Prehistoric and Roman Activity and a Civil War Ditch: Excavations at the Chemistry Research Laboratory, 2-4 South Parks Road, Oxford

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SUMMARY

Area excavation at the site of the Chemistry Research Laboratory site for Oxford University has revealed a complex of features dating from the Neolithic to the Civil War. The main focus of the site was a Roman settlement, part of which has been previously excavated at Mansfield Road. However the excavations revealed a section of the Civil War ditch, producing important new information relating to Oxford's Civil War fortifications. This has enabled a better understanding of the defences in this area of Oxford. The excavated evidence is presented together with a discussion of this site and how it relates to the Mansfield Road settlement.

INTRODUCTION

Between March and May 2001, Oxford Archaeology (OA) carried out a programme of excavation in advance of the construction of a Chemistry Research Laboratory complex for Oxford University, on behalf of Laing Ltd. Previous evaluation at the site revealed Roman ditches and associated postholes along with some modern features although the Civil War ditch was not found during this work (Fig. 1).[1] As a result of these findings it was recommended that full excavation of the site, an area of approximately 70 m x 70 m, be undertaken prior to development.[2]

The site lies at NGR SP 5170 0692 to the north-east of the centre of Oxford. It is bounded to the north by South Parks Road, to the east by Mansfield Road, to the south by Mansfield College and to the west by the Institute of Experimental Psychology (Fig. 1).

The site lies near the edge of the second (Summertown-Radley) gravel terrace, a short distance west of the first (floodplain type) terrace, between the Rivers Cherwell and Thames at approximately 61-62 m. O.D. The site is relatively flat and overlies Oxford Clay and Kellaway beds (Geology map sheet 236). The Oxford Clay was exposed during excavation of the sections through the Civil War ditch.

The site was excavated in four stages as spoil was stockpiled on site and reused to construct the pile mats. Each stage comprised machine stripping of the overburden followed by hand excavation. All excavation and recording followed standard OA practice.[3] Sufficient environmental samples and artefacts were recovered to characterise and date the site.

[1] 'New Chemistry and Molecular Science Laboratory Archaeological Evaluation report, 2–4 South Parks Road, Oxford', Oxford Archaeology unpublished client report (2000).

[2] Following recommendations by Brian Durham of OAAS (planning reference 98/1961/NO).

[3] D. Wilkinson (ed.), *The Oxford Archaeological Unit Field Manual* (1992).

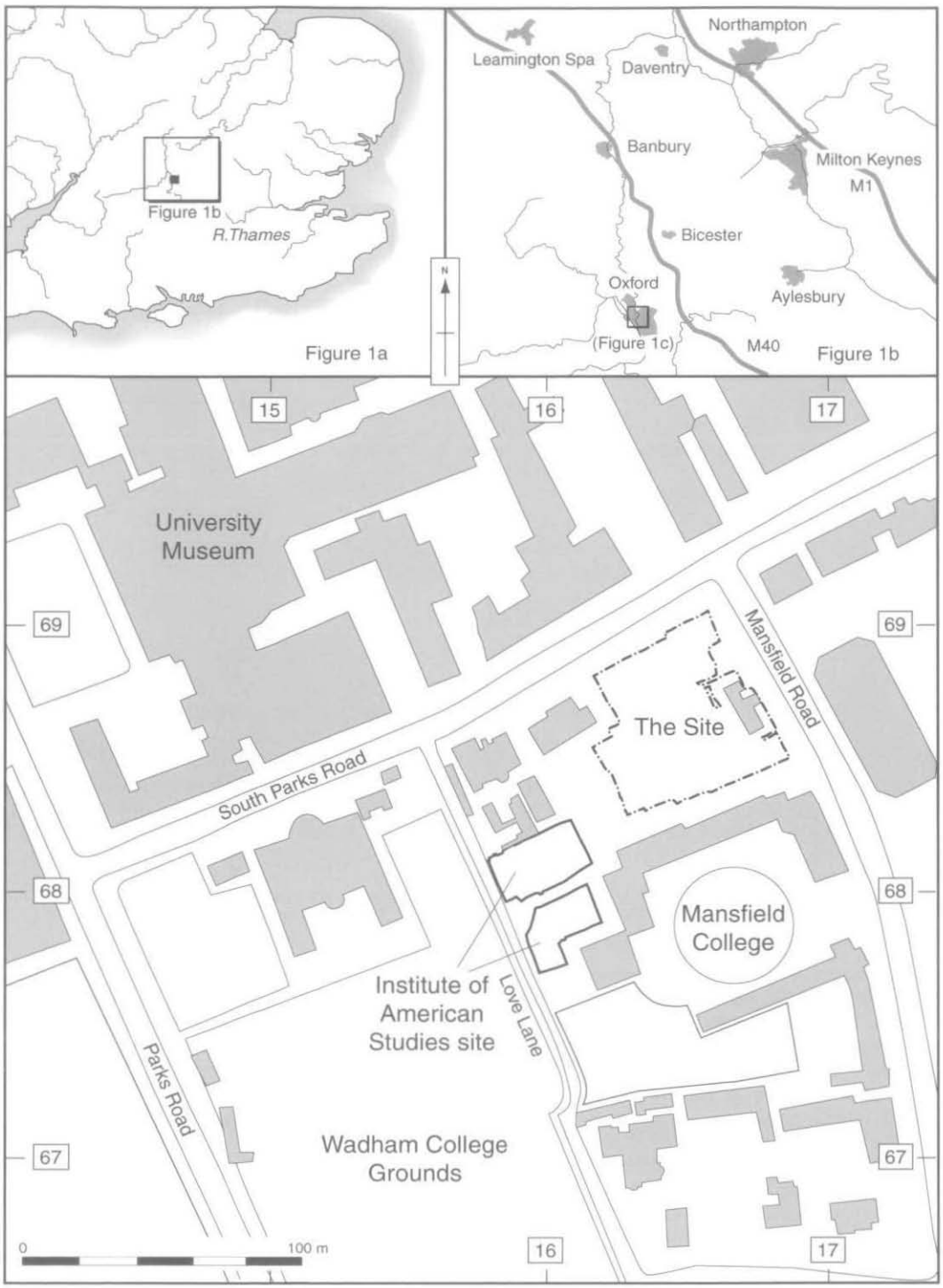


Fig. 1. Site location

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The site is located on the north edge of the historic core of Oxford, in the manor and parish of Holywell, where Oxford's Civil War defences were open fields and pastures. There is evidence for extensive prehistoric activity in the area to the north of the site; aerial photographs of the University Parks show ring-ditches of six Bronze Age barrows.[4]Excavations at the Rex Richards Building in the University Science Area, approximately 200 m. to the north of the Chemistry Research Laboratory site uncovered two concentric ring-ditches of a Bronze Age barrow in addition to Iron Age activity.[5] Excavations at the Gene Function Centre[6] also located a Bronze Age barrow, and excavations at the Sackler Library site – situated approximately 600 m. to the south-west of the site – uncovered what appeared to be two Bronze Age barrow ditches.[7]

Excavations in 1998 and 1999 in advance of the construction of the Rothermere American Institute (hereafter referred to as the Mansfield College site), immediately south-west of the current site, revealed evidence for Roman settlement. This included parts of two enclosures which extended eastwards out of the excavated area towards the present site.[8]

There is little archaeological evidence for Anglo-Saxon and medieval activity or occupation in the vicinity of the site, as may be expected from the historical information that this area was farmland belonging to the manor of Holywell, an ancient property of Merton College.

When Oxford became a Royalist stronghold in the Civil War a series of defences were constructed in the suburban fields. While the general course of the lines on the north-east of Oxford was known, the Civil War ditch identified on the present site has revealed important information about the line of these defences.

There is no historical evidence of significant post-medieval building activity in the vicinity of the development site until the construction of houses in the 19th century; the site became part of land to the rear of two large houses fronting onto South Parks Road, and more recently was used as a car park.

ARCHAEOLOGICAL DESCRIPTION

PHASING (Fig. 2)

The site phasing has been determined by a combination of the stratigraphic relationships, the artefactual evidence and where possible, by spatial relationships. With regard to the Romano-British period, the phasing (Phases 2a and 3) corresponds to the ceramic phasing, itself derived from that established for the Mansfield College site.[9]

[4] A. Barclay, 'Discussion', in A. Parkinson, A. Barclay, and P. McKeague, 'The Excavation of two Bronze Age Barrows', *Oxoniensia*, lxi (1996), 62.

[5] A. Parkinson, A. Barclay and P. McKeague, 'The Excavation of two Bronze Age Barrows', *Oxoniensia*, lxi (1996), 41–64.

[6] C. Boston, C. Bowater, A. Boyle and A. Holmes, 'Excavation of a Bronze Age Barrow at the proposed Centre for Gene Function, South Parks Road, Oxford, 2002', *Oxoniensia*, lxviii (2003), 179–200.

[8] D. Poore, and D. R. P. Wilkinson, *Beaumont Palace and The White Friars: excavations at the Sackler Library, Beaumont Street, Oxford* (2001).

[8] P. Booth, and C. Hayden, 'A Roman Settlement at Mansfield College, Oxford', *Oxoniensia*, lxv (2000), 291–331.

[9] P. Booth, 'Roman Pottery', in P. Booth and C. Hayden, op. cit. note 8, 311.

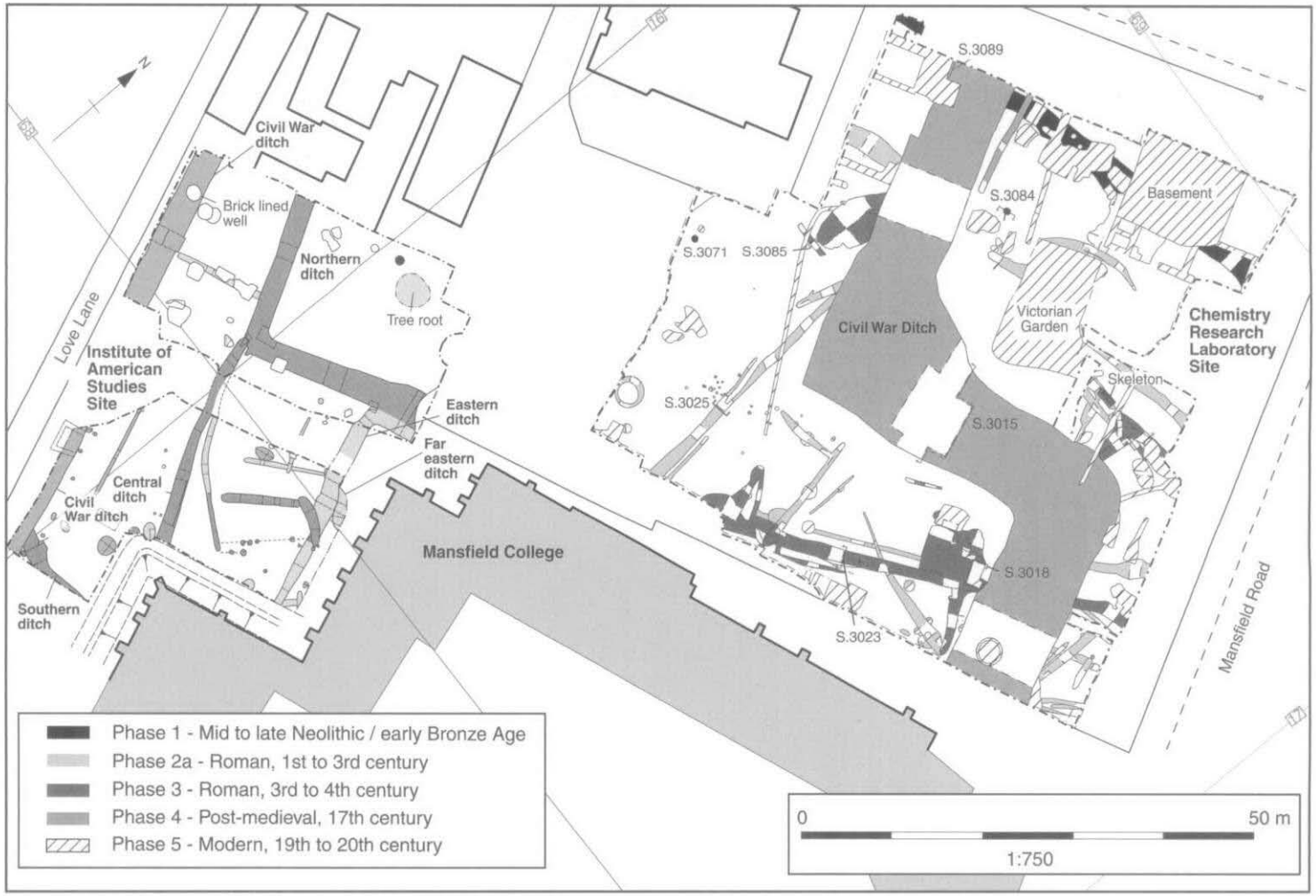


Fig. 2. Areas excavated showing phasing and the phase plan of the Mansfield College site.

Phase 1: Mid to late Neolithic/early Bronze Age (Figs. 3-5)

This phase consisted of two small pits, contexts 3383 and 3442 (see Fig. 4, sections 3071 and 3084), and a large boundary ditch (3460). Pit 3383 was V-shaped, measuring 0.70 m. wide x 0.53 m. deep, and contained two fills. Thirteen flints dated to the mid to late Neolithic were recovered from the top fill (3384) in addition to a small quantity of hazelnut shells, crab apple seeds and possible lime and spindle fruits. A few cereal grains (*Triticum* and *Hordeum*, see Table 8) were also recovered, which together with some *Anthemis cotula* would suggest some later contamination (see Challinor, below). Pit 3442 measured 0.76 m. in diameter x 0.30 m. in depth and also contained two fills. All of the finds came from the upper deposit (3443), and included 111 pieces of flint dated to the mid to late Neolithic period, in addition to 24 small fragments of (undiagnostic) burnt bone, a small quantity of hazelnut shell and 45 amorphous fragments of fired clay.

Ditch 3460 extended across the northern edge of the site, although it was truncated by later activity along much of its length (Fig. 5). It was V-shaped, and averaged 2.20 m. wide x 1.05 m. deep. The fills suggested that it had been backfilled rather than allowed to silt naturally. A small amount of Neolithic or early Bronze Age pottery and animal bone was recovered from middle fill 3503.

Phase 2: 2nd-3rd century AD

This phase principally comprised a few pits and small boundary ditches orientated roughly N.-S. No clear evidence for buildings was revealed, although some postholes and a circular gully could represent agricultural buildings.

Towards the west of the site was ditch 3170 (Fig. 4, section 3025), which extended from the southern baulk for 27 m. where it was truncated by the Civil War ditch. Ditch 3170 formed the west side of an enclosure. A short gully immediately to the east (3141) may represent an earlier or later phase. The ditch was recut at least once (3150) and a slightly divergent ditch (3220) to the north may represent a development of the enclosure to incorporate an access way. Approximately 13 m. to the east of 3170, ditches 3100 and 3160 appeared to define a small enclosure. Both of these ditches cut earlier pits (3138 and 3159 respectively), indicating that this small enclosure was a secondary development. Ditches 3150 and its predecessor 3170 produced 2nd-century pottery and a little bone. Pit 3138 was oval in plan measuring 1.6 m. wide by 0. 2 m. deep. It had shallow sloping sides and a flat base; it was filled with a greyish brown clay silt with occasional charcoal flecks and small gravel. It was heavily truncated and cut by pit 3136 and ditch 3140. Pit 3159 was sub-circular in plan with a rounded base and steep sides. It measured 0.48 m. in diameter and was 0.12 m. deep. It was filled with brown clay silt.

Phase 2a

At the extreme south-western corner of the site an isolated circular gully (3190) was revealed. It was approximately 0.78 m. wide, with a diameter of 3.40 m. (maximum), and 0.54 m. deep. Pottery dated to the 2nd century or later and a little animal bone was recovered from the gully fill (3196) and a nearby pit (3229). To the north east of this area a cluster of postholes was identified, just west of ditch group 3150. They averaged approximately 0.12 m. deep and 0.20 m. in diameter. No datable finds were recovered from any of them and no structures could be identified from their distribution. A further scatter of postholes of similar dimensions was identified approximately 5 m. to the east, but again no dating evidence or structural form was evident. Although they appear to be related to this phase of activity by their spatial association, it is accepted that they could be of any date.

Another possible late element of Phase 2a is represented by ditch 3110, in the south-eastern corner of the site. It was 1.16 m. in width and 0.15 m. in depth and adjacent and parallel to gully 3016, which was 0.4 m. in width and 0.11 m. in depth. Although there were no finds from these features, both cut ditch 3360 (which also produced no finds).

A short N.-S. gully (3012), was identified immediately to the east, at the northern terminus of which was single truncated posthole (3043). The gully produced a proportionately large assemblage of pottery (17 sherds) dated to the 2nd century, suggestive of the proximity of domestic activity.

To the south of gully 3012, a possibly related group of ditches and shallow gullies (3360, 3007, 3022, 3024) were identified in the south-eastern corner of the site, although only ditch 3007 produced any dating evidence in the form of a single sherd of mid 2nd-century pottery.

There was little evidence for Phase 2a activity in the northern part of the site, curving ditch 3510 being the only major feature, traced for approximately 11.5 m. The ditch contained two fills and varied

in width from 0.27 m. to 1.03 m. and depth from 0.08 m. to 0.38 m. Datable finds from the feature included three sherds of pottery dated from the 1st to 2nd century. The possible terminus of a shallow gully (3449), producing 2nd-century pottery, was also identified against the western baulk.

A dense sequence of ditches was revealed in the small area between the Civil War ditch and the eastern edge of the site. Broadly their orientation corresponds with the Phase 2a land division, and the pottery is also similar. The interrelationships of the ditches were unclear, due to the similarity of their fills, but the earliest ditches (3666, 3701 and 3681) extend on a NW.-SE. orientation and are truncated by the Phase 4 garden, although a ditch (3452) on the west side of the garden may be the terminus of ditch 3666. The later cuts in the sequence, (ditches 3691, 3700 and 3702) appear to either terminate or turn to the south-west, where they were truncated by the Civil War ditch, and they could well belong

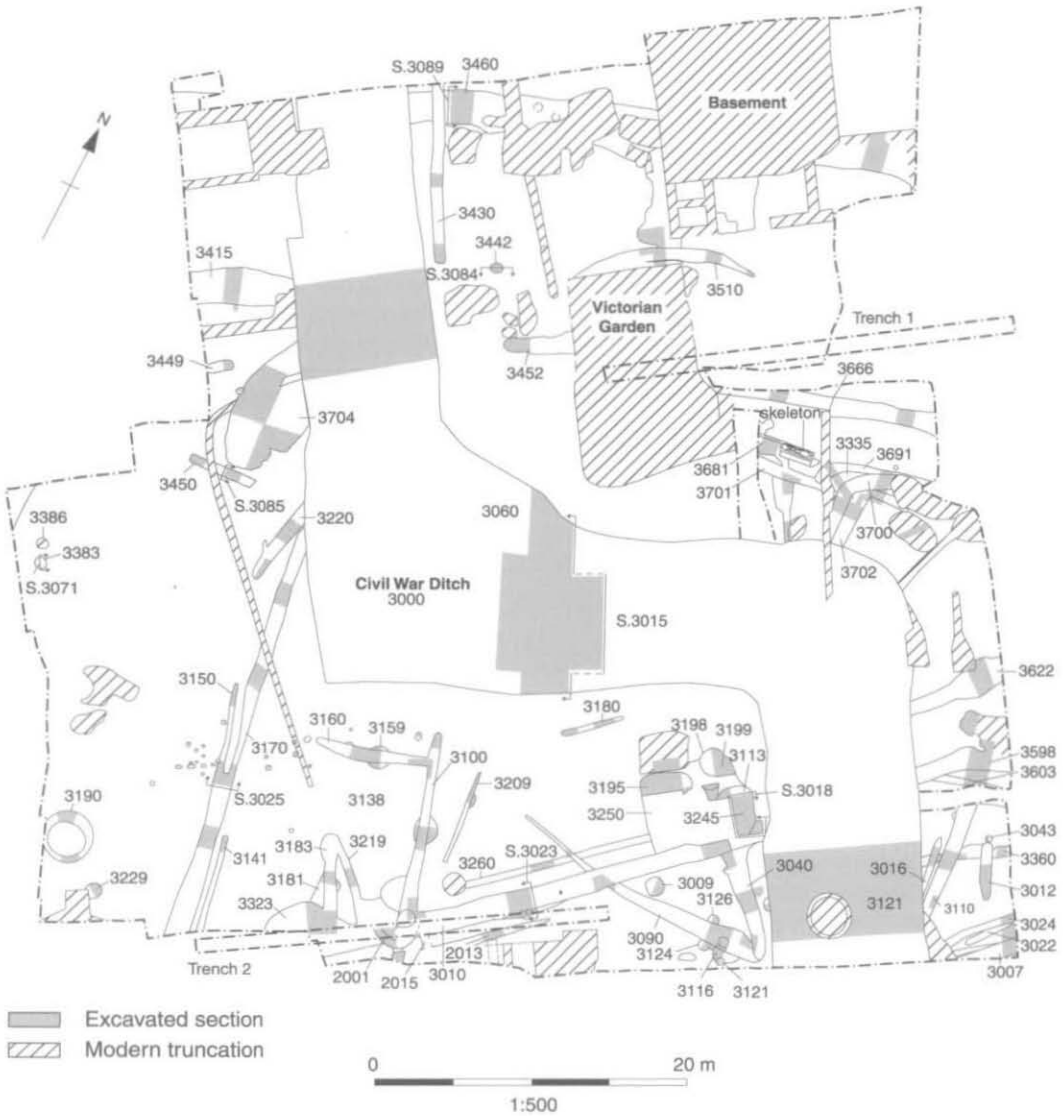


Fig. 3. Detailed plan of excavated features showing illustrated sections.

to Phase 3. Overall, however, the pottery assemblage from the fills of these ditches points to a 2nd-century date or later (Phase 2a).

A shallow ditch (3415) measuring 2.67 m. in width and approximately 0.46 m. in depth was situated in the northwest corner of the site, and produced pottery dating to the 2nd century or later; it could represent another element of this ditch arrangement, although only a short length was exposed between the Civil War ditch and the western edge of the site.

An anomalous element of the Phase 2a activity was the W.-E. ditch 3090, situated close to the southern edge of the site, which was cut by Phase 3 ditch 3010. Ditch 3090 at maximum was 1.3 m. in width and 0.3 m. in depth. Pottery from this feature was dated to the 2nd century. The remains of three ceramic discs were also recovered from this feature (Fig. 9). The ditch does not appear to relate to any others in the area. A number of pits (3103 – seen in section only, 3116, 3124 and 3126), also producing quantities of 2nd century pottery, were cut towards the southeast terminus of the ditch. These pits were

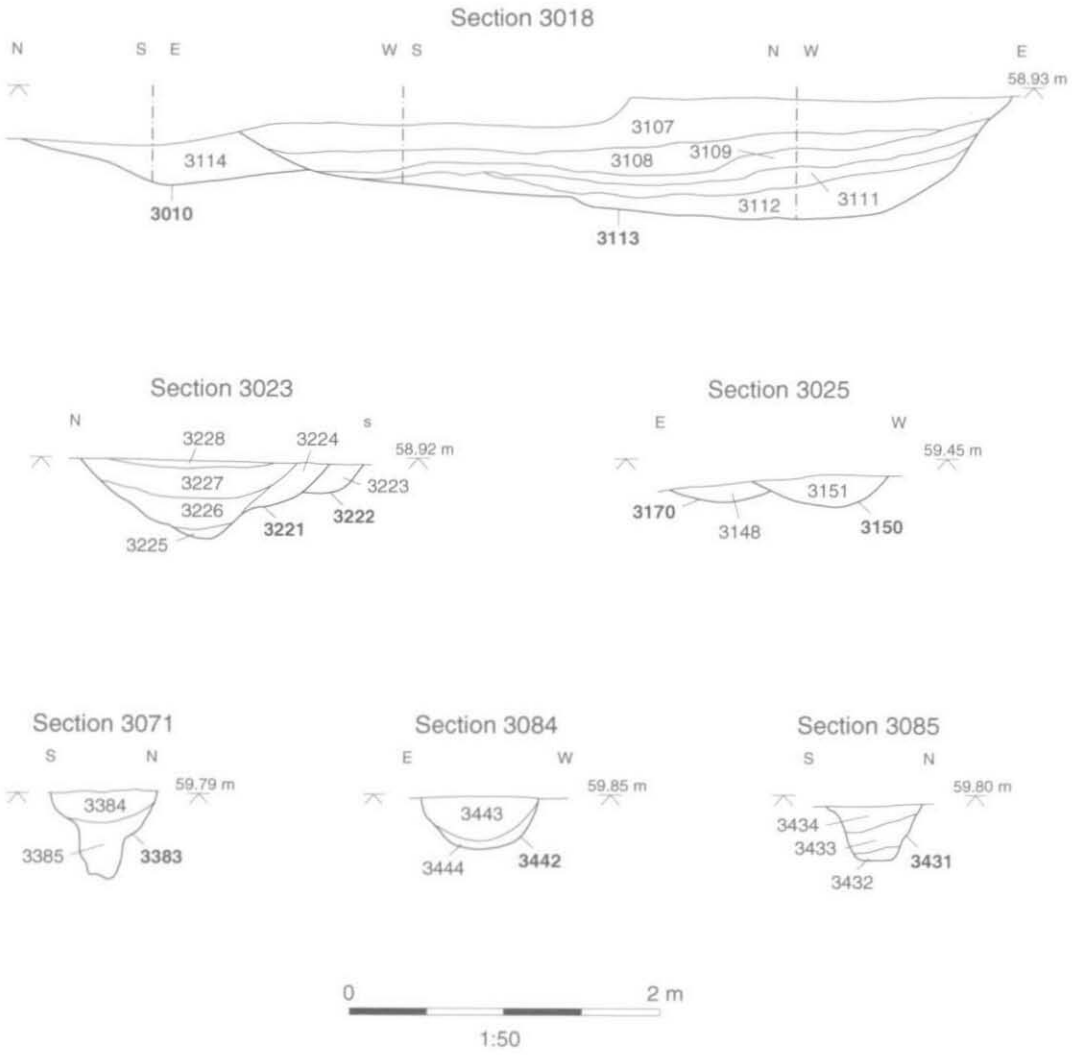


Fig. 4. Sections of selected features (Roman ditches and gullies 3010, 3221, 3170, 3150, and 3431; Roman pit 3113 and Neolithic pits 3383 and 3442).

