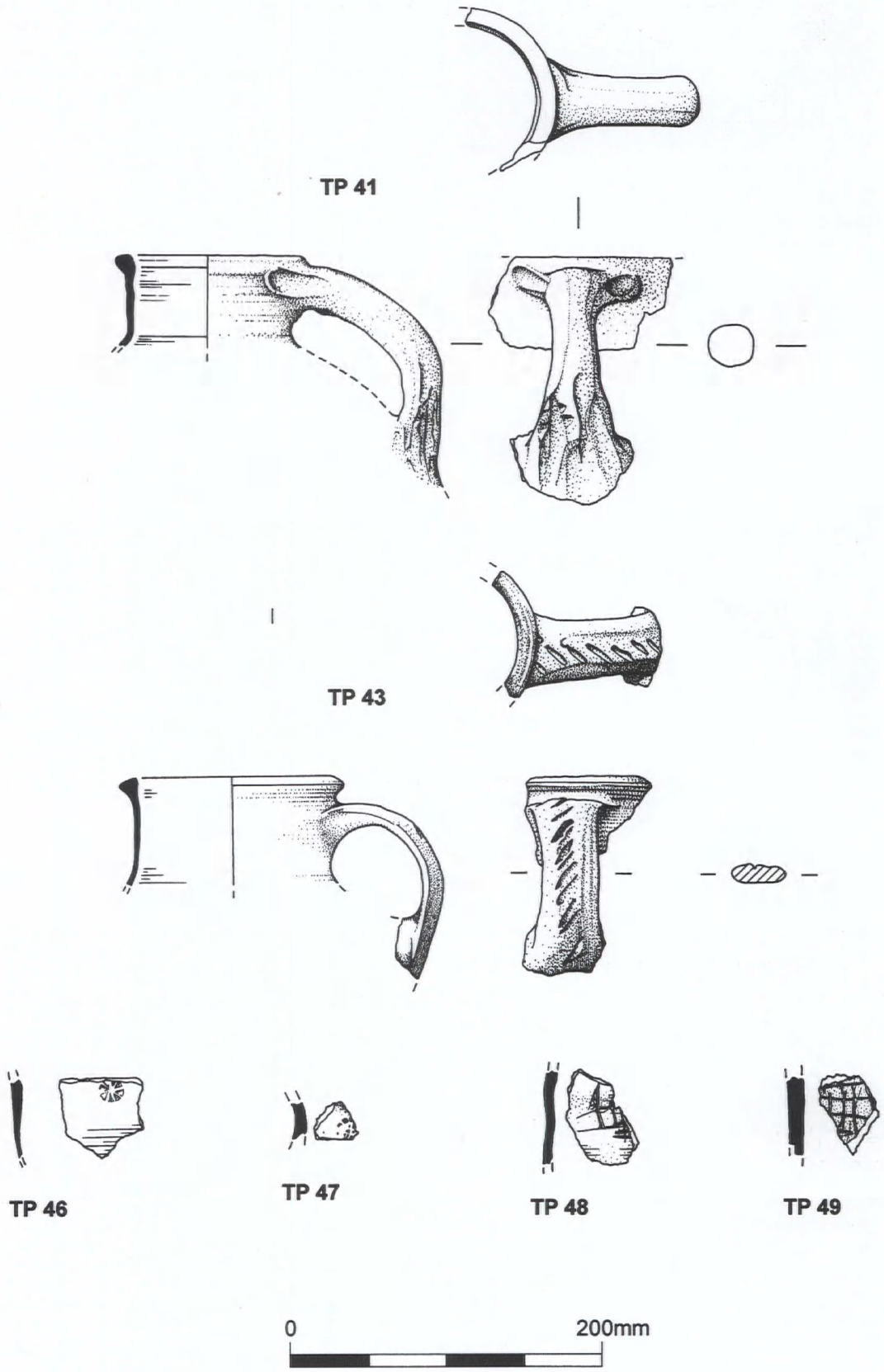


Fig. 5.6. Medieval pottery (41, 43, 46-49).

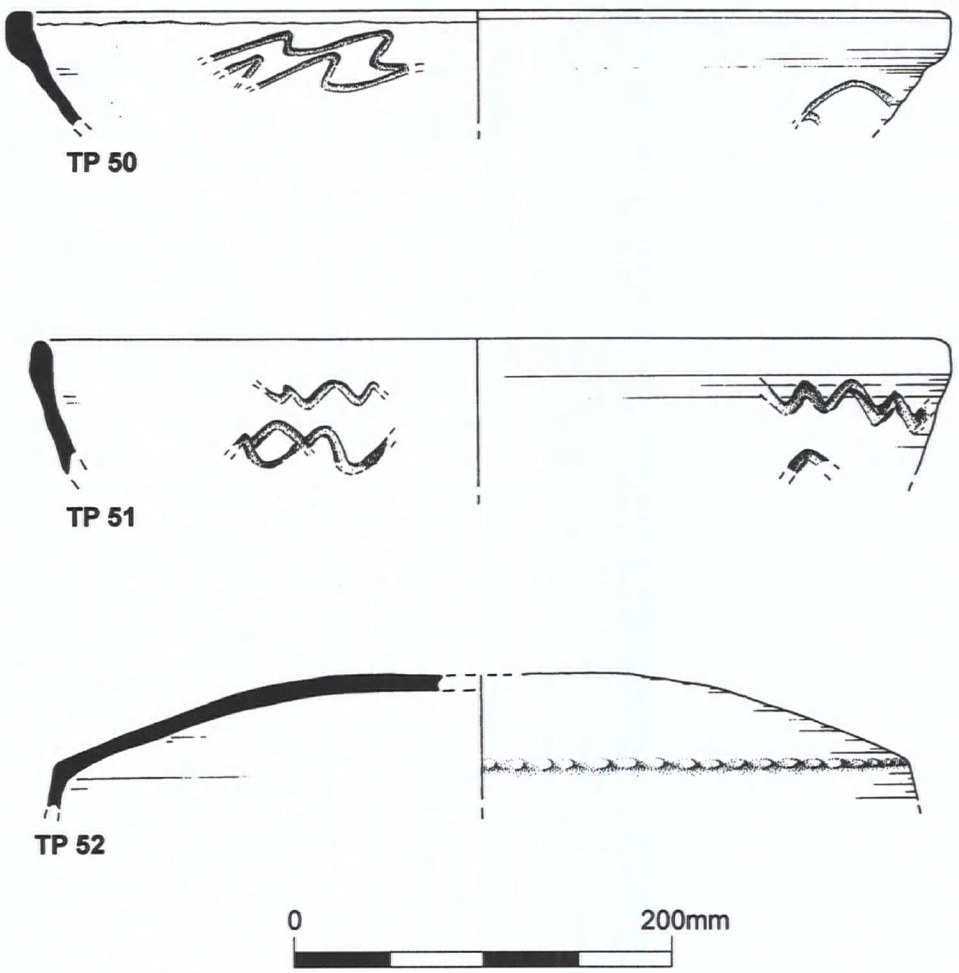


Fig. 5.7. Medieval pottery (50-52).

The data in Table 6 offer a general picture of activity at the site. They show how the majority of the pottery was stratified in medieval deposits, but also how a significant amount was redeposited in post-medieval (Phase 9) contexts.

Phase 3: Middle to late Saxon enclosures (8th century– mid/late 19th century)

The small quantities of stratified handmade wares could date to either the early or the middle Saxon period, as it is only generally possible to identify early Anglo-Saxon pottery by the presence of decorated wares, and none were found at this site. However, despite the fact that some context groups contained only handmade pottery, nearly all the structural groups produced middle Saxon pottery from at least one context, which strongly suggests that most, if not all the handmade pottery is of middle Saxon date. Only three structural groups (DG7, PG1 and SG1) produced only handmade pottery, and in each case only one sherd was present. DG4 and DG 6 produced Maxey ware and handmade fabrics, whilst the pottery from DG3, DG5, DG8 and SG3 comprised both of these types and also Ipswich ware. It is also worthy of note that whilst few handmade rims were recorded, most were developed to a greater or lesser degree (see Fig 5.1, 1-4), which may be further suggestive of a middle Saxon date.

The dating for this phase is primarily based on the chronology of Ipswich ware, although it is possible that the phase may have begun slightly before this material started arriving at the site, and perhaps continued into the later 9th century. The chronology of Maxey ware remains somewhat problematic. It has been found at a number of sites in the south-east midlands, but usually without any other dateable material, other than Ipswich ware, in association, and the accepted dating of 650-850AD (eg Hurst 1976) is in need of confirmation.

Phase	Sherds	Weight (g)	MNV
3	69	907	0.46
4	761	11580	10.29
5	778	10381	7.89
6	3277	47456	35.59
7	362	5012	2.99
8	1723	19607	13.05
9	1794	17300	16.43
Total	**8,764**	**112,243**	**86.70**

Table 6. Pottery occurrence by number and weight of sherds per phase, all fabrics.

The largest mean sherd weight for the handmade material is in Phase 9, the post-medieval period, whilst for Phase 3, the middle-early late Saxon phase, it is almost at its smallest. This is perhaps a good illustration of the way in which medieval and later activity disturbed many of the Saxon deposits. It also raises the possibility that handmade pottery was still in use in the early part of the late Saxon period. This has been suggested in other places, such as Oxfordshire (Mellor 1994, 36-7), but cannot be suggested with a great deal of confidence here.

Phase 4: Late Saxon and medieval settlement (late 9th/early 10th century – late 12th century)

This phase is dominated by late Saxon wares, but contexts belonging to this phase also produced medieval wares that continued for as much as a century after the Norman conquest.

The pottery assemblage is dominated by St. Neots wares, both the earlier types classified as T1 (1) in Northampton and dated to 900-1100AD (Denham 1985), and also the later T1 (2) material, dated 1000-1200AD by the same authority. Thetford ware is also present in small but significant quantities, offering further evidence of 10th century occupation. However, this phase also produced small quantities of Shelly Coarseware and South Lincs Oolitic ware, both first produced around 1100AD if not slightly earlier, and Lyveden 'A' ware which, on the evidence from the excavations at West Cotton in Northamptonshire, is a later introduction at sometime around the middle of the 12th century (Blinkhorn in print b). Local fabrics, such as CO3, C59a and C59b (all 12th-13th century) and C71 (12th–14th century) also first appear during this phase, and a single sherd of London ware, which began production around the middle of the 12th century, was also noted. There seems little doubt therefore that this period of activity extends into the second half of the 12th century.

Phase 5: Medieval aisled hall (late 12th century – early/mid 13th century)

This is an extremely short phase of activity when compared to the others at the site, but the ceramic chronology indicates that it is sound. The phase sees the decline of T1(2) type St. Neots ware, which is likely to have gone out of use around 1200AD, and also the first finds of Lyveden/Stanion 'B' ware, which started production around the same time. Perhaps most significant is the absence of Brill/Boarstall and Potterspury wares. The former, which was first produced in the early years of the 13th century, does not seem to have reached Bedfordshire until the mid-13th century or later, as is noted in the chronology of the county type-series, whilst the latter is common throughout the south-east midlands by the end of the 13th century.

Phase 6: Medieval moated manor (early/mid 13th century – late 14th century)

The start of this phase lies in the 13th century, as it sees the arrival of Brill/Boarstall and Potterspury wares at the site, all of which are well dated. Other well-dated 13th century regional imports such as Hedingham ware (C17), Grimston ware (C18) and Hertfordshire Glazed ware (C58) all appear during this phase.

There appears little doubt that the phase extends into the later part of the 14th century. Well dated local wares, such as EO1c and E2 (mid14th –16th century), first appear during this phase. In addition, a single fragment of a Brill/Boarstall ware bottle was noted. Such vessels appear to have been first

Site Phase	Jars	Bowls	Jugs	Curfews	Cups	Other*	Total MNV
4	69.2%	29.9%	0.8%	0	0	0	9.59
5	61.6%	14.1%	23.1%	1.2%	0	0	5.02
6	68.8%	22.1%	8.4%	6.4%	0	Bottle	35.69
7	49.4%	34.7%	13.3%	2.6%	0	0	2.71
7/8	35.0%	17.1%	39.4%	3.7%	4.9%	Dripping dish	4.32
Total	**37.15**	**13.14**	**6.31**	**0.52**	**0.21**	**0**	**57.33**

(expressed as a percentage of each phase assemblage: definite residual material excluded)
(* = vessels without symmetrical rims or diagnostic bodysherds)

Table 7. Vessel occurrence per late Saxon and medieval phases.

produced during the mid-late 13th century (Mellor 1994, fig 55). Both Tudor Green and Lyveden 'D' wares are absent apart from two extremely small, probably intrusive sherds (see above), indicating very strongly that the phase ended before *c* 1400AD.

Phase 7: Medieval moated manor (late 14th century– mid/late 15th century)

This phase begins after the introduction of mid-14th century wares such as EO1c and E2, and ends before the introduction of Cistercian ware in the later 15th century. However, Lyveden/Stanion 'D' ware, which was first made around 1400AD, does not appear in contexts of this date, although a few sherds were present in contexts dating to the succeeding Phase 8.

Phase 8: Late medieval (late 15th – early 16th centuries)

The vast majority of the pottery from this phase is residual, and it appears that occupation had all but ceased by this time. Only 5% of the pottery by weight (see Table 6) can be considered to be contemporary (fabrics EO1c and E2), but most, if not all of this, may be residual as these wares first occurred in the preceding two phases. A single rimsherd from a Brill/Boarstall 'Tudor Green' type cup, datable to the late 15th century, and a fragment of a Cistercian cup of a similar or later date, indicates some activity on the site at this time. The fact that only a single sherd of Red Earthenware (fabric PO1) was noted from the site shows that activity had certainly all but ceased by the mid-16th century.

Vessel Use

The data in Table 7 show a fairly typical pattern for medieval domestic settlements. During the late Saxon and earlier medieval phases, jars and bowls dominate the assemblage. This continues until Phase 7, after which there is a change, with jugs becoming more dominant, and cups appear during Phase 8.

This assemblage largely lacks specialist cooking and table wares, with only a single fragment of a dripping dish, a bodysherd and handle from a skillet, and two fragments of pottery cups falling into this category. All are derived from Phase 7 and 8 deposits comprising the latest floor levels and the demolition deposits. The absence of these pottery types of pottery vessel probably reflects Tempsford's manorial status. Metal cooking and tablewares probably had a greater role at the site, but due to their recyclable nature, these are rarely found in the archaeological record.

Deposition

The data in Table 8 shows the amount of pottery (by weight) recovered from the structural groups. In most cases, the assemblages were so small as to have no analytical value beyond dating, and even then, many produced so little pottery that the ceramic chronology cannot be relied upon. It should be stressed that the following discussion is based on partial assemblages from sample excavation of the late Saxon and earlier medieval deposits, although the deposits related to the manor house were near fully excavated.

Structural Group	MS	B01	B01A	C08	B07	'A'	Lyre C03	C04	C59b	C71	E01c	E2	Total
Aisled hall	201	36	1181	106	789	565	400	119	298	2	27	0	3724
Manor house	912	2260	1568	1710	10690	5135	4365	1914	2324	211	1318	1685	34092
DG1	0	0	27	0	0	0	0	0	0	0	0	0	27
DG2	7	0	0	0	0	0	0	0	0	0	0	0	7
DG3	69	0	0	0	0	0	0	0	0	0	0	0	69
DG4	245	1	0	0	0	0	0	0	0	0	0	0	246
DG5	203	0	0	0	0	0	0	0	0	0	0	0	203
DG6	76	14	0	0	0	0	0	0	0	0	0	0	90
DG7	30	14	0	0	0	0	0	0	0	0	0	0	44
DG8	36	0	0	0	0	0	0	0	0	0	0	0	36
DG9	69	0	42	0	63	0	0	0	0	0	0	0	174
DG10	364	199	15	0	0	0	0	0	2	0	0	0	580
DG11	3	31	0	0	0	0	0	0	0	0	0	0	34
DG12	0	7	11	0	0	0	0	0	0	0	0	0	18
DG13	3	4	0	0	0	0	0	0	0	0	0	0	7
DG14	86	14	607	0	72	0	0	0	0	0	0	0	779
DG15	0	0	167	38	0	0	0	0	0	0	0	0	205
DG16	43	250	0	0	0	0	0	0	0	0	0	0	293
DG17	499	1388	2265	44	15	0	33	0	0	0	0	81	4325
DG18	16	7	407	27	0	0	0	0	0	0	0	0	457
DG19	93	104	104	0	83	0	76	0	0	0	0	0	460
DG20	0	15	115	59	28	0	0	0	0	0	0	0	217
DG21	79	0	79	81	614	491	7	0	0	0	0	0	1351
DG22	33	61	75	0	8	82	0	0	0	0	0	0	259
DG23	0	10	111	18	0	0	0	0	0	0	0	0	139
DG24	0	55	0	4	65	0	42	0	0	0	0	0	166
DG25	0	0	0	0	0	0	0	0	0	0	0	0	0
DG26	0	2	62	0	0	0	0	0	0	0	0	0	64
DG27	39	59	270	0	22	0	0	0	0	0	0	0	390
DG28	48	0	12	0	5	0	0	0	0	0	0	0	65
DG29	40	70	53	0	145	11	7	29	10	27	0	0	392
DG30	0	0	83	78	836	154	2	0	16	0	0	0	1169
PG1	50	0	0	0	0	0	0	0	0	0	0	0	50
PG2	94	0	0	0	0	0	0	0	0	0	0	0	94
PG3	142	196	0	0	0	0	0	0	0	0	0	0	338
PG4	0	0	0	0	0	0	0	0	0	0	0	0	0
PG5	3	0	116	0	0	0	0	0	0	0	0	0	119
PG6	104	20	276	103	109	51	114	0	0	0	0	0	777
SG1	15	0	0	0	0	0	0	0	0	0	0	0	15
SG2	0	0	0	0	0	0	0	0	0	0	0	0	0
SG3	40	0	0	0	0	0	0	0	0	0	0	0	40
SG4	0	0	16	0	0	0	0	0	0	20	0	0	36
SG5	0	5	97	0	23	15	0	0	0	0	0	0	140
SG6	29	8	32	82	67	0	0	0	0	0	0	0	218
SG7	59	0	59	0	0	33	0	0	9	0	0	0	160
SG8	0	0	90	0	4	0	2	0	114	0	5	0	215
SG9	97	647	235	6	238	0	71	5	41	1590	0	0	2930
Total	**3827**	**5477**	**8175**	**2356**	**13876**	**6537**	**5119**	**2067**	**2814**	**1850**	**1350**	**1766**	**55214**

Table 8. Pottery occurrence per structural group, by weight (g) of pottery per group (major wares only).

With the exception of the middle Saxon deposits to the south, the majority of the pottery was deposited in features in or around the central part of the site. This was also generally the case at the medieval hamlet of West Cotton in Northamptonshire (Blinkhorn in print b), where the majority of the pottery derived from intact middens in yard areas associated with buildings. At Tempsford, the large amount of pottery redeposited in post-medieval soil horizons may well have originated from such deposits. The cross-fit evidence from West Cotton showed that sherds from the same vessels were found at distances of over 100m apart. This was not the case at Tempsford, where there is only a single domestic focus, and all of the cross-fits came from within the same structural groups or from disturbed soils overlying them (see below).

Phase 3: Middle to late Saxon enclosures (8th century – 9th century)

The structural groups assigned to this phase (DG2-9, SG1, SG3, and PG1) produced relatively small quantities of pottery, with no obvious sign of any spatial bias. The largest assemblage was 246g from DG4.

Phase 4: Late Saxon and medieval settlement (late 9th/early 10th century – late 12th century)

The distribution of pottery during this phase shows a strong bias towards the middle of the excavated area that was later occupied by the moated enclosure, which had protected the underlying features from truncation. The structural groups (DG14-22) produced fairly large quantities of pottery, with DG17 yielding 4325g. A total of 1351g of pottery was recovered from DG21, but the rest of the groups were quite small, with DG14 producing 779g, and the rest of the ditch groups producing less than 500g in each case. The pit groups (PG5 and 6) produced very little pottery (119g and 77g respectively), and SG4 only produced 36g. Features in the northern part of the excavation (DG23-28, PG4) produced much smaller assemblages. The largest group, from DG27, weighed 390g, with each of the other groups producing less than 200g of pottery. DG25 and PG4 yielded no pottery at all. The picture was similar in the southern part of the excavation (DG10-13, PG2 and 3, SG2). The largest group was 580g from DG10, but apart from PG3, which produced 338g, none of the groups produced more than 100g of pottery each, with SG2 producing no pottery at all.

Phase 5: Medieval aisled hall (late 12th century – early/mid 13th century)

All of the structural groups in this phase (DG29-30, SG5-7, SG9-10 and the aisled hall) were located in the central part of the site. The aisled hall produced 3724g of pottery, and while SG9 yielded 2930g of material and DG30 produced 1169g, the other groups each produced less than 500g of pottery.

Phases 6 – 8: Medieval moated manor (early/mid 13th century – early 16th century)

The manor house and the associated yards and soil horizons produced a total of 34,092g of pottery.

Residuality

The data in Table 9 show the high degree of residuality in the pottery groups dating to the mid-14th century and beyond. Over 50% of the pottery from groups of that date is residual, with the proportion rising to over 95% by the mid-15th century. This suggests that there was intensive disturbance of the deposits relating to the final century of use, so that most of the late assemblage came from demolition deposits. It seems likely that most of the medieval pottery represents re-deposited yard middens, and an area to the south of the kitchen wing of the manor house was clearly the location for a midden heap that contained pottery, animal bone and a range of other domestic finds.

Site Phase	E/MS	Maxey	B01	B01A	B07	C3+C4	Lyve 'A'	C10	E01C/ E2	Total % Residual	Total MNV
3	0	100	–	–	–	–	–	–	–	0%	0.37
4	0.5	4.5	23.1	66.7	3.0	0.9	1.2	–	–	5.0%	9.6
5	0	3.9	12.5	30.7	44.6	2.5	6.0	–	–	57.1%	5.7
6	0.6	3.0	15.5	24.0	33.6	10.5	7.6	1.1%	4.0%	56.8%	31.49
7	0	0	6.5	2.8	52.0	10.9	3.6	5.2%	19.0%	75.8%	2.48
8	0	1.8	16.3	5.9	35.7	23.5	11.9	0	5.0%	95%	11.07
9	0.5	1.4	18.5	25.1	14.6	23.6	5.3	6.8%	4.2%	100%	14.71
	0.32	**2.38**	**12.49**	**20.12**	**20.8**	**19.88**	**5.04**	**1.48**	**2.9**		**75.42**

(major fabrics only, expressed as a percentage of each phase assemblage by MNV, residual cells below line)

Table 9: Pottery fabric occurrence per ceramic phase.

Phase	Maxey	B01	B01A	B07	C3/C4	Lyve 'A'	B09	C10	E01C/E2
3	16.4								
4	55.9	14.3	11.0	23.2	22.3	61.1			
5	17.2	8.1	9.2	17.4	20.5	22.0	12.0		
6	34.8	7.7	11.1	17.3	9.9	18.8	44.5	9.8	10.2
7	3.0	5.5	9.1	16.2	7.5	27.8	21.3	17.8	15.7
8	30.7	7.8	8.7	13.2	8.6	18.0	17.8	8.2	8.8
9	13.3	6.7	8.6	10.3	9.3	16.2	8.5	13.2	8.5

Table 10. Pottery sherd mean weight (in g) for major fabrics per ceramic phase (residual cells below line).

Fragmentation analysis

The data in Table 10 offer a useful insight into the degree of disturbance to which the site was subjected. In the majority of cases the pottery, including residual sherds, shows very little change in its mean sherd weight through time until post-medieval Phase 9. The exception to this are the Maxey and St. Neot's wares from Phase 5, which show a considerable drop in their mean sherd weights, reflecting the high degree of disturbance caused by the major rebuilding in this phase. Otherwise, it appears that most of the pottery was the result of secondary deposition, even when current, and that the suggested disposal policy of middening occurred from at least the late Saxon period. This also shows that the post-abandonment disturbance was mainly a series of separate single events. If the pottery had been subject to continuous disturbance, such as ploughing, the residual material would have had considerably lower mean sherd weights.

Cross-fits

The following cross-fits were noted. The majority were made between contexts within the same structural group, or between a structural group and the post-medieval soil horizons which covered large areas of the site. This illustrates the degree of disturbance to which the archaeological deposits have been subjected.

Grimston ware curfew from Phase 9, topsoil and topsoil interface within moated enclosure = Phase 8, demolition material = Phase 7, floor surface = Phase 7, west wall of hall = Phase 6, external yard surface = Phase 5, kitchen range SG9.

Sandy coarseware jar from Phase 9, post-occupation layer above manor house = Phase 8, demolition material.

Lyveden 'B' glazed jug (Fig 5.4, 26) from Phase 9, post-occupation layer above manor house = Phase 8, demolition material = Phase 6, south wall of service wing = Phase 6, medieval soil horizons.

Reduced ware jar (Fig 5.5, 34) from Phase 9, post-occupation layer above manor house = Phase 7, pit within annexe.

Potterspury ware jar (Fig 5.5, 35) from Phase 9, post-occupation layer above manor house = Phase 6, external surface.

South Lincs Oolitic ware jug (Fig 5.1, 8) from Phase 6, medieval soil horizons = Phase 5, post-pit south side of aisled hall.

Sandy Oxidized ware jar from Phase 8, demolition material = Phase 6, medieval soil horizons.

Sandy Oxidized ware jar (Fig 5.5, 39) from three contexts forming part of Phase 5, kitchen range SG9.

Large Sandy coarseware jar (Fig 5.3, 23) from Phase 6, west wall of service wing = Phase 6, west threshold.

Sandy ware curfew from various contexts forming Phase 5, kitchen range SG9. ar (Fig 5.5, 40) from two contexts forming Phase 5, kitchen range SG9.

Ipswich ware jar from Phase 6, medieval soil horizons = Phase 5, structure SG6. A further fragment recovered from the Phase 6, fill of a slot forming the eastern wall of the hall seems likely to be from the same vessel.

Large ?London ware ?cistern (Fig 5.4, 30) from medieval soil horizons = a Phase 6, pit part of manor construction.

Sandy Coarseware curfew (Fig 5.3, 25) from Phase 6, medieval soil horizons = Phase 5 eastern aisle post, aisled hall.

Shelly ware bowl (Fig 5.5, 16) from Phase 5, ditch DG30 = Phase 5, structure SG6 = Phase 4, ditch part of DG20.

