REPORTS

Excavation of a Peterborough Ware pit at Wallingford, Oxfordshire

by ANDY RICHMOND

with contributions by JANET AMBERS, ALISTAIR BARCLAY, PHILIPPA BRADLEY, JOHN GIORGI and JAMES RACKHAM

SUMMARY

Excavations were carried out in advance of the construction of a hard play area at Wallingford Lower School, Oxfordshire. The principal feature identified consisted of a single pit which produced an assemblage of Peterborough Ware representing between seven and nine vessels. Associated with the pottery were a range of flint artefacts and quartzite pebbles together with an axe sharpening stone. Parallels for this artifact associated with Peterborough Ware pottery are extremely rare. A full palaeo-environmental analysis of the pits' fill was undertaken and cereal grains and faunal remains were recovered and identified. A radiocarbon date obtained from the charred hazel nut shells is discussed.

During April 1997 planning permission was granted for the construction of a new Science Block and Hard Play Area at Wallingford Lower School, Oxfordshire (SU60508990). Planning permission was subject to a number of conditions, one of which required that an archaeological watching brief be maintained during any works which might affect below ground archaeological remains. This was considered likely as the development area lay immediately to the north of Scheduled Ancient Monument Oxon 234 – the Saxon Burh defences of the settlement of Wallingford (Fig. 1).

The Hard Play Area covered approximately 2,000 square metres in an area of rough meadow with coniferous planting on the western edge and a belt of trees to the north. The ground sloped gently to the south, from 50 m. OD at the extreme northern edge to 48 m. OD at the south. The local soil comprised argillic brown earths with clay, overlying river terrace gravels. Groundworks for the construction of the Hard Play Area involved the grading and levelling of the ground to provide an even surface. This necessitated the removal of a maximum of 0.65 m. of topsoil and overburden along the northern half of the area with a grading bucket. The area was thereafter built up to the required level for the development.

THE EXCAVATIONS

It was during the observation of the soil stripping for the Hard Play Area that a circular pit (005) was identified cut into the sand-with-clay natural sub-strata. With the exception of an irregular pebble surface (001) located *c.* 55 m. to the west, it was an isolated feature 0.55 m. in diameter with evidence of charcoal fragments and occasional large stones, perhaps forming a lining to the feature. At the surface was a single large flat stone, believed to be an axe-sharpening stone. The pit was filled with a single homogenous mid-brown mottled silt containing many large pebbles (*c.* 0.2 m. diameter) and occasional small rounded stones (004) (Fig. 2). Contained within this fill were numerous fragments of fragile pottery and flint artefacts. Several very fragile pieces of animal bone were also visible as were patches of carbonised organic material. The pit was excavated by hand and the visible sherds of pottery and flint artefacts recovered. The remainder of the fill and all of the spoil was retained as a sample.