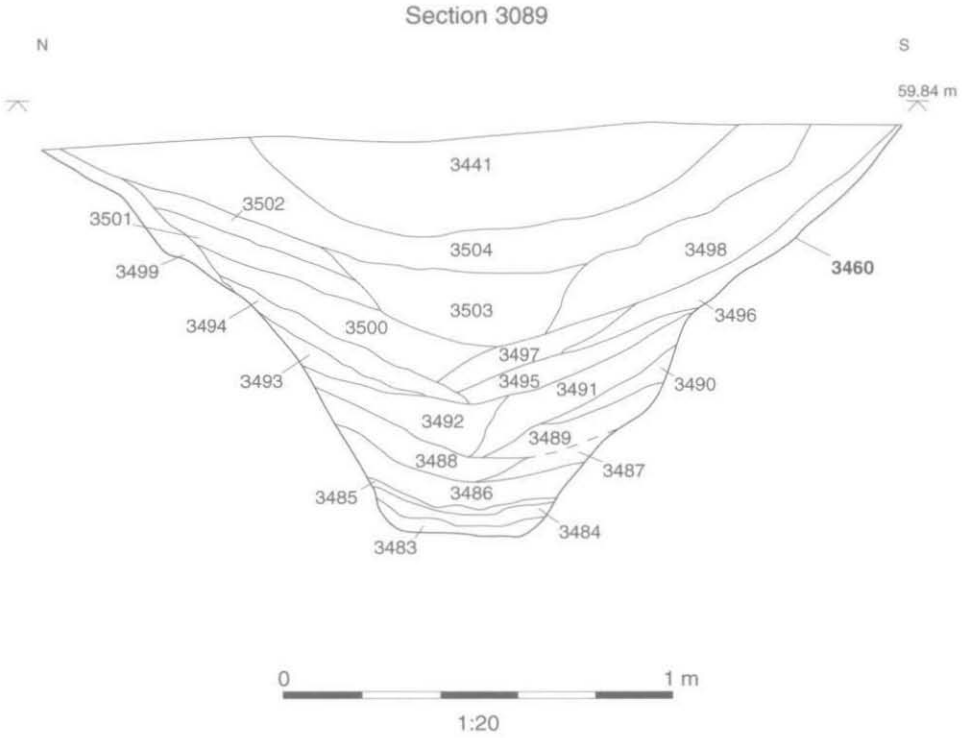


Fig. 5. Section through the prehistoric ditch 3460.

circular or sub-circular in plan measuring between 0.21 to 0.85 m. wide and were between 0.36 m. to 0.73 m. deep. They had rounded bases and steep or gently sloping sides. The pits were filled with yellow or brown silts and clays.

The converging *termini* of three N.-S. ditches (3181, 3183, and 3219) close to the southern edge of the site may also belong to Phase 2a, although none produced dating evidence.

Phase 3: 3rd-4th century

There appears to have been some rationalisation of the land division on the site in the 3rd century. The enclosure defined by ditches 3150, 3160 and 3100 went out of use and the focus of activity seems to have shifted towards the southern part of the site.

A new boundary is defined by the comparatively large NE.-SW. ditch 3010 (Fig. 4, section 3018). To the east of the Civil War ditch it was identified as ditch 3598. The width of the ditch varied from 1.20 m. to 2.26 m. and depth from 0.50 m. to 0.61 m., and there was evidence that 3010 was the third recut of the same feature (ctxs 3221, 3222 – Fig. 4, section 3023). Most of the pottery from the feature was dated to the 2nd and 3rd century. Ditch 3040 orientated approximately N.-S. was traced for 30 m. before it was cut by ditch 3010. It terminated close to the southern baulk near the terminus of ditch 3090.

To the north of gully 3012 were two ditches (3622 and 3603) broadly aligned SW.-NE., both producing 1st to 2nd century pottery, and both measuring approximately 1.25 m. in width and 0.5 m. in depth. Their alignment suggests that they belong with Phase 3 although residual finds came from their fills.

To the north and south of ditch 3010 were very shallow parallel gullies (2013 – identified in the evaluation, and 3260). Both averaged 0.40 m. in width and 0.15 m. in depth although only the lower

part of each survived later disturbance. Ditch 3260 was recorded as being cut by Phase 2a ditch 3090, and a single fragment of pottery dated to the 2nd century or later was recovered from the ditch fill, but, given its alignment with Phase 3 ditch 3010 there must be some doubt about its stratigraphic position in the sequence. Parallel to (and probably associated with) gully 3260 was a short gully (3180), situated a few metres to the north.

A number of pits, some discrete, others in intercutting groups, were identified either alongside ditch 3010, or cutting it, suggesting that eventually the ditch went out of use. A large group of five intercutting pits (3250: 3113, 3195, 3245, 3199 and 3198) were revealed just to the west of the Civil War ditch (e.g. Fig. 4, section 3018). They varied from 0.50 m. to 0.80 m. deep with fills of orange brown silty clay, and finds including animal bone, shell and from fill 3192 of cut 3195, a significant assemblage of mortaria. Although the sequence of pits was unclear, the artefactual dating suggests that the pit digging started in the late 2nd century, when ditch 3010 was in use.

Ditch 3010 was also cut, close to the southern baulk, by circular pits 2001 and 3323, which both contained pottery dating to the 4th century. The latter also contained the remains of an articulated sheep skeleton (3277, see Evans, below).

Little activity was evident in this phase in the northern part of the site. Cut into the northern edge of infilled Phase 2a ditch 3681, situated in the middle of the eastern side of the site, was a decapitated inhumation, supine and aligned along the ditch. The arms of the skeleton were crossed and the head had been removed and placed between the lower legs (Fig. 12, see Witkin, below). In place of the head at the eastern end was an ancillary vessel which was dated to the 4th century AD. The placing of this vessel is an unusual practice and is discussed further below.

A group of intercutting pits (3704) were identified close to the western baulk, all producing pottery from the 3rd to 4th century. None of the pits survived to a depth of more than 0.20 m. The fill (3412), of one of these pits (3411) was sampled, yielding significant quantities of charred grain. Immediately to the south of these pits, and possibly related, was a shallow gully (3450) on an E.-W. alignment (Fig. 4, section 3085). The east end of the ditch was heavily truncated and it may have originally extended further. From within a section of the gully the remains of a partially articulated cattle leg bone were recovered (see Evans below), along with 3rd- to 4th-century pottery.

Phase 4: Post-medieval – Civil War Defences

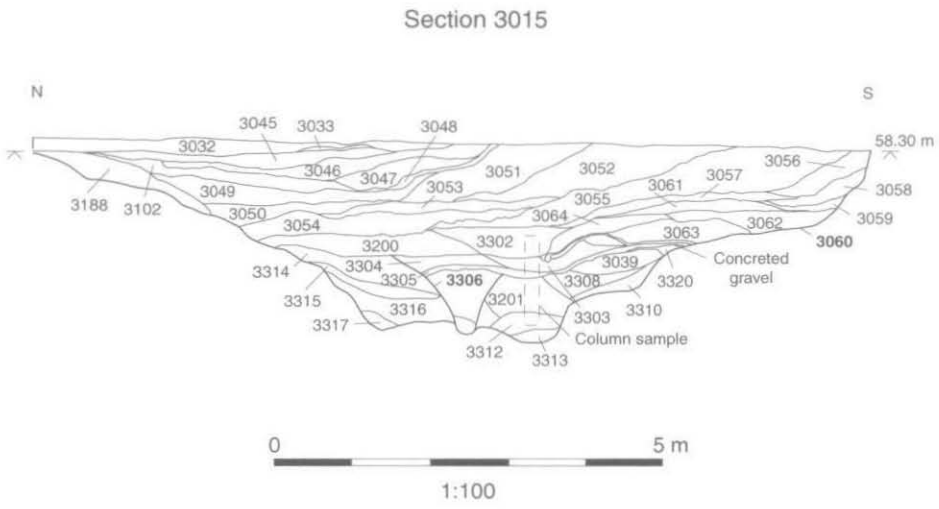
The principal feature of this phase is part of the Civil War outer defensive ditch (3000), which cut through the centre of the site from north to south. Four segments of the ditch were fully excavated, the clearest section being that across the short E./W. dog-leg (cut 3060 – Figs 3 and 6, section 3015). The dimensions of the ditch at this point were approximately 11 m. wide by 2.4 m. deep. The location of the ditch on the site appears to correspond with the outer line of defensive earthworks, as shown on Loggan's map of 1675, at a point of a short dog-leg in the ditch, defining at this point a small redan forming the angle between the projecting outer bastions. Evidence was found implying the original existence of a bank set to the south of the ditch, and the waterlogged plant remains from the lower ditch fills indicate that the ditch would have contained muddy water, at least before the base silted up (see Pelling, below).

The stratigraphy of the ditch fills appears to show an episodic process of infilling. Coupled with the (albeit meagre) finds evidence, a plausible sequence of four phases can be suggested to account for the stratigraphic and artefactual evidence (Fig. 6, section 3015).

Phase 1i: mid-17th century (clay pipe fragment – ctx 3316)

Although based on a single clay pipe fragment from fill 3316, the lower deposits could date from very soon after the ditch was completed, consisting of silty gravels, likely to be either water-borne deposits or erosion episodes from the sides of the ditch. The stratigraphy on either side of the Phase ii cut 3306 is quite distinct, suggesting that cut 3306 was made to remove a structure that was inserted along the bottom of the ditch when it was first excavated, and separated the north and south sides of the bottom of the ditch.

The structure could have been a pallisade (or pallisardo), an open wooden fence set at the bottom of a ditch which would delay attackers and allow them to be shot at from the ramparts. Similarly the ditch could have contained a row of 'storm poles' or angled sharpened stakes which would have fulfilled the same role.



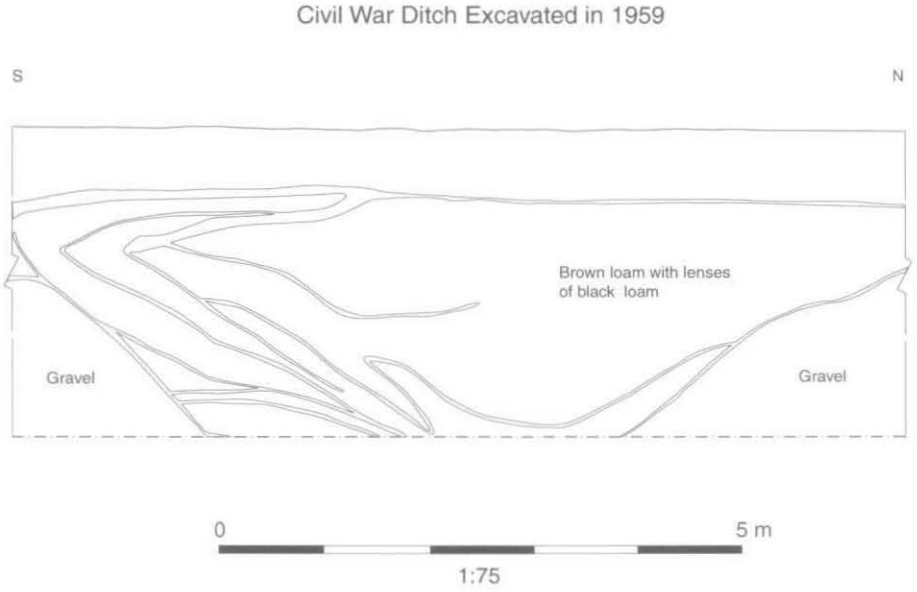


Fig. 6. (upper) Section through the Civil War ditch (3060) and (lower) section through the Civil War ditch excavated in 1959 (after May 1959).

Phase ii: mid-late 17th- early 18th century (clay pipe fragment – ctx 3303)

The structure is removed from the ditch and the base of the ditch infilled. Layer 3305 was a concreted layer of gravel, suggesting that it formed an exposed surface in the bottom of the ditch for some time prior to the deposition of subsequent material.

Phase iii: mid-18th century?

The bank material is used to infill the ditch. All of the layers are deposited from the north side of the ditch. Layer 3055, a greyish-blue clay, may be the natural Oxford Clay originally dug from the bottom of the ditch.

Phase iv: late 18th-19th century (pottery/clay pipe fragments/ bottle glass)

The remnant of the earthwork is levelled up by deposits from both north and south – possibly accruing through the action of ploughing. The greater quantity of finds could be the result of manuring, or suggest the growth of nearby occupation, and their date range indicates a greater proportion of residual material.

Very few artefacts were recovered from any of the excavated sections, and most came from within cut 3060. Objects recovered included a fragment of the base of a glass vessel with a stamp dating it to *c.* 1670 (ctx 3102, Fig. 10). Other recovered items included a wooden ball encompassed by a copper alloy band (ctx 3064), and a knife blade (ctx 3049) along with some pottery (only from the upper fills) and fragments of clay tobacco pipes (Fig. 11). A late erosion deposit, against the north side of the ditch (ctx 3189) contained a coin dated to 1819, in the reign of George III.

The only other feature assigned to this phase was gully 3430 which (in fill 3420) contained clay pipe securely dated to between 1690 and 1710. The ditch was on a north-south alignment terminating at the southern end 11.8 m. from the limit of the excavation area. The gully measured up to 0.84 m. in width and 0.28 m. in depth. At excavations at Mansfield College to the south-west of the site a shallow gully (ctx 422) possibly contemporary with the Civil War ditch was revealed on the same alignment to the east of the ditch.

Phase v: 19th century to present

The majority of the features dated to this phase were found in the northern part of the excavation area. The features principally consist of the remains of the basements of houses built in the 19th century, and areas of garden and garden features such as wells. Specific areas of severe truncation of earlier features were apparent, probably caused by deep cultivation beds.

Unphased features

At the very north of the site three postholes (3426, 3428 and 3423 – not illustrated) were identified cutting through the top fills of prehistoric ditch 3460. The postholes were similar in size between 0.45 m. and 0.61 m. in width and 0.15 m. and 0.24 m. in depth. As no finds were recovered from the features the postholes remain unphased, and they could equally well belong to any period after Phase 1.

FINDS

FLINT by Hugo Lamdin-Whymark

A total of 303 flints were recovered from the site. The majority of the assemblage came from the fills of two mid-late Neolithic pits: context 3384 (fill of pit 3383) contained 13 flints and context 3443 (fill of pit 3442) contained 262 flints. The remaining material (28 flints) came from numerous contexts across the site (Table 1). No pottery was recovered from either of the mid-late Neolithic pits, so dating is based on the presence of diagnostic flint artefacts and technological traits. The assemblages are described by feature below.

Pit 3383

Thirteen flints came from this pit (fill 3384); the majority of the flints were flakes but two blades, a blade-like flake and two chips were also recovered. Two serrated flakes were recovered; one was burnt

and fragmentary, but still exhibited gloss on the ventral surface, on the reverse of the teeth. The second serrated flake bore irregular teeth along a convex edge. Serrated flakes assist little with dating as they are found commonly in assemblages from the Mesolithic to early Bronze Age. However in association with relatively carefully struck flake material, a middle or late Neolithic date would be appropriate.

Pit 3442

A total of 262 flints were recovered from the single fill of pit 3442 (fill 3443), this total includes 145 flint chips (flakes <10 mm^2.) found during hand excavation and the total sieving of the deposit. The raw material utilised was a dark brown flint with a thick (3-10 mm.), unabraded chalky cortex; occasional grey flint was also present. This raw material was probably collected from an area directly on the chalk, the closest sources being the Chilterns to the east and the Berkshire downs to the south. The majority of the flint derives from a single nodule (including the cores, numerous flakes, the scraper and many of the chips), although it is apparent that several flakes not related to this nodule are also present (see below). The condition of the flint is exceptionally fresh, often leaving the finest chips adhering to the fissures and therefore this assemblage must have been deposited in the feature soon after knapping and use. The majority of the flint is uncorticated, but the occasional piece exhibits a light white cortication.

Flakes form the majority of the assemblage from this pit; a few blades and blade-like flakes are present, but do not represent the intended knapping product. The flakes produced are relatively large and broad, and many of the cortical and partly cortical trimming flakes are also quite thick. The flakes have been removed relatively precisely using both soft and hard hammer percussors, although the latter was most common. Simple platforms, and platforms with two or three removals predominate. Platform edge abrasion was present on some of the flints, but was not commonly used. Three flakes rejuvenating the core's face or platform edge were identified. A single axe-thinning flake was present, which is grey and of a different raw material than the majority of the assemblage. It has been very heavily utilised, and at 77 mm. long it is the largest piece in the assemblage. This flake represents a favoured tool rather than evidence for axe production.

Two flake cores were recovered both originating from the same nodule judging from the cortex. One multi-platform core, exhibiting heavily crushed edges, was probably exhausted although it still weighed 45 g. The second core is based on a partly cortical trimming flake, from which small flakes have been removed from three angles before deposition, this core weighs 28 g. and is burnt.

Eight retouched flints were recovered comprising an end scraper, a chisel arrowhead and six simple edge retouched flakes exhibiting slight retouch along one or more sides. The end scraper is manufactured on a broad side trimming flake and exhibits relatively crude abrupt distal retouch. The chisel arrowhead is comparable in form to Green's type D[10], but the protruding edge is broken; the blank for the arrowhead is a levallois flake. There is some evidence that the arrowhead is unfinished or represents a crude form, as one edge is snapped with no additional retouch, and the 'blade' edge exhibits no edge damage, despite being relatively thin.

A large proportion of the flint is burnt grey and crazed. These pieces account for 12% of the assemblage (14 flints), excluding chips; a few chips are burnt and broken fragments of larger pieces although the majority are genuine chips. The proportion of breakage is not particularly high at 25.6% (30 flints) excluding chips, reflecting the fresh condition of the flintwork and absence of post-depositional edge damage and breakage. Evidence of deliberate breakage was present on two conjoining fragments of a very heavily utilised blade that was struck into two pieces from a blow to the ventral surface. In addition, two chips represent wedge-shaped medial fragments of flakes created by a blow to the centre of the flake.

A large number of the flints (*c.* 30) appeared to have been utilised, judging by a visual inspection. However, on nine flints the use damage is overtly apparent, resulting from very heavy or prolonged usage. One large burnt flake (conjoining from two broken fragments) exhibited a rounded edge.

[10] H. S. Green, *Flint Arrowheads of the British Isles: a detailed study of material from England and Wales with comparanda from Scotland and Ireland, Part 1* (BAR Brit. Ser. 75(1), 1980), 101.

TABLE 1. FLINT ASSEMBALGE BY CATEGORY AND KEY FEATURES

CATEGORY	Pit fill 3384	Pit fill 3443	Remaining assemblage	Grand Total
Flake	6	93	15	114
Blade	2	3	2	7
Bladelet		1		1
Blade-like	1	4	2	7
Irregular waste		2		2
Chip	2	13		15
Sieved Chips 10-4 mm		132	6	138
Rejuvenation flake core face/edge		3		3
Thinning flake		1		1
Multiplatform flake core		1		1
Levallois/ other discoidal flake core			1	1
Core on a flake		1		1
Chisel arrowhead		1		1
End scraper		1		1
End and side scraper			1	1
Serrated flake	2			2
Retouched flake		6	2	8
Grand Total	**13**	**262**	**29**	**304**
Burnt unworked flint + burnt stone (g.)	-	2 + 70	66	68
No. Burnt (%) exc. Chips	4 (36.4)	14 (12)	1 (4.4)	19 (12.6)
No. Broken (%) exc. Chips	4 (36.4)	30 (25.6)	4 (17.4)	38 (25.3)
No of retouched (%) exc. Chips	2(18.2)	8 (6.8)	3 (13)	13 (8.6)

Refitting

A total of 18 flints were refitted into seven separate knapping sequences, the longest comprising five flakes. In addition, a spall from burning was conjoined to the core on a flake; two fragments of a flake broken by burning were reunited and a deliberately broken flake was conjoined (see above). All the flints in the refitting sequences appear to derive from the same chalk flint nodule; numerous other flints in the pit also appear to belong to this nodule but do not refit, including the end scraper and the majority of the chips. This indicates that the majority of flint in the assemblage derives from a reduction of a single core. All phases of reduction from core preparation to abandonment are present, although entirely cortical flakes are a little under represented, perhaps indicating some initial preparation elsewhere. Refits were made between partly cortical and cortical trimming flakes, and a single flake was refitted to each core. It is noteworthy that between the cores and cortical flakes refits could not be made. Indeed, non-cortical flakes are under-represented in the assemblage, indicating that these pieces were not deposited and presumably removed from the assemblage for use elsewhere. However, the flint in the pit should not be considered as waste material as many pieces within the refitting sequences exhibit use-wear. The flints deposited here may reflect the selection of material appropriate for the tasks undertaken prior to the creation of this deposit. More specifically, the use damage present on a number of the flakes is very heavy, so smaller, thinner non-cortical flakes may not have been appropriate for this degree of use.

The presence of an unburned flake refitting to the burnt core on a flake indicates that the burning occurred at some point after the removal of the flake. The deposition of these pieces together, alongside other burnt and unburned flints from the same nodule, shows that the burning happened in the short time period between knapping and deposition.

Remaining assemblage

The remaining 29 flints were recovered from 17 contexts spread across the site. The condition of the flints is variable; several exhibit some post-depositional edge damage and are clearly residual. The assemblage included a number of flakes and a couple of blades, and is comparable to the flintwork from

the pits. A small discoidal core was recovered from context 3286 (Sf 132); this reduction strategy is commonly associated with later Neolithic industries. Retouched artefacts comprise two flakes with slight edge retouch and an end and side scraper. The end and side scraper from context 3325, exhibits two phases of use. The first phase was abruptly retouched on a thick flake and was utilised causing clustered step fractures on the edge. The artefact developed a light bluish-white cortication, before it was re-worked, with new (uncorticated) abrupt retouch around the majority of its edges.

Conclusions

The technological traits of the flints from pit 3442 indicate that the industry was aimed at the production of flakes rather than blades. However, where appropriate, care was taken, in the form of platform edge abrasion and rejuvenation, to ensure accurate removals. For dating, the technological traits have to be considered carefully as much of the flint originates from a single knapping event, and so will reflect the techniques and skill of an individual (perhaps producing flints for a specific task), rather than the traits of the industry as a whole. As such, the technological traits, and association with a chisel arrowhead, indicate a mid to late Neolithic date for the assemblage.

As discussed above the pit contained a significant number of flints from the reduction of a single nodule, but it was noticeable that non-cortical flakes were under represented. A few flints from other cores were also present in the pit, including a well-used axe-thinning flake. Indeed, it was noted that many flints were utilised, often heavily. The fire that burnt the flint must have been alight after the flints were knapped as one of the cores with refits was burnt. Equally deposition must have followed closely because the knapping debris, burnt and utilised pieces to remain together. Indeed it possibly relates to a single task, or group of related tasks, that required fire and created heavy use damage.

The remaining flintwork dates from the mid to late Neolithic on the basis of technological traits and the presence of a chisel arrowhead. The two pits and background spread attest mid to late Neolithic activity. A third Neolithic pit, containing a small flint assemblage, was discovered c. 40 m. to the south-west of the site, on the Mansfield College site.[11] The assemblage was similar to that from pit 3383 and included a serrated flake, amongst other retouched artefacts. Differences in the deposition of artefacts within the pits was noted and some broad trends are apparent. Flint is the only artefact category present in pit 3383 and the pit on the Mansfield College site, and represents the largest artefact category from pit 3442, where a little fired clay, burnt animal bone and stone and some charred hazelnut shells, were also recovered. It is notable that pottery is absent from all three pits. These are common patterns in Neolithic pit deposits and have been observed on relatively local sites such as Barrow Hills, Radley, Spring Gardens Municipal Cemetery and Barton Court Farm, Abingdon.[12] The pit on the Mansfield College site and pit 3383 both contain small flint assemblages, but significantly include well-utilised flints including retouched tools. Pit 3442 also contains a relatively high number of retouched artefacts, including a crude, possibly unfinished and probably unused, chisel arrowhead. It is therefore possible that the arrowhead may have been made especially for deposition in the pit.