6 THE SAXON AND MEDIEVAL FINDS

T Hylton

with contributions by A Chapman, P Chapman, M Curteis (with M Blackburn), A Slowikowski, C Stevens and D Sutherland

Introduction

The excavation produced over 1000 finds spanning the middle Saxon to post-medieval periods. A small group of finds pre-dated the moated enclosure (Phases 3-5), while the majority came from deposits related to the use of the moated manor house (Phases 6-8). Some objects found in later medieval deposits appear to be late Saxon to 12th century in date, as was also demonstrated by the high levels of residual pottery. The finds are comparable with those from other medieval settlements of a similar date such as the moated house at Wintringham, Huntingdonshire (Beresford 1977), West Cotton, Raunds, Northamptonshire (Chapman forthcoming), Faccombe Netherton, Hampshire (Fairbrother 1990), Goltho, Lincolnshire (Beresford 1987) and Stratton, Bedfordshire (forthcoming).

The artefacts are those of a rural community with access to trade routes. The assemblage represents most aspects of life at the settlement from items for personal use and recreation, through to household furnishings. There is a small group of locks and knives, evidence for metalworking (iron and lead) and a broad range of tools.

In total there are 1095 individually recorded small finds in nine material types (Table 11). Each object has been described and measured, and a descriptive catalogue is retained in archive. Bulk finds, not individually numbered, include fired clay, tile and slag. The majority of artefacts were recovered during excavation, but the use of a metal detector at regular intervals increased the recovery of metal objects by a further 107 items.

Material	Total
Silver	10
Copper alloy	112
Iron objects	818
Lead	48
Stone	79
Bone/antler	22
Glass	1
Ceramic	1
Plaster	4
Total	**1095**

Table 11. The finds quantified by material type.

A total of 260 iron objects (excluding nails and small fragments) were submitted for X-ray analysis, undertaken by David Parish of the Buckinghamshire County Museum Conservation Service. This provided a permanent record and assisted identification. It also revealed technical details not previously visible, particularly for the lock mechanisms, and twenty-two iron objects were seen to be coated to varying degrees in non-ferrous metal. Five objects were chosen for further investigation by selective cleaning, using air abrasive on heavily concreted items, to reveal features of interest. No stabilisation was carried out. All sensitive finds are packaged in air tight plastic containers with silica gel and an indicator card, to maintain a low humidity and reduce deterioration.

The finds are published as individual types within six major functional categories. Only small groups and

Functional Category	Phase 3	4	5	6	7	8	9
Personal Possessions							
Costume and jewellery	1	1	–	14	3	17	14
Toilet equipment	1	–	–	1	–	–	3
Gaming pieces	–	–	–	1	–	1	–
Skates	–	–	–	1	–	–	–
Misc. objects	–	–	–	1	–	–	–
Equipment and furnishings							
General ironwork	–	–	1	7	2	11	1
Nails	–	2	1	58	25	212	141
Household equipment	–	–	2	8	3	8	4
Locks and keys	–	2	–	5	–	3	6
Knives	1	–	1	14	–	6	2
Hones/sharpeners	–	–	–	3	–	1	3
Querns/millstones	3	8	8	30	1	3	4
Tools							
Agricultural tools	–	–	–	1	1	–	–
Leather working	–	–	–	–	–	–	1
Metal working	–	–	–	1	2	1	2
Wood working	–	–	–	2	–	1	5
Textile working	1	5	1	5	–	4	–
Fishing equipment	–	–	–	1	–	–	1
Misc. tools	–	–	–	1	–	–	1
Horse furniture							
Fittings	–	–	1	4	–	3	6
Horseshoes	–	–	1	7	–	7	18
Nails	–	–	2	14	3	20	7
Weapons	–	–	–	4	–	–	5
Coins	–	1	–	3	–	2	3
Miscellaneous and unidentified							
Copper alloy	1	3	2	10	1	7	19
Iron	2	3	2	38	7	68	42
Lead	–	1	3	19	–	2	15
Antler and bone	–	2	1	1	–	2	3
Plaster	–	–	1	1	1	1	–
Stone	–	–	1	1	–	–	–

Table 12. Medieval finds quantified by functional category.

the miscellaneous and unidentified objects have been considered by material type. The categories are tabulated below along with the quantities recovered (Table 12).

Chronological groups

Phase 3: The middle to late Saxon enclosures (8th century – late 9th century)

Nine objects were found within the ditches of the domestic area between Enclosures 1 and 2 (DG3, DG4, DG5). The finds include a pin-beater, for the use of a warp weighted loom, an iron buckle (Fig 6.1, 2) and a collection of eroded fragments of lava quern. Although there were no concentrations denoting specific activity areas, the range of objects is representative of domestic settlement.

Phase 4: The late Saxon and medieval settlement (late 9th/early10th century – late 12th century)

The majority of the twenty-seven artefacts (24) and a large amount of metalworking debris came from ditches on the eastern side of Plot 2, suggesting the presence of a nearby domestic building. The assemblage includes a cut halfpenny of Aethelred II

(AD 978-1016) from DG18. General ironwork is limited, but a key for use with a barrel padlock and a spring shackle, came from DG17. Tools for manufacturing textiles include three heckleteeth or woolcomb teeth and two pin-beaters. Other objects worthy of note include a decorative fitting, possibly an escutcheon for suspension from a bowl (Fig 6.10, 44). A pair of tweezers form SG2 are similar to a complete example from a post-occupation layer (Fig 6.3, 12).

Phase 5: The medieval aisled hall (late 12th century – early/mid 13th century)

The majority of the twenty-seven artefacts were associated with structures SG9 and SG10, where there were stratified deposits, and only seven came from the aisled hall, where only cut features survived. Finds include a decorative binding strip with shaped terminals and a possible handle, both coated in non-ferrous metal, a bone point and two undiagnostic fragments of copper alloy sheet.

The ditch bisecting the plot, DG29, contained joining pieces of Millstone Grit from a millstone, indicating the nearby presence of a mill. To the south, structures SG9 and SG10 produced a prick-spur (Fig 6.9, 37), a horseshoe and horseshoe nail, perhaps indicative of a nearby stable. Other finds include a knife (Fig 6.7, 27) and a lead spindle whorl (Fig 6.8, 33). A fragment of rolled lead sheet in SG6 near the aisled hall and molten driblets in SG10 to the south, indicate lead working.

Phases 6 and 7: The medieval moated manor (early/mid 13th century – mid 15th century)

Over 140 finds were retrieved from the soil horizons within the moated enclosure. Some of this material is stylistically late Saxon and 12th century in date and came from earlier occupational phases. The characteristically late Saxon finds include collared pins with sub-biconical and polygonal heads, one ornamented with ring-and-dot motifs (Fig 6.3, 10); knives with the back of the blade rising then angling down to the tip (Fig 6.7, 25) and an incomplete knife with an elongated S-shaped profile. In addition, there is a leaf-shaped arrowhead furnished with a raised collar at the junction of the blade and socket (Fig 6.10, 42). The presence of horses is represented by a complete side link coated in non-ferrous metal (Fig 6.9, 39) which stylistically resembles types dated to 10th-11th centuries; Types 1 and 2 horseshoe, together with horseshoe nails with fiddle key and trapezoid heads.

The second group comprises finds discarded by the occupants of the manor house and incorporated into the surrounding soil horizons. There was a particular concentration in the area to the south of the service wing, and a small concentration of horse furniture close to the western threshold. The finds include a copper alloy thimble (Fig 6.8, 35), a scale tang knife, a barbed arrowhead (Fig 6.10, 43) and a bodkin, all of which are specifically of 13th-14th century date or later. Other finds worthy of note include a cut halfpenny of Henry III (1216-72); a combined earscoop and toothpick (Fig 6.3, 11); and part of a bone skate. Of particular interest is the presence of decorative iron binding strips, most probably for use on caskets and chests and copper alloy buckles and decorative buckle-plates (Fig 6.2, 4-6), all with non-ferrous metal coating. The quality of these items would be consistant with manorial status.

In general, however, a poor assemblage of artefacts was retrieved from the manor house, suggesting that most of the internal fixtures and fittings were removed for reuse or recycling, although a single candleholder was found by the eastern threshold (Fig 6.4, 16). A small collection of security equipment, includes a barrel padlock case (Fig 6.5, 18), a staple which may have been used in conjunction with the padlock, and a ward plate from a mounted lock, all found in the same area. In addition, a sliding bolt, also from a mounted lock was recovered from the east path, together with two coins; a cut halfpenny of Henry I (1100-35) and a farthing of Henry III (1216-72). There is a small group of agricultural and metalworking tools, which include a fragment from a scythe/sickle from the annex attached to the service wing and a punch and cold set from the service wing.

A small number of finds came from the final clay floor of the hall, including a coin of Edward I (1272-1307), a strap-end, a rim fragment from a cauldron and a selection of horse furniture. The profusely ring-and-dot decorated bone chess piece (Fig 6.3, 13) came from the demolition deposits.

Phase 8: Late medieval (late 15th century – early 16th century)

This phase produced the largest number of finds, the majority coming from demolition deposits created during the destruction of the building and perhaps later picking over of these deposits.

A small number of finds are quite obviously residual from earlier phases of occupation, these include a cut shortcross half penny of Henry III (1217-42), a

Saxon knife and decorative binding strips coated in non-ferrous metal.

Material from the dismantling of the building included a large number of used nails and unidentifiable, miscellaneous iron fragments. Other iron fittings that would have formed part of the structure include a timber dog, staples, a hinge pivot, a swivel loop and large studs, together with a mounted lock and a key and a barrel padlock key (Fig 6.7, 21). In addition, there is a group of costume fittings that include a lace chape, a bar mount, a buckle plate, together with a selection of drawn wire pins. There was also a small group of items associated with the use of horses including horse-shoes, nails and fragment of miscellaneous fittings.

The finds

Personal possessions

This category comprises small portable items which would have formed part of a persons clothing (costume fittings) or been held by an individual for personal use (toilet equipment). The category also includes items for recreational use (gaming pieces and skates). It is interesting to note that no items of jewellery were recovered.

Costume and jewellery

Buckles and buckle plates

Of the four copper alloy buckles, two are medieval and two are post-medieval "figure-of-eight" types. A crudely manufactured buckle, complete with pin and plate (Fig 6.1, 1) was recovered from the east path of the manor house. The end of the plate is folded and a wide gap at the fold indicates that rather than being attached to leather or textile, the plate may have been attached to a metal ring, possibly another buckle. It displays similarities to a distinctive type of cast buckle, with two loops and an integral plate, dated to the late 13th-14th century (Egan 1991a, figs 70-71). The other medieval buckle has a D-shaped frame with protruding lip, similar to examples from London (Egan 1991a, fig 42, 282,283).

There are four complete iron buckles and one fragment. Four buckle frame shapes are represented; two rectangular (Fig 6.1, 2), one figure of eight, one circular (Fig 6.1, 3) and one with two loops and an integral plate. The large rectangular buckle, possibly for use on a heavy-duty strap, came from middle Saxon enclosure ditch (DG4). It is possible that the circular buckle may be a brooch, but Egan's criteria for determining the difference between circular buckles and brooches has been used (1991a, 57). Two buckle frames are complete with pins, they have been attached by curling one end of the pin around the bar of the frame. One buckle has a non-ferrous coating, which visually enhances and protects the buckle from corrosion.

There are two iron buckle-plate shapes: D-shaped (1 example, Fig 6.2, 4) and rectangular (8 examples, Fig 6.2, 5 & 6). All would have been attached to the buckle by folding the end around the frame and securing it to the strap or belt by rivets. The plates are all furnished with notches for retaining the pin. Seven of the plates are decorated; two are ornamented with a linear motif and one with a border of opposing triangles. Four buckle plates, two iron and two copper alloy, are gilded.

Illustrations (Figs 6.1 and 6.2)

1 Buckle, copper alloy. Sub-circular frame with pin and plate. Buckle: 15 x 17mm, Plate: 29 x 9mm
Small Find (SF) 794, Context 889, Phase 6, manor house east path

2 Buckle, Fe. Complete, sub-rectangular buckle frame with pin attached. Length 50mm, width 58mm
SF 93, Context 727, Phase 3, DG4

3 Buckle, Fe. Circular frame with pin attached; circular cross-section; terminal of pin folded around frame. Ext. Diameter 42mm, Int. Diameter 34mm, length of pin 46mm
SF 15, Context 2, Phase 9, Topsoil

4 Buckle plate, copper alloy. D-shaped with recesses cut for the frame and slot for the pin. Three large holes for rivets with domed heads (not extant); decorated with two incised grooves close to edge of plate. Patches of gilding have survived around rivet holes. It is similar to an example from West Cotton, Northamptonshire (Hylton forthcoming). Length 20mm, width 41mm
SF 955, Context 1116, Phase 6, medieval soil horizons

5 Buckle plate, copper alloy. Rectangular with slot for the pin; five rivet holes. Gilded and ornamented with a single, marginally placed, incised groove. Length 41mm, width 13mm
SF 909, Context 1173, Phase 6, medieval soil horizons

6 Buckle plate, copper alloy. Incomplete, part of plate missing. Rectangular with recesses cut for the frame and slot for the pin. Openworked plate crudely decorated with a motif of engraved lines forming an arcade around two large incomplete perforations. Length 38mm, width: no measurements
SF 908, Context 1144, Phase 6, medieval soil horizons

Strap ends

Seven copper alloy strap-ends were found in deposits post-dating the mid-14th century. Three types are represented, defined by differing manufacturing techniques of varying complexity. Type 1 (1 example) is cast in one piece; it is tongue-shaped with a rounded terminal. Type 2

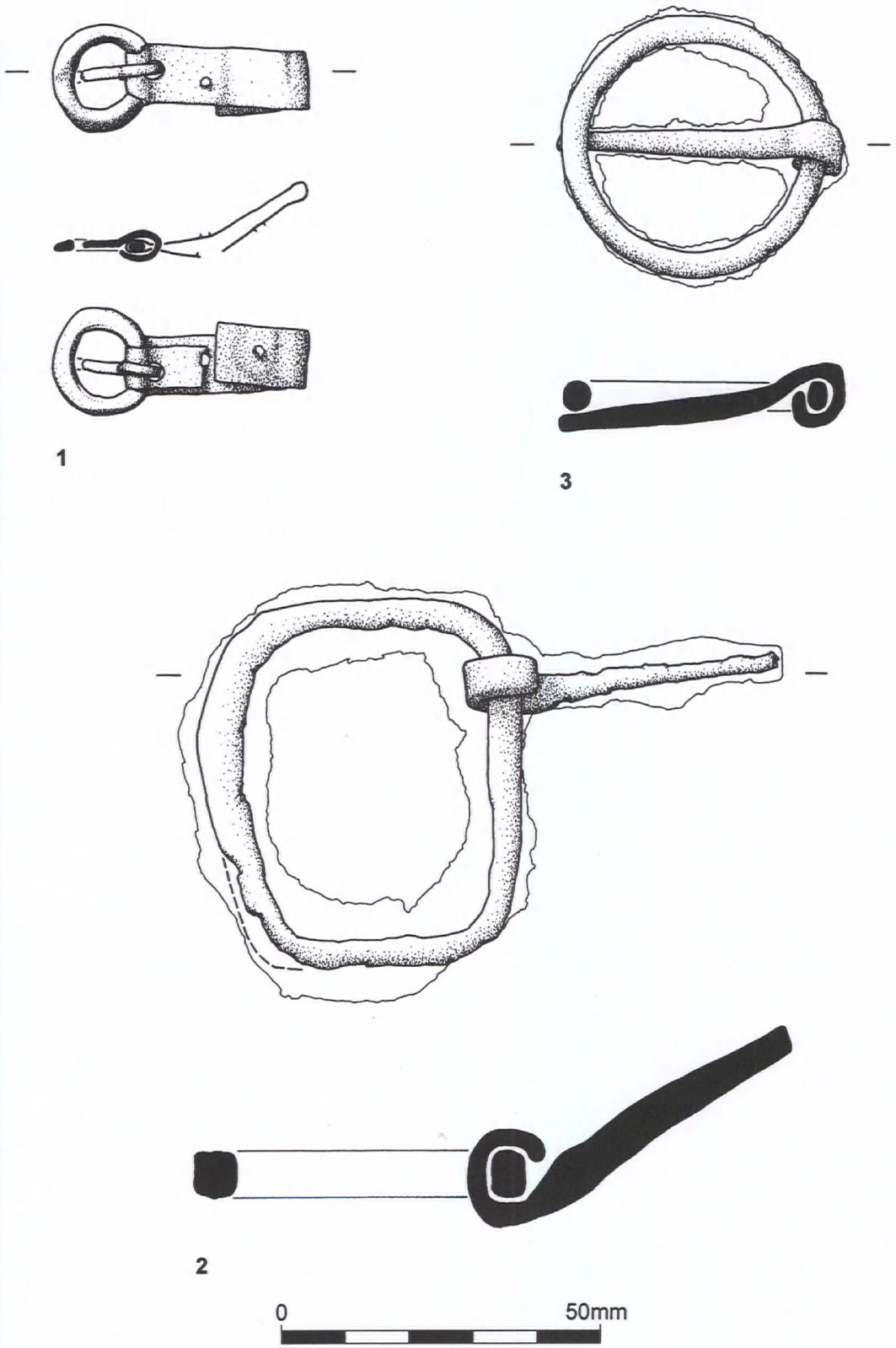


Fig. 6.1. Medieval finds: buckles (1-3).

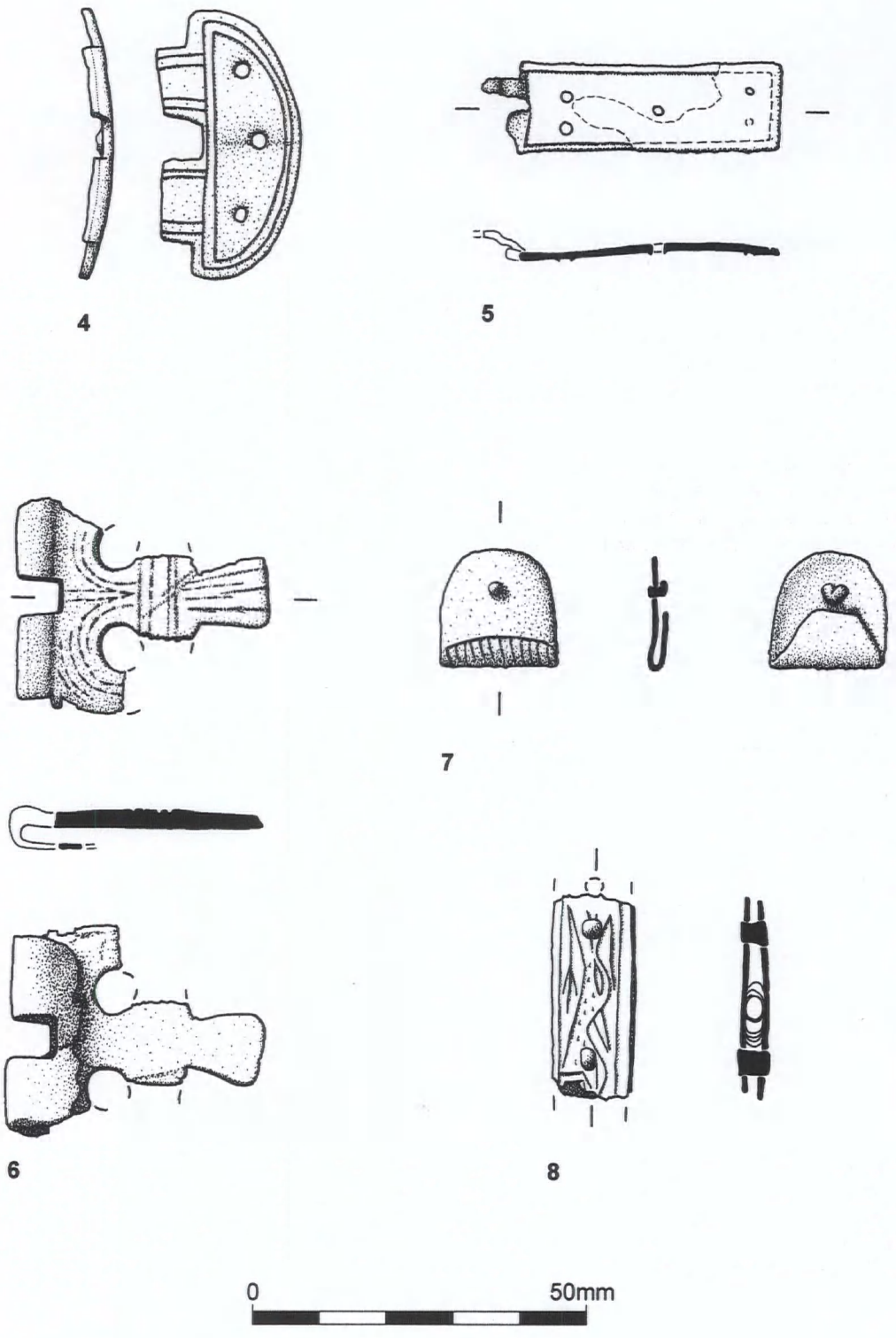


Fig. 6.2. Medieval finds: buckle plates (4-6) and strap ends (7-8).

(2 examples) are manufactured from a single strip of sheet copper alloy which has been folded in half, with the strap between the two plates, and secured by a rivet. Type 3 (4 examples) are composite strap-ends, manufactured from three or more individual components. A tongue-shaped sheet with grooved aperture and pointed end (Pritchard 1991(a), fig 93, 665) retains vestiges of the solder, which would have secured a forked spacer plate to the underside. The other examples comprise: a forked spacer-plate with collared knop (Pritchard 1991a, fig 682), a fragment of a two-piece sheet metal strap-end, which would originally have been fitted with side strips (Fig 6.2, 8), and a tiny fragment of a hinged plate and loop from a two-piece strap-end (Pritchard 1991a, fig 101). One strap-end is gilded and one is ornamented with a linear motif (Fig 6.2, 7), similar to an example from London (Pritchard 1991a, fig 90, 645).

Of particular interest is a cast strap-end with a rounded terminal, characteristic of the 10th century (Margeson and Willams 1985, 29, 4). It is decorated with a worn and very indistinct interlace motif (not illustrated). It is most probably the earliest in date, although it was found in a 14th century deposit. Although crudely executed, the interlace motif displays similar characteristics to the Scandinavian Borre-style interlace, recognisable because of its distinctive "ring chain" appearance. This artistic trait was transported to the Bristish Isles by Scandinavian settlers in the ninth and tenth centuries (Hall 1990, 31). A strap-end with similar motif is known from York (Roesdahl et al 1981, YD 39).

Illustrations (Fig 6.2)

7 Strap-end, copper alloy. Complete; D-shaped, folded widthways and secured by a rivet with domed head. Terminal rounded, folded edge ornamented with an incised line motif. Surface gilded. Measurement: 18 x 18mm
SF 426, Context 771, Phase 8, manor house, demolition layer

8 Strap-end, copper alloy. Incomplete, both terminals missing. Rectangular plates held together by two rivets; between plates there is a length of coiled wire, which possibly functioned as a buffer to keep the plates separated prior to insertion of side strips. Decorated with crude but elaborated linear engraving. Length (incomplete) 30mm; Width 12mm
SF 31, Context 135, Phase 9, post occupation layer

Pins

There are eleven pins, ten copper alloy and one iron. The earliest forms represented are collared pins with biconical and polyhedral heads, which date to the late Saxon period, although found in medieval deposits. There are two pins with sub-biconical heads. One is plain and similar to pins from Faccombe Netherton (Webster 1990, fig 7.8, 19-20); the other is decorated with ring-and-dot (Fig 6.3, 9) like an example from Suffolk (Webster and Backhouse 1991, fig 66k). One pin, with a collared, polyhedral head decorated with ring-and-dot, has a hipped shaft (Fig 6.3, 10), pins of this form are common on middle Saxon sites. Women used them as part of their everyday dress and they are found in large quantities on female monastic sites (Webster and Backhouse 1991, 84). The remaining pins are drawn copper alloy wire pins, which measure up to 76mm in length. Types include one pin with a globular head and five pins with heads of coiled wire.

Illustrations (Fig 6.3)

9 Pin, copper alloy. Sub-biconical head, with dot and circle ornament; cordon at junction of head and shaft. Circular section shaft, tapered to a fine point (now damaged). Length 70mm
SF 77, Unstratified

10 Pin, copper alloy. Complete. Polyderal head with collar set just below; hipped circular sectioned shaft, tapered to a fine point. The four faces of the head are ornamented with ring and dot and the top is plain. Length 64mm
SF 938, Context 1298, Phase 6, medieval soil horizons

Miscellaneous items

Mounts were used to strengthen and/or visually enhance items manufactured from textile or leather. In total there are five repousse mounts; these include a bar mount with terminal lobes, similar to an example from London (Egan 1991b, fig 134, 1147); a cinquefoil mount located within moat make up (Phase 6) and two sexfoil mounts, one complete with rivets and roves. In addition, there is a five-sided strap loop with internal rivet, similar to an example from London (Egan 1991b, fig 147, 1252). Egan has suggested that mounts of this type may have been used as an archer's leather wrist guard (ibid 231). There is one lace chape made from rolled copper alloy sheet, it was found in demolition deposits of the manor house. It is not perforated and has an edge-to-edge seam, like Oakleys Type 1 (1979, 262-63).