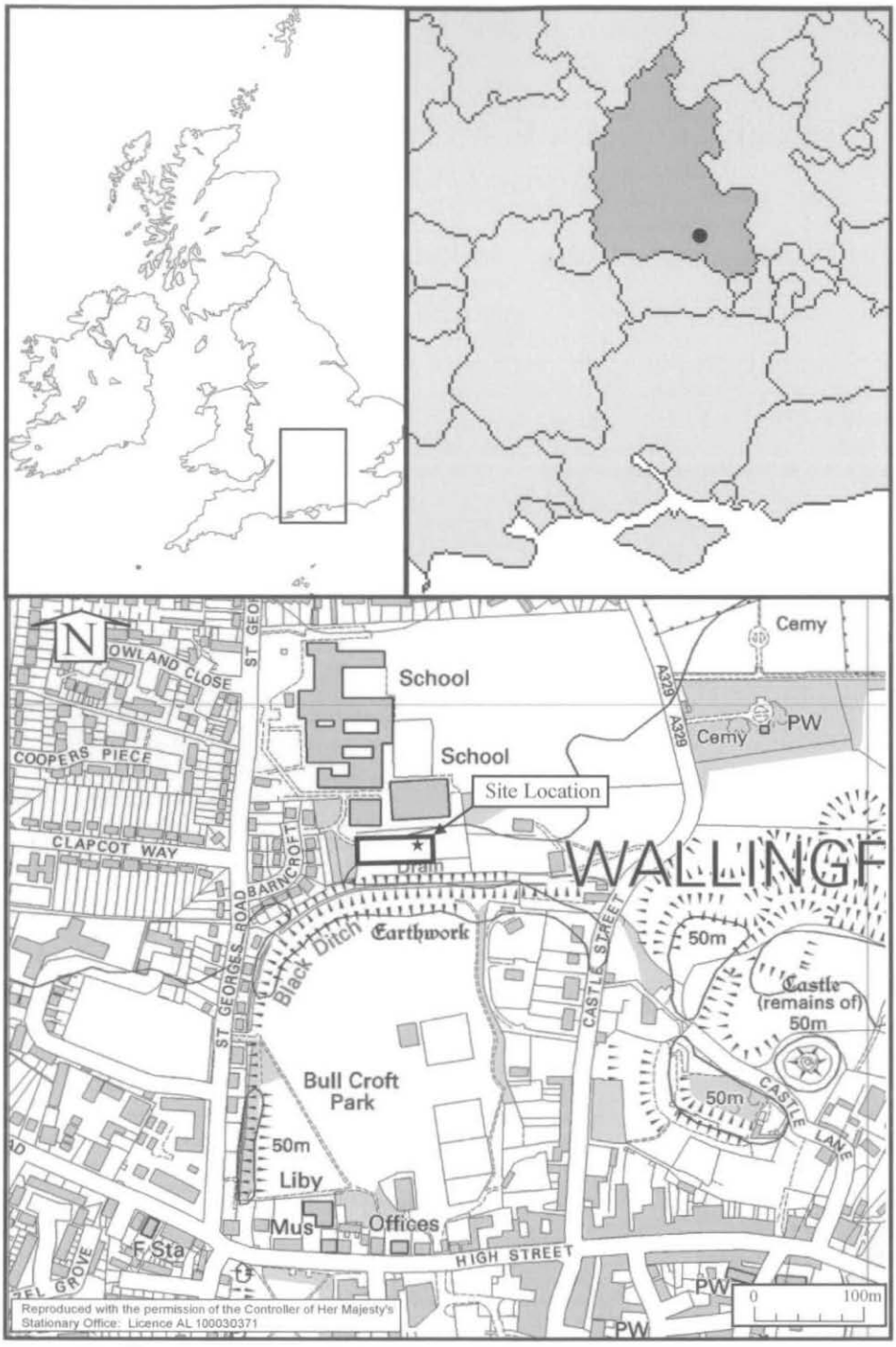

Fig. 1. Wallingford Lower School, Site Location

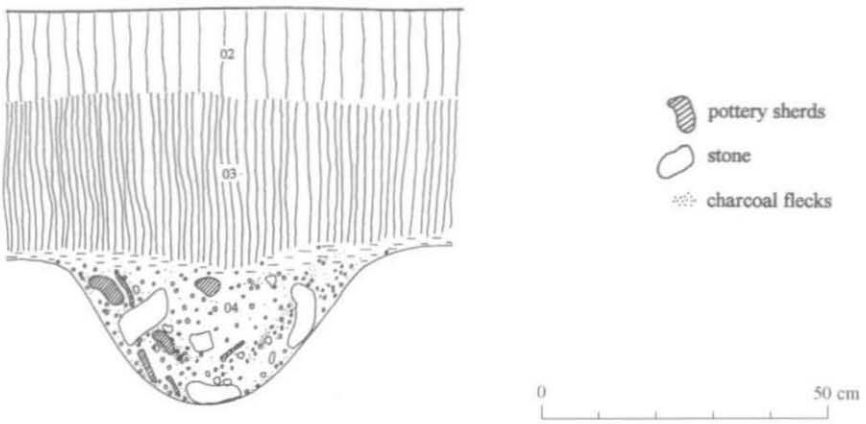

Fig. 2. The Peterborough Ware pit in section showing depth of overburden

The pit cut had gently-sloping sides and a rounded base, giving a 'bowl-shaped' profile. Its maximum depth, after topsoil removal, was 0.3 m. The shallowness of the feature indicates that it may have been truncated in the past, presumably by agricultural activities. The base of the cut appeared to be iron-stained in places. Aside from the pebble surface to the west, which yielded a single retouched flint with signs of post-depositional damage and four sherds of flint tempered Peterborough Ware pottery, no other features of suggested prehistoric date were identified in the area. The pit and irregular pebble surface therefore appear to be isolated features spatially removed from contemporaneous activities.

RADIOCARBON ANALYSIS by J. AMBERS

A radiocarbon analysis was kindly undertaken by the British Museum Department of Scientific Research as part of a project into the dating of Neolithic ceramics. 14 g. of charred hazel nut collected from the sample were submitted for analysis.

The result of the analysis yielded a date of 4350±50 BP (BM-3122) which when calibrated gives an age of 3270–3240 BC and 3110–2880 BC (95.4% confidence) or 3040–2910 BC at 68.2% confidence.

POTTERY by A BARCLAY

Introduction

The excavation produced a total of 285 sherds (includes 241 small fragments), weighing 848 g., of Neolithic Peterborough Ware the majority of which belongs to the Fengate substyle. Between seven and nine vessels are represented. Nearly all of the sherds came from a single pit fill (004) and can be assumed to form part of a deliberate deposit. A further 4 sherds were recovered from an irregular gravel surface (001). Vessels represented range from partially reconstructible profiles to single rim fragments.

Methods