The identification and reconstruction of a distinct sequence of events prior to deposition of material in pit 3442, provides a rare insight into the activities that created pit deposits. Although it is possible to establish a sequence of knapping, heavy use and burning of various materials, probably immediately before deposition, the conclusions fall somewhat short of the identification of actual tasks performed or reasons for deposition in this manner.

[11] Booth and Hayden, op. cit. note 8, 293.

[12] A. Barclay and C. Halpin, *Excavations at Barrow Hills, Radley, Oxfordshire. Volume 1 The Neolithic and Bronze Age Monument Complex* (Thames Valley Landscapes, 11, 1999); Z. Kamash, T. G. Allen and J. Hiller, *A Grave Situation: The Excavation and Salvage of a Neolithic to Saxon period Site at Spring Gardens Municipal Cemetery, Abingdon* (forthcoming); D. Miles (ed.), *Archaeology at Barton Court Farm, Abingdon, Oxon* (CBA Res. Rep. 50, Oxford Archaeol. Unit Rep. 3, 1986).

PREHISTORIC POTTERY by ALISTAIR BARCLAY

Context 3503 contained two small sherds weighing 3 g. of probable later Neolithic pottery. The two sherds are similar in appearance and may derive from the same vessel. Their fabric is tempered with a mixture of large grog, flint, quartzite, quartz and ironstone and other rock fragments. One sherd appears either to have a cordon or be part of a stepped shoulder. Although both sherds are plain, given their size, they could still derive from a decorated vessel. Within the context of the Upper Thames Valley, their fabric would be consistent with the Peterborough style of the middle Neolithic (3500-2800 cal BC).

ROMAN POTTERY by EDWARD BIDDULPH

Introduction

A total of 1361 sherds, weighing some 18.5 kg., were recovered. The assemblage spanned the 2nd to 4th centuries AD; there was nothing that could specifically be dated earlier, though some pottery would not be out of place within the late 1st century. The second half of the 2nd century is well represented, though the bulk of the assemblage belongs to the late Roman period. The pottery is generally in good condition. Surface preservation is variable, but sherds are consistently large. The assemblage can be directly compared with that from the neighbouring Mansfield College.[13] Both derive from the same settlement, but chronological differences are apparent. How these contribute to a greater understanding of ceramic supply and site development will be examined.

Methodology

The pottery has been recorded using the standard OA system for Iron Age and Roman sites. It was sorted into fabric groups (see below) based on surface appearance and major inclusion types. Where possible, fabrics have been referenced to the National Roman Fabric Reference Collection and Young's Oxfordshire series, where fuller descriptions are given.[14] The pottery was quantified by sherd count and weight. Vessel types were identified from rims, which were quantified by vessel count and estimated vessel rim-equivalents (RE).

Fabrics

S30. (**LEZ SA 2**). Lezoux Central Gaulish samian ware
S40. East Gaulish samian ware
F51. (**OXF RS**). Oxfordshire red/brown colour-coated ware
F60. Unsourced red colour-coated wares
M22. (**OXF WH**). Oxfordshire white ware mortarium fabric
M41. (**OXF RS**). Oxfordshire red/brown colour-coated mortarium fabric
W10. General fine white wares
W11. (**OXF PA**). Oxfordshire parchment ware
W12. (**OXF WH**). Oxfordshire fine white ware
W20. General sandy white wares
W22. Oxfordshire sandy white ware[15]
W23. Oxfordshire burnt white ware[16]
O10. General fine sand oxidised wares
O20. General coarse sand oxidised wares

[13] Booth, op. cit. note 9, 307–17.
[14] R. Tomber, and J. Dore, *The National Roman Fabric Reference Collection: a Handbook* (MoLAS monograph 2, 1998); C. J. Young, *The Roman pottery industry of the Oxford region* (BAR Brit Ser 43, 1977).
[15] cf Young, op. cit. note 14, 93 fabric 2.
[16] cf ibid., 113.

O37. Fine sand oxidised ware, occasional iron and grog inclusions, soft fabric and smooth or burnished surfaces; equivalent to R37[17]
O80. Very coarse oxidised fabric, usually grog-tempered
O81. (**PNK GT**). Pink grogged ware
R10. General fine sand grey wares
R20. General coarse sand grey wares
R21. Oxfordshire coarse sandy fabric[18]
R30. General fine/medium sand grey wares
R37. Fine sand grey ware, occasional iron and grog inclusions, light grey core and smooth or burnished surfaces[19]
R38. As R37, but with coarser grog inclusions[20]
R50. Sandy black-surfaced wares[21]
R90. Very coarse reduced fabric, usually grog-tempered[22] R95 (SAV GT). Savernake ware
B11 (**DOR BB 1**). Standard Dorset black-burnished ware 1
B30. Wheel-thrown black-burnished-type wares
C10. General shell-tempered wares
C11. Late Roman shell-tempered ware

As at Mansfield College, wares imported from the continent are present in small quantities. Unlike the Mansfield College assemblage, these exclusively comprise Central and East Gaulish samian fabrics; no amphora wares or South Gaulish products are represented. This largely reflects the differing chronological emphases at the two sites. No South Gaulish imports can be expected at the Chemistry Research Laboratory site where no certain later 1st- or early 2nd-century occupation is attested. By the same token, no East Gaulish products were recovered from Mansfield College, illustrating the late 2nd- to mid 3rd-century lacuna at that site.[23] In total fine and specialist wares form a proportion of 29% by RE at the Chemistry Research Laboratory site. This is appreciably lower than the 44% at Mansfield College. Oxfordshire red colour-coated ware (F51) appears to provide the biggest difference: 7% at the Chemistry Research Laboratory site, as against 19% at the neighbouring site. However, closer scrutiny of the quantification[24] reveals that the proportions of fine and specialist wares at both sites are not actually significantly different; both sherd counts and weights are reasonably similar, and the differences in rim-equivalents merely reflects the slightly greater preponderance of rims at Mansfield College. As expected Oxfordshire products dominate this category. The colour-coated fabric is joined by the standard range of white wares, including mortarium fabric (M22), parchment ware (W11) and burnt white ware (W23). Sherds assigned to general fabric groups (F60, W10 and W20) are also likely to derive from local sources.

Among oxidised wares, the fine fabric (O10) dominated in all measures. Although a general grouping, sherds assigned to the fabric consistently displayed a fine, well-sorted matrix characteristic of Oxfordshire products.[25] Some sherds were possibly once colour-coated, but now minus a slip these cannot be isolated with certainty. As at Mansfield College, pink grogged ware from Buckinghamshire (O81) was present. Unlike at that site, no rims were found and the fabric forms a lower proportion of the assemblage on the basis of all measures. If significant, the reason for such a difference cannot readily be explained. The reason ought not to be chronological. Storage jars, of which the sherds here

17 cf P. Booth, *Asthall, Oxfordshire: Excavations in a Roman 'small town'* (Thames Valley Landscapes, 9, 1997), 115–9.
18 cf Young, op. cit. note 14, 202, fabric 2.
19 cf Booth, op. cit. note 17, 115–9.
20 Ibid. 115–9.
21 cf Young op. cit. note 14, 203, fabric 5.
22 cf Young, op. cit. note 14, 202, fabric 1.
23 Booth, op. cit. note 9, 311.
24 Ibid., table 1.
25 Tomber and Dore, op. cit. note 14, 176.

form part, tend to be of later 3rd-4th -century in date.[26] Similarly, the comparatively high proportions of presumably locally-made coarse 'storage jar' fabrics (O80 and R90) at the Chemistry Research Laboratory site seem to rule out functional differences between the two sites, and instead may simply be due to accidents of recovery or identification.

TABLE 2. QUANTIFICATION OF ROMAN WARES

Ware	Sherds	% sherds	Wt (g)	% wt	MV	% MV	RE	% RE
S30	9	0.7	44	0.2	3	2.3	0.18	1.0
S40	6	0.4	162	0.9	–		–	–
F51	71	5.2	840	4.5	13	9.9	0.98	5.6
F60	3	0.3	13	0.0	–		–	–
M22	49	3.6	2924	15.8	18	13.7	1.92	11.0
M41	6	0.4	220	1.2	–		–	–
W10	1	0.1	8	0.0	–		–	–
W11	32	2.3	312	1.7	4	3.1	1.27	7.3
W12	9	0.7	146	0.8	–		–	–
W20	16	1.2	304	1.6	–		–	–
W22	2	0.1	56	0.3	–		–	–
W23	27	2.0	460	2.5	3	2.3	0.7	4.0
O10	49	3.6	744	4.0	7	5.3	1.38	7.9
O20	12	0.9	70	0.4	–		–	–
O37	5	0.4	112	0.6	–		–	–
O80	22	1.7	582	3.1	–		–	–
O81	6	0.4	204	1.1	–		–	–
R10	37	2.7	268	1.4	7	5.3	1.28	7.3
R20	83	6.1	728	3.9	8	6.1	2.29	13.1
R21	54	4.0	616	3.3	1	0.8	0.18	1.0
R30	280	20.6	2691	14.5	26	19.8	2.52	14.5
R37	129	9.5	2154	11.6	13	9.9	2.23	12.8
R38	1	0.1	14	0.1	–		–	–
R50	39	2.9	462	2.5	4	3.1	0.47	2.7
R90	52	3.8	1516	8.2	3	2.3	0.4	2.3
R95	2	0.1	20	0.1	–		–	–
B11	42	3.0	343	1.9	7	5.3	0.66	3.8
B30	15	1.1	126	0.7	3	2.3	0.19	1.1
C10	241	17.7	1350	7.3	6	4.6	0.36	2.1
C11	61	4.5	1022	5.5	5	3.8	0.42	2.4
TOTAL	1361	–	18511	–	21	–	1.63	–

[26] P. M. Booth and S. Green, 'The Nature and Distribution of certain Pink, Grog tempered Vessels', *J. Roman Pottery Studies*, 2 (1989), 82.

The bulk of the assemblage comprises reduced (R) wares. These are largely of local origin. Medium/fine fabrics (eg R30 and R37) dominate this category. Production of the latter was centred northwest of Oxford at Cassington, among other possible sites.[27] The evidence particularly from the Chemistry Research Laboratory site suggests that the manufacturers of R37 successfully competed with more local suppliers of coarse wares, taking between 10-13% of the entire assemblage depending on measure used. As is usual on Oxfordshire sites, coarse sand grey wares (R20) and black surfaced wares (R50) were supplied in smaller amounts than medium/fine grained wares (R30). Black-burnished (B) wares, particularly Dorset BB1 (fabric B11) which arrived from the mid 2nd century, found a small, but regular, market. Shell-tempered wares (C10 and C11) are present in roughly similar quantities at both Chemistry Research Laboratory and Mansfield College sites, though the smaller number of rims present at the former have undoubtedly exaggerated the differences between amounts of the late fabric (C11) at the two sites. Without good dating evidence undiagnostic body sherds have been assigned to the general fabric group by default.

Vessels

TABLE 3. QUANTIFICATION OF VESSEL CLASS

	Vessel class								
Ware	**B**	**C**	**D**	**E**	**F**	**H**	**J**	**K**	**Total (RE)**
S30					0.1	0.08			**0.18**
F51	0.01	0.15	0.06	0.1		0.63	0.03		0.98
M22								1.92	**1.92**
W11		1.1				0.17			**1.27**
W23		0.5				0.2			**0.7**
O10		0.7		0.17		0.51			**1.38**
R10		0.26		0.72		0.3			**1.28**
R20		2.17				0.12			**2.29**
R21		0.18							**0.18**
R30		1.96		0.37		0.19			**2.52**
R37		0.8				1.18	0.25		**2.23**
R50		0.22		0.25					**0.47**
R90		0.4							**0.4**
B11		0.35					0.31		**0.66**
B30		0.05					0.14		**0.19**
C10		0.36							**0.36**
C11		0.42							**0.42**
Total (RE)	**0.01**	**9.62**	**0.06**	**1.61**	**0.1**	**3.38**	**0.73**	**1.92**	**17.43**
%	**0.1**	**55.2**	**0.3**	**9.2**	**0.6**	**19.4**	**4.2**	**11.0**	

[27] Booth, op. cit. note 17, 133.

While a comparison of the range of fabrics at the Chemistry Research Laboratory and Mansfield College sites reveals some differences, a survey of vessel classes reveals a much closer match. At both sites, jars (C) were the commonest class by rim-equivalent (RE), followed by bowls (H), mortaria (K), beakers (E) and dishes (J). The order of the remaining classes diverges slightly (indeterminate jars/bowls (D), cups (F) and flagons (B)), though it is perhaps sufficient to note that these are poorly represented at both sites.

A quarter of all jars were necked.[28] These were available throughout the period of occupation in grey wares, particularly fabrics R30 and R37. Jars were present in other fabrics. Oxfordshire parchment ware (W11) contributed a small globular necked vessel, a standard product of the industry.[29] The usual jars in burnt white ware (W23) are also represented.[30] Cooking pot types (CK) were characteristically associated with black-burnished ware 1 (B11) and shell-tempered wares (C10/11). Such jars with wide everted rims in fabric B11 are typically late Roman. That this ware arrived during the 2nd century is attested in part by a single example of a small, beaker-like jar.[31]

As at the Mansfield College site, many bowls occurred in Oxfordshire colour-coated ware. The majority were deep or hemispherical bowls copying samian forms.[32] Type O44, a late Roman copy of samian form 36, was produced in oxidised ware (O10). The somewhat earlier dated prototype was also present along with an example of form 31; both were manufactured in Central Gaul. Grey ware bowls almost exclusively comprised the jar-like Young R38 types. More unusual is a straight-sided bowl in burnt white ware. The repertoire of forms produced in this fabric is not fully appreciated, and this bowl is a useful addition to the standard jar forms. Oxfordshire colour-coated mortaria are attested mainly by body sherds, though a collar fragment hints at the presence of a C97 type. Much more prolific are type M22 mortaria in Oxfordshire white ware. These date from the mid 3rd century. The site undoubtedly received mortaria in this fabric during the 2nd century, however, as the presence of types M2 and M6 suggests.

Few beakers could be assigned to specific types. Oxfordshire colour-coated beakers are present, but only bases were recovered. Grey ware beakers included globular and poppy-headed types.[33] With the exception of a single 2nd-century example in fabric R90, all dishes dated to the 3rd and 4th centuries, including samian form 79R from East Gaul. Other dishes mainly occurred in fabrics B11 and R30 and consisted largely of 4th-century flanged or plain-rimmed types. Flagons and cups were scarce, as they were at the Mansfield College site. The former is represented by colour-coated type C8, and the latter by samian form 33 from Central Gaul.

Chronology and ceramic supply

Although a few groups could be dated reasonably closely to within 50 years, the majority were dated more broadly. To reveal meaningful trends in ceramic supply and for the purpose of comparison, the bulk of the pottery has been divided into two phases analogous to those used for the Mansfield College site. The differing chronological emphases at the two sites mean that those phases are not entirely applicable here. Instead, a slightly amended scheme is perhaps more appropriate and is offered in Table 4.

TABLE 4. CERAMIC PHASES

Ceramic Phase	Date range
Phase 2	Late 1st and early 2nd centuries
Phase 2a	Mid 2nd and mid 3rd centuries
Phase 3	Late 3rd and 4th centuries

[28] Young, op. cit. note 14, type R24.
[29] Ibid., type P9, 86.
[30] Young, op. cit. note 14, BW1 and BW2.
[31] J P. Gillam, 'Coarse fumed Ware in north Britain and beyond', *Glasgow Archaeol. J.* 4 (1976), 57–80, figure 2.21.
[32] e.g. Young, op. cit. note 14, types C45 and C51.
[33] Young, op. cit. note 14, types R31 and R34.

TABLE 5. ROMAN WARES BY CERAMIC PHASE

	Phase 2a				Phase 3			
Ware	**Sherds**	**% Sherds**	**RE**	**% RE**	**Sherds**	**% Sherds**	**RE**	**% RE**
S30	8	2.3	0.13	3.0	1	0.2	0.05	0.6
S40	–	–	–	–	3	0.5	–	–
F51	1	0.3	–	–	70	11.5	0.98	12.5
F60	1	0.3	–	–	2	0.3	–	–
M22	5	1.4	0.42	9.6	42	6.9	1.5	19.1
M41	–	–	–	–	6	1.0	–	–
W10	–	–	–	–	1	0.2	–	–
W11	–	–	–	–	32	5.3	1.27	16.2
W12	–	–	–	–	9	1.5	–	–
W20	–	–	–	–	8	1.3	–	–
W22	1	0.3	–	–	1	0.2	–	–
W23	–	–	–	–	27	4.4	0.7	8.9
O10	6	1.7	0.51	11.7	25	4.1	0.35	4.5
O20	6	1.7	–	–	1	0.2	–	–
O37	–	–	–	–	5	0.8	–	–
O80	3	0.9	–	–	12	2.0	–	–
O81	–	–	–	–	6	1.0	–	–
R10	4	1.1	0.35	8.0	13	2.1	0.27	3.4
R20	7	2.0	0.15	3.4	32	5.3	0.14	1.8
R21	4	1.1	–	–	5	0.8	–	–
R30	79	22.4	0.88	20.1	109	17.9	0.51	6.5
R37	51	14.5	1.58	36.2	65	10.7	0.5	6.4
R38	–	–	–	–	1	0.2	–	–
R50	–	–	–	–	22	3.6	0.41	5.2
R90	–	–	–	–	22	3.6	0.16	2.0
R95	2	0.6	–	–	–	–	–	–
B11	16	4.5	0.2	4.6	12	2.0	0.46	5.9
B30	3	0.9	–	–	8	1.3	0.14	1.8
C10	146	41.5	0.15	3.4	16	2.6	–	–
C11	9	2.6	–	–	52	8.6	0.42	5.3
Total	**352**		**4.37**		**608**		**7.86**	

Ceramic Phase 2 is not definitely represented. A few groups might date to the late 1st century, but could equally date to the later 2nd century. Crucially, Phase 2 occupation is attested at the Mansfield College site. Occupation at the Chemistry Research Laboratory site certainly began by the mid 2nd century (Phase 2a), but interestingly no contemporaneous groups are known from Mansfield College. Assuming both sites to form part of the same settlement, this suggests a shift in the focus of occupation. The settlement received a good range of pottery at this time (see Table 5). Some of this began to arrive by the end of Phase 2, including black-burnished (B) wares and Oxfordshire white ware mortaria (M22),

both of which increased their proportions in Phase 2a. Other white (W) wares are largely absent, as they were during Phase 2, suggesting that their appearance is mainly a late Roman phenomenon, coinciding with the expansion of the Oxfordshire industry. This contrasts with other settlements, including Asthall and Wantage, where white wares are evident during the early Roman period.[34]

Measured by rim-equivalent (RE), reduced wares remain the dominant ware group in Phase 2a. However, there is an obvious decrease in the quantity of Oxfordshire coarse sandy fabric (R21), seemingly confirming 1st century-production of the ware.[35] Its Phase 2a appearance might well be residual. There is a clear discrepancy between sherd count and RE for shell-tempered ware (C10); the sherd count total suggests that the fabric was predominant in Phase 2a. The lack of comparative material makes as assessment of these measures difficult. Considering the inherent biases in sherd count, the proportion given by RE is likely to be more realistic, although it should be noted that C10 enjoys a relatively high average sherd weight of 16 g., suggesting that sherd count has not been unduly biased by very small fragments.

The level of occupation at the Chemistry Research Laboratory site increased during the late Roman period. Sixty-three per cent of phased pottery is assigned to Ceramic Phase 3. This can be compared with the Mansfield College assemblage where 83% of pottery was dated to the Phase.[36] A greater range of wares is introduced during this phase, for which the Oxfordshire industry was principally responsible. Colour-coated products (fabric F51) were arriving from *c* AD 240 (the single sherd in Phase 2a is almost certainly intrusive), as were parchment and burnt white wares (fabrics W11 and W23 respectively). White ware mortarium fabric (M22) increased in quantity, matching the proportion shown at the Mansfield College site. Closer dating of Phase 3 contexts is onerous. However, large groups containing a number of vessels in most or all of these fabrics remain the best candidates for 4th-century deposition. These include context 3107, fill of pit 3113, and the upper fills of pit 3323. Certain forms are also chronologically useful. Vessels that on balance tend to carry a 4th-century date are present, for example flanged bowl C51, but examples are generally few and scrappy. It is perhaps instructive that colour-coated mortarium C97 is present, but type C100, which tends to follow C97 chronologically, is absent. While as much as 88% of the Phase 3 assemblage by RE dates or may conceivably date to the 4th century, evidence for a 4th century emphasis is admittedly not as strong as it is for the Mansfield College pottery.

The increase in fine and specialist Oxfordshire products is met by a decrease in principal grey wares, particularly fabrics R20, R30 and R37. Interestingly, some reduced wares, namely black-surfaced ware (R50) and coarse-tempered ware (R90) – along with its oxidised counterpart (O80) – first occur in Phase 3. A similar, though not so marked, pattern is noticeable at the Mansfield College site. Despite the increasing dominance of Oxfordshire industry products, small-scale local producers were resilient, retaining, or adapting, their markets. Together, reduced (R) coarse wares remain the dominant fabric group, accounting for 44% of the Phase 3 assemblage by sherd count. This is comparable to the 50% reduced wares at the Mansfield College site. Fabric R21 must be residual by this time, despite its proportion staying reasonably constant into Phase 3. Also residual is a sherd of Central Gaulish samian ware (S30); East Gaulish samian (S40) only appears in this phase, and either arrived at the very end of its importation period – traditionally dated to *c* AD 240 – or is itself residual.[37] The first suggestion is a distinct possibility, since the fabric is joined by small amounts of fabric M22 in one context and M22 and F51 in another, with all sherds accompanied by grey wares and no white wares. Mansfield College is devoid of S40, which suggests that occupation resumed at that site towards the end of the 3rd century, and seemingly confirms its 4th century emphasis.[38] Pink grogged ware (O81) is also confined to Phase 3; this is consistent with the vessel type represented, as storage jars tend to be of later Roman date in this fabric.

[34] Booth, op. cit. note 17, 115; J. Timby, 'The pottery', in N. Holbrook and A Thomas, 'The Roman and early Anglo-Saxon settlement at Wantage, Oxfordshire: Excavations at Mill Street, 1993-4', *Oxoniensia*, 61 (1996), 131–147.

[35] Young, op. cit. note 14, 202.

[36] Booth, op. cit. note 9, table 3.

[37] P. Webster, *Roman Samian Pottery in Britain* (CBA Research Practical Handbook, 13, 1996).

[38] Booth, op. cit. note 9, 311.

TABLE 6. VESSEL CLASS BY CERAMIC PHASE

	Phase 2a		Phase 3		
Vessel Class	**RE**	**% RE**	**RE**	**% RE**	**Total**
Flagons (B)	–	–	0.01	0.13%	0.01
Jars (C)	1.48	33.87%	3.73	47.46%	5.21
Jars/bowls (D)	–	–	0.06	0.76%	0.06
Beakers (E)	0.52	11.90%	0.72	9.16%	1.24
Cups (F)	0.1	2.29%	–	–	0.1
Bowls (H)	1.85	42.33%	1.11	14.12%	2.96
Dishes (J)	–	–	0.73	9.29%	0.73
Mortaria (K)	0.42	9.61%	1.5	19.08%	1.92
Total	**4.37**		**7.86**		**12.23**

Jars, which had been placed second to bowls in Phase 2a, become the commonest vessel class in terms of rim-equivalence in Phase 3. This is due in part by the incidence of Oxfordshire products, such as parchment ware form P9 and burnt white ware jars BW1 and 2. Drinking forms, namely cups and beakers, also decline in proportion, although this is unlikely to represent a change in drinking habits. The only certain flagon appears in Phase 3 and, as already noted, Oxfordshire colour-coated beakers, though present and dated to the late Roman period, are not represented by rim-equivalence. As at Mansfield College, dishes (straight-sided or flange-rimmed) are assigned solely to Phase 3, mainly occurring in 4th century contexts.

Discussion

The pottery from the Chemistry Research Laboratory site has augmented the ceramic sequence for the settlement revealed here and at Mansfield College. It is now clear that the settlement was occupied during the late 1st century, continuing to the end of the Roman period. No major gaps are now evident within this sequence given that earlier Roman and Iron Age material has been recovered from the adjacent site at Halifax House, although the earliest Roman period and late Iron Age are as yet not represented. Closer examination of the sequence has suggested that the focus of the settlement shifted away from the Mansfield College site during the mid 2nd century; at the same time the area of the Chemistry Research Laboratory site was incorporated into the settlement. Occupation resumed at the former towards the end of the 3rd century. The Mansfield College site may well have enjoyed a more intense level of occupation during the 4th century.

A small amount of pottery had spalled or distorted during firing, including a near-complete burnt white ware (W23) jar from context 3697. Production of this fabric is attested at the Churchill Hospital site,[39] and suggests that, similar to the trade in imperfect samian, damaged vessels made locally could be marketed as 'seconds' if usable. With an overall mean sherd weight of 14 g., the condition of the assemblage was generally good, and few sherds are particularly abraded. The pottery was recovered mainly from pits and linear features, and more or less distributed equally between them. However, the mean sherd weight is slightly lower in linear features compared with pits (12 g., as against 16 g.). Moreover, pits tended to be filled with larger assemblages; the mean weight of pit groups is 267 g., while linear feature groups average at 147 g. This suggests that pits tended to receive pottery in better condition than ditches or gullies, and had been subject to fewer episodes of disturbance. The results from mean sherd weights and group weights are, in this case, misleading. More robust measures of pottery condition (brokenness = sherds/rim-equivalent, and completeness = rim-equivalent/vessel count),[40]

[39] Young, op. cit. note, 14, 113.
[40] C. Orton, P. Tyers and A. Vince, *Pottery in Archaeology* (1993).

reveal virtually no differences between the feature types. Linear features had a brokenness value of 78 (the more broken the pottery, the higher the value) and completeness value of 0.13 (where a complete vessel or assemblage is equal to 1). The respective calculations for pits were 76 and 0.14. In other words, the pottery in both feature types seems to have derived from the same sources; pits did not necessarily receive material more directly from point of breakage than linear features. This is consistent with the lack of postholes at the Chemistry Research Laboratory site, which suggests that the site was not the principal focus for occupation even during the later 2nd century.