Toilet equipment

A combined earscoop/toothpick has been manufactured from a strip of sheet metal. It terminates in an elongated scoop at one end and a flat, pointed pick at the other. Part of the shank has been twisted in a clockwise direction and then hammered flat (Fig 6.3, 11). Similar examples are known from 14th century deposits in London (Pritchard 1991b, fig 251, 1758-1760). The five pairs of tweezers are all one-piece types, manufactured from folded strips of sheet copper alloy. Two types are represented; flared arms (two examples) and parallel arms (three examples). The flared arms are earlier in date, and one was found in a middle Saxon context (SG2). Both are decorated, one with ring and dot, like an example from Richborough, Kent (Henderson 1949, plate 36, 114) and the other is coated in tin and decorated with incised lines (Fig 6.3, 12). The parallel arm tweezers are either plain or decorated with a

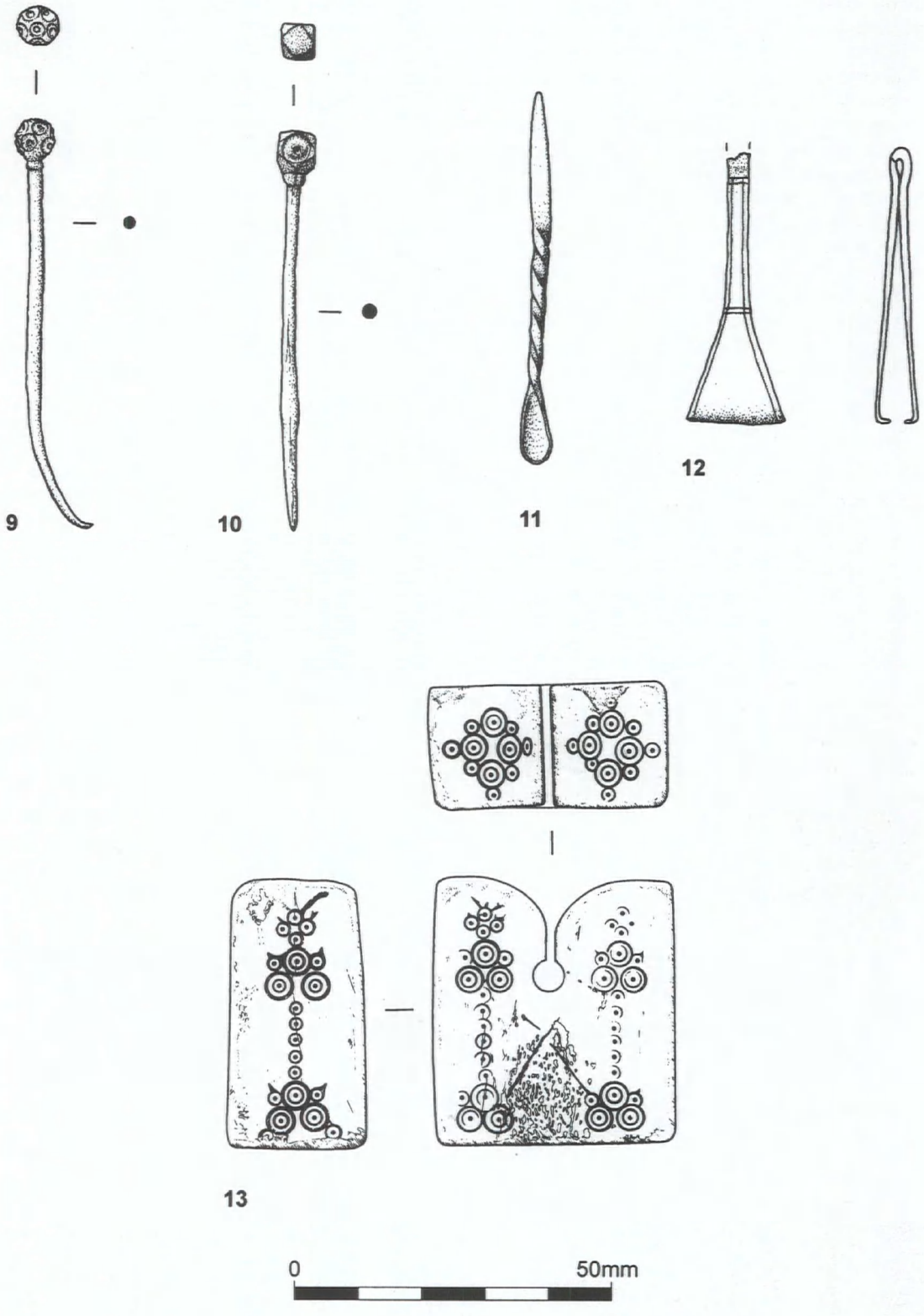


Fig. 6.3. Medieval finds: pins (9-10), toilet equipment (11-12) and chess piece (13).

zigzag motif (not illus.); all were residual within post-medieval contexts.

Illustrations (Fig 6.3)

11 Earscoop/toothpick, copper alloy. Length 70mm
SF 105, Context 731, Phase 6, medieval soil horizons

12 Tweezers, copper alloy. Complete, but broken. The blades appear to be silvered and are decorated with a marginally placed incised groove and two pairs of transverse grooves. Length 49mm, width of blade 16mm SF 87, Context 135, Phase 9, post occupation layer

Gaming pieces

Chess piece

A Chapman

A chess piece is fashioned from a single rectangular block of bone (Fig 6.3, 13 and Plate 15). The bone has not been identified, but as the piece has not been plugged at the top and bottom, as is typical for pieces fashioned from antler and long bone shafts, it is evidently from a large animal and could possibly be whale bone. Other, even larger pieces in whale bone have been found at Witchampton, Dorset (Stratford 1997, 38 and fig 46). It stands up to 42mm high, and is 37mm long by 21mm wide, and all four faces taper in slightly towards the top. There is a V-shaped notch in the top, with curved surfaces that plunge into a 1mm wide central slot that runs into a drilled perforation, 5mm in diameter. The corners of the piece are well rounded and the smoothing and polishing of the surfaces by frequent handling has partially worn away the decoration.

All four faces are decorated with repetitions of the same pattern, which appears twice on the main faces and once on each end. Sets of three double ring-and-dot motifs form two triangles that are linked by a line of six, single ring-and-dot motifs, although one end face has only five. The upper triangle is surmounted by four single ring-and-dot motifs forming a diamond, while further single ring-and-dot motifs are set in the angles of the main triangular patterns and beyond the two base vertices of the lower triangular pattern. On the main faces there is a single central ring-and-dot motif set below the central perforation, with incised lines running obliquely towards the lower triangular patterns. Horn-like projections extend from some of the single ring-and-dot motifs. Similar projections have been seen on other pieces, such as a king from London (Egan 1998, 292 and fig 221, piece 956) and a bishop found at Northampton Castle, although the horns were omitted from the original published drawings

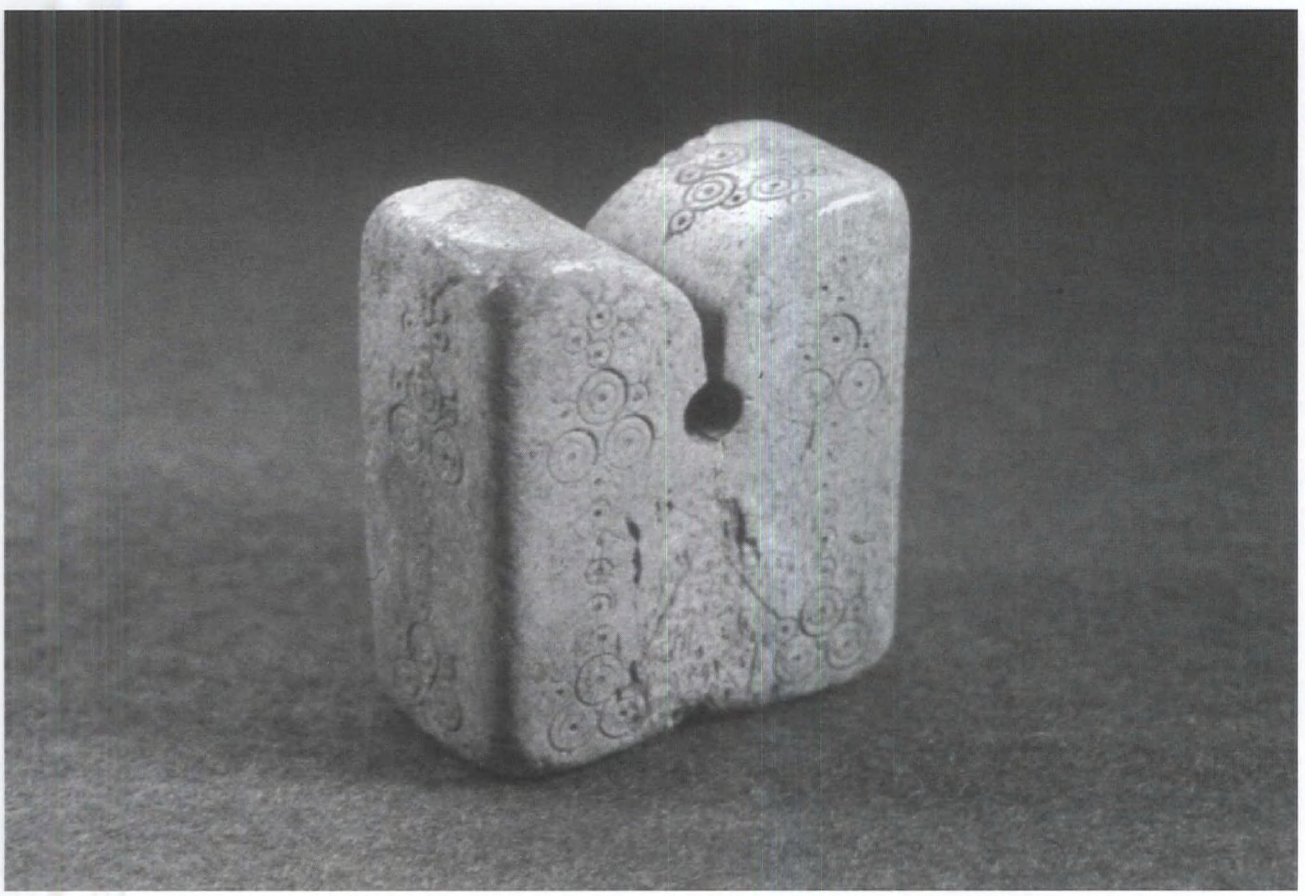


Plate 15. Medieval finds: the bone stylised chess piece, a rook.

(Dryden 1882 and Chapman 1999b, fig 2a). Each of the curving upper surfaces of the notch is decorated with four double ring-and-dot motifs forming a diamond, with single ring-and-dot motifs both set in the angles and at the vertices.

The characteristic V-notched top identifies the piece as a rook. There are a few similar examples in bone from England, but none have such profuse decoration, a total of 157 ring-and-dot motifs. The closest comparison in terms of form, size and decorative complexity is provided by a rook fashioned in antler from London (Egan 1998, 292 and fig 222, piece 959). There are a further two rooks from London (MacGregor 1985, 138 and fig 73b) and another from Woodperry, Oxon, all fashioned from oval-sectioned lengths of long bone and with relatively simple patterns of ring-and-dot motifs. There are also rooks in jet from Rievaulx Abbey, Yorkshire; Grimes Graves, Norfolk, and York.

The piece was recovered from a soil horizon in an external yard that is broadly contemporary with the demise of the manor house. The pottery dating for this context is mid/late 15th century, but the deposit contains mainly residual pottery from the early 13th century onward. The presence of this elaborately decorated chess piece helps to confirm the manorial status of the site, and it is the first medieval stylised chess piece to be reported from Bedfordshire.

Illustrations (Fig 6.3 and Plate 15)

13 Bone, chess piece, rook, elaborately decorated with single and double ring-and-dot motifs
Height 42mm, length 37m, width 21mm
SF 855, Context 693, Phase 8, demolition layer

Tableman

The second gaming piece comprises a plain disc, 34mm diameter by 6mm thick, cut from an antler beam. Such gaming pieces were common during the medieval period, making their first appearance after the Norman Conquest, and would probably have been used in the game of tables (MacGregor 1985, 135-137). They are more usually decorated with ring and dot motifs, like the numerous examples from Goltho (MacGregor 1987, 190-192), and the Tempsford piece may have been unfinished.

Skate

A fragment of an incomplete skate, manufactured from a cattle radius (K Deighton pers com), came from the medieval soil horizons (Phase 6). It was damaged in antiquity and the exterior surface shows moderate signs of abrasion, and the presence of black patches suggests that it may have been burnt. The proximal end survives, and the anterior surface is flattened and very smooth while the terminal displays signs of excessive wear through use. The skate is not perforated, like examples from Thetford (Rogerson and Dallas 1984, figs 195,196) and Bedford (Baker et al 1979, fig 179, 1513).

Miscellaneous objects

Buzz-bones

There are two buzz-bones; one is from a yard surface to the east of the manor house. They are manufactured from complete pig metapodials (K Deighton pers com.) with a central, transverse perforation. Although there may be no signs of wear, the distal and proximal ends have been knife trimmed to remove sharp edges and protrusions. They are up to 74mm long and the perforations are up to 5mm in diameter. Such objects are common finds in Britain and the continent on sites of Saxon and medieval date. In the past there has been some dispute as to their function (bobbins, toggles), but in recent years they have been interpreted as a buzzing, spinning toy (Lawson and Margeson 1993, 213-4 and MacGregor 1985, 102-3).

Equipment and furnishings

Building equipment

In comparison with the huge number of nails and the range of iron fittings that would have been required during the lifetime of the settlement, the number retrieved during the excavation is limited. One or two isolated finds were retrieved from deposits associated directly with the manor house (Phase 6), but the majority came from within the demolition deposits (Phase 8). It is noticeable that a high proportion of miscellaneous iron fragments came from demolition deposits. This together with the small number of objects retrieved suggests that most of the equipment was removed prior to abandonment, either for reuse or recycling.

General ironwork

The staples are either U-shaped (six) or rectangular (three), with circular, rectangular or square-shaped cross-sections. U-shaped staples measure up to 64mm in length. They would have been driven into timbers and the protruding end would form a fixing point for such items as chains, rings or hasps. An incomplete example was found on the floor of the west threshold of the manor house (Phase 6), and it is possible that it had been used in conjunction with the barrel padlock and or mounted lock fragments that were also found there. Rectangular staples have arms which are either shorter or longer than the overall width (Goodall 1993a, 143). One example with arms longer than the width, 90mm long (Fig 6.4, 14) was found on the floor of the service wing of the manor house (Phase 7). Goodall suggests that staples of this type may have served as bolt keepers on doorjambs (1993a, 143). There are two examples of rectangular staples with arms shorter than the width. These may have been used to support or bind edge-joined wooden planks used to form items such as doors, shutters or chests. There is one hinge pivot, it comprises a circular sectioned pivot (guide arm) 50mm high and a tapered rectangular sectioned shank, 66mm long. The shank would have been driven into the wood leaving the pivot free to retain the hanging eye of a strap hinge attached to a door shutter or gate.

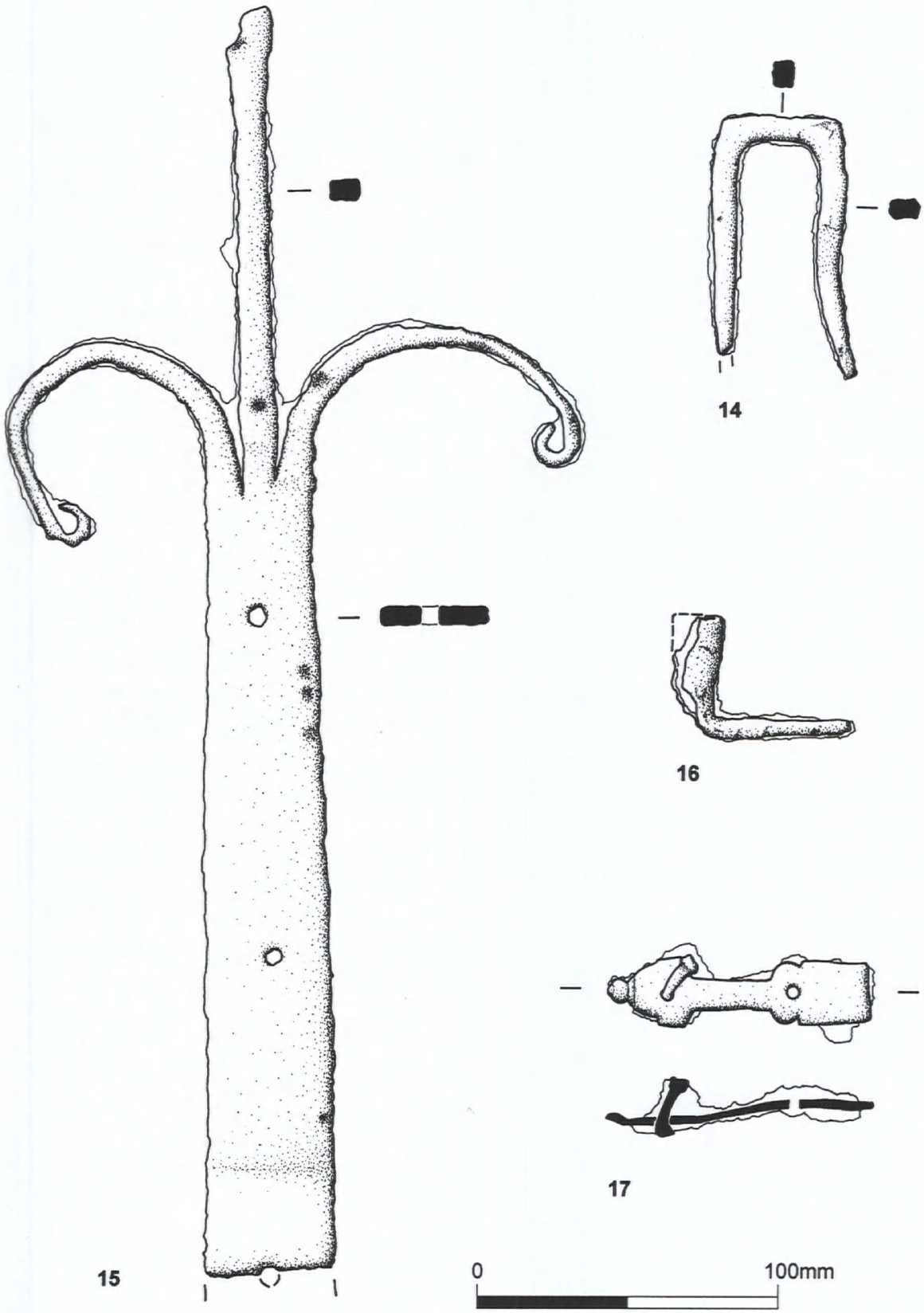


Fig. 6.4. Medieval finds: iron objects (14-17).

Of particular interest is the large hinge for use on a door. Although incomplete, it measures in excess of 245mm and the perforated strap terminates in a central arm between two scrolls (Fig 6.4, 15). Hinges of this size and type attest to the use of high quality fittings; the style resembles examples surviving on medieval church doors, like those on the church at Eaton Bray (Godber 1969, plate 15), which date to the 13th century. In addition, there are six substantial studs that may also have been used on doors; they all came from deposits associated with the manor house (Phases 6 and 8). They measure up to 73mm in length, with sub-rectangular, sub-circular or triangular heads, up to 40mm across.

Illustrations (Fig 6.4)

14 Staple, iron. Complete, rectangular shaped with rectangular cross-section. Width 45mm, length 90mm
SF 731, Context 948, Phase 7, manor service wing/south annexe

15 Hinge, iron. Length 245mm, width of strap 42mm, width of terminal 195mm
SF 852, Context 1116, Phase 6, medieval soil horizons

Nails
C Stevens

Iron nails first appear in the late Saxon ditches (Phase 4) and further examples came from around the southern kitchen range to the aisled hall. Larger quantities were associated with the manor house; found in the gravel yard surfaces and the soil horizons around the building and in the late clay floor. But the largest single group (136 nails) came from the demolition deposits over the manor house. No single type of nail was especially associated with either a single phase or particular contexts.

Of the 440 structural iron nails recovered, 63 were too damaged to be unclassified. Of the other 377 nails, 136 came from post-medieval deposits related to the demolition of the manor house. The nails are hand-forged generally with rectangular or square cross sections. The shape of the head was used to classify the nails and nine main types were identified.

The most common type (113 examples) have a slightly flared shank with no head. While it is likely that the heads of a few of these examples had broken off, the distinctive shank makes it unlikely that more than a few had their heads missing. This type ranges in length from 18mm-67mm, with one example measuring 95mm.

The second most common type (53 examples) have L-shaped heads of which the majority seem to be deliberately formed rather than the result of hammering. These nails have similar lengths to the first type and both would have probably been utilised for the same type of work on wood, bring hammered in so that the head of the nail did not protrude from the surface of the timber, such as would be used for floorboards.

There are 192 nails with flattened, rounded, square, T-shaped or rectangular heads, some countersunk. These nails, like the previous types, could have been used in timber where they would have sat flush with the surface of the timber. They generally measured up to c 83mm. Some of the nails, however, had disproportionately large heads, up to 40mm in diameter, and may have been used for roofing or as door studs.

A small number of nails (16) had domed heads. These would have been for purely decorative purposes such as door or chest studding. One nail found in a gravel yard surface east of the manor house had a cruciform head. This seems to have had some sort of unknown but specific purpose, and has been recorded previously at West Cotton, Raunds (Hylton forthcoming).

Household equipment

Lighting equipment is represented by a candleholder with single cup and angled stem, found on the eastern threshold of the manor house (Fig 6.4, 16). Parts of objects which relate to the preparation of food include a riveted attachment loop, for attaching drop handles to chafing dishes (see Margeson 1993, fig 45, 489, 490), two feet from cast copper cauldrons and a cast rim fragment from a cauldron. The exterior surface of the cauldron is covered in black soot and there are numerous scratches on the internal surface, when complete it would have measured c 200mm in diameter. In addition, there is a body fragment from an Oolitic limestone mortar.

Binding strips and strap mounts were probably for use on items of furniture, caskets and chests. Unlike the examples from Goltho Manor (Goodall A, 1987, figs 154,155), which are made from copper alloy, the binding strips from Tempsford are iron. They have characteristic D-shaped cross-sections and some retain non-ferrous metal deposits on their upper surfaces. This visually enhances the strips and is indicative of relatively high status. Items with non-ferrous coatings first appear in late 12th-early 13th century deposits, associated with the aisled hall. The binding strips measure from 6-10mm in width, generally they are perforated, either through the terminal, or evenly along their length. Most display some form of decoration; either in the form of shaped terminal knops (Fig 6.4, 17), foliate motifs or circular bosses. Three examples are furnished with transverse grooves, these are both decorative and act as keying lines for a non-ferrous coating. With the exception of the ubiquitous rings, which would have had numerous uses, general household equipment is represented by a swivel loop and a looped swivel, which would have been used for suspending such items as cooking pots.

Illustrations (Fig 6.4)

16 Candle holder, iron. Incomplete, part of cup missing. Single cup at right angle to stem. Like an example from London (Egan 1998b, fig 109, 406) the cup is on the outside of the right angle. Height 42mm, spike length 50mm, cup diameter 20mm

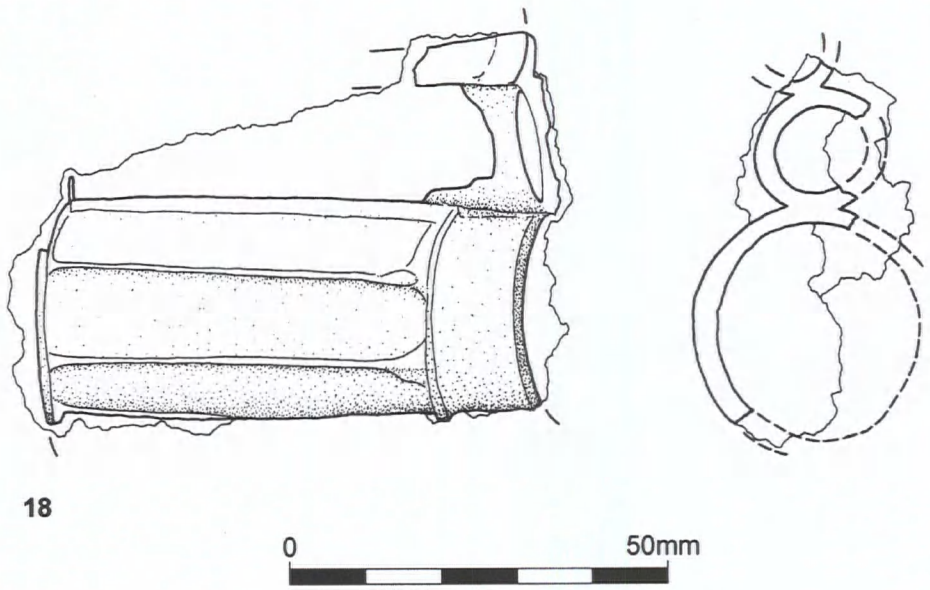


Fig. 6.5. Medieval finds: barrel padlock (18).

SF 585, Context 628, Phase 7, manor house eastern threshold

17 Binding strip, iron. Rectangular-sectioned strip with shaped terminals; square terminal with pierced rounded moulding; the other end terminates in a perforated (rivet extant) "acorn" like knop. Transverse grooves evident on X-ray. Non-ferrous coating. Length 90mm, width (at widest point) 22mm
SF 409, Context 771, Phase 8, manor house demolition layer

Locks and keys

There are seven pieces of lock mechanism, from two barrel-padlocks and five mounted locks, and seven keys. A barrel padlock case was found in the west threshold of the manor house. It is fragmentary, but vestiges of an integral fin and tube indicate that it parallels Goodalls Type B barrel padlock (1990b, 1001ff), where the tube that retains the free arm is located away from the case (Fig 6.5, 18). Padlocks of this type were in use throughout the post-conquest period. The cylindrical case is manufactured from a piece of rolled ferrous metal sheet, which has been strengthened and supported by horizontally applied strips. A similar manufacturing technique is seen on a padlock case from London dating to the late 13th to early 14th century (Egan 1998a, fig 69, 248). Vertical straps support the tube and fin. A padlock bolt, Type B, from the medieval soil horizons, comprises a circular closing plate with one complete and maybe three incomplete spines with leaf springs attached by two rivets. Both the case and the bolt are coated in a non-ferrous metal. A single leaf spring was found within a Phase 9 deposit.

Two almost complete mounted locks were recovered, both in later medieval deposits. They were operated by revolving a key, which passed a ward or collar before lifting the tumbler and throwing the bolt (Goodall 1990b, 1005). One lock plate is square with concave sides (Fig 6.6, 19) and the other is shield shaped, with a concave back plate (Fig 6.6, 20). The larger lock has two hasp apertures and both have bolts secured by staples. The larger lock has a P-shaped spring and the smaller an S-shaped spring. The dating of locks excavated in London (Egan 1998a, 104) suggests that P-shaped springs may be have gone out of use slightly earlier (*c* 1270-1400) than S-shaped springs (*c* 1270-1450). The individual pieces of lock mechanism and associated fittongs include: a sliding bolt, a ward plate, a lock escutcheon plate, a spring shackle and a hasp. The spring shackle is oval with a rectangular cross-section and tapered overlapping terminals and the hasp is figure of eight shaped, with a circular cross-section and forged with a slight curvature, and is similar to one from Faccombe Netherton (Goodall 1990a, fig 9,7, 366).