The assemblage was quantified by weight and sherd count (excluding refitting fresh breaks and sherds less than 10 mm in width/diameter). The pottery is characterised by fabric, form, surface treatment, decoration and colour. The sherds were analyzed using a binocular microscope (¥ 20) and were divided into fabric groups by principal inclusion type. Standard codes are used to denote inclusion types: A = sand (quartz and other mineral matter), G= grog, Q= quartzite. Size range for inclusions: 1 ≤ 1 mm. fine; 2 = 1–3 mm. fine-medium and 3 ≥ 3 mm. medium-coarse. Frequency range for inclusions: rare ≤ 3%, sparse= 3–7%, moderate= 7–10%, common= 10–15% and abundant ≥ 20%.

Fabrics

The sherds were separated into seven distinct fabrics from which five were principally flint-tempered and two were grog-tempered.

Flint-tempered

F2 Hard micaceous fabric with moderate medium angular flint inclusions. (5 sherds, weighing 8 g.): Vessel 3, plus misc. sherds

FA2 As F2 but with sparse quartz sand. (6 sherds, weighing 31 g.): Vessels 5 and 6

FA3 As FA2 but with coarser flint. In vessel 1 the flint is blocky and calcined rather than angular. (16 sherds, weighing 289 g.): Vessels 1, 7, 8 and 9

FGA3 As above but with the addition of sparse coarse grog. (3 sherds, weighing 21 g.): misc. sherds

FQA3 Hard micaceous fabric with moderate coarse flint, sparse quartzite and sparse quartz sand. (1 sherd, weighing 10 g.): Vessel 4

Grog-tempered

GAR3 Soft fabric with coarse common sub-angular grog, sparse quartz sand and rare argillaceous rock fragments. Some sherds also contain rare fine flint. (20 sherds, weighing 217 g.): Vessel 2

GQ3 Soft fabric with coarse sparse sub-angular grog and rare angular quartzite. (1 sherd, weighing 10 g.): misc. sherds

Forms

Of the seven rims, two are collared (1–2), while a third is clearly a fragment from a typical collared rim; all are typical Fengate Ware rims. Rim 1 has a convex profile, is decorated with impressed twisted cord and has neck pits (Fig. 3). Rim 4 has incised herringbone and an internal rim bevel decorated with impressed fingernail. However, rim 2, which is upright and squared in section, is somewhat unusual. The inturned rim 3 is perhaps more typical of the Mortlake style. Of the remaining rim fragments (not illustrated) two are from the very tips of probable collared rims and the third is indeterminate.