A degree of chronological division is apparent between pits and ditches. While both feature types were cut during Phase 2a and 3, a greater proportion of pit fills are dated to Phase 3 compared with ditch deposits. This association between feature type and ceramic phase (the chi-squared value based on these proportions was found to be statistically significant at the 1% level) suggests that Phase 2a activity was somewhat peripheral to the main settlement, as the site during this time was defined largely by boundary and enclosure ditches. Given the paucity of contemporaneous evidence at Mansfield College, the settlement focus must lie elsewhere. The Chemistry Research Laboratory site was closer to the settlement focus during Phase 3, though the lack of structures and nature of the pottery suggests that it remained on the outskirts.

All the results from the various measures help to confirm that the pottery is in good condition and reasonably well preserved. An indication of the extent of redeposition to have taken place is given by calculating the level of residuality. Unfortunately, the assemblage is largely without chronologically significant forms and fabrics until the late Roman period, making the assessment of residuality difficult. One exception is fabric R21, which was produced during the 1st and 2nd centuries. Examining the proportion of this fabric in Phaseeriod 3, when it should be residual, it can be seen that the fabric forms a very small proportion by sherd count; no rims are represented, suggesting that residuality, at least during Phase 3, was low and redeposition minimal.

An interesting aspect of the Mansfield College pottery was its inordinately high proportion of mortaria; the vessel class took a 12.5% share of the assemblage by RE.[41] This can be compared with 1.4% at Asthall,[42] or 0.8% at Wantage.[43] At the Chemistry Research Laboratory site, mortaria accounted for 11%. The high proportion of mortaria at Mansfield College was explained by the site's proximity to the kilns;[44] there is no obvious reason to seek other explanations with regard to the Chemistry Research Laboratory site. Booth suggests that mortaria may have served a wider range of functions than was perhaps usual.[45] This is evidenced in part by traces of burning and sooting on a number of Oxfordshire white ware mortaria. These were noted inside the vessels, but especially on top of the rim and around the flange. Few traces of burning were noted on the external surface of the base. Clearly the vessels had been used for more than just mixing and pounding ingredients. Heating certainly took place, but the absence of burning on the base indicates that the vessels were not placed upright directly on the hearth. A more likely explanation, perhaps, is that some vessels were inverted and used as lids.[46] The vessels were placed above the fire, but separated from it by another pot. Being large vessels, the overhanging rims and flanges of the mortaria were exposed to high flames. Occasionally, the burning had affected the cross-section where the vessels had fractured, suggesting that older and slightly damaged mortaria were used.

The pottery from both Chemistry Research Laboratory and Mansfield College sites suggests that the settlement was essentially a low-status rural settlement. The apparent shifting focus argues against a single principal building, such as a farmstead or villa, in favour of a village. The levels of fine and specialist wares (such as samian and white wares) at both sites are low from the 1st to 3rd centuries (4.5% in Phase 2 and 4.6% in Phase 2a by sherd count). Rural settlements in the region generally had less than 5%.[47] Imported *amphorae* are entirely absent from the Chemistry Research Laboratory site.

41 Booth, op. cit. note 9, 313.
42 Booth, op. cit. note 17, table 5.19.
43 Timby, op. cit. note 34, table 3.
44 Booth, op. cit. note 9, 313.
45 Ibid. 313.
46 P. Booth, pers comm.
47 P. Booth, 'Quantifying Status: some Pottery data from the Upper Thames Valley', *J. Roman Pottery Stud.*, 11 (2004), 45.

The amounts of fine and specialist wares increased substantially during the late Roman period to around 30%. This figure is comparable to that obtained at the major town of Alcester and the pottery production site at Dorchester.[48] The difference between the early and late periods is unlikely to represent an increase in site status, and given that Oxfordshire products are responsible for it, the probable reason is the same as that alluded to above – the proximity of production sites to the settlement.

Catalogue of illustrated pottery (Figs 7-8)

The vessels here are presented in ceramic phase order, sorted into groups where possible. This section illustrates the typological and chronological range of the assemblage.

Phase 2a

1. Fabric R30, Young type R23 necked jar. Context 3086, fill of ditch 3071 (part of 3090).
2. Fabric R30, Young type R23 necked jar. Context 3086, fill of ditch 3071 (part of 3090).
3. Fabric B11, small jar of cooking-pot form[49], context 3086, fill of ditch 3071 (part of 3090).
4. Fabric O10, type HC curving sided bowl. Context 3086, fill of ditch 3071 (part of 3090).
5. Fabric R37, Young type R38 necked bowl. Context 3086, fill of ditch 3071 (part of 3090).
6. Fabric R37, Young type R39 shallow necked bowl. Context 3086, fill of ditch 3071 (part of 3090).

This group has been dated to the second half of the 2nd century. The importance of fabrics R30 and R37 is clear. The small cooking-pot attests to the arrival of fabric B11 during this time. Jars and bowls clearly dominate. Shell-tempered ware was also recovered, but the range of fabrics is otherwise narrow.

7. Fabric O10, copy of samian form 38. Context 3161, fill of ditch 3162 (part of 3160).
8. Fabric R10, Young type R34 poppy headed beaker. Context 3161, fill of ditch 3162 (part of 3160).

This ditch fill is dated to the late 2nd/early 3rd century. Accompanying the illustrated pottery were Central Gaulish samian, shell-tempered ware and Savernake ware. Fabric R37 was the predominant grey ware. The context also contained a body sherd each of fabrics F51 and W22, which must be intrusive.

9. Fabric M22, Young type M2, trimmed and burnt around flange. Context 3328, pit 3323.
10. Fabric M22, Variant of Young type M12. Context 3168, ditch/gully 3169 (part of 3160).

Phase 3

11. Fabric M22, Young type M22. Context 3410, pit 3409 (part of 3704).
12. Fabric M22, Young type M22. Context 3410, pit 3409 (part of 3704).
13. Fabric W11, Young type P9 small jar. Context 3410, pit 3409 (part of 3704)

Dated to the 4th century on the basis of the wide range of Oxfordshire products, including an Oxfordshire colour-coated beaker, this group is among the latest at the site. Grey wares are not as important in this group, though fabric R37 remains conspicuous.

14. Fabric M22, Young type M22. Context 3412, pit 3411 (part of 3704).
15. Fabric W11, Young type P9 small jar. Context 3412, pit 3411 (part of 3704)
16. Fabric R37, type JA plain rimmed dish. Context 3412, pit 3411 (part of 3704).
17. Fabric R37, type JA plain rimmed dish. Context 3412, pit 3411(part of 3704).

This group is also almost identical to the previous one. Consequently, a similar 4th century date has been assigned to it. The dishes highlight the importance generally of fabric R37 in terms of ceramic supply. Given the fabric's later 3rd-century decline,[50] the dishes might well be residual here; alternatively this group dates to the turn of the 4th century.

[48] Ibid., 133.
[49] cf. Gillam, op. cit. note 31, fig. 2.21.
[50] Booth, op. cit. note 9, 313.

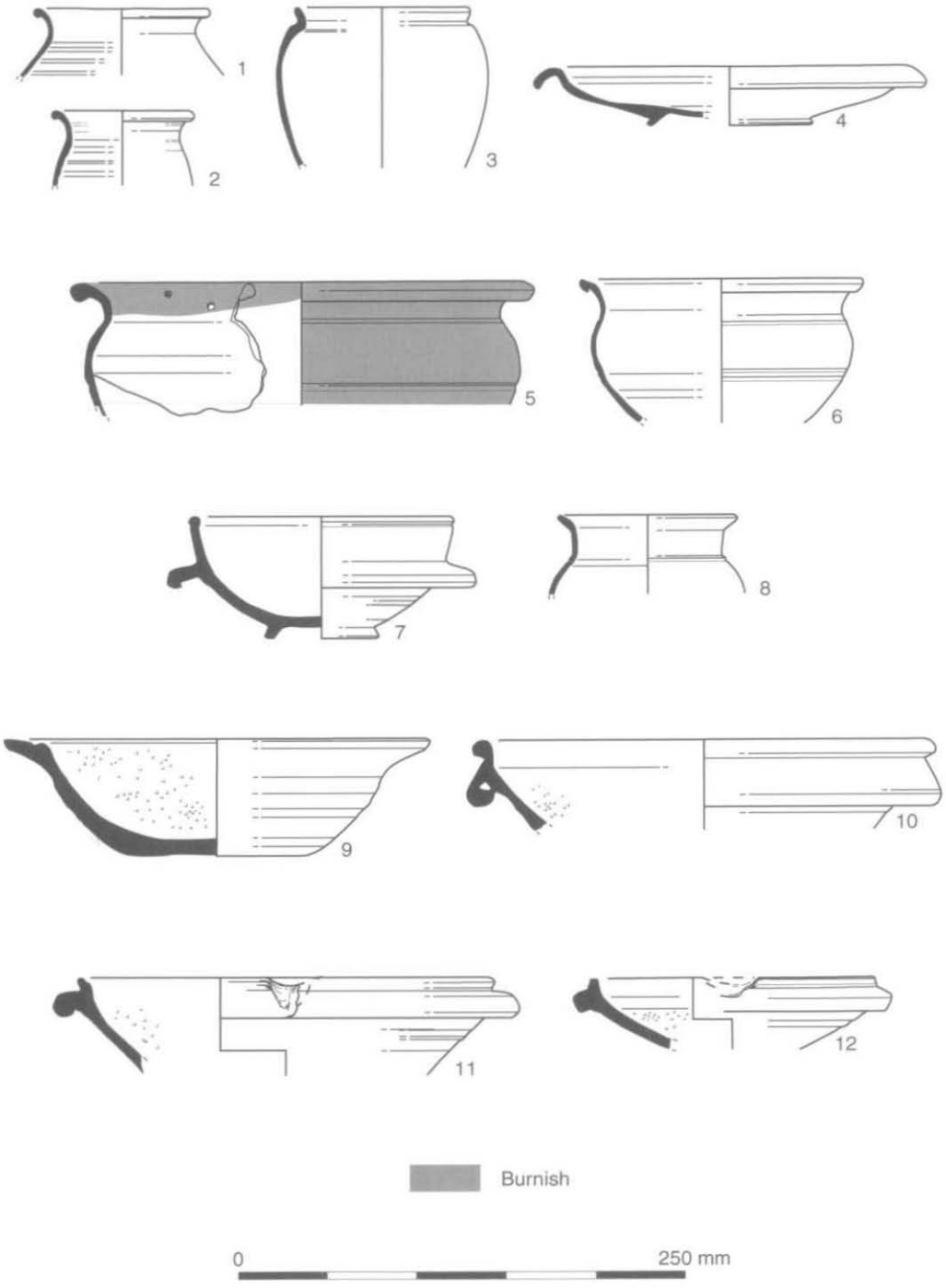


Fig. 7. Roman pottery numbers 1-12 (details in the catalogue).

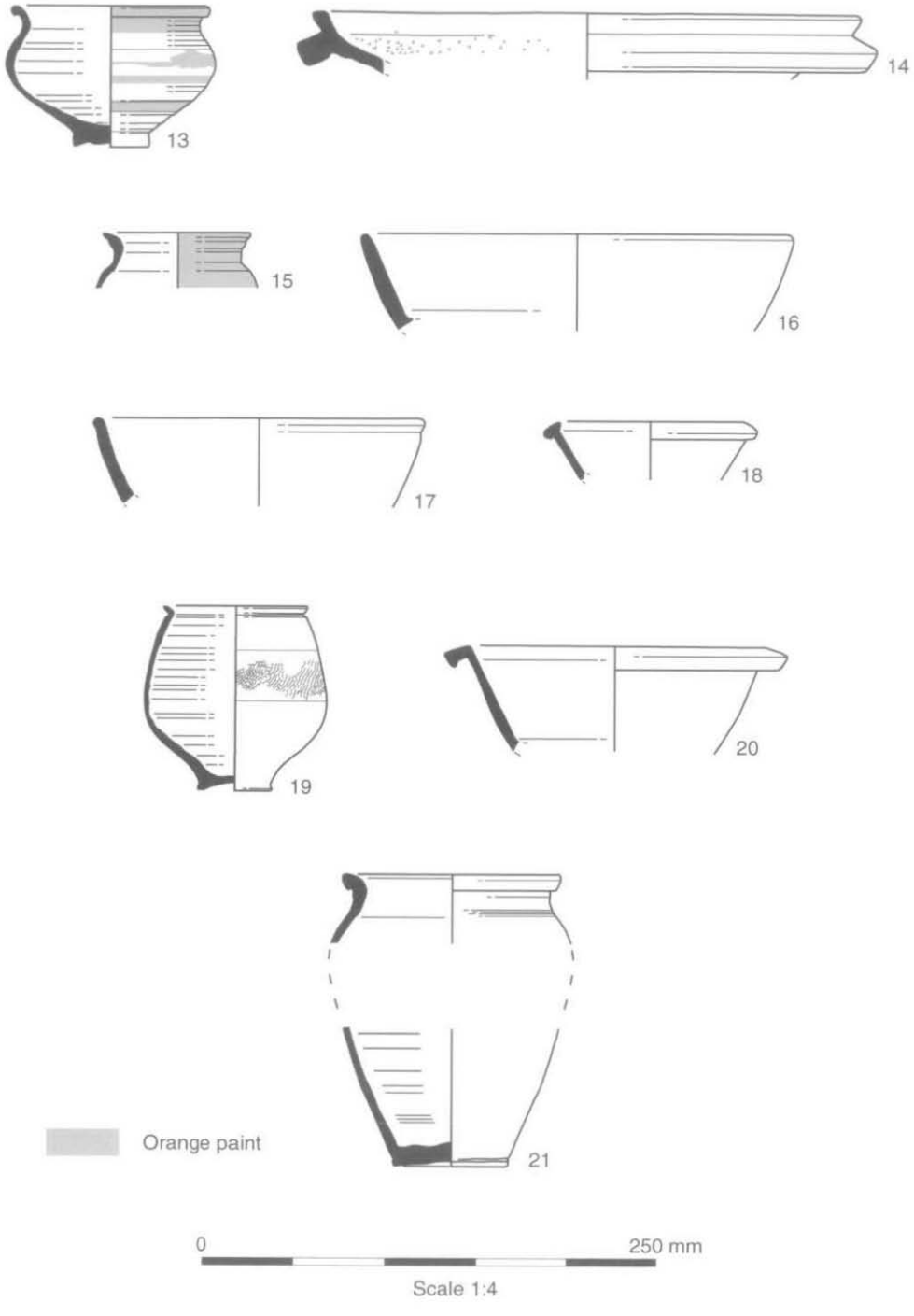


Fig. 8. Roman pottery numbers 13-21 (details in the catalogue)

18. Fabric R30, bowl. Context 3331, pit 3323.
19. Fabric R50, type EC bag shaped beaker. Generally a 2nd century form, the vessel occurred among late Roman deposits, though may have derived from underlying fills, which date to the earlier Roman period. Context 3336, pit 3323.
20. Fabric W23, type HB straight sided bowl. This form is unusual in this fabric. Context 3037, ditch 3088 (part of 3010).
21. Fabric W23, Young type BW2 jar. Context 3697.

This vessel was recovered from inhumation burial 3696 (see above). It had been placed in the position of the cranium of a decapitated skeleton. The vessel, dating from the later 3rd to late 4th century, was incomplete on deposition, and just the base and a few rim and body sherds remain. Some of the sherds were spalled, suggesting that the jar was a waster from kilns, from the Churchill Hospital site or another component of the Oxford industry.[51] Although distorted or damaged pots are known from funerary assemblages, it is unclear whether this jar had been specially acquired for such a purpose and then deliberately broken prior to deposition, with parts of it being held back, or that an already broken vessel was retrieved from a rubbish deposit and reburied in the grave. The location of the vessel is unusual. Pottery from decapitated inhumations is generally uncommon. Even rarer are vessels that replace body parts,[52] though outside the context of decapitated burials, certain vessels, particularly face- and head-pots, may have represented human heads required for ritual deposition.[53]

POST-ROMAN POTTERY by DUNCAN BROWN

A total of 67 sherds were recovered. The bulk of the assemblage is 19th century in date and the only medieval sherd is a fragment of Surrey Whiteware, known elsewhere as Coarse Border Ware,[54] which may be dated to the 14th or early 15th century. No finds can be related to the Civil War period and this assemblage must therefore be related to later activity, presumably agricultural or horticultural.

FIRED CLAY by EDWARD BIDDULPH

A total of 161 fragments weighing 2895 g. were recovered. All came from Roman-period contexts, with the exception of 45 amorphous fragments retrieved from context 3443, fill of Neolithic pit 3442. Three principal fabrics were recognised. Fabric 7 was hard with a reasonably fine sandy matrix. It contained occasional to moderate large, sub-rounded, limestone inclusions up to 5 mm. in size, with the same frequency of smaller clay pellets. Colour was variable, ranging from red-brown to buff/grey. Fabric 8 was softer. The range of inclusions was similar to fabric 7, although the limestone pieces that were at times larger than 5 mm. Occasional to moderate calcareous inclusions were also present. It was a less dense sandy fabric, characterised by moderate to frequent voids, giving it a coarser appearance and friable texture. Surface colours are generally more orangey-red. Impressions of organic material, perhaps straw, were visible on the surfaces of, and occasionally within, both fabrics 7 and 8. Fabric 9 was the hardest fabric. It contained well-sorted rounded clear and white quartz grains and occasional clay pellets. There was no visible limestone. The clay was of fairly uniform dark red colour. By weight, most fragments (2125 g., or 73%) can be assigned to fabric 8, followed by fabric 7, then 9. Although very different superficially, these fabrics share some characteristics with the Oxfordshire pottery industry;[55] in fabrics 7 and 8, predominant, well-sorted, fine sand-tempering; in fabric 9, frequent and well-sorted

[51] Young, op. cit. note 14.

[52] cf. R. Philpott, *Burial practices in Roman Britain: a survey of Grave Treatment and Furnishing* AD43-410 (BAR Brit. Ser. 219, 1991), 80.

[53] J. Cotton, 'A miniature Chalk Head from the Thames at Battersea and the "cult of the head" in Roman London', in J. Bird, M. Hassall and H. Sheldon (eds.), *Interpreting Roman London: Papers in memory of Hugh Chapman* (1996), 185–96, 189.

[54] J. Pearce and A G. Vince, 'Surrey Whitewares, a Dated Type-Series of London Medieval Pottery, Part 4' (London and Middlesex Archaeol. Soc. Special Papers, 10, 1988).

[55] cf. Tomber and Dore, op. cit. note 14, 174–7.

opaque or clear quartz grains. The fired clay and products of the pottery industry also share some types of secondary inclusions. On such evidence, the source of the fired clay is likely to be reasonably local to the Chemistry Research Laboratory site.

About 83% of the fired clay assemblage by weight formed parts of sub-circular discs or plates. A maximum number of 9 discs, in both fabrics 7 and 8, were identified; most were very fragmented, and the dimensions of all examples could not be ascertained. For those that were measured, the discs averaged 29 mm. thickness and 213 mm. in diameter, though it should be noted that the ranges of individual values were widely dispersed, so that examples visibly differed in size. All discs came from contexts that also yielded Roman pottery. This evidence indicates that six discs date to, or are consistent with, a 2nd-century date. The remaining three were from late 3rd- or 4th-century contexts (3258, 3412 and 3695). Generally, the discs were flat, though one, from context 3346 (ditch 3347) was upturned at the edge to form a lip.

Function remains speculative. The discs possibly served as lids to cover cooking vessels or storage jars.[56] It is perhaps instructive to note that no wheel-thrown lid was found among the Roman pottery assemblage, suggesting that this function was fulfilled through other means. Alternatively, given the robustness of some examples, the discs served as plates, perhaps for cooking or other forms of preparation. However, there are no obvious signs of burning. Structural uses similar to those served by tiles cannot be ruled out for some examples. These finds add to the still limited corpus of ceramic discs in Oxfordshire. None of the fired clay from Mansfield College was specifically identified as a ceramic disc, though a number of fragments were flat with straight edges.[57] Examples of similar discs have been found at Gravelly Guy, Mount Farm and four examples have been found at Farmoor.[58] These latter were *c.* 20 mm. thick and between 150 and 240 mm. in diameter. At Standlake, five disc or plate-like objects were recovered from mainly late Roman contexts.[59] At *c.* 20 mm. thick and with a diameter of 210 mm., these were also smaller than the disc/plates from the Chemistry Research Laboratory site. Perhaps more comparable are a number of 'flat slabs' from Abingdon. These were typically *c.* 30-40 mm. thick and recovered from early Roman contexts.[60] The variation in sizes of disc/plates between sites may reflect functional differences, though more examples are required to demonstrate this.

The shapes and functions of the remaining fired clay fragments cannot be identified. Fabric 8 predominated, although fabrics 7 and 9 were also represented. Of the Roman-period fragments, just one, weighing 16 g., was found in a 2nd century context (3617, fill of ditch 3619). The rest was from later 3rd century-plus or broadly Roman contexts.

The fragments retrieved from Neolithic pit 3442 were generally shapeless, though one piece had a flat surface. The fabric represented was closest to fabric 9. It was distinct from it, however, being softer and with a finer sand temper.

Catalogue of illustrated fired clay fragments (Fig. 9)

1. Ceramic disc, fabric 8, oxidised; 45 mm. thick, *c.* 275 mm. in diameter. From later 2nd-century context 3073, fill of ditch 3071.
2. Ceramic disc, fabric 7, grey; 20 mm. thick, *c.* 230 mm. in diameter. From 2nd-century context 3346, fill of ditch 3344.
3. Ceramic disc, fabric 7, grey; 30 mm. thick, *c.* 240 mm. in diameter. From 4th-century context 3412, fill of pit 3411.

[56] cf. Sanders, 'The Roman Pottery', in G. Lambrick and M. Robinson, *Iron Age and Roman Riverside Settlements at Farmoor, Oxfordshire*' (CBA Res. Rep. 32, 1979), 54.

[57] Booth, op. cit. note. 9, 318.

[58] A. Barclay and G. Wait, 'Fired clay', in G. Lambrick and T. Allen, *Gravelly Guy, Stanton Harcourt: The development of a Prehistoric and Romano-British Community* (Thames Valley Landscapes Monograph 21, Oxford Archaeology, 2004), 384–6; A. Barclay 'Fired Clay', in G. Lambrick (ed.), *Neolithic to Saxon Social and Environmental Change at Mount Farm, Dorchester-on-Thames* (Thames Valley Landscapes Monograph, forthcoming); Sanders, op. cit. note 56, fig. 28,124–7.

[59] A. Barclay, H. Glass and G. Hey, 'Fired Clay', in G. Hey, 'Iron Age and Roman Settlement at Old Shifford, Standlake', *Oxoniensia*, lx (1995), 136–8.

[60] P. Booth, 'Fired clay and ceramic building material, in Abingdon Reservoir Proposal, Abingdon, Oxon – 1998' (Archaeological evaluation report C23, unpublished), 37.

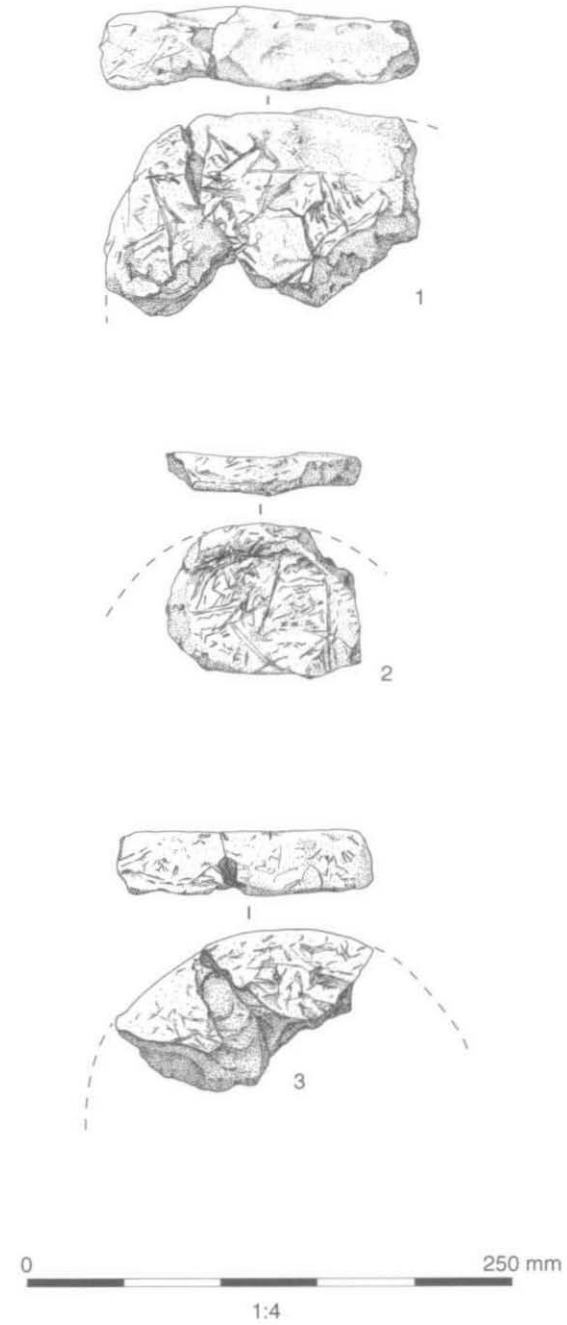


Fig. 9. Clay discs (details in the catalogue).