Illustrations (Figs 6.5 and 6.6)

18 Barrel padlock case, iron. Incomplete, and internal mechanism is missing. Case with fragment of fin and tube for retaining the free arm. Length 71mm, diameter 52mm
SF 980, Context 1323, Phase 6/7, manor house west threshold

19 Mounted lock, iron with non-ferrous plating. Concave sided plate with raised central section. Five marginally placed securing rivets are visible on X-ray. The internal mechanism has corroded in the locked position; it comprises two hasp apertures (15 x 5mm); bolt has U-shaped terminal to retain second hasp (length 59mm) and two projections on the underside to allow the key to throw the bolt; bolt secured by two staples; P-shaped spring;

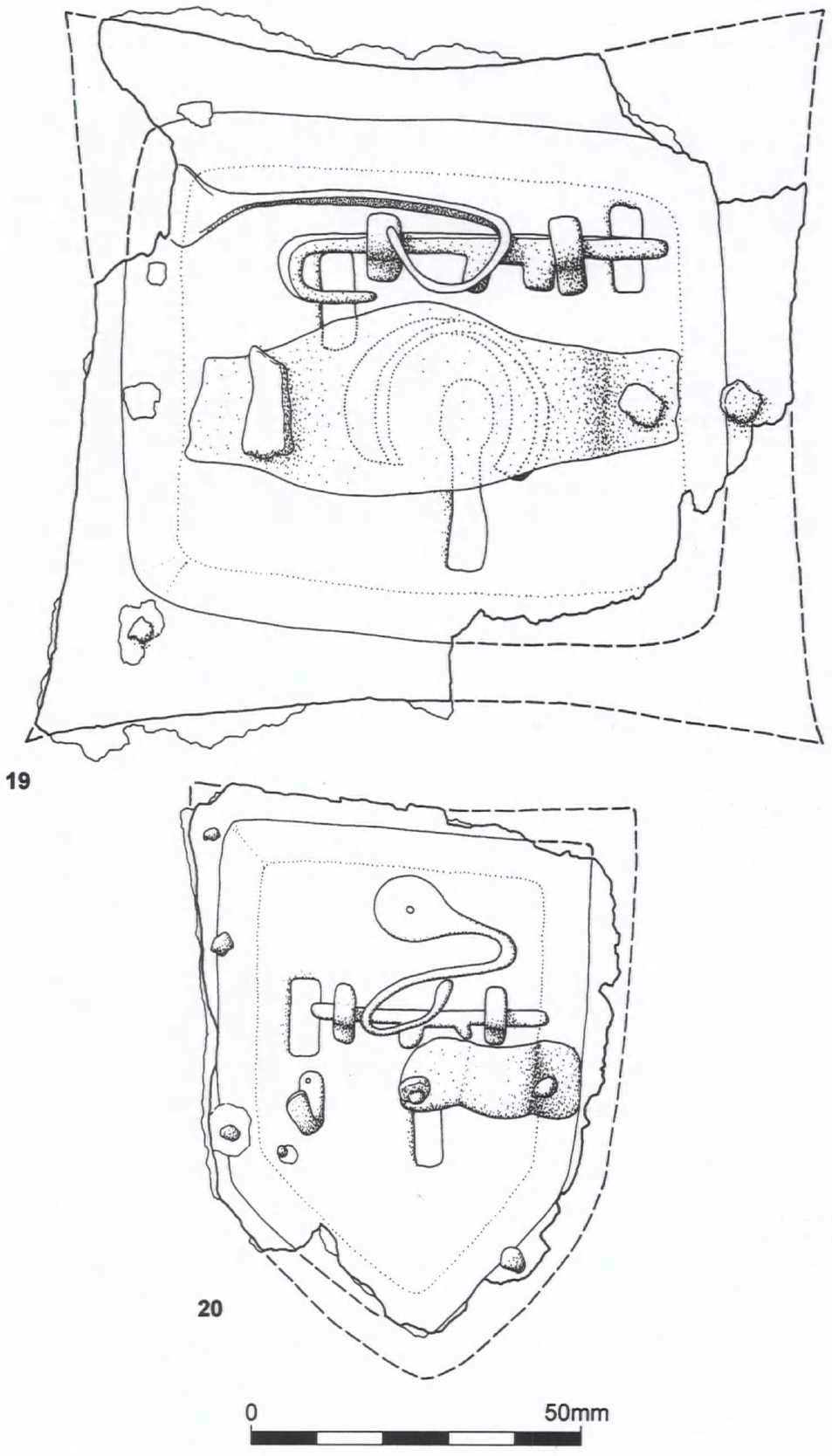


Fig. 6.6. Medieval finds: mounted locks (19-20).

circular key ward; key hole (30 x 8mm) rounded for shank of key and covered by key guard. External dimensions 111 x 106mm
SF 537, Context 771, Phase 8, manor house demolition layer

20 Mounted lock, iron. Complete, but broken. Shield shaped lock with back plate and concave sided plate held together by rivets (two visible on X-ray). Much of the internal mechanism is visible on x-ray. Hasp aperture (10 x 5mm), sliding bolt (length 32mm) corroded in the open position has two projections on the underside to allow the key to throw the bolt; bolt secured by two U-shaped staples; S-shaped tumbler/spring. Parts of keyhole visible on x-ray but not possible to obtain measurements. Length 85mm, width 65mm
SF 110, Context 135, Phase 9, post occupation layer

The two barrel padlock keys are made from iron, and have long stems with shaped bits. Although both are incomplete, one has a bit which is lateral to a parallel-sided stem – Goodalls Type A (Fig 6.7, 21), while the other has a stem in line with the bit – Goodalls Type C. Such keys were in use until the 13th century. The earliest type of mounted lock key is a pre-conquest form, distinguished by a solid stem with pear-shaped bow (Fig 6.7, 22), that barely outlasted the 11th century (Goodall 1990b, 1007). There are two casket keys measuring up to 39mm long, one of iron and one of copper alloy (Fig 6.7, 23). Both have circular bows and a solid stem, the iron example retains vestiges of a non-ferrous metal coating. Both display similarities to the Museum of London Type VI (Ward-Perkins 1940, fig 42, VI), and similar examples are known from Winchester (Goodall 1990b, fig 330, 3851-2).

The large keys have either solid (Fig 6.7, 24) or hollow shanks. The latter afford more security, as the bore has to fit over a corresponding pin in the lock, as well as passing over the wards. Sometimes the base of the shank is bored leaving a small conical hole (Fig 6.7, 23), although this presumably provides the same security as a key with a hollow stem.

Illustration (Fig 6.7)

21 Key for barrel padlock, iron. Incomplete part of bit missing. Similar examples from Winchester (Goodall 1990b, fig 323, 3706). Length 92mm
SF 584, Context 693, Phase 8, demolition deposits

22 Key for mounted lock, iron. Incomplete, part of bow and shank missing. Solid rectangular-sectioned stem tapering to a circular-sectioned terminal protruding beyond the bit. Single symmetrical ward cut in solid bit. Length (incomplete) 59mm
SF 318, Context 799, Phase 9, demolition

23 Casket key, copper alloy. Complete. Circular bow and solid shank, terminal in line with simple wards. The base of the shank has been bored, leaving a small conical recess. Length 39mm
SF 998, Context 1324, Phase 6, manor house west threshold

24 Key for mounted lock, iron. Complete, circular bow, solid shank, slightly tapered and terminating on the same alignment as the bit. Length 88mm
SF 94, Context 135, Phase 9, post occupation layer

Knives

Whittle tang knives

Of sixteen whittle tang knives with single-edged blades, three are complete and range in total length from 88-160mm, with blade lengths from 42-95mm, blade width from 8-20mm and blade thickness from 1.5-5mm. Seven blade types were identified. The earliest forms, Types 1 and 2, are particularly distinctive. Type 1 has a back that rises then angles down obliquely to the tip, with a horizontal cutting edge (Fig 6.7, 25). Stylistically this is of Saxon date and one incomplete example was found in a middle Saxon ditch (DG11). Type 2, characteristic of Viking knives, has a distinctive S-shaped blade and a tang which is much longer than the blade (Fig 6.7, 26). They are well known on the continent, but in England they did not continue in use after the Conquest (Goodall 1984, 81). Type 3, also early in date, has a back which angles down to the tip and a curved cutting edge (Fig 6.7, 27). Knife types 4-7 are standard medieval types. These include knives with the back of the blade sloping or curving to the tip and the cutting edge horizontal (Fig 6.7, 28); parallel blades which then curve to the tip; or with both the back and cutting edge curving to the tip.

Scale tang knives

There are only two, incomplete scale tang knives; both have blades with horizontal backs and curved cutting edges. One has an integral thickened expansion, "bolster", at the junction of the tang and blade, while the other retains part of a bone scale decorated with a pin inscription, (Fig 6.7, 29). Although incomplete, the first two letters "NO" are in lombardic script, preceded by a scrolled floral motif. Under the microscope it is possible to determine faint scratch lines, which mark the position of the letters. A similar example has been excavated in London (Cowgill *et al* 1987, fig 65, 138). The scales of both knives would have been secured by iron rivets, and one has tubular rivets. The scale tang knives are from mid-13th century or later deposits.

Illustrations (Fig 6.7)

25 Knife, iron: Type 1. Blade – length 73mm, width 20mm, thickness 4mm, tang – length 45mm
SF 944, Context 1298, Phase 6, medieval soil horizons

26 Knife, iron: Type 2 (2 examples). Blade – length 64mm, width 8mm, thickness 2-3mm, tang – length 96mm
SF 893, Context 693, Phase 8, manor house demolition layer

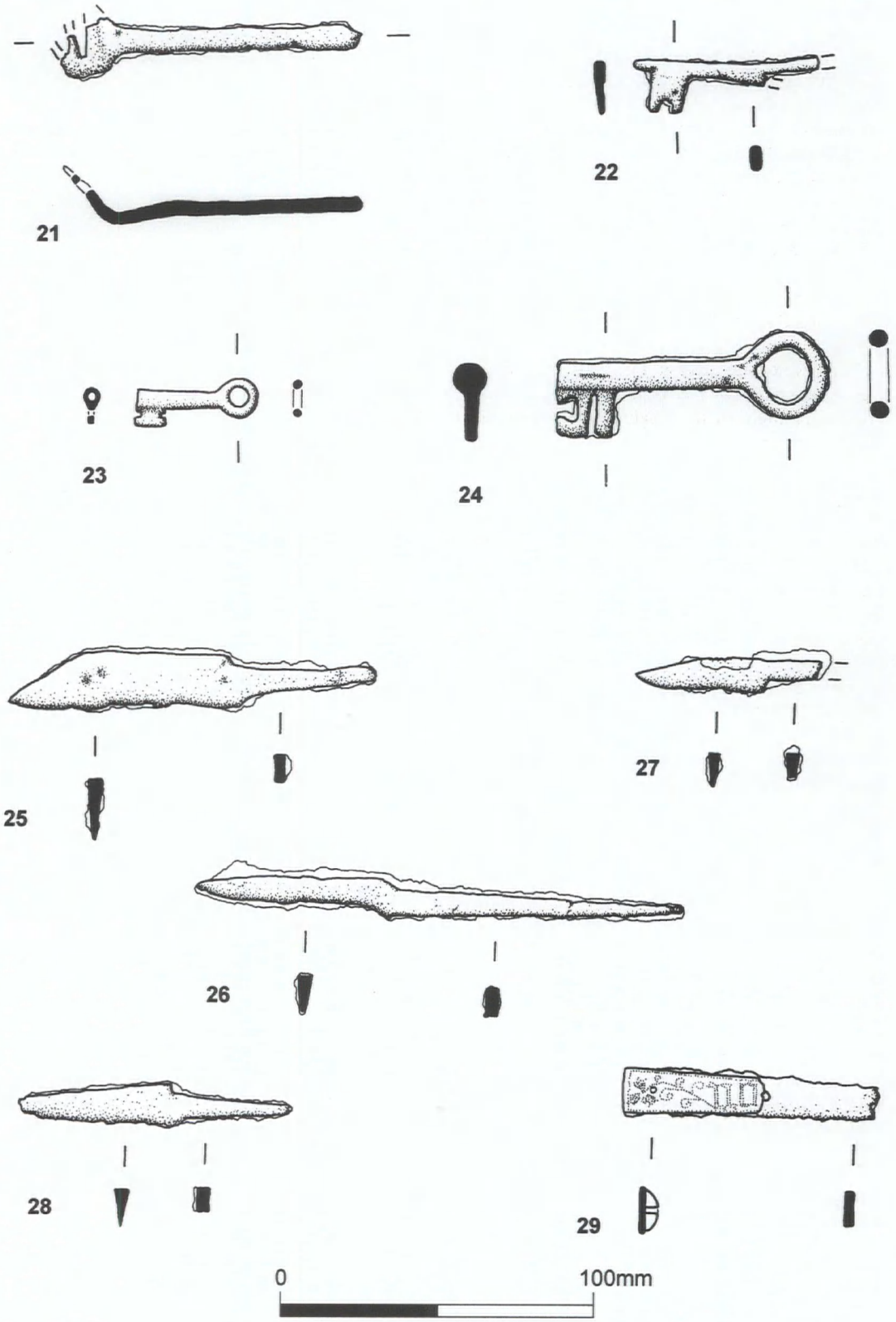


Plate 6.7. Medieval finds: keys (21-24) and knives (25-29).

27 Knife, iron: Type 3 (2 examples). Three shallow transfer grooves just before back angles down to tip may have been used to cut threads suggesting that this knife had a very specific function (David Parish pers com). There is an example with much larger grooves from Thetford, Norfolk (Goodall, I H, 1984, fig 124, 78). Blade – length 50mm, width 10mm, thickness 4mm
SF 1078, Context 1920, Phase 5, SG6

28 Knife, iron: Type 4 (2 examples). Blade – length 51mm, width 14mm, thickness 4mm; tang – length 37mm
SF 686, Context 1026, Phase 6, manor house external surface

29 Knife, scale tang, iron and bone. Tang has two perforations to hold scale attachment rivets. A small fragment of the original bone scale with D-shaped cross-section survives.
SF 423, Context 771, Phase 8, manor house demolition layer

Hones and sharpeners

All four fashioned hones are large elongated rods, and there are no examples of small hones perforated for suspension. Two are of micaceous schist (Norwegian ragstone), and one each of slate and a very fine grained sedimentary stone. They are 62-99mm long, with rectangular or triangular cross-sections and have up to four smoothed faces. There are five irregular pebbles or stone fragments used as sharpening stones with one or more smoothed surfaces. Two were found in Phase 6 deposits and one in Phase 9, the remainder are unstratified. One example has a single knifepoint-sharpening groove.

Querns and millstones (Geological identifications by D Sutherland)

There are 59 finds, comprising over 156 individual fragments weighing 13.2kg, of querns and possible millstone. Much of the assemblage is fragmentary and abraded, displaying few diagnostic features.

Fragments of lava quern, with a total weight of 9.42kg, form the largest group. These were present in middle Saxon (Phase 3) and late Saxon deposits (Phase 4) in some quantity, while those from later deposits may be residual. The grey vesicular basaltic lava will be from one of the well-documented north European sources (Wright 1992, 72-73). A small proportion preserved diagnostic features. The seven upper stone fragments range from 23-33mm thick and the majority retain vestiges of the original worn surface. Two pieces have peck marks from original working and two retain part of the collar around the hopper, one has a chamfered collar 15mm high.

There are five fragments of Millstone Grit, weighing 3.77kg, from deposits of medieval date; three from a Phase 5, ditch DG 29, and two from Phase 6, the medieval soil horizon and manor house parlour. All appear to be upper stones with worn surfaces, in coarse and fine-grained grit stone. Pecking marks/dimples are evident, either on upper surfaces or as a thin marginal band on worn grinding surfaces. The pieces are 28-60mm thick. Three joining fragments from ditch DG29 come from a stone at least 850mm in diameter, suggesting that it is part of a millstone rather than a quern. One piece has a vestige of a squared socket to hold the rynd.

Tools

Agricultural tools

Considering the rural nature of the site, there is a notable absence of tools relating to farming activities. A fragment of a curved blade, possibly part of a sickle or scythe was retrieved from the annex, south of the service range (Phase 7) and there is probable clapper from a sheep or cow bell.

Leather working

There is one possible iron awl, used to pierce leather prior to stitching, from a post-medieval deposit, suggesting that leather working only took place on a small scale to fulfil domestic requirements.

Metal working

A small number of tools associated with metalworking were found, these include four punches and two sets, all from deposits broadly contemporary with the manor house. This suggests that there was some capacity either for the manufacture or maintenance of equipment and fittings. Punches, used for the initial piercing of metal sheet or plate, range from 75-102mm long and have burred heads (Fig 6.8, 30). Sets have broad blades used to cut metal and range from 52-70mm long (Fig 6.8, 31); a similar example is known from Goltho (Goodall 1975, fig 41, 90).

Illustrations (Fig 6.8)

30 Punch, iron. Incomplete, one terminal (handle) missing. Square-sectioned and tapered to a small rectangular sectioned terminal. Tang circular sectioned. Length of tool 90mm, tang length (incomplete) 7mm
SF 125, Context 770, Phase 9, post occupation layer

31 Set, iron. Complete, rectangular cross-section and tapered to a broad blade; burred head. Length 53mm
SF 1067, Context 1790, unphased

Wood working

Wood working tools include an axe head, a saw, a reamer and six wedges. The axe head has a blade edge 61mm long. The saw is incomplete, only a fragment of the blade survives (Fig 6.8, 32). The reamer, also incomplete, would have been used for enlarging drilled holes; similar examples come from Northampton (Oakley 1979, fig 119, 62) and Norwich (Margeson 1993, fig 130, 1404). Wedges were driven into timber to split it along the grain, 'cleaving', while smaller wedges may have been used to secure structural fittings and heads of hafted tools. They range from 51-87mm long.

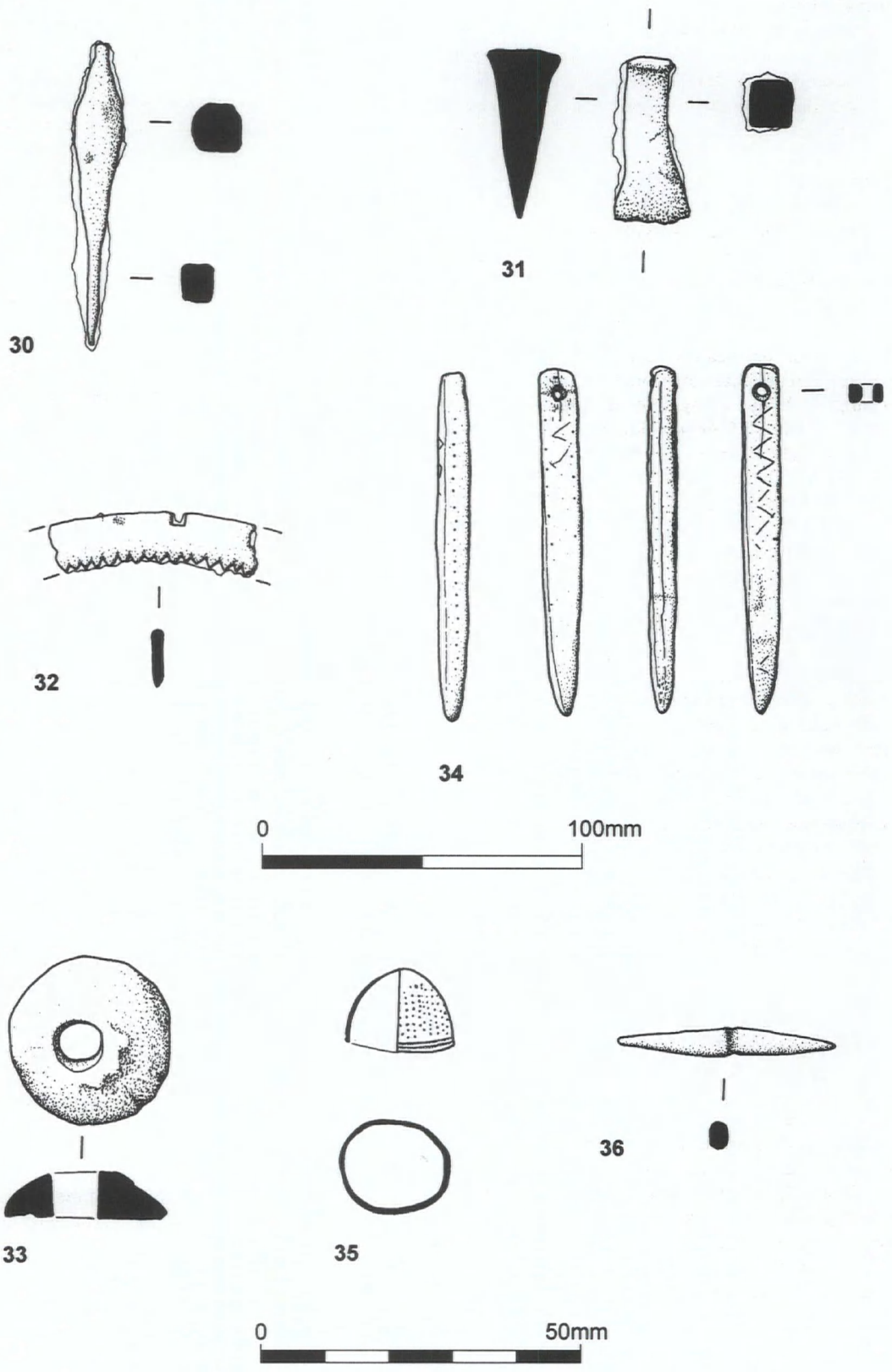


Fig. 6.8. Medieval finds: tools (30-35).

Illustration (Fig 6.8)

32 Saw, iron. Incomplete, fragment of blade only. Curved blade, serrated with small notch on outer edge. Width 17mm
SF 243, Context 770, Phase 9, post occupation layer

Textile working

A range of objects relate to the spinning, weaving and sewing of textiles, and there is evidence for the use of warp-weighted looms during the middle Saxon period (Phase 3), and heckles and the vertical two-beam loom from the late Saxon period onwards (Phases 6-8).

There are six bone pin-beaters, used during weaving to separate coarse threads that catch on each other when the shed is changed. A small fragment of a double-pointed pin-beater was recovered from a middle Saxon gully (DG3, Phase 3), and would have been for use with warp-weighted looms. The other two types, single pointed and combined spatulate and pointed-ended tools, would have been used with the vertical two-beam loom, which was introduced in the 9th century. The three single pointed pin-beaters are from late Saxon and medieval contexts. They are up to 114mm long, with rectangular cross-sections and have one flat end and one pointed end: they all display signs of wear. One is perforated through the flat end (Fig 6.8, 34). Polish and wear on the perforation indicate that it had been threaded with a cord for suspension. A shallow, transverse groove either side of the hole may have been created by a cord bound around the terminal to prevent the evident longitudinal split extending any further. It is decorated with a zig zag and dot motif, similar to an example from Thetford (Rogerson and Dallas 1984, fig 193, 61), which perhaps both enhanced the object visually and provided a better grip (Walton Rogers 1999, 1968). There are two pin-beaters with rectangular shafts that broaden at one end to form a spatulate terminal. Both have a worn concavity and well-polished surfaces.

There are seven heckle/woolcomb teeth, which would have been supported in rows on a piece of iron sheet, binding a wooden block, a heckle (Goodall 1984, fig 119, 20-1). Heckles were used for preparing and carding, wool and bast fibres before spinning into thread. Six have circular sectioned shanks and one is square sectioned; they are from 72 to 91mm long. A plain, lead, conical spindle whorl (Fig 6.8, 33) was found within SG9, the kitchen range to the aisled hall (Phase 5). Miscellaneous implements for textile working include an incomplete bone needle and a copper alloy thimble (Fig 6.8, 35) both from the medieval soil horizons. The thimble resembles a medieval example from Winchester (Biddle and Elmhurst 1990, fig 235, 2488).

Illustrations (Fig 6.8)

33 Spindle whorl, lead. Plain, conical spindle with large off centre perforation. External diameter 26mm, internal diameter 8mm, height 8mm, weight 27g
SF 657, Context 818 Phase 5, SG9

34 Pin-beater, bone. Complete, rectangular cross-section with parallel sides, terminates in a tapered rounded point, with a worn concavity just above. Upper terminal perforated. Although heavily worn, the broad sides are decorated with a zig zag motif, with rows of dots along the margins, while the narrow sides are decorated with an incised longitudinal groove and a line of dots. Length 111mm, width 10mm, thickness 8mm
SF 887, Context 693, Phase 8, manor house demolition layer

35 Thimble, copper alloy. Small thimble manufactured from sheet metal, most probably for light duties. Indentations stamped in vertical rows on the sides and concentric rings at the top; with two incised lines round the base. Height 8mm, diameter 17mm
SF 655, Context 785, Phase 6, medieval soil horizons

Fishing equipment

A stone fish net weight was recovered from dumped material overlying the levelled ovens, SG9. It is made from a sub-ovoid chalk pebble, with a V-shaped groove around the widest point, for attaching ties. Such objects were used to sink nets; similar examples are known from the River Great Ouse in Northamptonshire (Mynard 1979, fig 7, 41-44). A bone gorge is complete with two sharply pointed terminals (Fig 6.8, 36). Such objects are known from the Iron Age through to the medieval period. An identical example was found at the Anglo-Saxon settlement site at Pennylands, Milton Keynes (Williams 1993, fig 60, 63) and a medieval example is known from Cressing Temple, Essex (R Tyrrell pers com).

Illustration (Fig 6.8)

36 Gorge, bone. Complete; two sharply pointed terminals with a waisted central section for attaching to the fishing line. Length 34mm
SF 667, Context 770, Phase 9, post occupation layer

Horse Furniture

Late 12th-early 13th century contexts produced the earliest evidence related to horses, and larger quantities of material were retrieved from medieval deposits associated with the manor house (Phases 6-9). A group of horse related artefacts lay near the western threshold and along the eastern path, and other items particularly horseshoe nails, came from the demolition deposits.

Spurs

The earliest form is the prick spur, with a single spiked projection (goad) protruding from the back of the heel (Fig 6.9, 37). These remained in use until the 13th century, when rowel spurs, with a multi-pointed wheel rotating within a bifurcated terminal (the rowel box), came into use (Fig 6.9, 38) (Ellis 1990, 1037). One example of each was found.