Most of the remaining sherds (7–9) are relatively large and from the body. The vessels represented by catalogue entries 7 and 8 include base fragments. Bases appear to have been flat with oblique base angles (at approx. 60°) with the lower part of the vessel having a trunconic profile. Like the rims these bases are typical of the Fengate substyle. It is inconclusive as to whether vessel 2 had a round or flat base.

The remaining sherds, (5–6), are from one or two small and relatively thin-walled vessels. In both cases the decoration involves curvilinear and linear bands of end-to-end finger-nail impressions. The decoration on sherd 5 includes a possible swag motif, whilst sherd 6 has a wavy band motif. This type of decoration is extremely rare, occurring on only a few known vessels (Peterborough Ware cup from the chamber filling of the West Kennet long barrow[1], on a Fengate Ware vessel from Horton, Berks[2] and on Rudston vessels from East Yorkshire[3]).

Burnt residues were observed on the interior surfaces of vessels 7 and 8 and sooting was noted around the rim of vessel 1. These traces indicate that some of the vessels were used for the cooking of food.

[1] S. Piggott, *The West Kennet Long Barrow, Excavations 1955-56*, Ministry of Works Archaeological Report iv (1962), 38 & fig. 11: Pl 1.

[2] F. Raymond, 'The Prehistoric Pottery', in S. Ford (ed.), *Report on the Excavation of a Neolithic Ring-Ditch and Roman Features at Manor Farm, Lower Horton, Berkshire* (unpublished report Thames Valley Archaeological Services, 1997).

[3] T. G. Manby, 'Neolithic Occupation Sites on the Yorkshire Wolds', *Yorkshire Archaeol. Jnl.* xlvii (1975), 23-59, fig. 13, 4-5.