METALWORK by LEIGH ALLEN with identification of the coins by PAUL BOOTH

A small assemblage of metalwork was recovered, comprising 20 copper alloy objects, 14 lead and 29 iron. A great majority of the objects were recovered by metal detector and were either unstratified, or derived from the topsoil or the upper layers within the Civil War ditch.

A total of six objects are of Roman date: three coins, an armlet fragment, and two possible hobnails, although only the hobnails are from features of Roman date (ctx 3412 and 3434).

Stratified Roman objects

There are four stratified Roman objects: two coins and two hobnails. The two coins are from context 3004 (Sf 102) and 3189 (Sf 133). Sf 102 is damaged, thin, and illegible. It is 4th-century in date (probably not before AD 330 on the basis of size). Sf 133 is heavily encrusted but legible, the obverse bears a helmeted head probably of Constantinopolis type. The reverse has a standing figure probably victory. The coin is dated to 330-335 AD. The two possible hob nails from contexts 3412 and 3434 are both heavily encrusted.

Unstratified Roman objects

There are a further two Roman objects from unstratified contexts – a coin (Sf 100) and an armlet fragment (Sf 131). The coin is a sestercius of Marcus Aurelius (under Antioninus Pius), and is in good condition. The obverse bears the inscription AVRELIVS CAESAR AUG [PII FIL], the reverse TR POT V IIII COS II S C with Minerva standing left with an owl in the right hand. The coin dates to 139-161 AD.[61] The armlet fragment is constructed from three circular sectioned strands and has a projected internal measurement of *c*.42 mm.

Stratified post-medieval objects

There were 26 stratified objects of post-medieval date, including musket balls, dome headed tacks, a fragment from a whittle tang knife, nails, wire pins and a coin.

The musket balls from contexts 3003 and 3004 have diameters in the range 11-20 mm. The domed headed tacks from contexts 3004 and 3166 are probably for use on upholstery. The knife from context 3049 is incomplete it has a whittle tang and a damaged blade. The nails from contexts 3032 and 3102 have rectangular sectioned shanks but the heads are too corroded to distinguish their form. The wire pins from context 3166 are very fine and the coin from context 3189 is a George III penny dated to 1819.

Unstratified post-medieval objects

There are a further 31 unstratified post-medieval objects, including circular discoidal buttons, an additional musket ball and various unidentified strips and miscellaneous fragments.

GLASS by RACHEL TYSON

A total of 47 fragments of glass were recovered. The majority of these were wine bottle fragments from the Civil War ditch, including a complete seal. Some tiny fragments of glass came from samples from possible prehistoric (3384) and Roman (3340) ditches, but were too small to be diagnostic. They are unlikely to be prehistoric, but may possibly be Roman, blue/green glass being a common glass colour especially in the 1st to 3rd centuries AD.[62] However, given the presence of similar fragments in later contexts, it is more likely that these fragments are intrusive.

[61] RIC III (Antoninus Pius) 1321. AD 154-155, H. Mattingly and E A. Sydenham, *The Roman Imperial Coinage Volume III*, London (1930).

[62] J. Price and S. Cottam, *Romano-British Glass Vessels: A Handbook* (CBA Practical Handbook in Archaeology 14, 1998), 15.

Other glass from the Civil War ditch included fragments from two small 'phials', common in the 17th and 18th centuries, and used for a variety of liquid contents including medicines. Four small greenish window fragments indicate glazing of a similar date. A few fragments of 19th- to early 20th-century bottles were found in modern pit 3186.

The most interesting fragment was the complete wine bottle seal with initials 'WMA' above a crown, from a 'shaft and globe' wine bottle (Fig. 10). The name refers to the long neck and rounded body of the bottle. This seal is very similar to two with the initials 'WAM' above a crown on complete shaft and globe wine bottles in the Ashmolean Museum.[63] The initials stand for William and Anne Morrell, joint tenants of the Crown tavern between 1660 and 1679, during which time it moved between two locations in Cornmarket Street.[64] Of the five well-documented taverns in Oxford, the Crown is the one from which the largest number of seals have been found.[65] The design shown on the Ashmolean bottles is the earliest of the Crown's seal designs known. It is dated to *c.* 1670 by Banks, on account of the angular shoulder of the shaft and globe bottles. The shoulder angle was clearly pronounced by 1670, continuing to c. 1680, although it becomes noticeable from *c.* 1660.[66] This bottle could therefore be slightly earlier than 1670 since the shoulder angle is only slight. The remaining wine bottle fragments are likely to come from shaft and globe wine bottles of *c.* 1660-80, or 'onion' wine bottles used from *c.* 1680 into the 18th century. Some wide bases are more likely to date to the later 17th or early part of the 18th century.

Wine was retailed through licensed taverns such as the Crown at this date. The bottles had the tavern's (or the customer's) personal seal so that they were returned to the correct establishment. Wine was restricted to the relatively wealthy members of society; it was not sold in small quantities by law, in order to restrict drunken riots.[67] The Oxford colleges did not establish their own wine cellars until *c.* 1750, so this bottle may have been used by a member of the University or town.

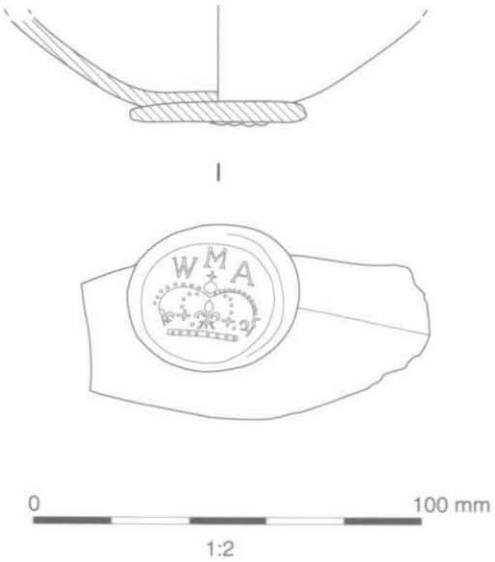


Fig. 10. Glass seal stamped with 'WMA' above a crown (details in catalogue).

63 F. Banks, *Wine drinking in Oxford 1640-1850. A story revealed by Tavern, Inn, College and other Bottles* (BAR Brit Ser 257, 1997), 59, fig. 5.19; AM 1919.6 and AM 1913.925.

64 Ibid. 55.

65 Ibid. 200.

66 R. Dumbrell, *Understanding Antique Wine Bottles* (Woodbridge: Antique Collectors' Club, 1983), 50–2.

Illustrated glass (Fig. 10)

1. Complete seal on wine bottle body fragment. Body fragment of olive green wine bottle with complete seal attached. Body turns at the shoulder at a slight angle; from a shaft and globe bottle. Seal stamped with 'WMA' above a crown. Seal diameter c. 45 mm. Ctx 3637 (Civil War ditch).

CLAY TOBACCO PIPES by D A HIGGINS

Methodology

Bowl forms have been recorded with reference to the London typology established by Atkinson and Oswald,[68] although the dating has been modified according to the form and attributes of the individual fragments. Variants of the basic London shape illustrated in the typology have had the letter 'v' placed after the type number. An assessment of the likely date of the stem fragments has been provided. The stem dates should, however, be used with caution since they are much more general and less reliable than the dates which can be determined from bowl fragments.

The excavations produced a total of 58 fragments of pipe, comprising 7 bowl, 49 stem and 2 mouthpiece fragments, from a total of 11 different contexts. None of the context groups was particularly large with only one of the contexts, 3049, producing more than 10 pieces of pipe.

Pipe bowls and fabrics

Of the seven bowl fragments, five are reasonably complete. The earliest example dates from *c.* 1640-1660 (Fig. 11.1, context 3316, Sf 143) and is of a typical London style that was in widespread use at this time. This example is neatly produced, of a very fine fabric containing tiny particles, and displays a fully milled rim. The surface is slightly soft and has a 'sharp' feel to it when rubbed. This contrasts with the other bowl fragments, all of which are slightly later in date and all of which are made of a distinctive fabric with fine sandy inclusions. The later bowl fragments range in date from *c.* 1680-1750 and were clearly produced using clay from a common source. The occurrence of this distinctive fabric in Oxford was initially identified amongst finds from Oxford Castle,[69] and its widespread use was confirmed by finds from the Sackler Library, Oxford.[70] Similar fabrics have also been noted at Reading,[71] but it is not yet clear if these examples represent pipes produced there, or whether they are imports from Oxford. The former is perhaps more likely, since pipes were rarely traded in any quantity from their place of manufacture. These finds add to a growing body of evidence for the exploitation of a source of white firing clay with distinctive fine sandy inclusions in the Oxford/Reading area from around 1680-1750.

The earliest recognisable form from this site that has been produced in the sandy fabric is a bi-conical spur form (Fig. 11.2, context 3420), which is a distinctive Oxford style.[72] There are also two partial heel fragments of generally late 17th- or early 18th-century types (ctxs 3032 and 3049). The remaining three examples are all of a standard 18th century form that was widely used across the country with only minor variations in style from *c.* 1700-1770 (contexts 3050, 3102 and 3558). The examples from Oxford generally do not have moulded maker's initials on them and sometimes they appear a little heavy around the heel area. The two most complete examples are illustrated in Figure

67 Banks, op. cit. note 63, 21.

68 D R. Atkinson and A. Oswald, 'London clay tobacco pipes', *Journal of the British Archaeological Association*, xxxii (1969), 171–227.

69 D A. Higgins, 'Clay Tobacco Pipes from trial Excavations at Oxford Castle, 1999' (unpublished field evaluation report prepared for Oxford Archaeological Unit).

70 D A. Higgins, *Clay Tobacco Pipes,* in Poore and Wilkinson, op. cit. note 7, 65–6.

71 D A. Higgins, 'Clay tobacco pipes', in *Excavations at the Reading Oracle* (Oxford Archaeology, forthcoming).

72 A. Oswald, 'Clay Pipes', in T G. Hassall, C E. Halpin and M. Mellor, 'Excavations in St Ebbe's Oxford, 1967–76: Part 2: Post-medieval Domestic Tenements and the Post-dissolution site of the Greyfriars', *Oxoniensia*, xlix (1984), 252, Type B.

11.3 and 11.4 (contexts 3358 and 3050). All of the 17th- and 18th-century bowls recovered from this site are of typical local styles and would have been made at workshops in or around Oxford. None of them is marked or decorated.

Manufacturing and finishing characteristics

The surface treatment could be discerned in 54 of the 58 pipe fragments, 17 of which had been burnished. This finishing technique was not generally used on pipes after the middle of the 18th century and the only period before this that is reasonably well represented at this site is from *c.*1680-1750. Forty-seven fragments were dated to within this period, which included all 17 of the burnished examples (representing 36% of this group). This is a rather lower percentage than noted from other sites in Oxford. Furthermore, only 7 of these fragments have an average burnish while in 10 cases it is poor. This suggests that these pipes were of a generally low quality and finish when compared with other groups from the town.

There were 49 fragments with measurable stem bores that were dated to within the period c.1680-1750. Of these, 2 (4%) has stem bores of 4/64″; 25 (51%) had bores of 5/64″; 19 (39%) had bores of 6/64″; 2 (4%) has bores of 7/64″ and just 1 (2%) had a bore of 8/64″. This shows a clear preference for stem bores of 6/64″ and, in particular, 5/64″ during this period. Only two of the bowls were milled; the heel bowl of *c.*1640-60 was fully milled while the spur bowl of *c.*1690-1710 was three-quarters milled (Fig. 11.1-2). None of the bowls has an internal bowl cross.

Discussion

Despite the small size of this assemblage, the pipes are still able to provide some evidence in relation to the post-medieval development of this site. The first point to note is the overall chronological distribution of the pipe assemblage. The earliest diagnostic fragment dates from *c.*1640-60, some 30 or 40 years after the habit of smoking had become common amongst the general population. Furthermore, only a small percentage of the assemblage dates from the 17th century with most of the material dating from *c.*1680 or later. This suggests that there was little artefactual deposition associated with the huge Civil War defensive works that were constructed in the area. The paucity of pipes from this period suggests that, whatever its use, the site was being kept free of domestic rubbish for most of the 17th century. Loggan's map of 1675 shows the site as gardens and grazing land, which is in keeping with the artefactual evidence.

The majority of the pipes recovered date from the period *c.*1680-1750 and most of these were associated with the various fills of the Civil War ditch. This suggests that the ditch remained open for some time after the end of the war and that this area was only levelled during the late 17th and early 18th centuries. No later bowls were present in this assemblage, but 19th-century stems were identified from contexts 3186 and 3387, both of which proved to be the fills of later pits cutting the site.

Illustrated pipes (Fig. 11)

1. London Type 10 bowl of *c.*1640-60, perhaps resulting from the documented Civil War activity on the site. Fully milled and bottered rim; surface abraded so not certain if originally burnished or not. Stem bore 8/64″. Context 3316, Sf 143.
2. Oxford style bi-conical spur form of *c.*1690-1710. Rim bottered and three-quarters milled. Local fine sandy fabric with a poor burnish and a stem bore of 7/64″. Context 3420.
3. Heel form of *c.*1700-1750 with mould line at the rim and rather lumpy heel area, possibly indicating initials that have been deleted from the mould. Wiped rim and poorly burnished exterior. Stem bore 5/64″. Context 3558.
4. Heel form of *c.*1700-1770 made of a fine sandy local fabric. Simple cut rim; stem bore 5/64″. Context 3050.

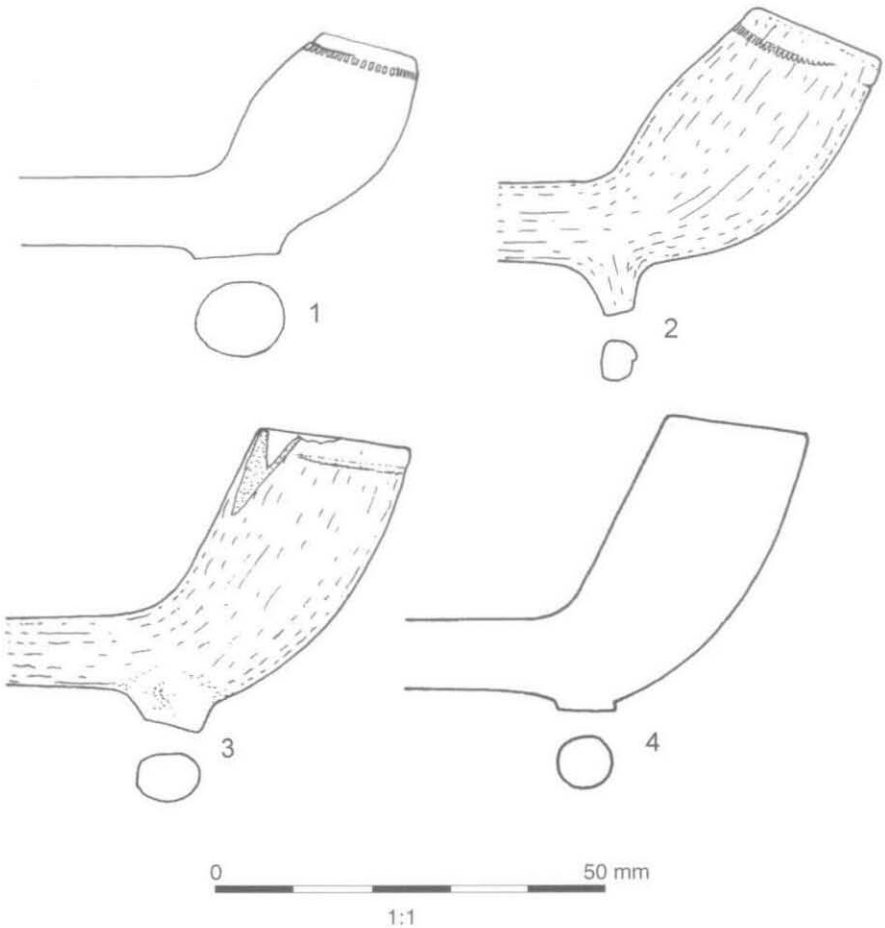


Fig. 11. Clay pipes (details in the catalogue).

CERAMIC BUILDING MATERIALS by LEIGH ALLEN

A small assemblage of ceramic building material, weighing 1,391g., was recovered from the excavations. Nearly 70% of the assemblage is Roman in date and was recovered from Roman pits and ditches. The remaining fragments are post-medieval in date.

The material is summarised in Table 7; tile types where they are identifiable have been recorded together with the dimensions of the tiles or tile fragments where they are complete. Five distinct fabric types were identified.

Roman tile

Three fragments of tegula or flanged roof tile were recovered; two came from ditch 3228 and the third from pit 3191. The fragments from ditch 3228 are both made from the same fabric and both have intact flanges but are probably from two different tiles as the flanges are different in shape and height. The third tegula fragment from pit 3191 is made from a much harder fired fabric and has a narrower flange. The fragment of flat tile from context 3161 could also be from a tegula, it does not bear any trace of a flange but it does have a curving incised groove on the upper surface which could be part of the semi-circular 'signature' often found at the end of tegulae.

TABLE 7. SUMMARY OF CERAMIC BUILDING MATERIAL

Context	Pot date	Form	Fabric	Weight (g)	Thickness (mm)	Flange (mm)
3032	Civil war	Flat tile	2	59	14	–
3049	PM	Ridge tile	2	196	20	–
3049	PM	Misc	2	73	–	–
3049	PM	Flat tile	3	77	26	–
3102	Civil war	Misc	2	28	–	–
3161	RB ditch	Flat tile	5	167	25	–
3186	Modern pit	Curved	2	199	26	–
3191	RB pit	Tegula	4	235	19	–
3228	RB ditch	Tegula	1	187	20	50
3228	RB ditch	Tegula	1	170	25	50

Post-medieval tile

The fragments are mostly from flat tiles with no other distinguishing marks. A single fragment of very thick (26 mm.) curved tile from a modern pit possibly represents part of a ridge tile. The post-medieval fragments are predominantly made from a very quartzite rich fabric with a rough sandy exterior.

Conclusion

The modest assemblage gives little scope for informed comment. The presence of at least one tiled Roman building in the vicinity is suggested, and the lack of post-medieval material supports the contention that the area was undeveloped until the 19th century.

WORKED STONE by RUTH SHAFFREY

One quern fragment of Millstone Grit (Sf 112) was recovered from ditch fill 3035. This is likely to be Roman and its occurrence in an Oxfordshire context is not particularly common though it has been found at sites including Abingdon and Asthall.[73] A broken pebble found in second century context 3417 may be a polisher of some sort as the surfaces are very smooth and one is particularly flat. Several pieces of oolitic limestone were recovered from Romano-British contexts. These were thin and flat and it is likely that they were used for building purposes of some kind. Burnt unworked stone was recovered from Neolithic pit 3443 and Civil War ditch fill 3049.

ECOFACTUAL EVIDENCE

CHARRED PLANT REMAINS by DANA CHALLINOR

Introduction

A total of 22 deposits were sampled, most of which were from Romano-British features and the Civil War ditch, although two prehistoric features were also sampled. The bulk samples were processed by flotation in a modified Siraf-type machine, with sample sizes mostly 10-40 litres in volume. An assessment was carried out by Ruth Pelling and several samples were found to be rich in charred remains. Seven of these were selected for analysis; one from a Neolithic (phase 1) pit, two from AD 2nd-century (phase 2a) ditches and four from AD 3rd-4th century (phase 3) ditches and a pit. The assessment results are included, where relevant, in this report.

[73] M. Parrington, 'The Quernstones', in id., *The Excavation of an Iron Age settlement, Bronze Age Ring Ditches and Roman features at Ashville Trading Estate Abingdon* (CBA Research Report 28, 1978), 88–9; F. Roe, 'The Worked Stone', in P. Booth, op. cit. note 17, 100–1.

TABLE 8. SUMMARY OF CHARRED PLANT REMAINS

	Period	Neolithic	2nd Century		3-4th century			
	Feature Type	*Pit*	*Ditch*	*Gully*	*Pit*	*Ditch*	*Ditch*	*Ditch*
	Feature number	3383	3071	3341	3411	3010	3027	3221
	Cut number	3383	3071	3341	3411	3068	3027	3221
	Context number	3384	3086	3340	3412	3067	3026	3226
	Sample number	**125**	**104**	**113**	**128**	**102**	**101**	**109**
	Volume of earth (litres)	40	40	40	20	40	40	40
	Volume of flot (millilitres)	60	30	25	20	25	40	20
	% flot analysed	100	12.5	25	50	50	50	100
Cereal grain								
Triticum dicoccum	Emmer wheat		1	1				
Triticum spelta	Spelt wheat		8	4	3	7	4	6
Triticum spelta	Spelt wheat, germinated		1	1				
Triticum spelta/dicoccum	Spelt/Emmer wheat		3	43	28	13	11	13
Triticum sp. (free-threshing)	free threshing wheat		1					
Triticum sp.	Wheat	2	10	44	25		2	1
Triticum sp.	Wheat, germinated					6		
Avena sp.	Oat			2	2			
Hordeum vulgare	Barley, 6-row twisted		1	2	3			
Hordeum vulgare	Barley, 6-row lateral			1	1			1
Hordeum sp.	Barley, hulled	1	5	6	13	7	6	2
Hordeum sp.	Barley, hulled straight	2	1	1				
Hordeum sp.	Barley			10	6		2	
Cerealia indet.	Indeterminate grain	3	13	99	46	28	19	8
Cereal chaff								
Triticum dicoccum	Emmer wheat glume base				1			
Triticum cf. *dicoccum*	cf. Emmer wheat glume base			3	1			
Triticum spelta	Spelt wheat glume base	1	156	92	41	37	47	54
Triticum spelta	Spelt wheat rachis		63	16	1	9	3	
Triticum spelta/dicoccum	Spelt/Emmer wheat glume base	3	345	154	113	163	125	102
Triticum sp.	Wheat rachis							1
Triticum sp.	Wheat basal rachis		6		3			
Triticum/Secale	Wheat/Rye awn		**	*		*		
Avena sp.	Oat, awn		**	***	***	**	**	**
Hordeum vulgare	Barley, 6-row rachis		1					
Hordeum sp.	Barley rachis		21	12	1	13	2	1
Hordeum/Secale	Barley/Rye basal rachis	1						
Cerealia indet	Coleoptiles		17	22	2	9	1	4
Cerealia indet	Cereal sized culm nodes		4			3		
Cerealia indet	Rachis					1		2
Weeds								
Papaver rhoeas type	Common poppy		1					
Corylus avellana	Hazelnut shell	38						
Chenopodium album	Fat-hen			29	7			1
Atriplex sp.	Orache		5			3	2	9
Chenopodiaceae	Goosefoot family		1			3	1	
Stellaria media group	Common Chickweed		3	2	1		1	3
cf. *Cerastium fontanum*	Common Mouse-ear							1
Agrostemma githago	Corncockle			3				
Persicaria maculosa	Redshank		1					2
Persicaria lapathifolia	Pale persicaria							2

Polygonum aviculare agg.	Knotgrass		2			2	1	8
Rumex sp.	Dock		1	23	21	5	1	1
cf. *Tilia* sp.	Lime fruit	1						
Malvaceae	Mallow family		1			4		1
Raphanus raphanistrum	Wild radish, pod segments		2			2	1	3
cf. *Anagallis* sp.	Pimpernel							1
Primulaceae	Primroses							1
Malus sylvestris	Crab apple	3						
Vicia/Lathyrus	Vetches/Peas		9	2	2	7	15	2
cf. *Medicago lupulina*	Black medick		32			10	13	1
cf. *Trifolium* sp.	Clover	1	9		2	16	1	6
cf *Euonymus europeus*	Spindle tree, fruit	1						
Linum cf. *usitatissimum*	Flax							1
Lithospermum arvense	Field Gromwell			1				
Odontites vernus	Red Barstia		7			5		
Centaurea sp.	Knapweed			2			1	
Anthemis cotula	Stinking Chamomile	3		227	44	3	5	1
Tripleurospermum inodorum	Scentless Mayweed		28	5		15	4	3
Anthemideae	Chamomile tribe			56	7			
Eleocharis palustris	Common Spike-rush		5	1	1	4	2	
cf *Carex* sp.	Sedges				1			
Bromus cf. *secalinus*	Rye Brome	1	19	33	11	14	7	
Poaceae	Grass, small seeded	1	10	73	7	4		5
Indet.	Indeterminate weeds		5		1	1		1
TOTAL REMAINS		**24**	**797**	**970**	**395**	**394**	**277**	**248**
Items per litre		1	20	24	20	10	7	6

Methodology

Several of the samples were so rich that it was necessary to sub-sample, using a riffle box. Each flot or fraction of flot was then put through a stack of sieves down to 300μm to aid sorting. Any identifiable seeds, chaff or other plant items present were extracted. Identifications were made under a binocular microscope at x10 to x20 magnification and were based on morphological characteristics and by comparison with modern reference material held at the Oxford University Museum of Natural History. Cereal grains were counted on the basis of embryo ends. The awn fragments were not counted or included in the calculations, although an estimate of quantity is given on the basis that * = rare, ** = frequent, ***=abundant. The plant parts recorded in the table are seeds unless otherwise stated. Classification and nomenclature for the weed seeds follow Stace.[74]

Results

The results of the charred plant analysis are given in Table 8.The cereal remains were dominated by hulled wheat; both *Triticum spelta* (spelt wheat) and *T. dicoccum* (emmer wheat) were positively identified. Given the difficulties of identifying *Triticum* grain to species level,[75] and the fact that many of the glume bases were fractured to less than half the full length, it was not often possible to distinguish between the two species with certainty. However, *T. dicoccum* was only confirmed in small quantities in three of the six flots, indicating that this species represents a minor component of the assemblage. Only one grain, from ditch 3071, was identified as free-threshing *Triticum aestivum/durum* (bread/durum wheat). Several wheat grains showed signs of having germinated and coleoptiles were present in most samples.