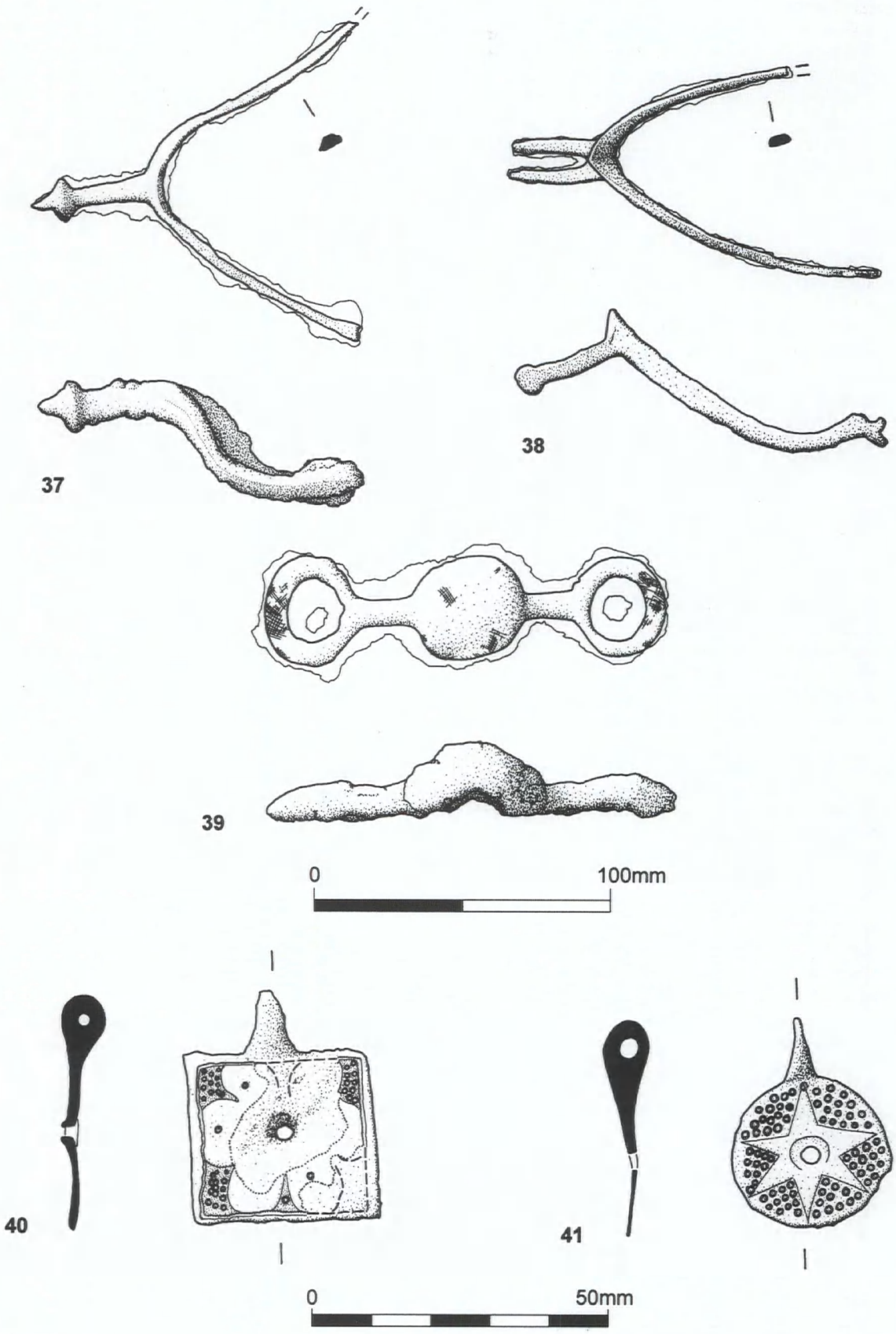


Fig. 6.9. Medieval finds: horse equipment (36-41).

Illustrations (Fig 6.9)

37 Prick spur, iron. D-shaped cross-section. Deeply curving sides with quadrangular goad and Type B (i) terminals (Ward-Perkins 1993, fig 28), suggesting a late 12th to 13th century date. The X-ray reveals that the spur retains patches of a non-ferrous coating. Overall length 126mm, length of neck 24mm, length of goad 17mm
SF 924, Context 1109, Phase 5, SG9

38 Rowel spur, iron. Incomplete, one terminal and rowel missing. Slender D-sectioned sides, which curve under ankle and terminate in the vestige of a "figure-of-eight" terminal. The sides rise to a crest at the join below a slightly curved neck. The neck is bifurcated to form a rowel box; each side terminates in a flat circular boss, which would have retained the pin securing the rowel (now missing). Length (incomplete)129mm, length of neck 37mm
SF 291, Context 770, Phase 9, post-occupation layer

Bridle bits

The single side link bridle bit comprises a domed boss flanked by fixed arms, which terminate in loops. Stylistically it is not dissimilar to a type of distributor with four fixed arms and a central boss, which dates from the 10th-to 11th centuries (Goodall 1990c, 1043). The single strap-hook is coated in non-ferrous metal and displays similarities to an example from London (Clarke 1995, fig 45, 52). There are two strap loops and one still retains the remains of a non-ferrous coating. Both examples display similarities to strap-loops from Winchester (Goodall 1990c, fig 334, 3895 & 3897) and Goltho (Goodall, I H, 1987, fig 160, 164).

Illustration (Fig 6.9)

39 Side link, iron. Complete, central boss flanked by arms with looped terminals. On the outer edges of each loop faint patches of cross-hatching are evident. These are either keying lines (although there is no evidence for non-ferrous coating), decoration or filling lines. Length 139mm
SF 1014, Context 1144, Phase 6, medieval soil horizons

Pendants and bell

With the exception of the suspension mount, all the finds were from demolition deposits. Two of the three cast pendant mounts are decorated; one with a sexfoil motif (Fig 6.9, 40) similar to an example from London (Griffiths 1995, fig 47, 56), and the other with a six-sided star within a field of punched dots (Fig 6.11, 41). A pendant with an identical motif was recovered from West Cotton, Northamptonshire (Chapman forthcoming). All three are gilded. The suspension mount, which came from the east path of the manor house, comprises a parallel side strip with tri-lobed terminals. It has been folded in half and held in place by a centrally placed rivet through the terminals.

There are fragments from three bells. One is medieval; it is elongated with an integral suspension loop (broken) and four petal-like tabs which would have been pushed together to prevent the pea from escaping. Patches of gilding are evident on the exterior surface. There is a similar example from Exeter (Goodall, A, 1984, fig 191, 138). The other two are post-medieval in date.

Illustrations (Fig 6.9)

40 Harness pendant, copper alloy. Cast rectangular, almost square gilded pendant with integral suspension loop. The pendant is decorated with a fine line border within which is a sexfoil motif (stylistically floral) within a field of punched circles. A fine line has defined each petal and at the centre of each there is a single punched circle. The centre is perforated. Measurements 31 x 30mm
SF 58, Context 135, Phase 9, post occupation layer

41 Harness pendant, copper alloy. Cast with integral loop. The pendant is gilded and decorated with a centrally placed six-sided star within a field of punched dots. The centre of the star is pierced. Diameter 27mm
SF 45, Context 135, Phase 9, post occupation layer

Horseshoes

There are 33 horseshoes, four complete and 29 incomplete. No horseshoes were recovered from pre-12th century contexts and only one was retrieved from pre-moat phases, structure SG9 (Phase 5). Five types were identified; based on shoe shape, counter sinking and nail-hole shapes (Clarke1995).

There are three predominant types; Types 1 and 2 horseshoes are often referred to as "Norman" shoes and they display varying degrees of waviness, created during the punching of the countersunk depressions, and have rectangular or oval countersinks with circular or rectangular nail holes. Type 1 has a relatively broad heel, while the heel of Type 2 is tapered. Horseshoes of this type date to the 11th-12th century, and usually have three holes on each branch. From the 13th century changes occur in the method of production, resulting in squared nails holes with no countersinking, Type 3. Types 4 and 5 are post-medieval types.

Fourteen examples are furnished with calkins, which help to prevent the horse from slipping on soft ground. Three different forms have been identified; thickened calkins (12 examples), a right-angled calkin (1 example), a double-folded calkin (1 example), for illustrations see (Clarke 1995, fig 52 a-d)). Thickened calkins predominate and occur on shoe Types 1, 2 and 3.

Horseshoe nails

There are 46 horseshoe nails, represented by straight (unused), clenched (used) and incomplete, with the point missing. On the basis of the head shape four types have

been identified: Type 1, fiddle key nails; Type 2, with a T-shaped head; Type 3, with a trapezoid head and Type 4, with a square head. The types represented are comparable with examples found on other contemporary sites and cover the complete typological and chronological range.

Type 1 nails (9 examples) would have been used with the earliest horseshoes (Types 1 and 2), as would the Type 2 nails (3 examples), and it has been suggested that the T-shaped nail is a well-worn fiddle key nail (Goodall 1990a, 421). Type 3 nails (21 examples), are normally considered to have been in use prior to the appearance of Type 4 (13 examples), and both were used with Type 3 shoes.

No nails were found in deposits pre-dating the late 12th century. Types 1 and 2 nails were retrieved from deposits dating from the late 12th to early 13th century. All nail types were retrieved from early 13th century and later deposits, but withTypes 1 and 2 most probably being residual. Type 3 nails were found in Phases 6, 7 and 8, while Type 4 nails came from Phases 7, 8 and 9.

Weapons

Stylistically, the earliest arrowhead/spearhead is leaf-shaped with an open socket and a raised collar at the junction of the blade and socket (Fig 6.10, 42), a feature not apparent on arrowheads of medieval date. The other two arrowheads and the bodkin date from the 13th–15th centuries. The arrowheads have flat barbs and a central socket (Fig 6.10, 43) and resemble Jessops Type MP 8 (1996, fig 1) and Museum of London Type 13 (Ward-Perkins 1940, fig 16). The blades are from 34-50mm long and 19mm wide, but it is not possible to determine whether the sockets are open or closed. Arrowheads of this type are generally classed as multipurpose, used for hunting and military purposes. One example still retains ferruginous wood deposits in the socket. The bodkin is complete (length 147mm, blade length 90mm, width at widest point 10mm, socket length 57mm). It has a closed circular socket which narrows into a long thin point with diamond shaped cross-section. The junction of blade and socket is slightly waisted and a small circular perforation (visible on X-ray) 11mm from base of the socket would have held a rivet securing the blade to the wooden shaft. This type is used to pierce armour; it resembles Jessops Type M8 (1996, 199).

Illustrations (Fig 6.10)

42 Arrrowhead, iron. Complete, leaf-shaped blade with open socket, and a raised collar. It is possible that the blade and socket were manufacture separately and braised together. Blade 50mm long, 17mm wide; socket 35mm long; collar 5mm long.
SF 1043, Context 1298, Phase 6, medieval soil horizons

43 Arrowhead, iron. Incomplete, lower section missing. Barbed arrowhead with central socket; flat barbs. Ferruginous wood deposit in socket. Blade 50mm long, 19mm wide; socket 23mm long (incomplete)
SF 277, Context 770, Phase 9, post occupation layer

In addition, there are five musket balls. One from the medieval soil horizons is slightly damaged, it has a diameter of 19mm. The others were found be metal detector in Phase 9 deposits; they measure 13-14mm in diameter.

Coins

M Curteis (with comment on Eadred coin by M Blackburn)

The collection of nine coins includes two Anglo-Saxon pennies, unusual as site finds; one is a previously unrecorded example of Eadred. These two coins indicate activity of some status during the 10th century. The early medieval coins indicate a high level of activity and status during this period, at least up to mid 14th century.

1 Eadred penny (945-55), horizontal type (HT1; North 706).
Moneyer: Eadmund
Condition: SW/SW (chipped) Weight: 0.65g
Die-axis 180 degrees.
Obv. + EADEREDE, cross
Rev. .: /EAD/+++/MVND/.. (double-struck, ND ligatured), double outer circle.
SF 17, Context 42, Phase 1

A coin of Eadred's HT1 variety has not previously been recorded for a moneyer Eadmund. He was probably a different person from the prolific Chester moneyer who struck coins of the HR1 and HR2 varieties. Our knowledge of Eadred's coinage from the Midlands and the South where HT1 was used is weak, and many moneyers are known from just one specimen. The corruption of the obverse inscription is unusual, but not unprecedented (cf. *SCBI* BM 545, 642). In other respects the coin is of good style, and it does not appear to be an imitation or contemporary forgery. Both the obverse and reverse of this coin pose something of a puzzle. The errors in the obverse legend (EADEREDE for EADRED RE) are very unusual in a series that is normally literate. There was a prolific moneyer Eadmund in the mid-10th century, but he is not known to have struck coins of this HT1 type. His coins are mostly of the north-western rosette varieties (HR and CR) and some mint-signed coins from Athelstan and Edgar's reign indicate he was operating at Chester.

2 Aethelred II (978-1016), cut halfpenny, crux type (normal) (991-97)
Moneyer: Snelinc Mint: Lincoln
Condition: SW/SW Weight: 0.65g
Catalogue: North 770
SF 1006, Context 1329, Phase 4, DG18

3 Henry I (1100-35), cut halfpenny, pellets in quatrefoil type (1131-34)
Condition: SW/SW Weight: 0.52g
Catalogue: North 870
SF 850, Context 989, Phase 6, east path

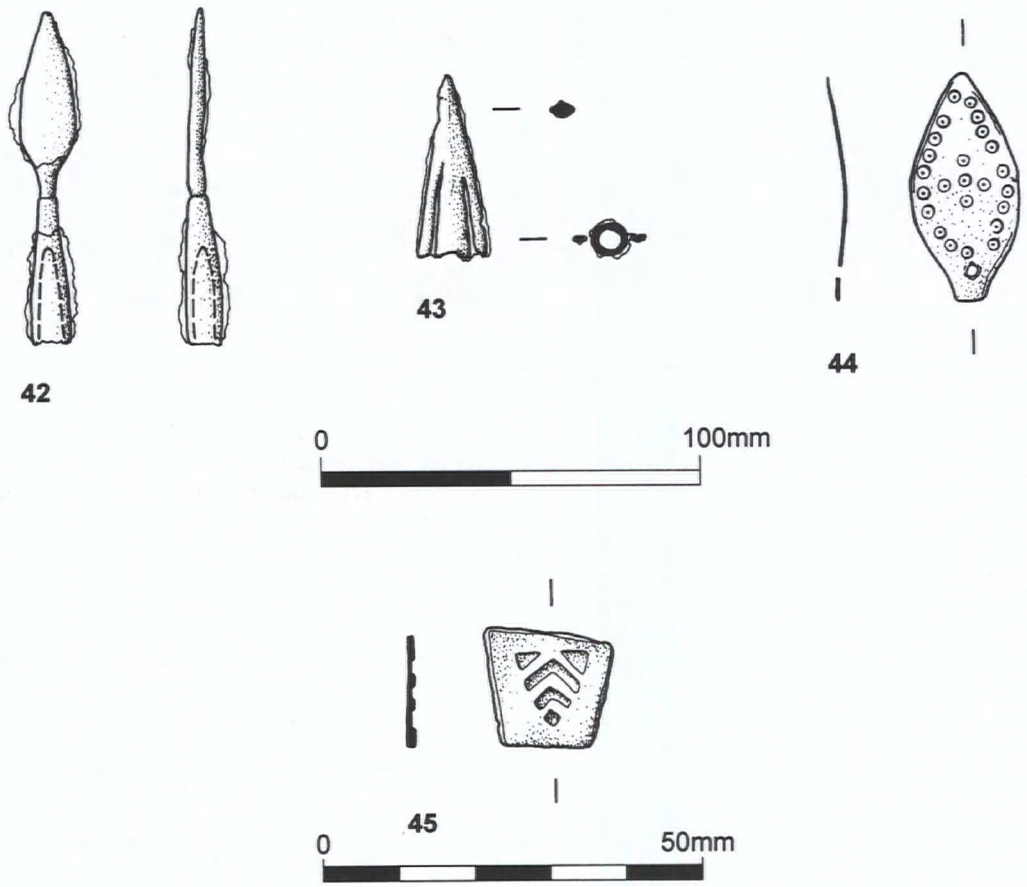


Fig. 6.10. Medieval finds: miscellaneous (42-45).

4 John (1199-1216), short cross farthing, class 5 (1205-10).
Moneyer: Willelm Mint: London
Condition: SW/SW Weight: 0.32g
Catalogue: North 970
SF 54, Context 135, Phase 9, post occupation layer

5 Henry III (1216-72), cut short cross halfpenny, class 7 (1217-42)
Mint: London
Condition: SW/SW Weight: 0.61g
Catalogue: North 978
SF 927, Context 693, Phase 8, demolition layer

6 Henry III (1216-72), long cross farthing, class 1 (1247-48)
Moneyer: Nicole Mint: London
Condition: SW/SW Weight: 0.30g
atalogue: North 983
Notes: Initial mark crescent and star
SF 788, Context 889, Phase 6, east path

7 Henry III (1216-72), cut short cross halfpenny
Condition: C/C Weight: 0.50g
SF 905, Context 1111, Phase 6, medieval soil horizons

8 Edward I (1272-1307), long cross penny, class 10ab2 (1301-10)
Mint: Durham
Condition: SW/SW Weight: 1.21g
Catalogue: North 1038/1
Notes: bifoliate crown, plain initial cross
SF 647, Context 907, Phase 8, hall

9 Edward III (1327-77), long cross farthing, third coinage (1344-51)
Mint: London
Condition: SW/SW Weight: 0.26g
Catalogue: North 1135/1
SF 309, Context 770, Phase 9, post occupation layer

Miscellaneous and unidentified objects

A copper alloy leaf-shaped decorative fitting perforated for suspension and ornamented with ring and dot motifs is of uncertain use but it may have been an escutcheon, for suspension from a bowl, or an amulet (Fig 6.10, 44). No parallels have been located. A possible coin weight made of lead is stamped with a heraldic motif (Fig 6.10, 45).

Illustrations (Fig 6.10)

44 Fitting, copper alloy. Lanceolate shaped piece of sheet metal perforated for suspension and decorated with ring and dot motifs. Length 61mm, width 29mm
SF 1048, Context 1564, Phase 3, DG7

45 Stamped sheet, lead. Cut trapezoid shaped fragment; stamped with a heraldic motif in the form of a shield of arms with a double chevron. The arms may represent a debased version of the well-known and distinctive coat of arms of the Clare family, Dukes of Gloucester. It is possible that this object may be a coin weight, it weighs 2.5gms which = 38.58 grains; a half groat during the reign of Henry IV weighed 36 grains. Measurements 15 x 17mm
SF 108, unstratified

The ceramic building material
A M Slowikowski

The ceramic building material is made up of 1104 sherds, weighing 74.637kg. It was recorded using Bedfordshire's Ceramic Type Series (CTS) codes, by context, fabric type and form, with quantification by sherd count and weight. Where sherds came from the same tile, this was noted. The unit of quantification used in the following report is weight, unless otherwise stated. Attributes such as decoration, evidence of use (sooting, mortar etc) or manufacturing details have been noted where they occur.

Fabrics

Type 1A Sandy (10.01%): the unglazed, plain sandy tiles had some variation in the fabric, although all were orange to orange-brown in colour, with a light grey core. Forms – peg tiles predominate, although rare examples of floor tile and ridge tile also occur. Bricks, *imbrices* and *tegulae* in this fabric are Roman in date.

Type 1A Red sandy (3.17%): hard, although not as hard as type 1A above, red-orange throughout. Forms – peg tiles only.

Type 1B Sandy glazed (0.02%): orange-red to dark brown with a grey core. The glaze is patchy, green in colour, blending into brown, and probably occurs on the lower part of the tile only. Forms – a single fragment of a flat roof tile.

Type 1C Sandy vitrified (14.53%): very hard, almost vitrified, purple throughout, with occasional dark brick red patches. Usually unglazed but patches of white glazing occur due to the reaction of the silica in the clay to the high temperature. This is probably a harder fired version of type 1A, but has been allocated to a separate code due to the apparent deliberate nature of its firing to achieve the appropriate colour and hardness. Forms – peg tiles predominated, although a small quantity of bricks was also found.

Type 1D Harsh sandy (27.12%): fairly soft, very harsh and crumbly to the touch, sandy, slightly under-fired fabric, whose surfaces rub off with the fingers. Colours are usually orange-pink to brown with lighter buff margins and/or cores. Forms – both flat roof tiles and hip and ridge tiles occurred in this type, as did floor tiles and a single brick fragment.

Type 16 Buff harsh (7.73%): this is a variant of type 1D, in that is consistently of a buff colour with occasional light grey core. It is slightly harder fired than type 1D, but otherwise the inclusions are the same. Forms – Hip, peg and ridge tiles occurred in this fabric variant.

Type 5A Calcareous tempered (5.27%): hard fired, buff or pale orange surfaces with a light grey core and occasional grey-white margins. Characterised by distinct white inclusions of shell and limestone protruding through the surface. Forms – the majority of forms seem to be plain, unglazed ridge tiles. Possibly the pale colour was enough to make the ridge stand out. A single *tegula* fragment was found in a wholly shelly fabric, probably originating from the kilns at Harrold (Brown 1994).

Type 8 Blue grey (9.44%): hard, orange surfaces and light blue-grey core, with a dense fabric and rare inclusions. Forms – flat tiles mainly, glazed green in a small patch on the lower third of the tile. The glaze is sprinkled on in powder form, giving a 'splashed' appearance.

Type 9 Vesicular (7.81%): light buff-brown to orange-brown surfaces, with a light grey core, usually fairly thick but it can peter out into a thin blue-grey line that eventually disappears. Characterised by large voids throughout the fabric, up to 2mm, probably from leached calcareous matter. Forms – flat roof tiles predominated although a small quantity of hip and ridge tiles was also found. All are unglazed.

Type 11 possibly Potterspury type (13.22%): characterised by a dark grey core, almost black in colour, and buff to light brown surfaces. Forms – glaze is invariably thin, patchy and dark green in colour. Ridge tiles predominated, possibly deliberately importing 'quality' product for the roof ridges, which would have been seen at a distance. If the dating for the pottery made at Potterspury stands for the tile, a date within the 13th-14th century can be suggested.

Type 14 Micaceous: a fine, dense fabric, red throughout, with mica visible to the naked eye. Forms – flat roof tiles only. All are plain and unglazed.

Discussion

The ceramic building material dates probably from the 13th century, with the calcareous tiles being the earliest. Calcareous tempered pottery is generally dated to the 12th and 13th centuries, but it may have continued into the 14th century. It ceased to be of any great importance from the late 13th century and it can be supposed that sand took

over from calcareous temper in tiles at about the same time. The sandy fabrics continued in use into the post-medieval period.

Flat roof tiles

The flat tiles were generally unglazed, although as only the bottom third of the tiles were usually glazed, more of the unglazed area would survive. Where glazes do occur, they are sparse, green or sometimes brown, and sprinkled on in powdered lead form. About one third of the assemblage comprised dark grey/purple tiles, suggesting some attempt at possible patterning on the roof, with alternating orange and purple tiles. Reduced tiles might also give the appearance of stone slates from a distance. There are only ten instances where mortar survives on either surface, even though this was a common method of sealing gaps between tiles, known as 'torching'. The absence of mortar on breaks suggests there was little in the way of patching and repair.

The dimensions of two tiles could be reconstructed. Both are 280mm long, 190mm wide and 130mm thick (11 inches x 7½ inches x ½ inch) (Fig 6.11, 46). In 1477 it was declared that the statutory size for flat roof tiles would be: 10½ inches (270mm)long , 6¼ inches (160mm) wide and 5/8 inches (16mm) thick (17 Edw IV, c iv). The fact that these requirements were frequently repeated indicates that they were largely ignored. The tiles from Tempsford are larger than the statutory size, although customary measurements make it difficult to compare. The reduced type 1C tiles are all thinner than the required measure, they average 10-12mm, between 3/8 in and ½ in.

Illustration (Fig 6.11)

46 Peg tile, ceramic fabric type 8, lower part green glazed

Hip and ridge tiles

A single possible ridge tile of type 9, with a square hole at one end used to nail the tile onto the laths, could be a hip tile. None of the other identified hip tiles had surviving holes, but these would have been the usual method of attachment. There is documentary evidence that nails were preferred for hip or ridge tiles, and wooden pegs for flat tiles (Cox 1979, 9). The hip tiles would have been laid down the ridges of the hipped roof, overlapping each other in 'granny bonnet' style.

The ridgeline was decorated with green-glazed ridge tiles, with a hand-moulded and knife-trimmed crest, typical of the 13th century (Le Patourel 1973, 87). All crested ridge tiles were in the same fabric, type 11 (Fig 6.11, 47). Other ridge tiles were found in varying fabrics, but all these were plain and unglazed. The angles of the type 11 ridge tiles are very steep, while the tiles in other fabric types are much shallower. It may be that the steep-angled tiles were used on a thatched roof, which is always at a much steeper pitch than stone or clay tiles (Clifton-Taylor 1972,140, 272, 340). Roofs of mixed materials are known from other sites, such as the stone roof with clay ridge tiles at the Knight Templars' Preceptory at Skelton, West Yorkshire (S. Wrathmell pers comm).

Illustration (Fig 6.11)

47 Ridge tile, ceramic fabric type 11, green-glazed with a hand-moulded and knife-trimmed crest

The Finial

A single finial was found, suggesting that at least one gable-end was surmounted by a decorative tile. It is in fabric 11, the same as the decorated ridge tiles and would probably have been used in conjunction with them. Comparable finials have been dated to the mid-13th to 14th centuries (Dunning 1967, 86). This finial falls into the group 1, Hereford type of unattached finial, a category defined by Dunning and recently reviewed by Hurman and Nenk (forthcoming).

The finial is of globular, unattached type with a frilled collar on the shoulder, a hollow socket at the bottom and a decorative top that may have ended in a point (Fig 6.11, 48). The socket allowed it to be fitted into one end of a purpose-made ridge tile (Dunning 1967, 83). There is no evidence that the finial had been mortared into position, as there is on the shaft of the finial from Aardenburg, Netherlands (Dunning 1968, 212). The body is pierced with at least two rows of holes, but these seem too small and too few for it to have acted as a ventilator allowing the escape of smoke, and there is no sooting on the interior. It is also much smaller than the known examples of louvres or ventilators, such as one excavated from Grove Priory and in a similar fabric (Slowikowski in prep b). Decorative finials, which used the escape of smoke for visual effect, are known from urban contexts such as Nottingham and Oxford (Nottingham Castle Museum, Ashmolean Museum). It may be that the Tempsford finial was primarily decorative and served only a minor function as a ventilator.

The body is wheel thrown, with the socket applied by hand. The decorative top was also wheel thrown but appears to have been made separately and attached to the body. It was most likely made by a potter rather than a tiler. There is documentary evidence for orders being given to potters to produce specific, one-off examples (Wood 1965, 298).

The fragments came from the medieval soil horizons and one from the western threshold, dated to the mid-13th and 14th centuries. This compares well with the suggested date of this type of finial. Other roof tiles from the same contexts include ridge tiles in the same fabric, which may have been in use at the same time.