74 C. Stace, *New Flora of the British Isles* (2nd edition, 1997).

75 G C. Hillman, S. Mason, D. de Moulins and M. Nesbitt, 'Identification of Archaeological Remains of Wheat: the 1992 London Workshop', *Circaea*, 12/2 (1995), 206.

Hordeum sp. (barley) was also recorded from all samples; most of the grains were hulled, and occasional twisted and lateral grains testified to the presence of *H. vulgare* (6-row barley). Two samples produced small quantities of *Avena* sp. (oat) grain and there were awn fragments in most samples. While it was not possible to determine whether the *Avena* was wild or cultivated, it is likely that the remains entered the archaeobotanical record as a weed with the main crop. In addition to the cereal remains, there was one other species from the Roman samples which may fall into the category of cultivation: *Linum usitatissimum* (flax). Flax was cultivated as a crop from the Neolithic period onwards and has been found in other Roman contexts in the Upper Thames Valley.[76] However, the single seed found at the Chemistry Research Laboratory site does not provide evidence for cultivation here.

The assemblages of weed seeds are dominated by species of disturbed/cultivated land, such as *Chenopodium album* (fat-hen), *Atriplex* sp. (orache), *Stellaria media* group (common chickweed), *Rumex* sp. (dock), *Medicago lupulina* (black medick) and *Bromus* cf. *secalinus* (rye brome). Species commonly found in arable habitats include *Agrostemma githago* (corn cockle), *Anthemis cotula* (stinking chamomile), *Tripleurospermum inodorum* (scentless mayweed), *Papaver rhoeas* (common poppy) and *Odontities vernus* (red bartsia). The presence of *Anthemis cotula* is of interest as this species is thought to be a Roman introduction to Britain and its occurrence in the Neolithic sample (125), therefore, is likely to be intrusive. The particularly large quantity of seeds in sample 113 suggests that a seed head may be represented. *Anthemis cotula* is also characteristic of heavy damp, calcareous clay soils, in contrast to *Rhaphanus raphanistrum* (wild radish) which prefers lighter and more acidic soils. The seeds of *Eleocharis palustris* (common spike-rush) and possible *Carex* (sedge) are indicative of wet grassland, perhaps suggesting damp areas or muddy puddles amongst the crop fields.

Woodland species were present in the Neolithic sample, with *Corylus avellana* (hazel) nutshell, *Malus sylvestris* (crab apple) seeds and two charred fruits. Although the identification on the fruits could not be determined with certainty, they resembled the fruits of *Tilia* (lime) and *Euonymus europeus* (spindle). It is unusual to find these sorts of charred fruit in archaeobotanical assemblages.

Discussion

Neolithic

The sample from pit 3383 produced a typical Neolithic assemblage with small quantities of cereal grain, hazelnut shell and crab apple seeds. This indicates food debris, from both gathered and cultivated sources. The *Tilia* (lime) and *Euonymus* (spindle) fruits are unusual in that the fruits of these trees are not often found charred, but the taxa are native. The fruits are unlikely to have entered the assemblage as food and may have come in with the fuelwood. There was little identifiable charcoal in the sample; a brief scan showed that *Corylus avellana* (hazel) was present and another diffuse porous species, which it was not possible to identify. The presence of the *Anthemis cotula* seeds in the sample, however, indicates that there was some Roman contamination in the sample. It is possible that the other weed seeds, and indeed, the cereal remains, may also be contaminants. Certainly, the major crop of southern Britain in the Neolithic period was *Triticum dicoccum* (emmer wheat) rather than *T. spelta* (spelt wheat) which became widely cultivated in the late Bronze Age or Iron Age.[77] The presence of at least one definite spelt glume base is therefore suspect.

Romano-British

The assemblages from the Roman samples were similar in composition and dominated by chaff and weed seeds of arable/disturbed ground. This indicates that the charred remains represent the dumped remains of crop processing waste rather than the remains of the product (clean grain). The chaff remains were composed mostly of glume bases, which suggests that the waste material was burnt and dumped after the grain was effectively dehulled for storage or consumption. In modern traditional

[76] e.g. M. Jones and M. Robinson, 'The Crop Plants', in D. Miles (ed.), *Archaeology at Barton Court Farm, Abingdon, Oxon* (CBA Res. Rep. 50, 1984), microfiche 9.

[77] J.R.A. Greig, 'The British Isles', in W.Van Zeist, K. Wasylikowa and K-E. Behre (eds.), *Progress in Old Worlds Palaeoethnobotany* (Balkema, Rotterdam, 1991), 299–330.

societies hulled cereals are often parched to release the grain, after the initial winnowing and sieving stages,[78] and this practice is also referred to by Roman authors.[79] It is possible that the cereal remains from the Chemistry Research Laboratory site were burnt at this stage of the processing, but the low quantities of grain suggest that the waste from the sievings was burnt at a later stage – either as fuel or as waste – and then dumped into ditches and rubbish pits.

There were a number of coleoptiles recovered from the samples and the occasional germinated grain. This may indicate that some of the crop was spoiled and had germinated in the field, or that the grains were deliberately allowed to germinate to aid malting. The quantities, however, are low as the percentage of coleoptiles in relation to total quantity of chaff (excluding awn fragments) is less then 10% in each sample. Moreover, it is not possible to determine whether these archaeobotanical assemblages represent a single event of burning and dumping or multiple events.

The principal wheat crop in Oxfordshire, indeed in southern Britain, at this time was spelt wheat.[80] Sites from the region tend to produce assemblages dominated by spelt wheat, with barley and occasional grains of oat and emmer wheat; for example Farmoor and Barton Court Farm.[81] The remains from the Chemistry Research Laboratory site are consistent with the regional picture. Interestingly, they contrast with the remains from the adjacent site of Mansfield College. The conclusion from the archaeobotanical analysis of the 3rd-4th century samples at Mansfield College was that the assemblages represented stored products (both emmer and spelt wheat spikelets, clean barley grain and pulses) rather than processing waste.[82] It is likely, therefore, that the Chemistry Research Laboratory site is at the edge of the settlement; at least in an area where the processing of the glume wheats (de-husking) was carried out using fire, before being removed to the Mansfield College area for storage.

However, the large quantities of emmer wheat, barley and pulses at Mansfield College are not present at Chemistry Research Laboratory. Perhaps the emmer wheat that was stored at Mansfield had been brought in from elsewhere and was not commonly cultivated in the adjacent fields. Of course, it is also possible that spelt, emmer, barley and/or legumes were cultivated on a rotational basis and that the archaeobotanical remains at Chemistry Research Laboratory are the results of a single burning event which happened to be during spelt processing. The fact that the assemblages from the 2nd-century ditches are very similar to those of the 3rd-4th century tends to suggest that spelt wheat was the principal crop at the site throughout the period of cultivation at the site.

In conclusion, the archaeobotanical remains from the site are consistent with the regional picture for both the Neolithic and the Roman periods. It is suggested that the site was, in the Roman period, in the fields where crop processing took place and that the product was then stored in buildings at the Mansfield College site. There may have been rotational cultivation of several crops (cereal and legume) but this is not evident in the remains from Chemistry Research Laboratory and it is highly likely that the crops stored at Mansfield came from several fields from different locations.

WATERLOGGED REMAINS FROM THE CIVIL WAR DITCH by RUTH PELLING

Introduction

A column of seven samples was taken from the lower fills of the Civil War ditch for the recovery of waterlogged plant and insect remains (Fig. 6). Sub-samples of waterlogged deposits of 1 kg. were floated onto 250μm meshes and the flots were kept wet. The flots were assessed by scanning under a binocular microscope at x10 to x20 magnification.[83] Any seeds noted were provisionally identified and

[78] G C. Hillman, 'Reconstructing Crop Husbandry Practices from Charred Remains of Crops', in R. Mercer (ed.), *Farming Practice in British Prehistory* (1981), 123–162.

[79] e.g. Pliny NH XVIII.

[80] M. Henig and P. Booth, *Roman Oxfordshire* (Stroud, 2000), 154–5.

[81] G. Lambrick and M. Robinson, *Iron Age and Roman riverside Settlements at Farmoor, Oxfordshire* (Oxfordshire Archaeological Unit Report 2, 1979); M. Jones and M. Robinson, op. cit. note 76.

[82] R. Pelling, 'Charred Plant Remains', in P. Booth and C. Hayden, op. cit. note 8, 324–8.

[83] Note that this report is taken from the assessment of the waterlogged remains (Pelling unpublished) as little potential for further work was identified.

TABLE 9. WATERLOGGED PLANT REMAINS

			Sample	122	133	136	137	139	141	142
			Context	3380	3202	3303	3305	3201	3312	3322
			Weight (kg)	1	1	1	1	1	1	1
		habitat								
Bryophatia	Moss			–	–	–	–	+	–	–
Ranunculus acris/repens/bulbosus	Buttercup	Gd		–	–	–	–	+	++	–
Ranunculus sceleratus	Celery–leaved Crowfoot	Aq		–	+++	++	–	+	–	–
Brassica/Sinapis sp.	Cabbage/Turnip/Mustard			C	+	–	–	–	+	+
–										
Raphanus raphanistrum	Wild Raddish	C		–	–	–	–	+	–	–
cf. *Rorippa* sp.	Yellow Cress	d		–	–	+	–	–	–	–
Silene dioica	Red Campion	CRd		–	+	+	+	+	–	–
Cerastium sp.	Mouse-ear Chickweed	CR		–	–	–	+	+	–	–
Stellaria media	Chickweed	CR		+	+	+	+	+	+	+
Chenopodium album	Fat Hen	CR		+	+	+	+	+	+	+
Atriplex sp.	Orache	CR		–	–	+	–	–	–	–
Conium maculatum	Hemlock	RWd		+	–	–	–	–	–	–
Apium nodiflorum	Fool's Watercress	Aq		–	+	–	–	–	–	–
Torillis japonica	Upright Hedge-parsley	GH		–	–	+	+	–	–	–
Polygonum aviculare	Knotgrass	CR		+	+	+	–	+	+	+
Rumex hydrolapathum	Waterdock	Aqd		+	–	+	–	+	+	–
Rumex sp.	Docks	CR		–	–	+	–	+	–	–
Urtica dioica	Common Nettle	GCR		+	+	++	–	++	+	–
Hyoscyamus niger	Henbane	R		–	+++	–	–	+	+	–
Solanum sp.	Nightshade	R		–	–	+	–	–	–	–
Labiate				–	–	–	+	–	–	–
Plantago minor	Plantain	GR		–	–	–	–	+	–	–
Sambucus niger	Elderberry	R		–	–	+	–	–	–	–
Carduus sp.	Thistle	GRd		–	+	+	+	–	–	–
Carduus/Cirsium sp.	Thistle	GR		+	+	++	–	+	–	–
Leontodon sp.	Hawkbit	G		–	–	–	–	–	+	+
Picris hieraciodes	Bristly Ox-Tongue	GRC		–	–	–	–	+	–	–
Sonchus asper	Spiny Milk-Thistle	CR		+	–	–	–	–	+	–
Alisma plantago–aquatica	Water-Plantain	Aq		+	–	+	–	–	–	–
Zannichellia palustris	Horned Pondweed	Aq		–	–	–	–	–	+	–
Eleocharis palustris	Common Spikerush	GM		–	–	–	–	–	+	–
Carex sp.	Sedges	GM		+	–	–	–	+	–	–
Lolium type	Rye-Grass	GR		+	–	–	–	+	+	–
Gramineae small	Grasses			+	–	–	–	+	–	–
Cereal sized straw fragments				+	–	+	–	–	–	+
Cereal sized culm node				–	–	+	–	–	–	–
Branch wood				–	–	+	–	–	–	–
Wood splinters				+	–	–	–	–	+	–
Cadis fly pupare				–	+	+	–	+	+	–
Insects				+++	+	++	–	+	–	+
Molluscs				–	–	+	–	+	+	–
Small bone				–	–	+	–	–	–	–

+ = present; ++ frequent; +++ abundant

Aq = aquatic species
C = cultivated ground
G = grassland
H= hedgerow
M = marsh
R = ruderal
W = woodland
d = damp ground

an approximation of abundance made. Abundance was recorded on a three point scale (present, frequent, abundant). Nomenclature and taxonomic order follows Clapham *et al*.[84]

Waterlogged seeds were noted in all samples (Table 9). The range of taxa represented was fairly consistent. Aquatic species include *Ranunculus sceleratus* (celery-leaved crowfoot), *Apium nodiflorum* (fool's watercress), *Rumex hydrolapathum* (waterdock) and *Alisma plantago-aquatica* (water plantain) which suggest shallow, muddy water, while *Zannichellia palustris* (horned pondweed) is characteristic of more open water. Species of marshy or wet grassland were presumably growing on the edges of the ditch, such as *Ranunculus acris/repens/bulbosus* (buttercup), *Conium maculatum* (hemlock) and *Eleocharis palustris* (common spikerush). The dry ground species include grassland plants such as *Carduus/Cirsium* sp. (thistle), *Picris hieraciodes* (bristly ox-tongue) and *Sonchus asper* (spiny milk- or sow-thistle) and plants of disturbed ground, such as *Hyoscyamus niger* (nightshade), *Urtica dioica* (stinging nettle), *Stellaria media* (chickweed) and *Chenopodium album* (fat hen). Occasional insects were noted including species of grassland and disturbed ground conditions. No direct evidence for human activity was recovered from the ditch although cereal-sized straw fragments may have derived from human activity.

The waterlogged deposits indicate that some muddy water was present within the ditch and that grassland and disturbed ground conditions prevailed in the immediate area. No plants of economic importance were noted.

HUMAN BONES by ANNSOFIE WITKIN

Introduction

The isolated late Roman decapitation inhumation (3696) had been interred in a sub-rectangular grave cut (3694) orientated west-east. The skeleton was supine, extended with the arms crossed over the stomach area. The cranium and the uppermost three vertebrae had been removed from the body and placed between the lower legs with the head facing north. An ancillary vessel (3697) was located in the south-western end of the grave, above the shoulders of the skeleton.[85]

Methodology

The human skeletal remains was analysed according to the recording standards set out in IFA paper number 7.[86] Dental inventory was recorded following the Zsigmondy system. The sex of the individual was established through visual observations of the sexually diagnostic features of the cranium and pelvis as well as metrical data.[87] Age was estimated through the degenerative changes of the pubic symphysis,[88] the auricular surface[89] and sternal rib end.[90] In addition, dental attrition[91] and cranial suture closure[92] were also used. Stature was calculated using the regression formulae of Trotter.[93]

[84] A. R. Clapham, T. G. Tutin and D. M. Moore, *Flora of the British Isles* (3rd edition, 1989).

[85] This is a summary of the full report on the human remains, a complete copy of which may be found in the archive.

[86] M. Brickley and J. McKinley, *Guidelines to the Standards for recording Human Remains* (IFA paper 7, Southampton, 2004).

[87] Workshop of European Anthropologists, 'Recommendations for Age and Sex Diagnoses of Skeletons', *Journal of Human Evolution*, 9 (1980), 517–49

[88] J. M. Suchey and S. Brooks, 'Skeletal Age Determination based on the Os Pubis: a comparison of the Acsádi-Nemeskéri and Suchey-Brooks method', *Human Evolution*, 5 (1990), 227–238.

[89] C. O. Lovejoy, R. S. Meindl, T. R. Pryzbeck and RP. Mensforth, 'Chronological Metamorphosis of the Auricular Surface of the Ilium: a new method for determination of Adult Skeletal Age-at-death', *American Journal of Physical Anthropology*, 68 (1985), 15–28.

[90] M. Y. Iscan, S. R. Loth and R. K. Wright, 'Age Estimation from the Ribs by Phase Analysis: White Males', *Journal of Forensic Sciences*, 29 (1984), 1094–1104.

[91] A. Miles, 'Assessment of Age of a Population of Anglo-Saxons from their Dentition', *Proceedings of the Royal Society of Medicine*, 55 (1962), 881–6.

[92] R. S. Meindl and C. O. Lovejoy, 'Ectocranial Suture Closure: A revised method for the determination of Skeletal Age at Death based on the Lateral-anterior Sutures', *American Journal of Physical Anthropology*, 68 (1985), 29–45.

[93] M. Trotter, 'Estimations of Stature from Intact Long Limb Bones', in T. D. Stewart (ed.), *Personal Identification in Mass Disasters* (Washington, 1970), 71–83.

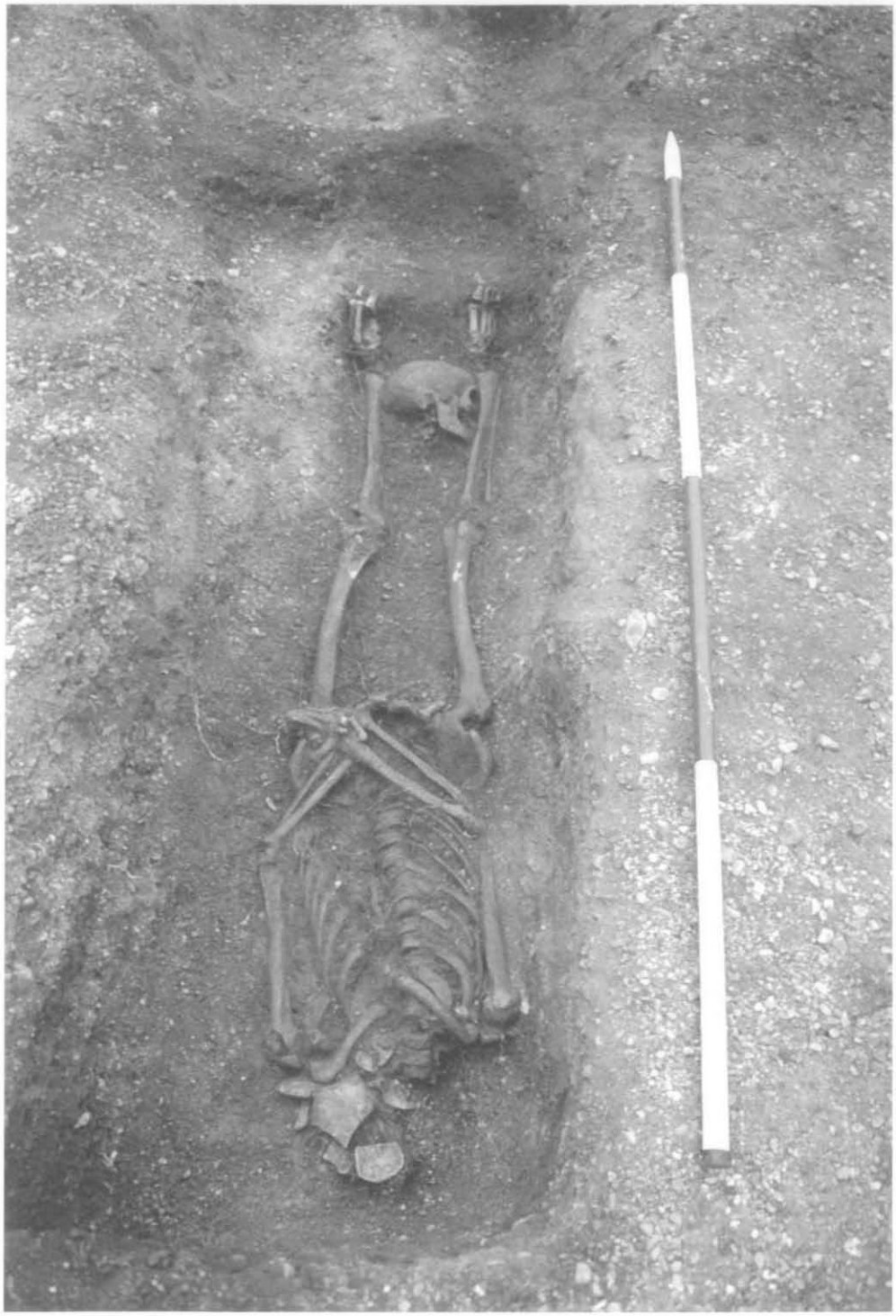


Fig. 12. Inhumation 3696

Results

Age, sex and stature

The individual was clearly male and aged over 50 years. He was estimated to be 1.85 m. tall. The mean stature of Roman males was 1.69 m.[94] It is clear this individual was well above average height and would be considered to be tall when compared to modern standards.

Dental and skeletal pathology

A total of 23 teeth had been lost ante-mortem, a further 7 post mortem and only 2 teeth were present. Small and medium sized calculus deposits were present on the dentition. Calculus is mineralised plaque and is generally associated with poor oral hygiene.[95] One large apical dental abscess was also present on the anterior portion of the maxilla relating to the right central and lateral incisor.

Slight porosity was present on the superior parts of the right and left parietals. This type of lesion is known as porotic hyperostisis and is caused by iron deficiency. The lesions were healed.

The base of the left maxilla exhibited lesions consistent with maxillary sinusitis. The infection was active at the time of death. There are numerous causes and these include smoke from domestic fires, allergies and upper respiratory tract infections.[96]

Striated lamellar bone was present on the medial aspects of both tibia. This type of infection involves only the surface of the bones and is known as periostitis. The precise aetiology is not known but it is believed that due to the close proximity to the skin surface, the infection may have been caused by minor shin trauma.

Degenerative changes to the joint surfaces were present on the right and left acromioclavicular joints, right sternoclavicular joint, left distal ulna, both hip joints, navicular bones and the heads of 1st1st metatarsals. Osteoarthiritic changes were present on the right elbow and the intermediate phalanx of the third digit, left hand. Degenerative changes were also present throughout the spinal column. with the most severe lesions present in the cervicals.

One cut mark was present on the third cervical vertebral body. It was situated distally on the anterior aspect running from left to right at a slight angle. On the right side, the edges of the cut mark were depressed, indicating that pressure had been applied when the cut was made. In addition, the inferior margin of the inferior articular process and the inferior edge of the lamina on the left side were missing. The edges of the bone were smooth and sharp thus indicating that the bone had been sliced off using a sharp implement such as a knife. The angle of the cut suggests it was made at the same time as the cut mark on the anterior aspect of the vertebral body.

Decapitation burials

Geographical and chronological distribution

The vast majority of decapitated Roman burials have been found south-east of the line between the Severn and The Wash and are particularly concentrated in the Upper Thames Valley and Wessex. It therefore appears that the rite is confined to the areas where inhumation burials were the predominant rite prior to the conquest.[97] In Oxfordshire, cemeteries containing decapitated burials have been excavated in Abingdon, Alchester, Barrow Hills, Bloxham, Cassington, Crowmarsh, Curbridge, Stanton Harcourt, Wroxton St Mary, and Yarnton.[98]

94 C. Roberts and M. Cox, *Health and Disease in Britain. From Prehistory to Present Day* (Stroud, 2003).
95 S. Hillson, *Dental Anthropology* (New York, 1996).
96 C. Roberts and K. Manchester, *The Archaeology of Disease* (2nd edn., New York, 1995)
97 R. Philpott, op. cit. note 52, 78.
98 M. Harman, T. I. Molleson and J. L. Price, 'Burials, Bones and Beheadings in Romano-British and Anglo-Saxon cemeteries', *Bull. Brit. Mus. Nat. Hist. (Geol.)*, 35(3) (1981), 145–188; C. M. Clarke, 'Excavations at Cold Harbour Farm, Crowmarsh', *South Midlands Archaeology*, 26 (1991), 1–76; P. Booth, 'Late Roman cemeteries in Oxfordshire: a Review,' *Oxoniensia*, lxvi (2001), 13–42; A. Boyle and R. A. Chambers, 'The Romano-British cemetery', in R. A. Chambers and E. McAdam, *Excavations at Barrow Hills, Radley, Oxfordshire. Volume II: the Romano-British Cemetery and Anglo-Saxon Settlement* (Oxford Archaeology Thames Valley Landscapes Monograph, forthcoming); A. Boyle, 'The Human Remains', in G. Hey, *Yarnton: Iron Age and Roman Settlement and Landscape* (Oxford Archaeology Thames Valley Landscapes Monograph, forthcoming).

Most of the identified decapitation burials have been found in small rural cemeteries associated with farms, villas and minor settlements, very few being found in urban cemeteries and most are dated to the 3rd and 4th centuries. The Roman decapitation burials which have been dated in Oxfordshire all belong to the late Roman period.

Age and sex distribution

South of the line between the Severn and the Wash, of the decapitation burials which can be assigned sex, 87 burials, 56 were females and 39 males indicating a slight preference of females receiving this type of treatment. The age ranges present are diverse but individuals aged below 16 are generally absent apart from two infant burials at Springhead, Kent, and a recent example from Lankhills.[99] The incidence of decapitation does not appear to vary from the general trends of mortality in the adult population.

In Oxfordshire, there is a slightly higher incidence of male (24) compared to female (19) decapitation burials.[100] The age ranges are very similar to those above given for all of the country.

Funerary ritual

Grave furniture is not commonly found in the graves of decapitated individuals. This may however reflect the general decline of grave goods in late 4th century. Local variations do however occur with the tradition persisting to the end of the 4th century. When artefacts are present, these have consisted of pottery and glass vessels, coins, equipment, personal ornaments and footwear.

Of 123 known decapitation burials, 111 (90.24%) of the crania had been placed below the hips and 54 (43.9%) had been placed between the knees and legs or the feet. In Oxfordshire, all inhumation burials had the cranium between the knees or legs. Most commonly it had been placed between the lower legs and feet.

On those decapitations with cut marks present, it is clear the act was performed from the front, at or after the time of death. Four out of seven decapitation inhumations from Lankhills had cut marks present.[101] These indicated that the neck was severed between the 3rd and the 4th vertebrae (the middle of the neck). Cut marks were present on the anterior surfaces of these vertebrae on all individuals with minimal bone damage. This indicates skill and precision on part of the person(s) performing the severing of the heads. Moreover, the lack of bone damage strongly suggests that the individual was dead prior to the severing of the head as such surgical accuracy would have been extremely difficult to achieve if the individual had been alive.[102]

Discussion

It is clear that the decapitation burial from this site fits well within the corpus of similar burials in the region. It was of an elderly male individual who most likely had reached the natural end of his life. The neck had been severed from the front between the 3rd and 4th vertebrae with little damage to the bones, denoting obvious care.

Various theories as to the motive for this ritual have been put forward: to prevent the dead from walking; as a punishment or deterrent; human sacrifice of lower status individuals (illegal under Roman law); rite of passage – by breaking the link between this world and the next the deceased is able to pass over to the other world; the head was believed to be the seat of the soul. By severing it, the victim would be deprived of his soul and therefore his future life; celts and Romans believed that the head was the seat of the life force and therefore a powerful totem. Through the ritual killing of a dead individual the supernatural life force was shifted to a beneficiary in this world.

99 Philpott, op. cit. note, 52; Booth, pers. comm.

100 Harman *et al.*, op. cit. note 98; Clarke, op. cit. note 98; Booth, op. cit. note 98; Boyle and Chambers, op. cit. note 98; Boyle, op. cit. note 98.

101 R.J. Watt, 'Evidence of Decapitation', in G. Clarke, *The Roman Cemetery at Lankhills* (Oxford, 1979), 342.

102 Philpott, op. cit. note 52, 80.

Of the above theories, the last mentioned is the one that may be the most plausible, offering an explanation for the evident care and attention taken when the head was removed.

Catalogue

Preservation and completeness	Excellent with few bones missing
Age	50+
Sex	M
Stature	1.85 m.
Dental pathology	Large abscess and moderate calculus

Dentition

X	X	X	X	X	/	X	/	/	/	/	/	/	X	X	X
X	X	X	X	X	X	X	X	X	X	X	X	X	X	7	8

Pathology

Porotic hyperostosis, maxillary sinusitis, Degenerative joint disease, Spinal degenerative joint disease, periostitis, cut mark on C3.

ANIMAL BONE by Emma-Jane Evans

Introduction

A total of 3274 fragments (11.0338 kg.) of bone and teeth were recovered from the site. Of these, 2102 fragments (10.8926 kg.) were recovered by hand excavation, and 1172 fragments (1412 kg.) were recovered from sieved soil samples. Many broken fragments of the hand-recovered material were refitted, reducing the number to 854 fragments.

Methodology

Identification of the bone was undertaken at Oxford Archaeology with access to the reference collection and published guides. All the animal bones were counted, and where possible the bones were identified to species, element, side and zone.[103] Also, fusion data, butchery marks, gnawing and burning were noted. Undiagnostic bones were recorded as small (small mammal size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck, and Prummel and Frisch, in addition to the use of the reference material housed at OA.[104] Where distinctions could not be made, the bone was recorded as sheep/goat (s/g).

The condition of the bone was graded using the criteria stipulated by Lyman,[105] grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

Tooth eruption and wear stages were measured using a combination of Halstead and Grant (Table 12).[106] Measurements were taken according to the methods of von den Driesch and withers heights

[103] D. Serjeantson, 'The Animal Bones', in S. Needham and T. Spence, *Refuse and Disposal at Area 16, East Runnymede: Runnymede Bridge Research Excavations*, vol. 2 (1996).

[104] J. Boessneck, 'Osteological Differences in Sheep *(Ovis aries Linné)* and Goat *(Capra hircus Linné)*', in D. Brothwell and E. Higgs (eds.) *Science in Archaeology* (1969), 331–58; W. Prummel and H.-J. Frisch, 'A Guide for the Distinction of Species, Sex and Body Size in Bones of Sheep and Goat', *Journal of Archaeological Science*, xiii (1986), 567–77.

[105] R. L. Lyman, *Vertebrate Taphonomy* (Cambridge Manuals in Archaeology, 1996).

[106] P. Halstead, 'A Study of Mandibular Teeth from Romano-British contexts at Maxey', in F. Pryor, *Archaeology and Environment in the Lower Welland Valley* (1985), 1, 219–82; A. Grant, 'The Use of Tooth Wear as a Guide to the Age of Domestic Ungulates', in B. Wilson *et al.*, *Ageing and Sexing Animal Bones from Archaeological Sites* (BAR British Series 109, 1982), 91–108.

were calculated using Teichert, and Kieserwalter in Boessneck and von den Driesch (14).[107] Fusion data for selected species are presented in Table 14.

Results

The majority of the animal remains are in good condition, grading between 1 and 2, allowing for the identification of 484 fragments, 57.2% of hand collected bone, and 126 fragments, 10.7% of sieved material, all from phased contexts. A summary of all the hand collected species identified and the sieved remains are presented in Tables 10 and 11.

TABLE 10. TOTAL NUMBER OF HAND COLLECTED BONES BY SPECIES AND PHASE

Phase	Horse	Cattle	S/g	Pig	Red Deer	Dog	S.Mammal	Bird	Total
1	0	8	1	0	0	0	2	1	12
2a	2	21	2	1	1	1	0	0	28
3	30*	73	299**	4	0	0	0	3	409
4	8	14	9	0	0	0	0	4	35
5	0	0	0	0	0	0	0	0	0
Total	**40**	**116**	**311**	**5**	**1**	**1**	**2**	**8**	**484**

*19 of these bones came from partially articulated horse remains in ditch group 3450
** 281 of these bones belonged to one individual (context 3277)

Phase 1 – Neolithic/Early Bronze Age

Only 16 fragments of bone were identified from early Neolithic/Bronze Age features. Of these fragments, bone and teeth from cattle, sheep/goat, pig, small mammal and bird were present, with cattle fragments being the most abundant. The minimum number of cattle was one, with fusion data of suggesting that at least one animal survived into adulthood. Butchery marks were noted on several large long bone fragments, indicating that some processing of animals was carried out but animal husbandry regimes cannot be inferred from this assemblage. The minimum number of sheep/goat, pig, small mammal and bird is also 1. A total of 147 fragments of burnt bone were recovered from pit 3442, three of which were identified as pig molars. The remainder of the burnt bone was unidentifiable to species.

Phase 2a and 3 – Romano-British 1st to 4th century AD

Cattle The majority of the bone comes from features dated to the later Roman period (Phase 3). Cattle were the best represented species, with a minimum number of six. The age at death of cattle using tooth eruption and wear stages was calculated for four mandibles, with one aged at 1-8 months, and three aged 8-18 months. Fusion data also suggest that half of the cattle present were dying before reaching the age of $3^1/_2$ years old. Chop marks were noted on many of the bones indicating that the cattle were processed, probably for the consumption of meat. Two cattle bones exhibited eburnation, which may be indicative of osteoarthritis.

107 A. Von den Driesch, *A Guide to the Measurement of Animal Bones from Archaeological Sites* (Peabody Museum, 1976); M. Teichert, 'Osteometrische Untersuchungen zur Berechnung der Widerristhöhe bei vor- und frühgeschichtlichen Schweinen', Kühn-Archiv 83, 237-92 (1969); J. Boessneck and A. von den Driesch, 'Kritische Anmerkingen zur Widerristhöhenberechnung aus Längenmassen vor und frühgeschichtlicher Tierknochen', Saugetierkdl Mitt 22 (4) (1974), 325–48.

TABLE 11. TOTAL NUMBER OF IDENTIFIED SIEVED REMAINS BY SPECIES AND PHASE

Phase	Chicken	Cattle	S/g	Horse	Pig	Vole	Frog/ toad	Wood mouse	Bank vole	Field vole	Crow	D. goose	Passerine	Fish	Eel	Mouse	Total
1	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
2	1	0	1	0	0	3	2	4	1	6	3	0	0	0	0	0	21
3	50*	9	4	5	2	6	14	5	0	0	0	0	1	2	1	1	101
4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**51**	**9**	**5**	**5**	**6**	**9**	**16**	**9**	**1**	**6**	**3**	**1**	**1**	**2**	**1**	**1**	**126**

*Bones belonging to one chicken from pit 3323

TABLE 12.TOOTH WEAR ERUPTION STAGES FOR CATTLE AND SHEEP/GOAT

Cattle		< 1 mth	1–8 mths	8-18 mths	18-30 mths	30-36 mths	Young adult	Adult adult	Old	Senile
Phase 2 and 3	Number	–	1	3	–	–	–	–	–	–
	%	–	25%	75%	–	–	–	–	–	–

Sheep/goat		< 1 mth	1–3 mths	3–10 mths	10–20 mths	20–34 mth	3–5 yrs	5–8 yrs yrs	> 8 yrs yrs
Phase 2 and 3	Number	–	–	–	–	–	1	2	–
	%	–	–	–	–	–	33.3%	66.7%	–
Phase 4	Number	–	–	–	–	1	–	–	–
	%	–	–	–	–	100%	–	–	–

TABLE 13. FUSION DATA FOR CATTLE, SHEEP, SHEEP/GOAT, PIG AND HORSE

Cattle		Phase 1			Phase 2 and 3			Phase 4		
	Age	U/F	F	%	U/F	F	%	U/F	F	%
D. Humerus		–	–		–	3		–	1	
P. Radius		–	–		–	2		–	–	
Acetabulum		–	–		–			–	–	
Glenoid		–	–		–	3		–	–	
Early Fusion Sub-total	6–24 months	0	0	0%	0	8	0%	0	1	0%
1st Phalanx		–	–		–	–		–	–	
D. Tibia		–	–		1	2		–	1	
D. Metacarpal		–	–		–	–		–	1	
D. Metatarsal		–	1		–	1		–	1	
Mid Fusion Sub-total	24–42 months	0	1	0%	1	3	25%	0	3	0%
Calcaneum		–	–		–	1		–	–	
P. Femur		–	–		2	–		–	–	
P. Ulna		–	–		–	–		–	–	
P. Humerus		–	–		–	–		–	–	
P. Tibia		–	–		1	–		1	–	
D. Radius		–	–		2	3		–	–	
D. Femur		–	–		–	1		–	–	
Late Fusion Sub-total	42–48 months	0	0	0%	5	5	50%	1	0	100%

Sheep/goat		Phase 2 and 3			Phase 4		
	Age	U/F	F	%	U/F	F	%
D. Humerus		–	2		–	1	
P. Radius		–	2		–	–	
Acetabulum		–	–		–	–	
Glenoid		–	2		–	–	
Early Fusion Sub-total	3–10 months	0	6	0%	0	1	0%
1st Phalanx		1	1		–	–	
D. Tibia		2	3		–	–	
D. Metacarpal		–	1		–	2	
D. Metatarsal		2	2		–	1	
Mid Fusion Sub-total	15–36 months	5	7	41.6%	0	3	0%
Calcaneum		–	1		–	–	
P. Femur		–	–		–	–	
P. Ulna		–	2		–	–	
P. Humerus		–	2		–	–	
P. Tibia		1	2		–	–	
D. Radius		–	2		–	1	
D. Femur		–	4		–	–	
Late Fusion Sub-total	36–42 months	1	13	7.1%	0	1	0%

Pig		Phase 2 and 3		
	Age	U/F	F	%
D. Humerus		1	1	
P. Radius		–	1	
Acetabulum		–	–	
Glenoid		–	–	
Early Fusion Sub-total	12–24 months	1	2	33.3%
1st Phalanx		–	–	
D. Tibia		–	–	
D. Metacarpal		–	–	
D. Metatarsal		–	–	
Mid Fusion Sub-total	24–30 months	0	0	0
Calcaneum		1	–	
P. Femur		–	–	
P. Ulna		–	–	
P. Humerus		–	–	
P. Tibia		–	–	
D. Radius		–	–	
D. Femur		–	–	
Late Fusion Sub-total	36–42 months	1	0	100%

Horse		Phase 2 and 3			Phase 4		
	Age	U/F	F	%	U/F	F	%
D. Humerus		–	3		–	–	
P. Radius		–	1		–	–	
Acetabulum		–	–		–	–	
Glenoid		–	1		–	–	
1st Phalanx		–	3		–	–	
2nd Phalanx		–	2		–	–	
D. Metapodial		–	3		–	2	
Early Fusion Sub-total	6–24 months	0	13	0%	0	1	0%
D. Tibia		–	2		–	–	
Calcaneum		–	–		–	–	
P. Femur		–	2		–	–	
Mid Fusion Sub-total	24–42 months	0	4	0%	0	0	0%
P. Ulna		–	–		–	–	
P. Humerus		–	1		–	–	
P. Tibia		1	1		–	–	
D. Radius		–	1		–	–	
D. Femur		–	1		–	–	
Late Fusion Sub-total	42–48 months	1	4	20%	0	0	0%

TABLE 14. WITHERS HEIGHTS CALCULATED FOR DOMESTIC SPECIES

Phase	Species	Withers Height
3	Horse	1.39 m. (13.6 hands)
3	Horse*	1.29 m. (12.7 hands)
3	Horse	1.33 m. (13.1 hands)
3	Horse*	1.54 m. (15.2 hands)
4	Horse	1.50 m. (14.8 hands)
4	Horse	1.48 m. (14.5 hands)
3	Sheep/goat*	0.60 m.
3	Sheep/goat*	0.58 m.
3	Sheep/goat*	0.59 m.

* articulated skeleton

Sheep/goat The minimum number of sheep/goat is four, including the articulated skeleton. A total of 281 of the identified fragments belonged to the remains of a sheep skeleton found within the northern edge of late Roman pit (3323). All of the recovered long bones were fused and tooth wear stages indicated that the animal was from 6 to 8 years of age. There was no indication as to the cause of death of the animal. It seems unlikely that this represents a ritual burial and is more likely to be the remains of an old animal that may have died from disease or other non-human related means and was cast into a pit.

The age at death of the disarticulated sheep/goat fragments was calculated using both tooth wear and eruption stages and fusion data. These methods suggested that the age of sheep/goat at the site ranged from <15 months, to 5-8 years of age. Butchery marks were noted on 2 of the 23 bones not associated with the articulated skeleton, indicating that sheep/goat were also processed at the site. Withers heights of the articulated sheep/goat could be calculated using three separate limb bones. The average value for the three calculations suggests a withers height of 0.59 m., which is average for this period, as compared to 2nd and 3rd century Lincoln with a range between 0.53 m. and 0.65 m., with the average also being 0.59 m.[108]

Horse The minimum number of horse is three, including the articulated limbs found in ditch group 3450. Parts of the right hind leg and left foreleg were recovered from this feature. It may represent all that remains of a horse skeleton, the rest of which may have been ploughed away. The age at death of horse from this site indicated that at least one animal died before reaching $3^1/_2$ years old. Butchery marks were noted on two bones, with one long bone having been chopped and one intermediate phalanx bearing cut marks. It is possible that the phalanx exhibiting cut marks, (belonging to the articulated horse remains), may have occurred from the skinning of the animal. This was also noted at Farmoor, where two horses were buried together in a single pit, both of which had cut marks on the phalanges associated with skinning.[109] However, as only parts of the right hind leg and left foreleg were recovered from this feature, the evidence is not conclusive.

Withers heights could be calculated on four individual bones, two of which came from the articulated horse. There was a slight discrepancy in the heights calculated from the bones of the articulated horse, with measurements of 12.7 hands (1.29 m.) and 15.2 hands (1.54 m.). The further withers' heights calculated gave measurements of 13.6 hands (1.39 m.) and 13.1 hands (1.33 m.). Horses from this period tend to be between 10 and 14 hands, which the horses from this site seem to be.[110] Due to the small number of bones that could be used to calculate withers height, it is difficult to know if the discrepancy in the articulated horse measurements is due to a problem in the method, or if this represents a larger horse which would be worthy of note from this period.

Pig The fusion data suggests that the majority of pig recovered died before the age of $3^1/_2$ years. Chop marks were noted on two bones, indicating that pigs had been processed, probably for consumption, as pigs provide very little secondary products and are exploited mainly for their meat.

Dog A single dog vertebra was found. Dogs were almost certainly kept as working animals and guard dogs, as well as being used in hunting.

Wild animals The presence of red deer during this period is represented by a single bone, a proximal phalanx.

Small mammals The small mammals present at the site comprised bank vole, field vole and wood mouse. These are mammals that may occupy buildings, and more commonly fields and gardens, therefore it is highly likely that they are the remains of animals that died naturally at the site. The frog/toad remains are also likely to be wild species that died of natural causes at the site, rather than having been introduced by humans.

Birds Remains of chicken, crow, domestic goose and a passerine (song bird) were recovered from the sieved remains. The remains of the crow gave a minimum number of 1, the ulna of which had a healed midshaft fracture. The passerine coracoid is probably representative of a bird dying naturally at the site.

[108] K. Dobney, J. Jaques and B. Irving, 'The Animal Bones from Lincoln', in *Of Butchers and Breeds, Report on Vertebrate Remains from various Sites in the City of Lincoln* (Lincoln Archaeological Studies, 5, 1996), 23–65.

[109] B. Wilson, 'The Vertebrates', in G. Lambrick and M. Robinson, *Iron Age and Roman riverside settlements at Farmoor, Oxfordshire* (Oxfordshire Archaeological Unit Report 2, CBA Research Report 32, 1979), 128–33.

[110] Dobney *et al.*, op. cit. note 108.

The minimum number of chickens is two, one of which was an almost complete (probable) male (with spur) chicken from pit 3323. There were no butchery marks to indicate the bird had been processed for consumption, but a larger population would be required to draw any reasonable conclusions. Osteophytic lipping was noted around the spur on a tarso-metatarsus.

Fish Four fish vertebra were recovered through sieving. Two of these were identified as eel, which would have been present in local streams and rivers.

Phase 4 – post-medieval

The cattle teeth and bone fragments from this phase resulted in a minimum number of one. The age at death was estimated using fusion data, as no tooth rows were available to use tooth wear and eruption data. This suggested that the cattle died before reaching $3^1/_2$ years of age. Butchery marks were noted on the majority of the fragments suggesting that cattle were processed, probably for consumption. However, the limited evidence does not allow any conclusions to be drawn as to cattle husbandry from this period.

The minimum number of sheep/goat from this period is one, with tooth wear and eruption data suggesting an age of death of 20-34 months. The fusion data indicates that an age of over $3^1/_2$ years was achieved by at least one individual, therefore, with the tooth wear data, a minimum number of two can be inferred. Butchery marks were noted on the majority of the bones present suggesting that sheep/goat were processed, probably for the consumption of meat, but as with the cattle remains, no conclusions can be drawn as to the use of sheep/goat from this period.

The presence of two complete right horse metatarsals indicates a minimum number of two. The fusion data suggests that all the horse recovered survived to greater than 4 years of age. Butchery marks around a distal metatarsal may, as with the horse from the Romano-British period, represent skinning marks. Withers heights could be calculated from the two metatarsals, giving heights of 14.5 hands and 14.8 hands, slightly larger than those of the Romano-British period.

One fragment of domestic goose was identified, with two other fragments suggesting domestic goose size. It is likely that the domestic goose was consumed at the site, but its importance in the diet of the population cannot be inferred from such a small sample.

Discussion

Neolithic/early Bronze Age

The very small sample of bones and teeth from this period does not allow any conclusions to be drawn as to the animal husbandry regimes practised at this site during the Neolithic/early Bronze Age, or the importance of particular species to the population. It may only be suggested that the presence of butchery marks on several large long bones indicates that the cattle were processed for meat, but specific butchery practices carried out at the site cannot be inferred.

Romano-British 1st to 4th century AD

The evidence indicates that cattle, sheep/goat and pigs were consumed during this period. Age of death data for cattle and the presence of butchery marks indicated that cattle were kept until they had reached an age for maximum meat yield, and were processed for the consumption of meat, and the chopping of long bones is indicative of marrow utilisation. Sheep/goat remains were also processed, but whether meat production was the main purpose for which the animals were kept, or whether those animals kept for milk and wool were eaten after their death is difficult to determine. Butchery marks and age at death of pigs may support the option that cattle and sheep were utilised as much for their secondary products as for meat. As pigs can produce large litters outside the usual seasonal cycles followed by cattle and sheep, a plentiful supply of pork is always available; therefore pigs are usually killed prior to full maturation.[111]

[111] Ibid. 45.

The remains from this period may indicate that the skinning of horse was undertaken. Whereas cattle can be utilised for traction, milk production, meat production and manure, horses can only be used to pull relatively light loads and for manure. The horse's importance lay in the status it conferred on its owner and its use as transport.[112] However, once dead, a horse's carcass could be utilised for meat and the skin for leatherworking.

The withers heights calculated from the recovered skeleton generally accord with those suggested for the Romano-British period. The possible presence of the larger horse, as noted, may be due to discrepancy in the method; large horses were usually bred and reserved for the military,[113] and their presence in the context of a modest farmstead would arguably be unlikely.

The evidence suggests that deer formed a minor component of the population's diet during this period, but its importance cannot be inferred from a sample of this size.

It has been argued that chickens were often kept for sacrifice and cock-fighting as well as for meat and eggs, although no evidence is available to ascertain the cause of death of this individual.[114]

Post-medieval

As with the Romano-British period, cattle and sheep/goat were processed and probably consumed at the site during this period, as was the domestic goose. It is possible that the horse had been skinned, and withers heights suggest that the horses are slightly larger than those of the Romano-British period.

DISCUSSION

Evidence for three distinct periods of occupation was recovered and, although there was considerable truncation and disturbance in some areas of the site, enough survives to enable us to explore the types of settlement and activities represented. Limited prehistoric activity was identified but this had added to the generally sparse knowledge of occupation of Oxford in the Neolithic and Bronze Age. The Romano-British occupation forms the main evidence recovered from the site and has enabled this settlement to be discussed more fully with the results from the Mansfield College site. Finally important new evidence relating to the Civil War defences has been recovered.

Neolithic and Bronze Age Prehistoric

The prehistoric features consisted of two pits and a ditch in the northern part of the site. Both of the pits contained flint and hazelnut; pit 3442 contained a small amount of burnt animal bone while pit 3383 contained a small quantity of charred crab apple seeds and some unusual spindle and lime fruits. The latter may well have been deposited together with wood for fuel. A little cereal was recovered from this pit but given that some Roman contaminants (e.g. *Anthemis cotula*) have been identified caution should be exercised.

A Neolithic pit similar to the two at this site was found at the excavations at Mansfield College immediately to the south-west of the excavation.[115] While its relative location may be purely circumstantial, it is notable that the three pits form a line on a NE.-SW. alignment and are spaced approximately 35 m. apart. The isolation of these features and their possible linear alignment may signify that the placement of these pits was intentional. The fact that only one possible Neolithic pit has been identified in the area of modern central Oxford

112 A. Grant, 'Animal Husbandry', in B. Cunliffe, Danebury (CBA Res. Rep. 52, 1984), ii, 496–548.

113 Dobney *et al.*, op. cit. note 108.

114 D. Serjeantson, 'The Bird Bones', in M. Fulford and J. Timby, *Late Iron Age and Roman Silchester, Excavations of the Site of the Forum-Basilica 1977, 1980-86* (Society for the Promotion of Roman Studies, Britannia Monograph Series, 15, 2000), 484–500.

115 Booth and Hayden, op. cit. note 8.

(located at Littlegate[116]) adds to the significance of the pits found on this site. Neolithic and Bronze Age flint has been recovered from various sites in Oxford, although quantities are frequently very small.[117] There is now however considerable evidence for Neolithic activity within the Oxford area into which the evidence from this site fits well.[118]

The simplest interpretation of the ditch 3460 is that it may represent a Bronze Age boundary of some kind, unrelated to the pits. However, the possibility that it is a cursus ditch is worth consideration. The limited quantity of later Neolithic pottery is of note and is contemporary with the flintwork from the pit. In the Upper Thames Valley the occurrence of Neolithic pits and Bronze Age barrows in close proximity to Neolithic monuments has been noted, as for example at Barrow Hills, Radley, and the phenomenon appears to apply to cursuses as well; a Bronze Age ditch and pit identified at Halifax House, South Parks Road may be contemporary.[119]

Romano-British settlement

Consideration of the Romano-British settlement on the site should take account of the general level of preservation of deposits. It is clear that the site as a whole has suffered considerable disturbance, both from discrete but total truncation by such features as the Civil War ditch and the 19th-century basements and services, and more generally by post-medieval garden cultivation. This has compromised the clarity of the stratigraphic sequence to some degree – particularly in the archaeologically 'busy' areas of the site – and inevitably reduced the confidence of the phasing.