Illustrations (Fig 6.11)

48 Decorative finial, ceramic fabric 11, upper part green glazed. Height 260mm (incomplete).

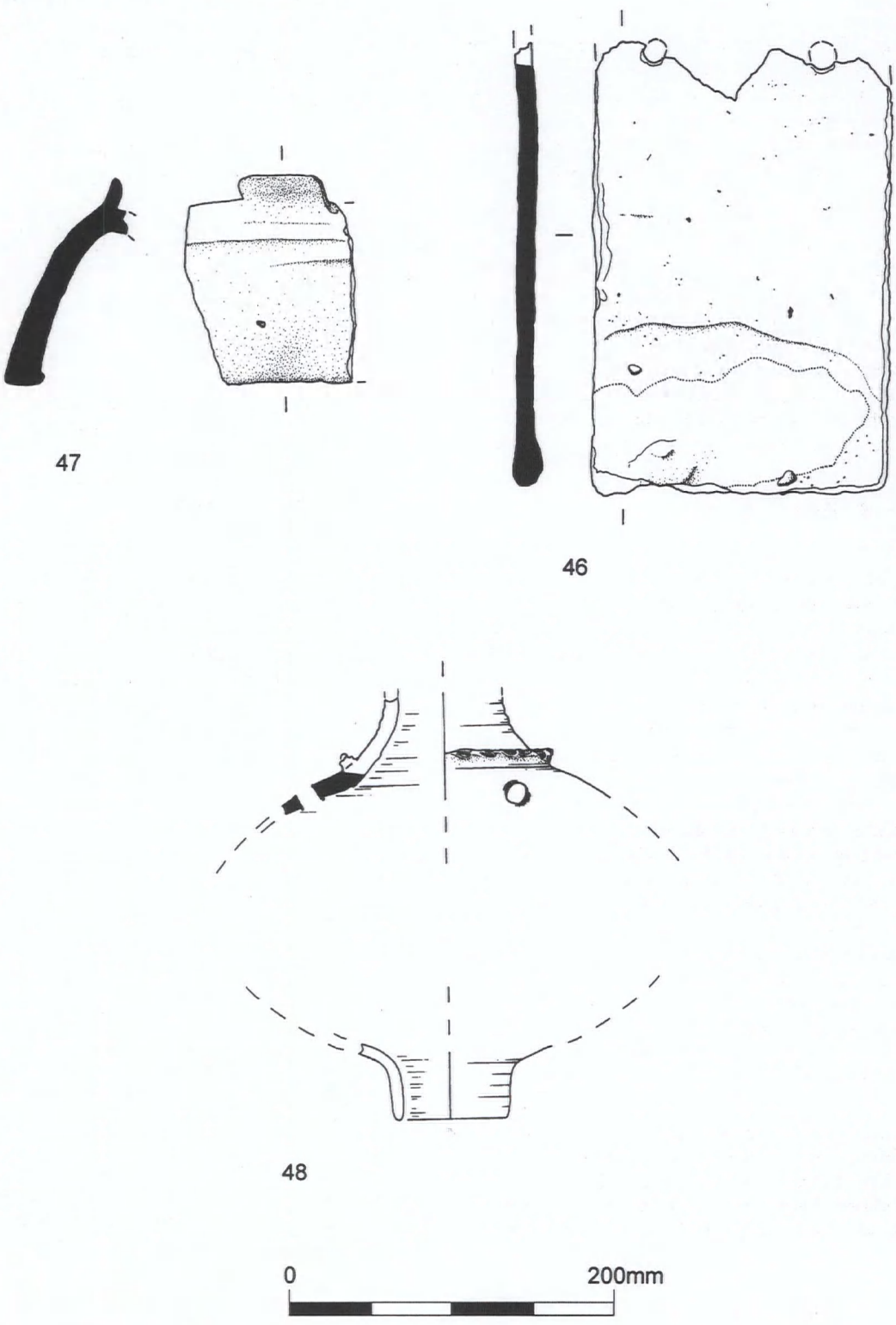


Fig. 6.11. Medieval finds: ceramic roof tiles (46-47) and finial (48).

Floor tiles

The majority of floor tiles are in fabric 1D, and are classified on the basis of their thickness, measuring from 20mm to 40mm thick, averaging 28mm. Surfaces occasionally show the remnants of a patchy white slip. Any glaze which overlay this has worn away, taking most of the slip with it. Holes are pierced at random from both surfaces, but never reach all the way through. This is a common method of manufacture on Dutch tiles, particularly in the early post-medieval period. No full dimensions survive, but these tiles are probably large paviours rather than the small decorated floor tiles. The fabric is an unusual choice as it is relatively low fired, very sandy and crumbly in texture, and a harder wearing surface would have been required for a floor. Some of the tiles show signs of burning, particularly on their surfaces, and it is likely that the primary use of these was as hearth tiles, as used in the final hearth within the hall of the manor house.

Stone roof tiles

P Chapman

There are 104 fragments of perforated stone roof tile, weighing 39.29kg, including a single large tile weighing 9.5kg, nearly one quarter of the total. During excavation, only fragments containing at least part of a perforation were retained. The tile comes from contexts related to the construction, use and demolition of the manor house from the early/mid 13th century through to the mid-15th century. This suggests that the manor house had been roofed with both ceramic and limestone roof tiles from its construction, with different materials on different parts of the building. It was recovered from a wide range of contexts; the largest tile, together with four others, had been laid as part of the refurbishment of the western threshold, although none show signs of wear. A few small, reddened fragments had been used as part of the hearth construction, and another as a post-pad in the late structure to the east of the manor house, SG8. But most of the tile came from surfaces around the buildings or was residual in demolition deposits, including discrete dumps probably related to the collection and sorting of material during the process of demolition.

Almost all the tiles are made from limestone containing dense fossiliferous shell, although five are in fine-grained sandstone. The nearest limestone geology lies immediately west of Bedford some ten kilometres to the west of Tempsford, so either complete tiles or the raw material must have been imported from some distance away. The assemblage is fragmentary with only a few pieces sufficiently intact to indicate their original dimensions. Many of the tiles had also suffered from erosion, with areas of the original limestone surfaces having flaked off. It may be regarded as Colyweston-type limestone, although not necessarily from that source. The original tile edges are often straight and sharp cornered, although some have been rounded and roughly smoothed. The upper edges were typically tapered in and rounded, so that only a short length of straight cut top remained. This may have been done to reduce the overall weight of the tiles on the parts that were concealed by the row of tiles above. The lower sides were probably all near parallel-sided, as on the largest tile, but this area rarely survived on the smaller tiles.

The recovered pieces indicate that the tiles came in a range of sizes (Fig 6.12, 49-53). Small tiles are between 40 and 65mm wide at the top, widening to 120mm at the maximum surviving lengths of 120mm (52 and 53). Medium size tiles are typically 140-160mm wide at the top and 200-240mm wide at the maximum surviving lengths of 180-250mm (54 and 55). The largest tile is 320mm wide with a surviving length of 540mm (56). The thickness of the tiles varies from 9-25mm, although there may be concentrations at 9-15mm thick and at around 20mm and 25mm. The largest tile was 25mm thick but so was one of the smaller tiles. The finer grained limestone also tended to be thinner. All the nail or peg holes are circular and have been cleanly drilled, half of them have diameters of 9mm, and the rest 8mm or 10mm. Where it is possible to determine their position, more holes are set either towards the corners rather than at the centre, and no piece had two surviving peg holes.

The range of sizes that survive indicate that the tiles were graded, with the biggest being laid at the eaves with diminishing courses to the ridge. Stone tiles were laid at quite a steep pitch, at 50 degrees or more, being pegged or nailed to laths that were pegged or nailed to the rafters (Brunskill 1978). A few of the fine fossiliferous tiles had been shaped with one end at a very acute angle. If this is the original shaping these tiles may have been for fitting in valleys.

Illustrations (Fig 6.12)
49-53 Limestone roof tiles

Fired clay/daub

P Chapman

A total of 31.7 kg of fired clay was recovered. Approximately half of this came from the oven of the kitchen range contemporary with the aisled hall, SG9, and the nearby hearths and ovens, SG10. The remainder came from features and layers ranging in date from the late Saxon to the late medieval. The fired clay from the kitchen range area was typically well fired with frequent inclusions of gravel, shell and flint. The occasional fragment of swan mussel suggests that some of the raw material came from river deposited silts and clays. There were many large pieces, measuring 70mm or more in length, with one side smoothed while the reverse face contained well preserved wattle impressions, between 10mm to 20mm in diameter. They presumably came from the demolished wattle and daub superstructure of the excavated oven.

Metalworking debris

A Chapman

A total of 51kg of metalworking debris was recovered. It largely comprises irregular, undiagnostic pieces of dense, vesicular metalworking slag indicative of general

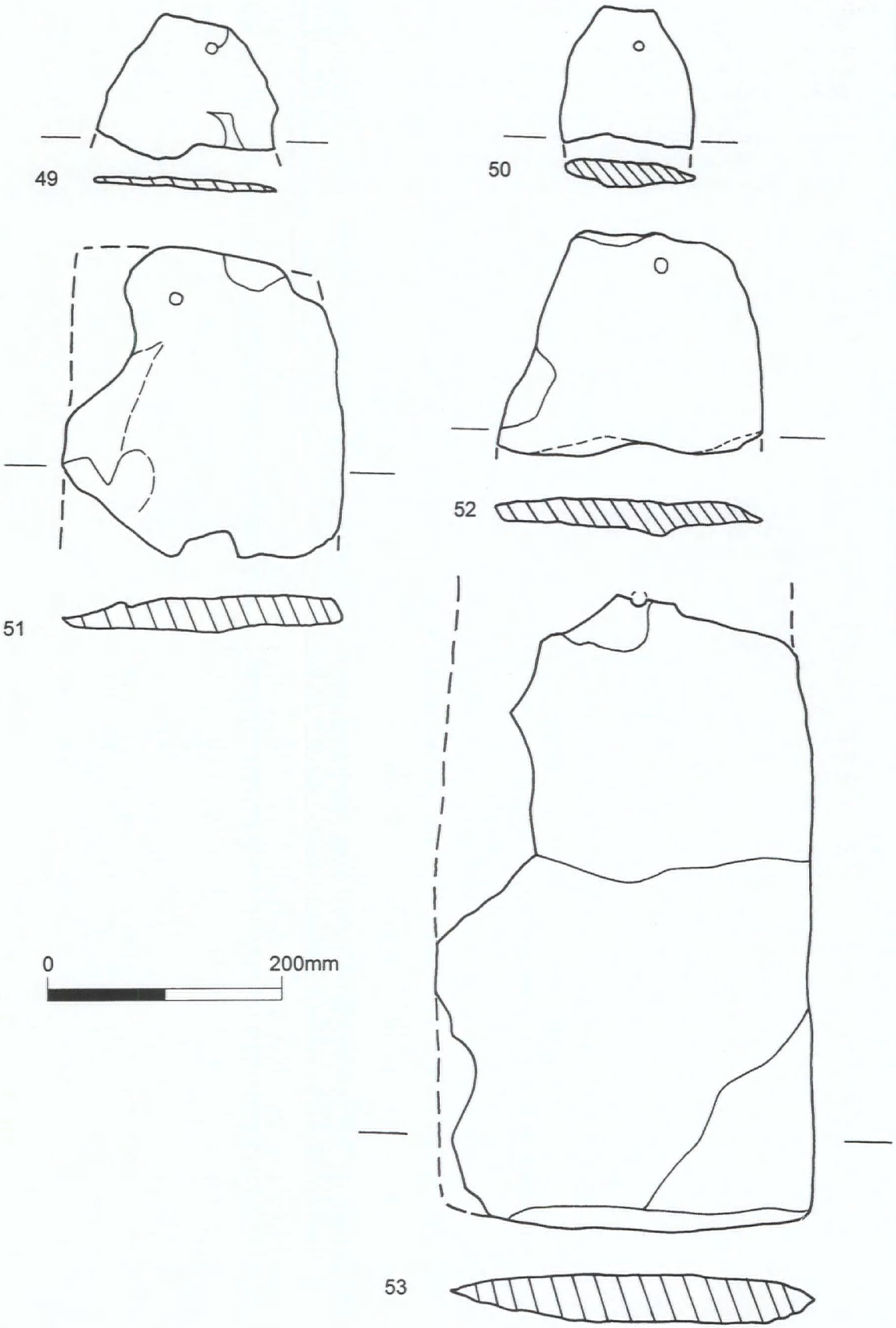


Fig. 6.12. Medieval finds: stone roof tiles (49-53).

ironworking. There are frequent pieces which retain some smoothed outer surface, sometimes with scorched, reddened clay adhering, which have evidently come from hearth linings. The best examples appear to have come from accumulations of slag immediately below the blowing hole, as evidenced by small marginal areas of vitrified glassy material. In addition, these pieces frequently contain wood impressions from the charcoal fuel. There are also many small pieces with vitrified, glassy surfaces that have evidently come from the hottest part of the hearth around the blowing hole, although no actual blowing-hole apertures had survived. Two good examples of smithing hearth bottoms are present indicating that secondary smithing was being carried out. A complete example is oval, 105mm by 90mm, with the characteristic concave upper surface and convex base. A second incomplete example is partially magnetic. A further two pieces of particularly dense, metallic looking slag were also found to contain magnetic inclusions. Some of the fine debris also contained small magnetic particles, but no quantity of hammer scale was recovered. This is unsurprising given that none of the material was recovered from primary contexts.

The material came from 74 contexts, but only six produced large quantities, 32.7kg forming 64% of the assemblage. The late Saxon/early medieval ditches (Phase 4: late 9th century/late 12th century) produced 10.7kg (21.1% of the total), with the main group coming from the fills of DG17. This was probably the period in which metalworking was a significant factor in the site economy. The material from later contexts is probably residual, indicating that the demise or relocation of the industry coincided with the creation of the moated manor house, if not with the preceding aisled hall phase.

7 THE FAUNAL AND ENVIRONMENTAL EVIDENCE

7.1 The Faunal Remains

E Hutchins

A total of 165kg of animal bone, including 2874 identified bones, were collected. Cattle bone dominated in most phases with more than half the bone coming from the mid-12th to early 16th centuries, although for the late Saxon to medieval settlement phase sheep/goat predominated. The remains were in a reasonably good condition, although very fragmentary. A certain amount of post-depositional damage had occurred. The surfaces were in a good enough condition to show fine knife-cuts. Most of the bones had significant dog gnawing, which made identification sometimes difficult. Cattle metapodials and sheep/goat tibia and radii were frequently missing both proximal and distal articular surfaces.

As a guide to the relative abundance of each animal by phase, the minimum number of individuals for each species is summarised in Table 13.

The relative abundance of each bird by phase is also indicated by the minimum number of individuals for each species, as summarised in Table 14.

Mammal Species	**Phase**							
(Minimum No. of individuals)	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Cattle	1	4	13	6	20	1	4	5
Sheep	0	2	9	5	26	2	8	12
Horse	1	1	3	3	6	0	2	3
Pig	1	1	5	2	7	1	4	5
Dog	0	2	3	1	2	0	1	1
Rabbit	0	0	0	1	2	0	0	1
Hare/Rabbit	0	0	0	0	2	0	1	2
Hare	0	0	2	1	3	1	1	0
Deer	0	0	1	0	1	0	1	0
Rat	0	0	0	0	1	0	0	0
Cat	0	1	0	0	1	0	0	1
Hedgehog	0	0	0	0	0	0	0	1

Table 13. Mammals by phase: minimum number of individuals.

Bird Species	**Phase**							
(Minimum No. of individuals)	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Goose	0	1	1	1	3	1	2	2
Duck	0	0	1	0	1	0	1	1
Chicken	0	0	3	1	2	0	2	2
Bantam	1	1	1	2	3	1	3	1
Brent Goose	0	0	0	1	0	0	0	0
Pheasant	0	0	0	0	1	0	0	0
Crow	0	0	0	0	1	1	1	0
Teal	0	0	0	0	0	0	0	1
Wood pigeon	0	0	0	0	1	0	0	0
Coot	0	0	0	0	0	0	1	1
Snipe	0	0	0	0	0	0	0	1

Table 14. Birds by phase: minimum number of individuals.

Species (Minimum No. of individuals)	Phases 2	3	4	5	6	7	8	9
Bird	0	0	1	0	2	0	2	1
Large Mammal	0	1	3	1	4	1	3	1
Medium Mammal	0	1	3	1	6	1	1	3
Small Mammal	0	0	0	0	0	1	1	0

Table 15. Indeterminate animal remains by phase.

For those remains that cannot be assigned to a particular species see Table 15.

Phase 2: Roman

The small quantity of identifiable animal bone (17) recovered from this phase derived predominantly from cattle, but the possible level of intrusion from this phase suggests that these remains retain little analytical value. The presence of Bantam, here used to mean a small Galliform chicken type is interesting. Chickens first occur in Britain in occasional Iron Age deposits, but are not at all common. The Romans also kept chickens (Lat: *Gallina*).

Phase 3: middle to late Saxon enclosures (8th century-late 9th century)

This assemblage of 154 identified bones is dominated by cattle, and rather less by pig and sheep. Only 6% of the cattle bones came from 'rich' cuts, while the majority, 60%, derived from 'poor' cuts. The body-parts of the sheep were also those of a poorer diet – bones such as the feet, ankles and jaws. Some goose and bantam is present, as are pig, horse, dog and cat. This assemblage is typical of a small agricultural holding with a diversified strategy.

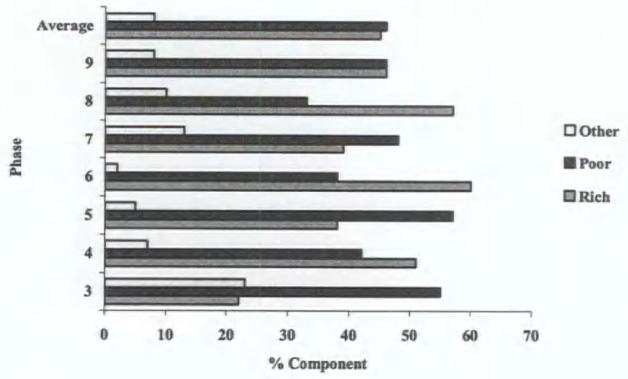


Table 16. Proportion of high-meat body-parts to low-meat parts, as a % of all sheep bones, by phase.

Phase 4: late Saxon to medieval settlement (late 9th century – late 12th century)

This assemblage of 617 identified bones is characterised by 'rich' sheep/goat cuts. The 'rich' body-parts are the humerus, femur, radius, tibia and ulna, while the 'poor' parts are the mandible, calcaneus, phalanges, astralagus and skull (Table 20).

Many of the usable cattle and sheep/goat mandibles came from this phase (and Phase 6) so the results are particularly applicable. The sheep tooth-wear results (Table 17) show that the animals were mostly killed before 24 months, or after 48 months. This is a typical of a dairy economy where the surplus lambs are killed off at around 6-9 months and provide a valuable source of meat. For meat production the lambs are killed at the end of their growing period, at around 2-3 years.

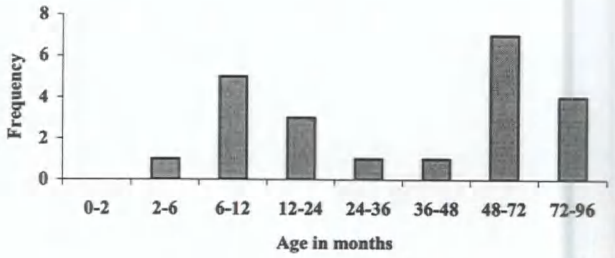


Table 17. Sheep tooth-wear analysis (after Payne, 1973), all phases.

Phases 5-8: Medieval aisled hall and moated manor (late 12th century – early 16th century)

The greatest number of identifiable animal bones, 1820, was recovered from these phases. Cattle were again the predominant species, followed by sheep and pig (Table 18). A number of other species were

also present (Tables 13 and 14), particularly dog, hare and chicken.

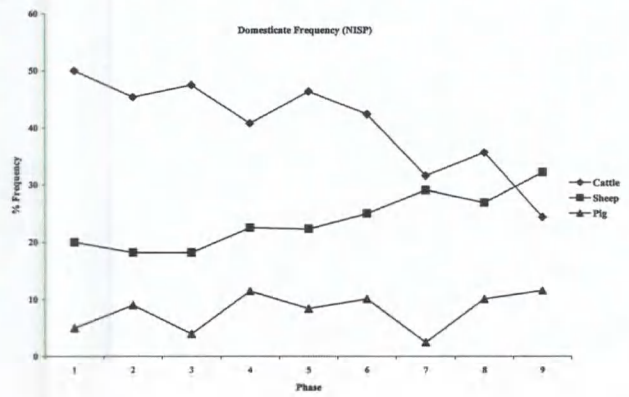


Table 18. The three main domesticated animals, minimum number of individuals as % of total assemblage.

The cattle remains from this period are slightly in favour of 'poor' cuts (53.4%) against 'rich' cuts (46.6%), although these deposits certainly contain much residual material (Table 19). The continued importance of cattle in the medieval period on this site, at a time when the rest of the country was starting to concentrate more on high-quality wool production, might be due to the site's proximity to the river and the rich pasture of the water meadows. Alternatively, as this material all relates to the occupation of the manor house it is perhaps more likely to be indicative of the consumption pattern within the manor house, with this comprising quantities of beef, rather than being indicative of the balance of the local pastoral economy.

The sheep from this period are less evenly distributed. Most of the remains are from the front legs of the animal (65%) as compared to the back legs (35%). This may be the result of deliberate selection.

'Rich' cuts	**total**	**'Poor' cuts**	**total**
Humerus	21	Mandible	41
Radius	55	Metacarpal	10
Scapula	14	Metapodial	51
Femur	9	Metatarsal	9
Pelvis	8		
Tibia	67		

Table 20. Sheep bone distribution, Phases 5-8.

The age distribution of the sheep in this period is not dissimilar to that in Table 17; the kill-pattern seems to reflect a strategy designed to maximise milk and wool production, with surplus meat being supplied by the young lambs. Table 21 shows the unfused sheep bones present. This shows that up to 11 animals were younger than 36 months, of which 7 were under 24 months old, and 2 under 10 months. This would seem to tie in with the tooth-wear analysis, in that most lambs would have been killed off at about 6-12 months.

The other species from this phase include horse, pig and dog as well as a variety of other mammals and birds, including rabbit and geese. The horse would have still been a fairly expensive commodity, but would have increasingly been used for agriculture as bigger and bigger types were bred. Dogs would still be generally working or hunting animals, although thelate medieval period did see a fashion for 'lap-dogs' – small dogs as a fashion accessory for well-to-do medieval ladies. Pigs were a constant presence throughout this period; they were a typical low-income meat source, easy and cheap to keep. Some of the animals – hare, deer and some of the birds – would be the result of hunting, either as a leisure activity by the well-off inhabitants, or as a serious attempt by the less wealthy to supplement their existing diet.

'Rich' cuts	**total**	**'Poor' cuts**	**total**
Femur	16	Mandible	58
Humerus	34	Metacarpal	19
Radius	37	Metapodial	75
Tibia	30	Metatarsal	33
Pelvis	13	Skull	3
Scapula	34		
	164 (46.6 %)		188 (53.4%)

Table 19. Cattle bone distribution, Phases 5-8.

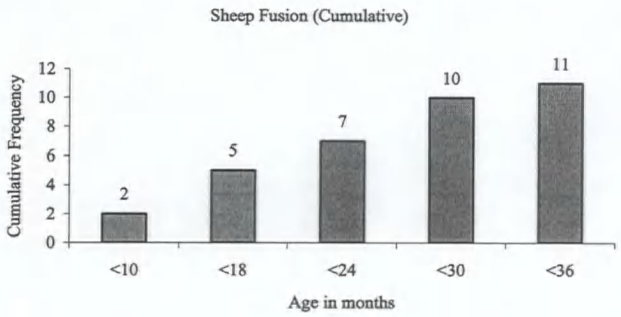


Table 21. Sheep age calculated from unfused bones. The bones from up to 11 individuals are represented.

Small animal bones

The frogs, toads, vole and rat are all common wild animals, often associated with human habitation. The tiny amount of fish bones recovered is surprising, particularly given the popularity of fish during the medieval period. This may be a result of the lack of general sieving for small bones on site; both instances of fish bones were recovered from soil samples taken, primarily, to recover charred plant materials and molluscs. The water vole, *Arvicola,* is a small mammal that lives on well-vegetated banks of clean rivers and streams. The wood mouse, *Apodemus*, generally favours deciduous woodland but can also occur on the edges of human cultivation. *Rana* is the common frog.

7.2 The Charred Plant Remains

E Hutchins

A total of 46 samples were taken for ecofactual analysis. The dried flot was inspected under a 20x objective Brunel stereo microscope with direct lighting, with any detailed inspection being carried out under a 40x objective.

The plant remains recovered from the samples are generally associated with cultivation, habitation or other areas of disturbed ground, particularly on the edges of agricultural areas (Table 23). The range of crops, including oats, wheat and barley, is typical of the early medieval crop rotation cycle. Barley seems to be poorly represented, although this may be a result of the generally degraded appearance of the grains; many of the *Triticum* sp. grains may well be *Hordeum*. Other crops such as broad beans and peas would have both replenished the nitrogen in the soil, and provided an alternative protein source. The pulses can be dried and stored through winter. They make for both a change in diet, and an 'emergency' food source for poor harvests, and lean years. The varieties of fruit were also most probably consumed by the upper echelons of society. Hazelnuts have been a staple 'wild food' ever since people have

Phase	**3**	**4**	**5**	**5**	**5**	**5**	**8**	**9**
Group	**PG3**	**DG26**	**Aisled hall**	**PG4**	**SG9**	**SG10**		
Description			**Hearth/ oven**	**Kitchen range**	**Kitchen range**		**Demolition**	**South moat**
Amphibian (*Rana /Bufo*)	Y	Y	–	Y	Y	–	Y	Y
Arvicola terrestris (water vole)	–	–	–	–	–	–	–	Y
Rattus sp. (rat)	–	–	–	–	–	–	Y	
Rana temporaria (common frog)	–	–	–	–	–	–	–	Y
Apodemus sylvaticus (wood mouse)	–	–	–	–	–	–	Y	–
Fish indet.	–	–	Y	–	–	Y	–	–

Table 22. Small animal bones: species present.

Common Name	Latin Name	Habitat
Bread wheat	Triticum aestivum L.	Cultivar
Wheat	Triticum sp.	Cultivar
Rye	Secale cereale L.	Cultivar
Barley	Hordeum vulgare L.	Cultivar
Naked barley	Hordeum vulgare var. nudum	Cultivar
Oat	Avena sativa L.	Cultivar
Broad Bean	Vicia faba L.	Cultivar
Vetch	*Vicia* sp.	Commonly a weed.
Pea	*Pisum/Lathyrus* sp.	Cultivar
Elder	*Sambucus* sp.	
Sedge	*Carex* sp.	Wet and marshy areas.
Spike-rush	*Elocharis* sp.	Wet and marshy areas.
Dock	*Rumex* sp.	Disturbed ground.
Fat Hen	*Chenopodium* sp.	Disturbed ground.
Corncockle	*Agrostemma githago* L. [*Lychnis githago*]	A weed of cornfields. Extinct in the wild today.
Stinking Chamomile	*Anthemis cotula* L.	A weed of cultivated places, often on heavy clay-rich soils.
Flax	Linum usitatissimum L. [Linum humile]	Cultivar. Grown for linen and linseed oil.
Grass	Gramineae spp.	
Grass	Bromus sp.	
Plantain	Plantago sp.	Damp places such as water meadows.
Dandelion	Taraxacum sp.	
Hazel	Corylus avellana L.	Wood used for coppicing, edible nut.
Cherry	Prunus avium L. [Cerasus avium]	Often grows near cultivation. Edible fruit.
Nettle	*Urtica dioica* L.	Disturbed ground.
Plum	*Prunus domestica* L.	Often close to habitation. Edible fruit.

Table 23. Charred plant remains: species present.

inhabited the British Isles, and are another alternative protein source, particularly good for trace Vitamins such as B12, only otherwise present in meat. Plum and cherry would have been enjoyed by the wealthier members of society.

Many of the 'weed' seeds are edible, and would have been another food source. Elder has edible fruits and flowers. The leaves of dock, nettle, fat hen, plantain and dandelion are all edible. Particularly interesting is the instance of corncockle, *Agrostemma githago* L. [*Lychnis githago*], which is now extinct in the wild, mostly because of improvements in winnowing and seed cleaning techniques and the use of herbicides.

Although samples 2, 39, 40 and 44 all had some elements of wheat chaff, the general absence of wheat chaff suggests that most of the crop processing took place away from the excavated area. Sample 2, from DG26, suggests nearby agricultural activity. The samples from DG29, Phase 5, come from arable crops perhaps grown nearby. Most of the chaff was derived from straw, probably as a result of field burning. Also of interest are the instances of flax. This was a vital crop, providing both the fibres for linen, and linseed oil. Its presence here may indicate that one or both of those commodities were being produced on land controlled by the inhabitants of this site.

Sample	53	26, 41, 42	37 and 42	2
Phase	1	4	4	4
Group		DG19	DG17	DG26
Description	Palaeochannel	Division between Plots 1 and 2	Plot 2	Plot 4
Triticum aestivum	–	4	4	–
Triticum sp.	2	4	–	1
Triticum stalks	–	–	–	1
Secale cereale	2	1	–	–
Hordeum vulgare	1	2	2	–
Avena sativa	–	1	2	–
Vicia faba	–	1	1	–
Vicia sp.	–	2	2	–
Pisum/Lathyrus sp.	–	2	2	–
Sambucus sp.	–	+	–	–
Carex sp.	–	+	–	–
Anthemis cotula	–	+	–	–
Elocharis sp.	–	1	–	–
Linum usitatissimum	1	–	–	–
Gramineae sp.	–	1	–	–
Plantago sp.	–	1	–	–
Taraxacum sp.	–	+	–	–
Urtica dioica	–	+	–	–

Table 24. Charred plant remains present in Phases 1 and 4.

7.3 The Molluscs

E Hutchins

The mollusc remains were inspected under a 20x objective Brunel stereo microscope with direct lighting, with any detailed inspection being carried out under a 40x objective. Mollusc remains were retrieved from 40 samples. They include species from a wide range of habitats, ranging from dry calcareous scree to moist, shaded marshland (Table 26).

Phase 4: late Saxon and medieval settlement (late 9th century – late 12th century)

Samples 41, 42 and 55 from Ditch Group DG19 indicate a damp, shaded habitat, with some deeper water, with a pond-like fauna (Table 27). This may show that the ditch was full of water for the greater part of the year.

Phase 5: Medieval aisled hall (late 12th century – mid 13th century)

Samples 21, 22 and 31 from the ovens of the kitchen range SG9 relating to the aisled hall, indicate both damp and dry habitats. The damp population may be from transported material, or from nearby vegetation, whereas the dry population may be an in-situ fauna. Samples 35 and 36 from oven group SG10, both indicate a damp, shaded environment. Typically, this could be due to a nearby tree, or other vegetation. Samples 39, 40 and 44 from boundary ditch DG 29, close to the aisled hall, produced no habitat data. Samples 57, 58, 61, 72 and 73 from around the aisled hall, indicate a mostly dry, but occasionally damp habitat. Sample 74 from near the aisled hall, indicated a varied habitat.

Phase 6: Medieval moated manor (mid 13th century – late 14th century)

Sample 56 from the medieval soil horizons indicates a dry, calcareous habitat. Samples 34 and 56 from the environs of the manor house indicate wet environments, probably due to the proximity of the moat.

Phase 9: Post-medieval

Sample 24 from the upper fills of the moat, indicates a wet, shaded environment, much like an over-shadowed pond. This would indicate the presence of water for all or most of the year.

Sample	**21, 22 and 31**	**35 and 36**	**39, 40 and 44**	**57, 58 and 61**	**72 and 73**	**74**	**56**	**34**
Phase	**5**	**5**	**5**	**5**	**5**	**5**	**6**	**6**
Sub-Phase	**SG9**	**SG10**	**DG29**	**Aisled hall**	**Aisled hall**	**SG6**	**Manor house**	**Manor house**
Description	**kitchen range**	**kitchen range**	**Ditch**	**Aisle posts**	**Hearth**	**Struc-ture**	**Post-hole hall**	**Pit**
Triticum aestivum	3	3	4	2	–	3	4	–
Triticum sp.	3	–	2	2	2	2	–	1
Triticum stalks	–	–	2	–	–	–	–	–
Triticum chaff (awns/spikelets)	–	–	1	–	–	–	–	–
Avena/Secale sp..	–	3	–	–	–	–	–	–
Secale cereale	1	–	–	–	–	–	–	–
Hordeum vulgare	2	2	2	2	1	1	3	–
Hordeum vulgare var. nudum	–	–	–	–	–	1	–	–
Avena chaff	–	+	–	–	–	–	–	–
Avena sativa	2	2	3	2	1	2	3	–
Vicia faba	1	–	–	+	–	–	1	-
Vicia sp.	1	1	2	2	1	–	2	–
Pisum/Lathyrus sp.	1	–	2	1	1	1	–	–
Carex sp.	–	–	–	+	–	–	–	–
Rumex sp.	2	–	1	–	–	–	–	–
Anthemis cotula	–	1	2	–	+	–	–	–
Chenopodium sp.		1	2					
Agrostemma githago	–	–	+	–	–	–	–	–
Linum usitatissimum	–	+	–	–	–	–	–	–
Plantago sp.	–	–	+	–	–	–	–	–
Corylus nut frag.	–	–	–	–	–	1	–	–
Prunus avium	+	–	–	–	–	–	–	–
Prunus (domestica?)frag	+	–	–	–	–	–	–	–

Key

–	0	absent
+	1	present
1	2-10	present
2	11-100	present
3	101-1000	present
4	1000+	present

Table 25. Charred plant remains: Phases 5 and 6.

Species	Habitat
*Trichia sp.*Catholic	
Vallonia sp. (pulchella)	Open Calcareous places and dry grassland or screes; moist meadows and marshes
Cochlicopa lubrica	Catholic; moderately damp places
Oxychilus alliarius	Catholic; woods, fields and rocks. Tolerant of poor acidic places
Pupilla muscorum	Dry exposed places and screes
Cepea nemoralis	Varied; woods, hedges, scrub and grassland
Helix aspersa	Vary varied, often gardens and parks
Vitrea crystallina	Catholic, but commonest in damp places
Planorbis planorbis	Ponds
Bithynia sp.	Ponds, slow streams
Pisidium amnicum	Streams and rivers
Ena obscura	Woods, walls and shaded rocky places
Catinella sp./Succinea sp (?)	Damp, sparsely vegetated places
Ceciloides acicula	Subterranean; a burrowing animal
Vertigo substriata	Damp places; woods, marshes and lakes
Discus rotundatus	Moist sheltered places; woods and leaf-litter
Hellicella itala	Dry exposed places; screes and calcareous grassland
Aegopinella nitidula	Moderately moist places; woods, herbage and near human places
Balea perversa	Dry exposed places; walls and rocks. Occasionally on trees

Table 26. Molluscs present by species.

7.4 The Pollen

R Scaife

Pollen columns were taken from sections in the area of the southern moat, including the fills of a late Saxon ditch DG19 and the southern moat (Fig 3.15, Section 31). Given the waterlogged state of the sediments in these features, it was anticipated that pollen analysis might provide useful information on the local vegetation and environment of the Saxon and later periods. Furthermore, as there is little available pollen data spanning the historic period from the Bedfordshire region the study of these fills provided an opportunity to examine these later phases.

Although moats frequently offer substantial sequences of waterlogged sediments especially suited to pollen analysis, few studies have been undertaken. This is perhaps a function of the taphonomic problems and interpretation since these features may contain pollen from a wide variety of sources. These sources may range from pollen incorporated from the aquatic and marginal vegetation of the moat itself; that via normal transport from adjacent vegetation communities and also secondary/ derived pollen from 'ordure' derived from garderobes which exited into the moats. However, given that there are often waterlogged sediments remaining, even where sites have been backfilled and become vegetated over, these sites have enormous potential for the study of environmental change over the past 1000 years.

The few studies previously carried out have demonstrated that useful information can be gained from pollen analysis of such sediment fills, especially when related to other palaeoenvironmental studies. For example, pollen studies and plant microfossil studies of the moat of Hampton Court Palace were able to elucidate the character of the local park land and gardens and the species of tree planted locally, as well as the more regional vegetation (Robinson 1996; Scaife 1996). Evidence of local vegetation changes have also been forthcoming from the study of the moated manor at Yaxley Manor Farm, Cambridgeshire (Scaife 1990) and, perhaps most importantly, interdisciplinary studies undertaken on the fills of the Tower of London Moat (Impey *et al* 1998; Keevil 1997) which include pollen, diatom, plant macrofossils and insect studies.

Methodology

Samples for pollen analysis were taken from metal monolith profiles taken from the excavated sections of the late Saxon ditch DG19 and the southern medieval moat. Sub-samples of 2ml volume were

Sample	41, 42, 55	45	21, 22 , 31	35 and 36	39, 40, 44	57, 58 61	72 and 73	74	56	34	24
Phase	4	4	5	5	5	5	5	5	6	6	9
Sub-phase	DG19	DG17	SG9	SG10	DG29	Aisled hall	Aisled hall	SG6			
Description	Plot 1/2	Plot 2	Kitchen range	Kitchen range	Boundary ditch	Aisle posts	Hearth/ oven	Pit group	Hall	Medieval Soil horizons	South moat
Trichia sp.	2	1	2	1	2	1	2	2	2	1	1
Vallonia sp.	1	1	2	1	1	1	1	2	2	1	1
Ceciloides acicula	2	2	2	2	2	2	2	2	2	1	1
Pupilla muscorum	1	+	1	1	1	–	1	2	+	–	–
Hellicella itala	+	–	–	–	–	+	–	–	+	–	–
Balea perversa	–	–	–	–	–	–	–	–	+	–	–
Cepea nemoralis	–	–	–	–	–	–	–	–	–	–	+
Helix aspersa	1	–	–	–	–	–	–	–	–	–	–
Ena obscura	–	–	–	–	–	–	–	–	–	–	–
Oxychilus alliarius	–	–	–	1	–	–	1	–	–	–	–
Planorbis planorbis	1	–	+	–	–	–	–	–	+	–	1
Bithynia sp.	–	–	–	–	–	–	–	–	–	–	–
Pisidium amnicum	–	–	–	–	–	–	–	–	–	–	–
Catinella./Succinea sp	–	–	–	–	–	–	–	–	–	–	–
Vertigo substriata	–	+	1	1	+	+	+	+	–	–	–
Discus rotundatus	–	–	–	–	–	–	–	+	–	–	–
Vitrea crystallina	–	–	–	–	–	–	–	–	–	–	–
Cochlicopa lubrica	1	–	1	1	+	+	1	1		+	–
Aegopinella nitidula	+	+	–	1	1	–	–	–	1	–	+
Habitat	**V/W/SW**	**V**	**D/W**	**V/VS**	**V**	**V**	**D/V**	**V**	**D**	**W**	**SW**

Key

-	0	absent	V	varied
+	1	present	W	water-tolerant
1	2-10	present	D	water-intolerant
2	11-100	present	S	shade-loving
3	101-1000	present		
4	1000+	present		

Table 27. Molluscs by phase and habitat.

prepared using standard techniques for the extraction of the sub-fossil pollen and spores (Moore and Webb 1978; Moore *et al* 1991) with the addition of micromesh sieving (10u) to aid the removal of clay fraction. Absolute pollen frequencies were calculated using added exotics to known volumes of sample (Stockmarr 1971). Pollen was identified and counted using an Olympus biological research microscope fitted with Leitz optics. A pollen sum of 300 grains of dry land taxa plus all extant spores and pollen of marsh taxa and aquatic, fern spores and miscellaneous pre-Quaternary palynomorphs was counted. An extensive reference/comparative collection of modern taxa was available to aid identification. Pollen diagram(s) have been constructed and plotted using Tilia and Tilia Graph. Percentages have been calculated as follows:

Sum	=	% total dry land pollen (tdlp)
Marsh/aquatic	=	% tdlp + sum of marsh/aquatics
Spores	=	% tdlp + sum of spores
Misc	=	% tdlp + sum of misc. taxa.

Taxonomy in general follows that of Moore and Webb (1978), Moore *et al* (1991) modified according to Bennett *et al* (1994) for pollen types and Stace (1991) for plant descriptions. These procedures were carried out in the Palaeoecology Laboratory of the Department of Geography, University of Southampton.

The Pollen Data

Two columns have been examined from the southern moat. Column 50-52 cut through the late Saxon ditch DG19 (Phase 4; 10th-12th century) and overlying moat fills (Fig 3.15, Section 31). A second comparative column (48-49) was also taken and examined from the latter context (872), which formed part of the post-13th century moat fill. Ditch system DG19 was also sampled but failed to produce pollen (Fig 3.7, Section 16 [1387], column 46-47). The palynological characteristics of the two analysed profiles is as follows:

Column 50 - 52, contexts 860, 861, 872

This is the longer of the two profiles analysed and three local pollen assemblage zones have been ascribed. These are characterised from the base of the profile upwards as follows.

Zone 1: 75cm to 50cm, contexts 860-861

Herbs are dominant (to 98%) with only sporadic occurrences of trees and shrubs. The latter comprise occasional *Betula*, *Quercus*, *Fagus*, *Populus* and *Alnus*. The diverse herb component is dominated by Poaceae (66%) with cereals (to 20%). Lactucoideae (to 35%), *Artemisia* (5%) and Apiaceae (a single basal level to 13%) are relatively important. Of particular note is the greater importance of *Cannabis* type, *Centaurea cyanus* and *Secale cereale*. Aquatics comprise primarily *Lemna* (3%) with some Cyperaceae. There are occasional peaks of derived pre-Quaternary pollen and spores.

Zone 2: 50cm to 30cm, context 872

This zone is characterised by an expansion of tree and shrub pollen percentages and diversity, but with herbs remaining dominant. *Fraxinus* is the most important tree (to 18%) with lesser sporadic occurrences of *Pinus*, *Ulmus*, *Quercus* (3%), *Alnus* and *Juglans* with shrubs including *Crataegus/Sorbus* type, *Prunus/Malus*, *Corylus avellana* type and *Salix*. Poaceae remains the dominant herb but with reduced percentages (*c* 40%) with cereals remaining important (10-15%). *Vitis vinifera*, *Secale cereale* and *Fagopyrum esculentum* are present. There are also increases in *Plantago lanceolata* (to 8%) and Asteraceae types. Lactucoideae after a minimum at the top of zone increase in value throughout Zone 2 (to 35%). There is an expansion of aquatic tax with peaks of *Potamogeton* type (to 15%), Cyperaceae (2-3%) and occurrences of *Myriophyllum* spp., *Callitriche*, *Menyanthes trifoliata*, *Caltha* type and *Hydrocotyle vulgaris*. *Trichuris* (nematode/ intestinal parasite) is present.

Zone 3: 30cm to 0cm, context 872

There is a reduction in tree pollen (largely *Fraxinus*) with only occasional occurrences of *Pinus*, *Quercus*. Herbs are characterised by high values of Poaceae (to 80%), Lactucoideae (to *c* 30%) and *Sinapis* type (declining throughout the zone). Cereal percentages are reduced with a minor peak at 15-20cm. There is a reduction in aquatic megaphytes but Cyperaceae expand (10-12%). Spores of ferns become more important with an expansion of *Pteridium aquilinum* (to 13%). *Ascaris* (intestinal parasite) is present.

Column 48-49, context 872

Although the pollen spectra are relatively homogeneous being dominated by herbs (to 95%), two broad assemblage zones have/can be distinguished. These are characterised as follows.

Zone 1: 48cm to 22cm

This zone is delimited from above by slightly differing taxa and values of trees and shrubs (especially in the lower levels) and higher values of some herbs than in subsequent Zone 2. Trees comprise *Fraxinus* (to 6%), *Quercus* (6%), and occasional records of *Betula*, *Ulmus* and *Alnus*. There are few shrubs with only small numbers of *Corylus avellana* type, *Salix* and *Crataegus/Sorbus* type. Herbs to 96% of pollen are dominated by Poaceae (50-60%) with expanding Lactucoideae (45% at 24 cm) and higher values in this zone of *Sinapis* type (18%), Chenopodiaceae (5%), Apiaceae (2-3%), *Plantago major* type (4%), *Plantago lanceolata* (13%) and *Bidens* type (18%). Marginal and aquatic taxa include Cyperaceae and occasional *Typha* and *Myriophyllum spicatum*. Spores are largely of *Pteridium aquilinum* (9%).

Zone 2: 22cm to 0cm
Trees become more important in the upper levels of this profile but *Fraxinus* of Zone 1 becomes absent whilst there are expansions of *Pinus* (to 6%), *Ulmus* (to 5%) and occasional occurrences of *Quercus*, *Populus*, *Picea* and *Taxus*. Herbs remain diverse and dominated by Poaceae (40-50%) with higher values of Ranunculaceae (peak to 10%), Lactucoideae (45%) and *Plantago lanceolata* (peak to 16% at 8cm) and Cereal type (8% at 12cm). A single grain of *Vitis vinifera* is present at 20cm. Marginal aquatic and aquatic taxa comprise Cyperaceae, *Lemna*, *Callitriche*, *Potamogeton*, and *Typha angustifolia* type. A single cyst of the nematode, *Ascaris* is present at 16cm.

Discussion

Within the pollen sequences examined, two distinct archaeological phases are present. Although the fills of moats may display a complex stratigraphy characterised by phases of cut/dredging and fill, here the two principal units result from the medieval moat having been cut into an earlier Saxon ditch feature. Both contexts/phases appear to have maintained a high water table giving good pollen and organic preservation. The late Saxon ditch (contexts 860, 861) underlying the medieval moat (contexts 872) is best represented in columns 50-52 which spans both temporal phases. The second, shorter profile (48-49), also on the west facing section of the southern moat, comes from the fill of the upper, medieval moat cut in the early 13th century and as such is comparable with the upper section of the principal column. As might be expected, however, there are differences in the inferred vegetation and environment evidenced in the two periods represented.

The late-Saxon ditch fills

This period is represented in pollen zone 1 of Column 50-52 (Fig 3.15, Section 31). Pollen data show very low levels of tree and shrub pollen for this period (10th-11th century), and a clear dominance of herb communities. The sporadic but continuous *Quercus* (oak) is typical of the historic period representing the continuation and importance of oak woodland at the regional level whereas other woodland communities such as lime had been removed during the late prehistoric period. This and the presence of *Betula* (birch), *Pinus* (pine) and *Populus* (poplar) is due to their anemophily and thus potential for long distance transport. The exception to this is *Fagus sylvatica* (beech) which is extremely poorly represented in pollen profiles at even small distances. Here, there is a single grain in the basal samples which may have some significance.

Clearly the pollen taphonomy in such depositional environments is complex coming from a variety of sources. However, the nature of the basin being small suggests that the contained pollen will have derived largely from the area adjacent to the ditch. Here, the preponderance of herb pollen and the diversity of taxa demonstrated clearly that the local environment was largely agricultural with evidence of mixed economy-pastoral and arable.

There are two lines of evidence for cultivation including cereal/arable and second, *Cannabis sativa* (hemp) during this period. Cereal pollen percentages and possibly associated weeds of disturbed ground and cultivation are important. The former with percentages to 28% at 64cm (column 50-52) comprise wheat and barley type (*Triticum* and *Hordeum*) with occasional records of *Secale cereale* (oats) in the basal level. Weeds include *Artemisia* (mugwort) and the diagnostic blue cornflower (*Centaurea cyanus*) a then common weed of arable cultivation and often particularly in association with *Secale cereale* (Pals and van-Geel 1976). Whilst the probability is that cereal cultivation was taking place in fields adjacent to this ditch feature, it must also be considered that the pollen may be of secondary derivation. It is possible that crop processing (winnowing and threshing particularly) may also have been taking place nearby, which would liberate cereal and weed pollen trapped in the husks/ears of cereal (Robinson and Hubbard 1977). Furthermore, there is also the possibility that cereal pollen may also be deposited along with human and animal faecal debris and other domestic ordure such as floor coverings or food remains. With the former it is now widely known that pollen ingested in farinaceous products readily travels through the gut and intestine such that it is frequently recorded in cesspits, latrines and in moats or other areas where ordure was deposited (Greig 1981 and 1982; Scaife 1986, 1995). Typically, however, remains of intestinal parasites, whip-worm and round-worm, are frequently associated with high cereal pollen values in such depositional contexts. This may indeed be the case in the overlying medieval moat (see below) but none were found in the late Saxon fill and it seems likely that cereal cultivation was taking place in the adjacent fields. Whichever of these possible sources of cereal pollen there remains strong evidence for a strong cereal aspect to the economy.

Throughout pollen assemblage zone 1 there is a constant and small but significant presence of *Cannabis sativa* type. This pollen taxon is a type which includes both hop (*Humulus lupulus*) and *Cannabis sativa* (hemp) both being of the family Cannabiaceae. Morphologically the pollen of these two types is usually not differentiable to either genus and deductions have to be made on the overall

ecological characteristics of the pollen assemblage (s). The former (hop) although cultivated for beer production in the south of England is in general a plant native to alder valley carr woodland where it forms part of the rich lower shrub levels. Here there is no pollen evidence for such a vegetation community. Furthermore, hop pollen is not well represented in pollen spectra. All of these factors suggest that we are here dealing with hemp (*Cannabis sativa*) which is also a feature diagnostic for this and the medieval period and found at various sites in Eastern England (Godwin 1967a, 1967b; Bradshaw *et al* 1981).

The Ditch Habitat: throughout this late Saxon phase there is pollen of *Lemna* (duck weed) and sedges which show that the ditch contained standing water (possibly seasonal) but which remained wet. It is possible that the high values of Apiaceae (cow parsley family) may be part of the marginal plant community. Occasional levels with high incidence of derived geological palynomorphs may represent periods of inwash and disturbance of the adjacent ground.

The medieval and post-medieval ditch fills

The moat which was constructed in the 13th century cut into the existing late Saxon ditch which as noted, remained wet and with standing water. It is not clear what date the uppermost sediments of the Saxon ditch are although it seems unlikely that there is a continuous temporal span for most of the intervening period between sedimentation in the ditch and the moat construction. Certainly, construction of the moat will have removed surface levels of the ditch even though the ditch may not have been cleaned on occasions. Furthermore, the sediment filling the moat (context 872 and above) may substantially post-date the construction of the moat if cleaning/dredging had occurred during its early history.

There is, thus, the possibility of a substantial hiatus in the sediments between the Saxon ditch fills and medieval or post-medieval fills. This is clearly seen in the pollen data from profile 1 (column 50-52) with the change from pollen zone 1 to pollen zone 2. In the latter there is evidence of a markedly different environment to that of the Saxon period with changes in both the tree/shrub pollen assemblages and in the herbs present. This is perhaps most clearly seen in the former which show a substantial increase of *Fraxinus* (ash) and minor expansions of *Quercus* (oak), *Corylus avellana* (hazel), *Salix* (willow) and some overall increase in taxonomic diversity which include *Juglans regia* (walnut).

Ash (*Fraxinus excelsior*) is clearly the most important tree in pollen assemblage zone 2 (profile 1; column 50-52) but declining to absence in pollen assemblage zone 3. This is further emphasised by the fact that ash is very poorly represented in pollen spectra (Andersen 1970, 1973) suggesting that it was of substantial importance in the vicinity of the moat during the first phase of sedimentation. *Salix* (willow) is similarly poorly represented in pollen spectra and not surprisingly grew around the fringes of the moat. Other pollen of trees present is considered to be of more regional presence than coming from local growth. *Sorbus/Crataegus* (hawthorn and rowan), *Prunus/Malus* type (wild cherry, sloe and apple) and *Cornus sanguinea* (dogwood) suggest the presence of some local scrub or even hedgerows.

It is concluded, therefore, that the intervening period (of the hiatus) between the late Saxon and the moat fills saw the regeneration of woodland, especially ash on the manor site. The woodland was, however, cleared (pollen zone 3) along with other trees and there is a return to an open, agricultural environment. There is, however, an expansion of *Pinus* (pine) in the upper levels of pollen zone 2, column 48-49, along with *Ulmus* (elm), occasional *Taxus* (yew), *Populus* (poplar) and *Picea* (spruce). Although there are similarities between the two pollen profiles for the moat sediment fills, the expansion of these tree types is better evidenced in the upper levels of profile 2 (column 48-49; pollen assemblage zone 2) with ash dying out in pollen zone 1 (profile 2) being comparable with the top of zone 2 and lower part of zone 3 in profile 1. This expansion of trees at the top of profile 2 may be due to the fact that the sediments of profile 2 (context 872) may be of slightly later date than profile 1.

There is unfortunately no dating evidence for context 872 and a medieval age was initially suggested. However, given the complexity of this cut and fill sequence it is possible that the profile is of later date with these changes in woodland types relating to the establishment of Tempsford Park and the enclosure movement in the 17th and 18th century. Profile 2 column 48-49 exhibits increases in pine and elm pollen in its upper levels and the presence (albeit a single grain) of *Picea* (spruce). The former is not generally considered to have continued throughout the Holocene after early post-glacial dominance. Its re-introduction as an ornamental tree into parks after publication of John Evelyn's *Sylva* and later plantation for forestry has produced a valuable datum/maker. Many pollen diagrams which span the last few centuries display a prominent peak of pine pollen which is referable to these plantation phases

(for example, Long *et al* 1999) from 1750-1800. In some cases, as here, this may also be associated with *Picea* (spruce) also introduced into parks and gardens. The expansion of *Ulmus* (elm) at the same period may be attributed to the enclosure movement and the maturing and flowering of hedgerow elms (*Ulmus procera*). However, elm and pine values are rather small for these relatively high pollen producers and it appears that after the removal of ash the local environment once again became open grassland/ pasture with little cereal cultivation. *Juglans regia* (walnut) is present in zone 2 (profile 1) but along with ash is not present in the upper levels of the two profiles. This is an interesting record of this non-native tree which was introduced by the Romans into Europe as whole. There is now a wealth of evidence demonstrating its continuity throughout the historic period, especially in relation to planted parks and gardens. This is especially the case in London (Greig 1992) with comparable data also come from the Tower of London.