With that in mind, the site will first be considered in its own right, then in the context of the adjacent Mansfield College and Halifax House sites, and in the local landscape.

The evidence suggests activity early in the 2nd century (Phase 2a), as a division of land along a broad N.-S. axis, with supplementary paddocks and slight evidence for structures, but few indications suggesting proximity to a settlement 'core'. The only likely structure at this time is represented by the circular gully (3190), which may be a 'stack ring' – a gully dug round a hay rick. This type of feature is known from some early Roman sites in the Upper Thames as for example at Thornhill Farm, Fairford, Glos.[120] The group of postholes to the north-east could be contemporary, but no dating material was recovered from them. Finally, the short N.-S. gully (3012) in the south-east corner of the site, with an associated posthole and a reasonable quantity of pottery in the fill might represent a beam slot and corner posthole of a W.-E. oriented building.

The distribution of features suggests that the site is on the periphery of the settlement. The northern half of the site is almost devoid of significant evidence, even allowing for the greater degree of disturbance by modern features.

116 T. G. Hassall, 'Excavations at Oxford 1971. Fourth interim report', *Oxoniensia*, xxxvii (1972), 141.

117 D. Poore and D. Wilkinson, op. cit. note 7, 37.

118 See for example A. Barclay, R. Bradley, G. Hey and G. Lambrick, 'The earlier Prehistory of the Oxford region in the Light of recent Research, *Oxoniensia*, lxi (1996), 3–20; R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR Brit. Ser. 194, 1988).

119 A. Barclay and C. Halpin, op. cit. note 12; A. Barclay, G. Lambrick, J. Moore and M. Robinson, *Lines in the Landscape. Cursus monuments in the Upper Thames Valley: Excavations at the Drayton and Lechlade Cursuses* (Oxford Archaeology Thames Valley Monograph 15, 2003), 30–1; S. Anthony, 'Prehistoric and early Roman Field Systems at Halifax House, South Parks Road, Oxford', *Oxoniensia*, lxx, 129-140.

120 D. Jennings, J. Muir, S. Palmer and A. Smith, 'Thornhill Farm, Fairford, Gloucestershire: An Iron Age and Roman pastoral Site in the Upper Thames Valley' (Thames Valley Landscapes, 23, 2004), 150.

The overall alignment of the ditches in Phase 2a shows a mix of the regular (i.e. contexts 3170, 3160, 3100) and the haphazard (3510, 3090), and there is a suggestion that it may be derived from an earlier system of field boundaries. Pottery of 2nd-century date was recovered from ditches that stratigraphically pre-date the securely Phase 2a features, although they generally display similar alignments.

The later phase of activity shows an altogether more rationalised plan, with most features broadly aligned with the SW.-NE. ditch (3010) across the southern edge of the site. The scarcity of activity in the northern part of the site is still marked, and of particular interest in this regard is the presence of the inhumation.

A number of possibilities can be suggested for the location of the burial on the line of an apparently disused boundary ditch. It may, for instance, link the person directly with the property originally defined by that ditch. Inhumations of this nature, where the head is removed after death, placed between the legs or by the feet and a pot placed in the original position of the head, are uncommon, although the motive behind the practice is open to debate. The ancillary vessel seems to put it later than the ditch(es) along which it is aligned. One explanation could be that, although the ditches were filled in, the line they defined was still marked perhaps by a hedge, for instance.

Local context

That there was some form of community throughout the Romano-British period on the gravel terrace north of the later core of Oxford is accepted. Iron Age origins for this occupation have been identified at a number of sites. The cumulative body of evidence – from small observations, watching briefs, and narrow evaluation trenches as much as from more sizeable area excavations like the Chemistry Research Laboratory site – points to generally continuous Romano-British occupation, but as yet, it has not been possible to clearly identify a settlement core, nor, indeed speculate with much confidence on the status of the settlement. Each new investigated area seems to suggest a refinement of earlier presumptions and conclusions, but as often as not its conclusions are contradicted by later revelations, and the area south of Parks Road and east of Mansfield Road is no exception.

On the basis of the evidence at Mansfield College, Booth and Hayden postulated part of a settlement or fairly modest status – beginning as an ad hoc agglomeration of farmsteads within a fairly unplanned (and derivative?) ditch layout that was ultimately rationalised and became aligned to a N.-S. boundary ditch identified in the Radcliffe Science Laboratory site in 1970-1. This was conjectured to echo a Roman road alignment approximately on the line of the modern Banbury Road. Some of the artefactual evidence pointed to something slightly more elaborate than a group of low status farmsteads, and it was suggested that this may imply the existence of a more sophisticated building nearby, and possibly the access to trading contacts provided by the main road.[121]

The settlement focus appears to lie to the south and south-east of the Chemistry Research Laboratory site. However, a watching brief conducted on development of part of the field to the east of Mansfield Road found only a modest scatter of Romano-British pottery, and no contemporary features; excavations at Halifax House, South Parks Road, have revealed Iron Age and early Roman features including pits, postholes and the remains of field systems.[122]

[121] Booth and Hayden, op. cit. note 8, 327–31.

[122] Oxford Archaeology, 'New University Club House, Mansfield Road, Oxford' (unpublished archaeological watching brief report, 2003); S. Anthony, op. cit. note 119.

In some ways the addition of the Chemistry Research Laboratory site evidence adds weight to this scenario. There is no clear evidence of building, and the settlement focus seems to be to the south, or south-east of the site in both phases. As with the Mansfield College site, the artefactual evidence – in particular the pottery – suggests access to better quality wares, but does not convincingly suggest high status occupation.

As Biddulph notes, the two pottery assemblages indicate a variation in the settlement pattern on each site, with occupation on the Chemistry Research Laboratory site beginning slightly later than that at Mansfield College (2nd century as opposed to late 1st century). In addition, the occupation 'interlude' in the 3rd century at Mansfield College is not evident on the Chemistry Research Laboratory site. This could imply a shifting settlement, but need not mean more than that a property became temporarily unoccupied, while an adjacent property was newly occupied. Clearly, however, the Phase 3 rationalisation is evident on both sites, and seems to be evidence of the action of a single authority. Whereas this rationalisation appears to be the last major Romano-British development on the Mansfield College site, the pits cutting the major W.-E. ditch on the Chemistry Research Laboratory site are arguably evidence for a further modification of land use.

While the orientation and, broadly, the dimensions of the large ditch 3010 and the W.-E. arm of the northern ditch on the Mansfield site seem very similar (see Fig. 3), the assumption that they are the same ditch is not necessarily borne out by the conclusions derived from their respective pottery assemblages. The former produced pottery pointing to a 3rd-century date for its usage, with evidence for its suppression as a viable boundary in the 4th century. In contrast, the Mansfield site ditch is considered to be a late (3rd to 4th century) development of the site.[123] There is, of course, some overlap in the ceramic chronology of the sites, but the important aspects seem to be that the alignment of later (Phase 3) boundaries on the Chemistry Research Laboratory site are not echoed on the Mansfield Road site, and the suppression of the major east-west ditch on the Chemistry Research Laboratory site is not apparent on the latter. In other words, while the two sites might be elements of the same settlement, they are clearly not evolving in the same way.

Differences in the charred grain from the Mansfield Road site and the Chemistry Research Laboratory site suggest that at the latter site grain processing was occurring in the surrounding fields whilst the cleaned product was stored in buildings on the former site.

It could be suggested that the discrepancies evident in the development of the two sites point to the likelihood of there being a major boundary – possibly north-south oriented – between the two sites.

OXFORD'S CIVIL WAR DEFENCES: THE NORTHEAST SECTOR by JULIAN MUNBY and EDMUND SIMONS (Figs. 13 and 14)

The defensive lines around Oxford were constructed in 1642 for the royalist garrison, and were slighted in the following year by the Parliamentarian forces. The returning royalist garrison remade these lines, and a new and more extensive outer defence was begun in 1644-45, and served in the Siege of Oxford in 1646.[124] Parts of the inner line still survive as earthworks or boundaries, and both lines are shown on early mapping, the inner one being the earlier, and the outer and more elaborate line the later one. It is a sector of the outer

[123] Booth and Hayden, op. cit. note 8.

[124] A. Kemp, 'The Fortification of Oxford during the Civil War', *Oxoniensia*, xlii (1977), 237–46. For previous studies, see F. J. Varley, *The Siege of Oxford* (1932).

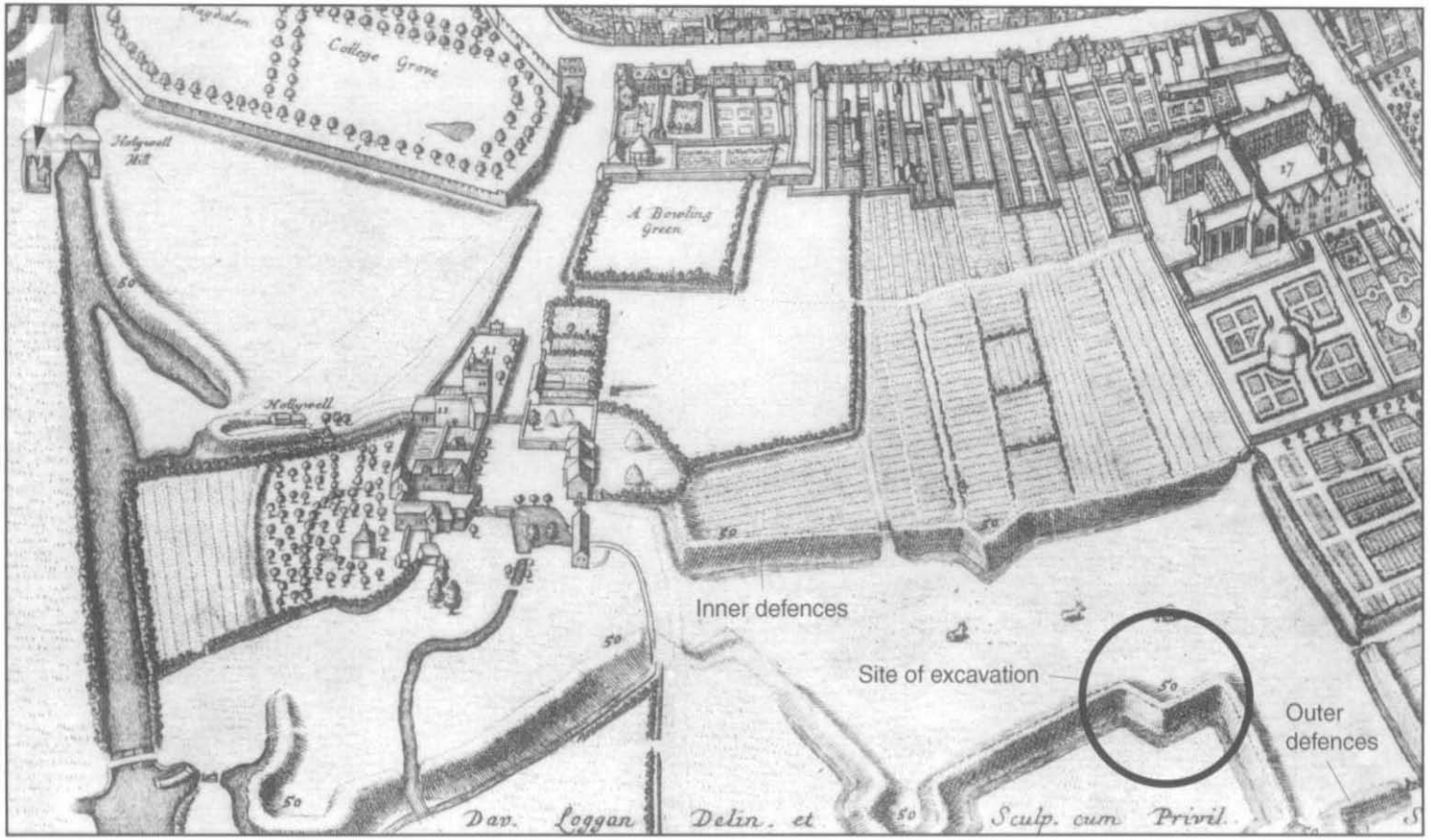


Fig. 13. Detail of Civil War earthworks in Holywell field (looking south) on Loggan's map of 1675

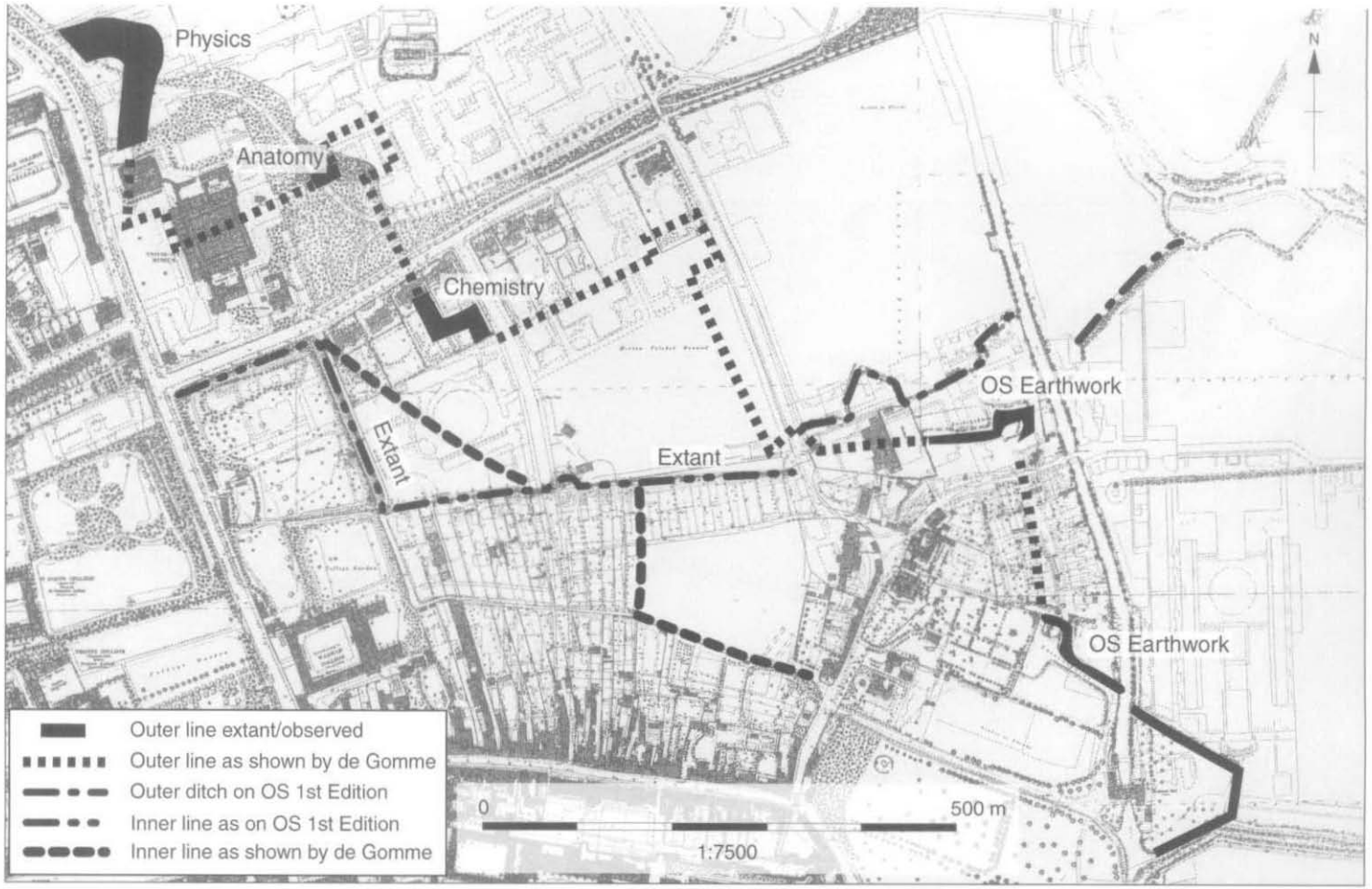


Fig. 14. Field and map evidence for north-east trace of Civil War defences

line, hitherto unlocated, that has now been discovered at the Chemistry Research Laboratory site, and this calls for a review of the extent of the north-eastern defences.

The Civil War defences of Oxford are well known from the map of 1645 by the royalist engineer, Sir Bernard de Gomme,[125] and the remains surviving thirty years later are shown on David Loggan's birdseye map of Oxford, those on the north side of the city being clearly shown in the foreground of his view (Fig. 13).[126] It is less well realised how much of them survived into the 19th century to be recorded on Ordnance Survey maps, while a number of excavations in the Science Area have encountered significant remains, described below. Loggan's map of 1675 shows the site of the Chemistry Research Laboratory as pasture (grazed by cows) between two lines of the Civil War defences. Only the inner line has survived, and the outer line had mostly vanished by the 19th century.

Evidence for the inner line of defences

The evidence for the inner line is fairly clear, since a long East-West line survives as shown on Loggan, though with interesting variation from de Gomme's scheme (Fig. 14). The line can be followed from Parks Road, at the junction with South Parks Road. Here there was a bank along the north edge of Rhodes House (a nursery garden in 1675), which turns southwards down Love Lane (this length still survives) as far as the north-east corner of Wadham College Garden. At this point it turned east, and the long east-west line with a small redan in the centre still exists as a property boundary and a slight bank on the southern edge of the Merton playing field, and then as the boundary between the Merton and Balliol fields (sometimes known as King's Mound) until it reaches St Cross Road. The ditch has been sectioned in 1979 in Rhodes House garden[127] and in recent excavations for the Rothermere American Institute.[128] The east-west line has been investigated on several occasions, at New College School in 1959, and Mansfield College in 1992.[129]

The first variant between de Gomme's scheme and Loggan's depiction of the earthworks is that the design shows the Wadham College re-entrant crossed by a diagonal line (from South Parks Road to a point just West of the redan), whereas it was clearly built as a re-entrant. One might speculate that de Gomme failed to join his dots when inking his plan, but examination of the original shows that (of the many prick marks on the sheet) there is not one at the N.E. corner of St John's garden. The ditch has been sectioned in recent excavations at Mansfield College[130], and in advance of the construction of the New University Clubhouse.[131] The second variant is in the line eastwards from the 'bastion'. Both Loggan and the OS show a line going directly eastward to St Cross Road, and then turning south by the great barn opposite the church and manor house. On de Gomme the east-west line is indicated, but there is also a re-entrant southwards from a point east of the 'bastion', returning to St Cross Road at a point south of the church and running into the north wall of Magdalen Grove. None of this is shown on Loggan, though it can be seen how the line would have passed along the north side of the bowling green next to the Grove.

[125] R.T. Lattey, E.J.S. Parsons and I.G. Philip, 'A contemporary Map of the Defences of Oxford in 1644, *Oxoniensia*, i (1936), 161–72; for the painting by Jan de Wyck, based on de Gomme, see J. Munby, 'The Siege of Oxford and the Revolution of 1688', *Oxoniensia*, liii (1988), 346–7. For de Gomme, see now A. Saunders, *Fortress Builder. Bernard de Gomme, Charles II's Military Engineer* (English Heritage, 2004).

[126] David Loggan, *Oxonia Illustrata* (1675).

[127] Observations by Brian Durham, Oxford Urban Archaeological Database (UAD), event No. 542.

[128] Booth and Hayden, op. cit note 8, [UAD event No. 403]

[129] *South Midlands Archaeology*, 23 (1993), 75 and 24 (1994), 46 [UAD Nos.362, 1282].

[130] Booth and Hayden, op. cit. note 8.

[131] OA, op. cit. note 122.

Evidence for the outer line of defences

Compared with the earlier irregular zig-zag trace of the defensive ditch and rampart. De Gomme shows a formal defence of four flattened bastions linked with a sharply recessed trace with small redans set at the junctions between Parks Road and the River Cherwell (Fig. 14). This scheme (used several times by de Gomme) allows each large projecting part of the trace to act as a bastion in itself and provide covering fire for its neighbour. Three of these appear on Loggan, but his map ends short of the Northern bastion. Archaeological evidence for the outer line consists of the following observations:

A. The outline of an 'entrenchment' was shown on the 1873/5 Ordnance Survey map on the site of the later Clarendon Physics Laboratory. Discoveries were recorded during building the laboratory in 1909,[132] and when it was extended in 1937-8.[133]
B. A ditch was found under the south-west corner of the Geology Department in 1946,[134] and perhaps related to the ditch observed in 1970 outside in the north drive of the Museum.[135]
C. The nature of the discoveries made in the building of the University Museum in 1855-60 is unclear, but seem to have included a mound that was levelled.[136]
D. A ditch section was archaeologically observed by Jeffrey May in 1958 under Human Anatomy building (Fig. 6).[137] The ditch was aligned WSW to ENE, and had a clay pipe dated 1640-60 in the bottom of the ditch, which appeared to have been filled in one operation with gravel and topsoil.
E. The ditch found on the Chemistry Research Laboratory site in 2001 (this paper)

The route of the outer line of defences

As a result of these observations, the outer line of defences can be located as follows. The first bastion was under the Clarendon Physics Laboratory, with a re-entrant somewhere in the area of the Geology Department and the University Museum. The second bastion was in the Human Anatomy/Dyson Perrins Laboratory, with a re-entrant under the Chemistry Research Laboratory. The third bastion was under the Zoology Department, where no archaeology was undertaken or recorded, with the re-entrant probably guarding the road leading north from Holywell.

The fourth bastion remains something of a puzzle. De Gomme, Loggan and the OS map agree in showing a bastion on the site of the Social Sciences Library in Manor Road, with a return southwards to an intermediate bastion just outside the east end of Holywell Churchyard, and then an irregular bastion around Holywell Mill.[138] However, the OS map also depicts a second outer trace along the south side of New College playing field, but only as a water-filled ditch with no earth bank. The line may even continue on the east side of the Holywell Mill stream, where a further length of ditch is shown continuing down to the River Cherwell. This alternative outer line is perhaps the remains of the first line of defence,

132 Lattey *et al.*, op. cit. note 125, (1936), 171.
133 Notes and News', *Oxoniensia*, iii (1938), 173, 177 [UAD, event No. 123].
134 Previously unreported; plan in Ashmolean Museum [UAD No. 1283].
135 'Archaeological Notes', *Oxoniensia*, xxxvi (1971), 111 [UAD No. 232].
136 Lattey *et al.*, op. cit. note 125, 171 [UAD No. 235].
137 'Archaeological Notes', *Oxoniensia*, xxiv (1959), 101 [UAD No. 176]
138 C. Bell, 'Archaeological Investigations on the Site of a Medieval and Post-Medieval Watermill at Holywell Ford, Magdalen College, Oxford', *Oxoniensia*, lxi (1996), 275–95. [UAD No. 312]

abandoned when the second was built, but remaining as a ditch. Remains of this ditch (up to 6 m. wide) were observed in 1998 when the site was developed.[139]

The outer line of defences probably consisted of a ditch with a banked rampart at the rear. This will have had a revetted parapet protecting a raised firing step along its entire length. Musketry positions and gun positions will have been protected by gabions (earth-filled basketry drums), timber 'blinds', sandbags and possibly even woolsacks. Guns would have been placed on heavy timber platforms and would have had nearby magazines covered by earth or timber. Additional small buildings and temporary shelters may have been built up against or near the rampart.

The rampart is likely to have been fronted with 'storm poles'; these were rows of sharpened stakes which would have prevented infantry storming the ramparts. Similarly 'chevaux de frise' (iron tipped spiked wooden barriers) or 'abbatis' (mounds of tree branches) may have been placed on the outer side of the rampart.

Below the rampart lay the ditch which may have been strengthened by a palisade (open fence) or additional stakes. Beyond the ditch was the counterscarp bank and glacis (sloped ground covered by fire from the rampart). On works of this importance and scale it is possible that the counter-scarp bank was provided with a 'covered way', this being a pathway with parapet covered by fire from the rampart behind. This would allow troops to move along the lines of the defences and provide an additional tier of musketry in the event of an attack.

Beyond the counterscarp lay the glacis; although not clearly shown on any of the historic mapping the glacis may have been extensive and would consist of a gently sloping bank on the far side of the counterscarp. Beyond this would be an artificially enhanced field of fire which would be cleared of all obstacles and in which hollows would have been filled and raised ground flattened. In this area 'pitfalls' (small hidden pits often filled with stakes) may have been placed to impede any attempt to storm the fortifications.

The complexity of the bastioned trace would have been reflected in the quality of the works and it is probable that they were provided with all the additional features mentioned above and would have presented a formidable line of defence. By the time Loggan was mapping Oxford some twenty years after the end of the Civil war the defences survived only as bare mounds and ditches stripped of all of their defensive purpose.

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139 'New College Sports Ground Archaeological Watching Brief Report' (Oxford Archaeological Unit, January 1999) [UAD Event No. 404].

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