There remained, however, the preponderance of herbs dominated by grasses with other pastoral types. Cereal pollen remains especially important in profile 1 (zone 2) along with *Sinapis* type (charlocks) and other segetals including especially blue corn flower (*Centaurea cyanus*), Chenopodiaceae (goosefoots and oraches) and spurrey (*Spergula*). Two possibilities for this importance exist as also discussed in relation to the Saxon ditch. Firstly, there is the possibility that cereal cultivation and/or crop processing was being carried out close to the moat/manor complex which would account for the high cereal pollen percentages/ values. Alternatively and highly likely for such a moat, is the possibility of human and animal faecal debris and other food debris and floor covering having been dumped into the moat. All are sources of pollen, albeit of secondary transport/derivation. The ova of the intestinal parasites whip worm (*Trichuris*) and round worm (*Ascaris*) were recorded here but only in small numbers. This does, however, attest to the possibility that the moat may have been used to dispose of such ordure.

High values of Brassicaceae (*Sinapis* type) in the moat fills are enigmatic. Charlocks are frequently associated with cereal cultivation as a weed but may similarly come from cultivated Brassica crops (cabbage family). As with other cereal and food taxa it is not clear whether the pollen is of secondary or primary origin. Furthermore there is the possibility that pollen may derive from plants growing along the margins/banks of the moat. *Fagopyrum esculentum* (buckwheat) and *Vitis vinifera* (grape) are interesting records of these cultigens. Both are rarely found although the number of occurrences has been increasing steadily in recent years. Here, pollen of both occurred sporadically within the sediments of the medieval or later moat (figure 1; p.a.z. 2 and figure 2 base of p.a.z. 2). Taphonomy may also play an important role and it seems most plausible that, as with cereal pollen, these 'exotic' taxa may also come from secondary sources dumped into the moat rather than directly from local sources of buckwheat cultivation and viticulture. Greig (1981 and 1982) has similarly commented on the occurrence of grape pollen in cesspits and with contemporary experiments that found pollen derived from Rich Tea biscuits!

The moat habitat

It has been suggested (above) that the Saxon ditch contained standing water with growth of duckweed and marginal sedges. As might be expected, the moat shows more evidence of marginal aquatic and aquatic vegetation. This is particularly prevalent in zone 2 (column 50-51) with pondweed (*Potamogeton*), duckweed (*Lemna*), water milfoil (*Myriophyllum* spp.), water starwort (*Callitriche*) and marginals including sedges (Cyperaceae), marsh marigold (*Caltha palustris*), bog bean (*Menyanthes trifoliata*), water plantain (*Alisma plantago-aquatica*), marsh pennywort (*Hydrocotyle vulgaris*) and possibly fringing willow (*Salix*). Although the possibility of ordure being dumped into the moat has been mooted this apparently did not produce unfavourable growth conditions for these aquatics. The upper levels of profile 1 (pollen zone 2) and throughout profile 2 have less of these aquatic taxa which may be due to drying out and infilling of the moat or possibly more polluted conditions.

Summary and Conclusions

There have been few detailed pollen studies of moats and excavation of the Tempsford Manor moat has provided a useful opportunity to ascertain the potential of such contexts/features, especially since these features are frequently stratigraphically complex through constant dredging and sedimentation. Here, this is similarly the case and is further complicated by the fact that the medieval moat was cut into an earlier late Saxon ditch. However, this has also facilitated an examination of the local late Saxon land use as well as the fills of the medieval moat and has demonstrated that useful information can be gained from such studies.

7.5 The Human Bone

T Anderson

Skeleton 1

This was represented by cranial fragments, dentition, damaged spine, pelvic fragments and incomplete limb bones. Pelvic morphology indicates that the remains are female (Bass 1987; Ferembach *et al* 1980). Age was assessed as over 45 years by marked dental attrition (Brothwell 1981), although the sharpness of the available sutures would suggest a younger individual. The metrics and indices fall within the bounds of normality. The overall evidence suggests an elderly female eating a coarse diet, which has lead to chronic infection with painful facial swelling. Strenuous activities have resulted in widespread spinal degeneration, osteophytes and intervertebral compression. Also osteo-arthritis of the left shoulder may be related to overuse. The individual also spent long periods with the right ankle flexed, suggestive of unilateral squatting.

The right mandible (left side unavailable) displays minor bony swellings (tori) in the region of the canine and the second premolar. Various authors have argued that mandibular tori are genetically controlled (Drennan 1937, Sawyer et al 1979, Suzuki & Saki 1960). Other studies have related their expression to environmental factors, including masticatory stress (Hrdlika 1940, Johnson 1959, Ossenberg 1980). Their morphological variation suggests that they are probably inherited on a multifactorial basis (Axelsson & Hedegaard 1981, Sellevold 1980). In a group of females, from Dark Age Iona, every mandible (n16) displayed tori (Wells 1981). Mandibular tori are a frequent finding in Eskimo samples (van den Broek 1943, Hauser & de Stefano 1989: Table 44). In medieval material, prevalences of 7% (Power 1986) and 17% (van den Broek 1943) have been reported from Ireland and Norway, respectively.

The left ilium presented with a large accessory sacral facet (the right side was unavailable). A variant which was first recognised by von Albinus in 1753 (Seligmann 1935). They are known to become more common with advancing age (Seligmann 1935, Stewart 1938, Trotter 1937, 1964). Their development is probably related to degeneration of the intervertebral discs, with subsequent spinal compression. Various workers have noted a male bias for the trait (Seligmann 1935, Stewart 1938). However, a female predilection has also been reported (Trotter 1964). The right distal tibia displays a small overgrowth of the articular surface, evidence of squatting (Charles 1893, 1894; Kennedy 1989: Table 1; Thomson 1899; Wood 1920).

Pathology was restricted to spinal and joint degeneration. Spinal osteo-arthritis involved the lower thoracic costo-transverse facets. Practically all the available vertebral bodies presented with small-medium osteophytic outgrowths. Intervertebral osteochondrosis (IVO), restricted to the outer edge of the vertebral bodies (the annulus fibrosus), was also widespread. The left shoulder and the left sterno-clavicular joint presented with osteo-arthritic changes. In clinical practice, primary OA of the shoulder is rare; most cases being secondary to underlying disease (Doyle 1986: 863). However, inarchaeological material, excessive use of the shoulder joint with repeated extension of the arm has been implicated (Kennedy 1989: Table 1).

The available dentition displayed marked attrition; widespread *ante-mortem* tooth loss and minimal deposits of calculus but no carious lesions. A large cystic cavitation (*c.*14mm mesio-distally x 16mm superio-inferiorly and 7mm deep) has eroded through the buccal (cheek) aspect of the right maxilla. The second premolar was lost *post-mortem*; however, the roots of both premolars and the canine were originally patent to the cyst. Exposure of the canine root canal, resorption of the available tooth roots, support a diagnosis of a radicular cyst (Killey *et al* 1977, 75-88; Shear 1983, 114-141). Although, this is the most common cyst in clinical dentistry (Shear 1983, 114) it has rarely been recorded in archaeological material (Hillson 1996, 286, fig 12.15). This variation is probably related to the fact that only the larger cases that break the bone surface will be recorded in dry bone material. Many radicular cysts are asymptomatic (Shear 1983, 116). It has been suggested that in adults it may take *c* 10 years for a cyst to reach 20mm in diameter; this is the size required for visible bony swelling (Killey *et al* 1977, 81). However, the evidence of infection and bone erosion would suggest the present lesion gave rise to both pain and facial swelling.

Skeleton 2

It was very poorly preserved and comprised only five loose teeth, as well as badly fragmented spine and rib fragments. In addition, the occasional hand bone, a fragment of the right elbow and two lower limb fragments were recovered. Based on the lack of dental attrition, the individual was probably *c.*22-27 years old (Brothwell 1981). The very small size of the teeth suggests the possibility that the remains are female. The only evidence of disease was localised

spinal osteo-arthritis; osteophytes and intervertebral osteochondrosis.

Skeleton 3

This was a practically complete skeleton in which all the available bones, except the damaged skull, are solid and well-preserved. Pelvic morphology indicates that the remains are female (Bass 1987; Ferembach *et al* 1980). Age was assessed as 20-25 years by the lack of dental attrition (Brothwell 1981) and the fact that the spine; pelvis and clavicle displayed remnants of fusion lines, indicating that growth had only just ceased (Ferembach *et al* 1980). The available metrics and indices fall within the bounds of normality. Stature, based on mean humeral; femoral and tibial length, was assessed as 1.590m (5' 2¾") (Trotter & Gleser 1958).

An anatomical variant, fusion of the manubrium to the corpus of the sternum was noted. Such a fusion is normal in the gibbon (Paterson 1893), but has rarely been reported in human material. Two cases, an incidence of 2%, were noted from medieval Norwich (Anderson *et al* unpub).

Pathology was restricted to a well-healed fracture of the right eleventh rib, some 35mm from the head of the bone. Typically rib fractures occur due to a fall against a hard object (Adams 1965, 108). The porous nature of the bony callus (a circumferential swelling) suggests that the injury occurred only a few weeks before death. The only evidence of oral disease was minor deposition of calculus.

8 DISCUSSION

The excavation, though limited to the route of the road corridor, has added considerably to the understanding generated from the evaluation of 1993 (Shotliff 1996b), and makes a valuable contribution to the study of medieval moated enclosures. Activity began in the Neolithic and early Bronze Age with a scatter of residual worked flint including some retouched tools of quality, perhaps fashioned on imported flint nodules. This appears to represent casual loss by people passing through, rather than evidence of settlement. In the Roman period a sparse system of linear ditches and residual finds suggests the presence of a field system probably related to a nearby settlement, and similar in character to a pattern of cropmarks to the east and lying north and south of Station Road. These probably form parts of the larger estate of a nearby villa lying to the east of the present A1 and north of Highfield Farm. The widespread distribution of this type of site points to a densely populated hinterland to the small Roman town of Sandy.

It was the middle Saxon period, around the 7th to 8th centuries AD, which saw the beginning of an unbroken period of settlement spanning some 700 to 800 years, continuing until the demolition of the moated manor house in the 15th century. The middle Saxon settlement probably comprised a series of small ditched enclosures set between two larger enclosures, perhaps largely used for stock control. This arrangement had been replaced by a regular system of ditched plots by the early 10th century, and the associated finds indicate the nearby presence of occupied tenements. By the end of the 12th century some plots had been amalgamated, probably at the formation of a small manor house, represented by an aisled hall and a detached kitchen range. By the mid-13th century this had been replaced by a new timbered manor house set within a moated enclosure. The amalgamation of existing ditched plots to form a manorial enclosure may denote an increase in the fortunes of the owner, although a change in ownership is equally possible. The construction of the aisled hall and associated kitchen could reflect elevation to manorial status at this time, or a relocation of an existing manor house from another part of the settlement. The subsequent construction of a manor house within a moated enclosure presumably reflects a further increase in wealth. The documentary evidence indicates that this may have been the capital messuage of Brayes Manor. The manor house had been deserted by the mid-15th century, and in the 18th century the earthworks were included within grounds of the new Tempsford Hall and Park.

Medieval settlement development

The middle Saxon to late Saxon settlement comprised remnants of what may have been two large oval-shaped ditched enclosures with an area of smaller settlement enclosures set between them. The northern enclosure, which extended 130m north-south, contained some minor ditch systems and, between the late 7th and mid-8th century, three women were buried in this area, with their graves set 16-20m apart. However, the size of these enclosures and the paucity of settlement evidence within them suggest that they may have primarily been stock enclosures or corrals.

A similar mid to late Saxon oval-shaped enclosure, measuring up to 100m in diameter, has been recorded at Higham Ferrers, Northamptonshire (Spandl 1996, 43), although this enclosure was defined by a much larger ditch, up to 2.3m wide and 1.3m deep. The Higham Ferrers enclosure has been interpreted as a possible collection point for stock or food rents belonging to a polyfocal royal estate (Foard and Ballinger 2000) and the enclosures at Tempsford may have served a similar purpose, but on a smaller scale. The small middle Saxon bone assemblage indicates that animals, especially cattle, were being slaughtered on site, which would fit with the agricultural economy of the Ouse valley, where cattle would have been grazed on the more fertile water meadows. The lower number of sheep remains may indicate that sheep farming was undertaken further afield, perhaps on more marginal land. If the Tempsford enclosures did form levy collection areas then it is likely that little of the stock would have been butchered on the site, as the recovered bone assemblage was small. The bones of the sheep and cattle recovered from the site comprised generally poorer cuts, with the majority of the quality meat presumably removed from the site for richer consumers.

The late Saxon re-organisation of the settlement in the form of a rectilinear ditch system that probably

formed regular rectangular plots can be mirrored elsewhere within late Anglo-Saxon rural England. At West Cotton, Northamptonshire in the mid-10th century, the plots were approximately one acre in extent, although they were often sub-divided into half and quarter acre units (Chapman forthcoming). As there was only a narrow transect across the plot system at Tempsford, the original pattern of organisation cannot be determined. However, it has been noted that two one acre plots, measuring 20 rods (100.8m) long by 16 rods (80.48m) wide, would fall within the compass of the later moated enclosure, and this may have respected the arrangement and dimensions of the late Saxon plots.

The 10th and 11th centuries witnessed nationwide reorganisation of the land after the re-establishment of Anglo-Saxon England following cessation of the Danelaw. This reorganisation not only established Anglo-Saxon authority, but also maximised the economic use of the land. The latter effect was in part due to the granting of smaller estates than had been the case in the preceding centuries. This all suggests a growing population and the beginning of the nucleation of settlements (Welch 1992, 121). The occupants of the tenements at Tempsford were probably tied to the local lord under the growing feudal system, but they would have benefited from increasing food production. The animal bone assemblage from the site shows an increase in the number of better quality meat cuts from sheep and a greater use of cattle, suggesting the development of a more dairy based economy during this period.

In the late 12th to early 13th century the amalgamation of two plots allowed the construction of an aisled hall and associated kitchen range. In constructional detail and size the hall is comparable to contemporary buildings recovered from West Cotton and north Raunds, Northamptonshire (Chapman forthcoming and Audouy forthcoming), and at Brome, Suffolk (Wilson and Hurst (eds) 1968, 193 and fig 52). At these sites the aisle posts provided the main structural support and the external walls were founded in shallower linear slots. In consequence, the external wall foundations might leave no or minimal archaeological trace, as appears to be true at Tempsford. The aisled hall may have been in use for quite some time, as several of the aisle posts and wall posts had been re-cut or modified on a number of occasions. However, if the hall was constructed of a wood which lasts well in the ground, such as the heartwood of English Oak, with posts measuring at least 0.3m by 0.3m, a life of up to 100 years could be expected (Beresford 1987). The recut post-pits could therefore simply represent adjustments in positioning of the posts during construction and not subsequent replacement. There were also problems in disentangling the complex palimpsest of features in this area, many of which do not relate to the structure of the aisled hall.

The moated enclosure and manor house

The moated enclosure at Tempsford was constructed in the early to mid 13th century, apparently directly replacing the aisled hall and occupying the same plot, which was probably two acres in total extent. The ditches were broad and flat-bottomed, at 9-12m wide and up to 2m deep, and it is likely that the moat would originally have been water-filled. Access into the enclosure was from the north across a central causeway, although whether this may have replaced an earlier bridge, such as at Glottenham Manor, Sussex (Platt 1978, 113), is unknown.

The moat enclosed an area of 0.65ha, and the interior was flat and level with the upcast from the moat excavation used to slightly raise the ground level above the surrounding land. The central part was occupied by an extensive area of metalled yard. To the west there stood the timber manor house, which comprised a central open hall with a parlour and solar wing to the north and a service wing to the south, forming a T-shaped building. As the manor house was the only major building recovered, little can be said of the internal organisation of the manorial enclosure. However, the other manorial buildings such as a kitchen, bakehouse, barn, stables, and perhaps a dovecote and other ancillary structures probably lay along the eastern side of the enclosure, on the opposite side of the courtyard to the manor house.

The manor house was largely of sill beam construction whereby the walls were raised upon a clay and stone plinth, with substantial stone post-pads supporting the major uprights. This style of construction reflects an important innovation in the 13th century, when various forms of foundation were used instead of earthfast posts (Dyer 1986). The roofs of the main components of the building comprised a combination of stone and ceramic tiles. The tiles recovered from the external surfaces contemporary with the building and later demolition phases can be paralleled at the Knights Templars' building at Skelton, West Yorkshire (S Wrathmell pers comm).

The effect of the construction of the manor house on the medieval landscape of Tempsford is difficult to determine from the excavation of only a part of the manorial complex. There is also a similarly limited

view of the form and status of the previous occupation of the same area. If this was the capital messuage of Brayes manor, the manor was included in the Domesday Book and clearly there must have been a 10th -12th century manor house that has not been located. This might have lain some distance away, which would imply that the building of the aisled hall and its replacement, the moated manor house, represented a major change in the topography of settlement at Tempsford. However, the finds from the 10th to 12th century ditches did include quantities of domestic debris indicating the nearby presence of domestic buildings. This material included substantial quantities of ironworking slag, indicating that secondary smithing was being carried out here, an activity that may have been under the direct control of the manor. It is therefore possible that the plots within which the moated manor lay had always contained the manor house, and its relocation was only within its own plot system, which would have had no effect on the topography of the settlement as a whole.

The moated manor lay near to the road linking the two medieval conglomerations, Tempsford Church End, to the south and including the parish church, and Langford End (previously known as Lambcourt End) to the north-east, where surviving earthworks denote deserted tenements fronting onto Station Road. The position of the Tempsford Park moated manor within Lambcourt End would place it at the westernmost end of this block of settlement. The manor therefore appears to have occupied a series of plots to the south of Station Road, where it would have dictated and dominated access between the dependent tenements of Lamcourt End, and both Church End and other nearby settlements, such as Roxton on the opposite side of the the Great Ouse and accessable by the ford across the river prior to the provision of a bridged crossing.

Most villages in this area of Bedfordshire consist of similar strung out, non-nucleated lines of houses set within tenement plots, and contain two of more separate groupings known as ends. These reflect the dispersed, small-scale holdings common in the pre-conquest period and which continued into the medieval period, with settlements often never becoming single nucleated villages. Other moated manors in the Tempsford area also fit this pattern, such as Veseys manor at Green End, Great Barford (Brown and Taylor 1991). However, the apparently similar pattern observed in Suffolk (Emery 1962), where loosely grouped clusters of settlement with the names Green and Street contain moated enclosures, were generally connected to woodland clearance and, on place name evidence, are suggestive of a secondary colonization of wooded or waste land, while Tempsford is evidently a primary settlement of the late Saxon reorganisation of the Danelaw.

Brayes manor was evidently not the principal manorial centre for Tempsford, and there is no documentary or archaeological evidence that it ever possessed a chapel. The manorial centre of Tempsford manor would have lain in Church End, close to the parish church of St. Peter, and there was also a nearby manorial mill situated on the River Ivel. However, it is interesting to note that fragments of a millstone from the aisled hall suggest that Brayes manor too may have controlled a mill in the early 13th century, most probably also a watermill given its location so close to the River Great Ouse. Church End also contains a small motte and bailey, Gannocks Castle, which presumably contained the manorial centre in the immediate post-Conquest period.

The manor house was to remain essentially un-changed during its lifetime, although there were episodes of refurbishment and minor additions during the 14th century. Of particular interest is the prominent line of elongated slots that lay to the east of the manor, for which a convincing interpretation is still lacking. The manor house appears to have fallen out of use and been dismantled by the middle of the 15th century. The moated enclosure then appears to have been left largely undisturbed until Sir Gillies Payne established Tempsford Park and Hall in the late 18th century, when the area was partially land-scaped. Trees planted along the western arm of the moat included elm and spruce, and a "stew" pond was dug out of part of the southern moat. The final recorded episode was the dumping in the northern moat ditch of brushwood from hedgerow clearance and domestic glass and pottery from the Hall in the late 19th century.

Moated enclosures in the landscape

It was during the 13th to the 14th centuries that moated enclosures began to appear as major new landscape features throughout England, and over 5000 have been recorded with a main concentration occurring across the central and eastern lowlands (Aberg 1978, 3 & table 1). A recent study indicated that those excavated in eastern England have been dated to the period 1180–1320, and there are up to 300 within Bedfordshire alone, giving it one of densest distributions in England, (Lewis *et al* 1997, 133). The construction of the Tempsford moated enclosure in the early/mid 13th century is therefore comfortably within this broader date range, and within the period during which a majority of moated enclosures were constructed.

The scale of moated sites varies greatly. They can occupy less than a quarter of a hectare, as at Biggin Wood, Tempsford (HER 800) situated 1.5km from Tempsford Park, but at Stratton Moat (HER 815) the later phase measured 1.8ha (Shotliff forth-coming) and other large sites measure up to about 2ha, such as at Caxton Pastures Cambridgeshire (Taylor 1978). The Tempsford moated enclosure occupying about two acres (0.81ha) and enclosing a central space of about 1.6 acres (0.65ha), is four times the area of the smallest examples but still only half the size of the larger enclosure. It is therefore within the central group of moated enclosures and so is typical of many such sites.

There is no regular attribute that relates to the location of every moated site, but there are several common factors that can be identified. The majority of sites are found in lowland areas, frequently valley sites, with a concentration on land with underlying clay subsoil, as at Tempsford. Their construction in these areas would, on the whole, inevitably create sites that were often wet, and the large moat ditches would provide both drainage and retain water from natural in-flow from the water table. Some moated sites are located close to springs or streams, which allowed for the watercourses to be channelled into the moats, thus creating a flow of water. This was probably the case at Willington, Bedfordshire, which lies adjacent to the River Great Ouse with a banked ditch leading to the site and feeding water into the moat (Hassall 1975, 25). Moats with standing water would have naturally become stagnant, attracting unwanted pests, and creating a possible health hazard and it would seem likely that most moats would have had an out flow point somewhere along their circuits, although this is not evident at Tempsford.

The water, apart from being of a domestic use for the kitchen and other household needs, was also stocked with fish, which were fattened by kitchen refuse and are known to have been eaten in considerable quantities on fast-days (Emery 1962). A climatic argument for moat construction was discussed by Emery (1962), when he related that some moats would have been necessary to water livestock in years of severe drought. He gives the Winchester area as an example, where the estate Account Rolls listed successive summers from 1284 to 1300 as having twelve years of dry or very dry weather. However, while many moats were deliberately located close to water sources, such as at Willington (Hassall 1975), Taylor (in Aberg 1978, 12) states that some sites could never have maintained water-filled moats.

Rather than for practical issues of water management, it is more likely that moated sites, demonstrably substantial features within the landscape, were constructed by their owners in order to display their position in society by creating a symbol of their status. It is possible that the moated site was an emulation of the castle, which would give the occupier an affinity with the nobility. However, the status of the occupier probably varied from the farmstead of the yeoman farmer to manors of the landed gentry, with some sites gifted by both religious and royal patronage. In addition to displaying their status, moated enclosures would have clearly marked the territory of the landowner, and no dispute could be made over it. The enclosures themselves would also have created an enlarged private area for the occupier, indirectly creating a social division. The location of Tempsford, in dominating access to and from Lambcourt End, may be an example of such a territorial marker.

The location of moated enclosures in general, however, is not necessarily related to population distribution, as they can be found on both marginal and occupied areas. Some sites can be found on peripheral areas, where clearance of woodland or waste (assarting) had taken place to allow the exploitation of new farmland, due to expanding populations which occurred in the 12th and 13th centuries (Emery 1962, 385, Clarke 1984, 53). Emery (1962) also noted apparent clustering of sites within individual counties, for instance the marked increase of sites in the marshlands of Lincolnshire, especially along the eastern fringes of the limestone edge and on the clays between Ancholme and the River Witham.

Other sites were placed directly over preceding settlements, usually lower status 'peasant' holdings, as occurred at Milton in Hampshire and Ashwell in Hertfordshire (Platt 1978, 111). Wintringham (Cambridgeshire) can be similarly interpreted, although here the buildings were of a higher status (Beresford 1977, 205). Often evidence of the earlier occupation can be found sealed below the make-up of the enclosure platforms as at Bradwell Bury, Buckinghamshire (Clarke 1984, 59), where several pre-moat timber buildings of peasant type dating to the late 9th-12th centuries were recovered (Mynard 1994, 7). This imposition of moated sites on a pre-existing landscape indicates a probable static population, but a dramatic change in the settlement structure. This picture can also be seen at other sites such as the deserted hamlet of Moreton in Dinton, Buckinghamshire where an irregular moated

enclosure was imposed upon a rectangular toft system (Lewis et al 1997, 28, fig 4.7). The nearby moated site at Stratton (HER 518) seems to have been imposed on an earlier system of rectangular land parcels and fields in what seems to have been a relatively marginal area (Shotliff forthcoming). Tempsford does fit this basic pattern, with the aisled hall and then the moated manor house replacing a system ditched tenement plots. However, the status of the earlier occupation cannot be determined, and it is possible that this was just a reorganisation and rebuilding on an existing manorial plot that did not involve the displacement of any peasant tenements.

There is evidence from many moated sites to show that they enclosed domestic building ranges and, in some cases, are still occupied by major buildings, such as farms and large houses (Emery 1962). The origins of many of these buildings have a probable manorial background, although all the sites which have been identified as moated enclosures are not necessarily of a similar status and function. Other moated enclosures, in particular the smaller sites, were possibly used for animal stock control and watering, in other cases the interiors were laid out as gardens or orchards (Emery 1962). It also remains probable that many moated sites changed their function over time, being used for more mundane purposes once the manorial buildings had been levelled, but the effort and cost put into the original construction of a substantial enclosure would still suggest a more significant original use.

In conclusion, the moated manor house at Tempsford Park appears to be unexceptional, and it is probably a fairly typical representative of its class as the moated domestic residence of a minor manor. The construction of the aisled hall in the later 12th century may have happened towards the end of the reign of Henry II (1154–1189), at the end of a prolonged period of relative stability and prosperity. The creation of the moated manor house in the early/mid 13th century may well have been within the first three decades of the reign of Henry III (1216–1272), which again could be viewed as a period of relative calm and prosperity following the intervening years of uncertainty under both Richard I (1189–1199) and John (1199–1216).

In this historic context, the creation of the moated manor specifically as a means of practical defence seems less likely, although the added security was no doubt a contributory factor. But, perhaps more importantly, it provided a level of respectability and comfort whilst also establishing a clearly visible physical distinction between the manor house and the domestic residences of the dependent tenements. While the social distinction had been there prior to this, the physical distinction between the earlier manor, set within its ditched plots, and the surrounding tenements would probably not have been so dramatically evident. The creation of the moated manor house at Tempsford is perhaps a product of a growing affluence being reflected in the provisonal of a fashionable residence that linked the occupier to those above him in the social order, and emphasied his distinctly different role in society, even though the basis for his wealth would have been founded in the practice of exactly the same agricultural regime, even if on a grander scale, as that of the surrounding and dependent peasantry.

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