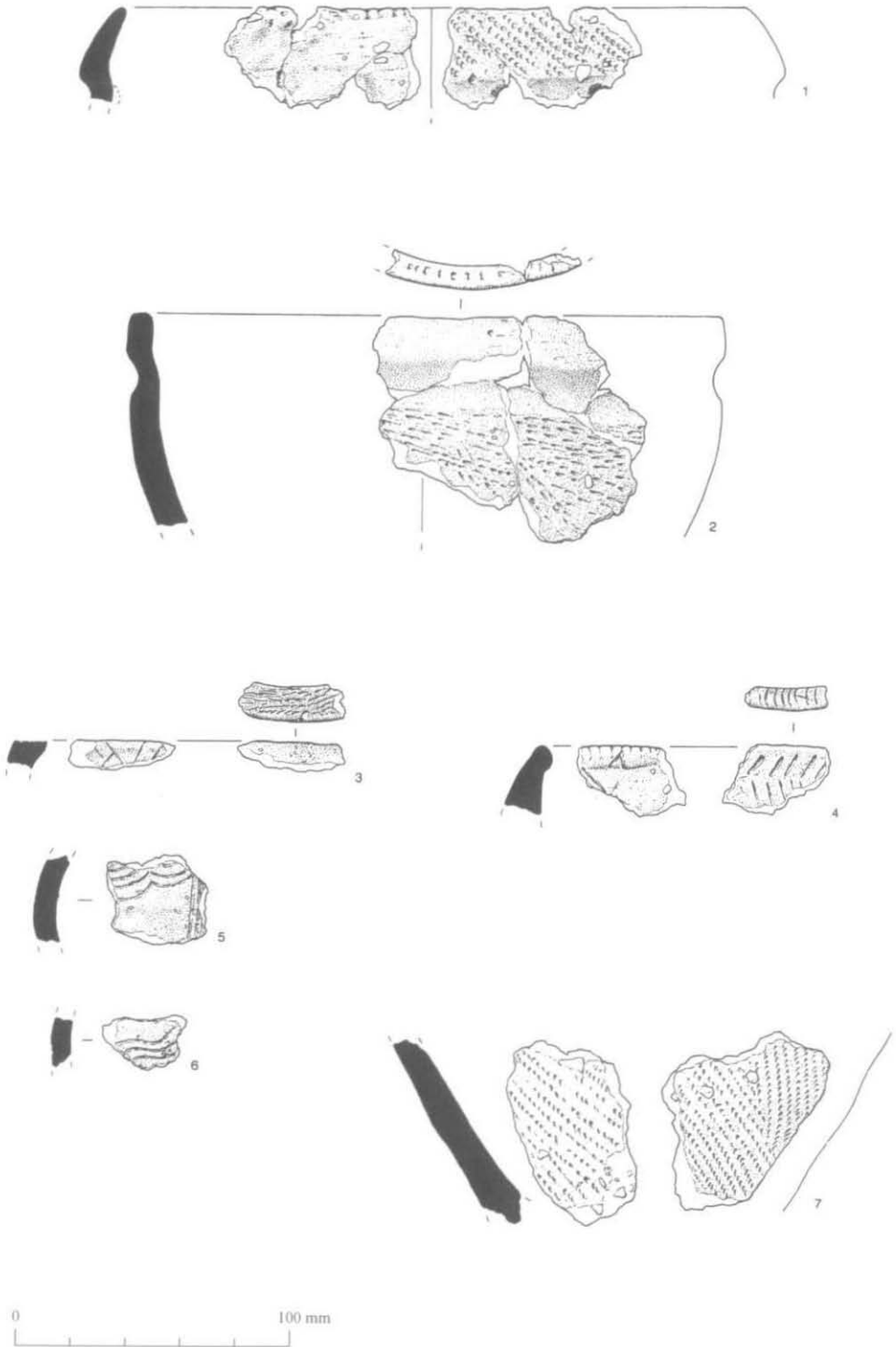

Fig. 3. Peterborough Ware vessels 1 to 7

TABLE 1. A BREAKDOWN BY VESSEL AND FABRIC (Quantification by sherd count and weight in g.)

Ves No	F2	FA2	FA3	FGA3	FQA3	GQ3	GAR3	Misc	Total
1			7–52						7–52
2							20–217		20–217
3	1–4								1–4
4					1–10				1–10
5		1–13							1–13
6		1–5							1–5
7			5–114						5–114
8			3–97						3–97
9			1–26						1–26
Misc	4–4			3–21		1–10		233–262	241–297
Total	5–8	2–18	16–289	3–21	1–10	1–10	20–217	233–262	281–835

Discussion

The date range for the development of Peterborough Ware based on a series of new radiocarbon determinations would seem to fall within the later 4th millennium BC and the start of the 3rd millennium BC. The single date from Wallingford which calibrated to 3270–3240 and 3110–2880 BC at 95.4% confidence (BM-3122 : 4350 ± 50BP) would be consistent with this range.

A number of sites within the Oxford area of the Upper Thames Valley have produced Fengate Ware, although very few have produced large assemblages. A small quantity of Fengate Ware was found at the Abingdon causewayed enclosure and from the adjacent barrow cemetery at Radley,[4] while a substantial assemblage has been found at Yarnton just to the north-west of Oxford.[5] Other material comes from pit deposits at Drayton, Stanton Harcourt and Cassington and on the edge of the region at Cam, Gloucestershire and Astrop, Northamptonshire.[6] Like Lower School the vast majority of this pottery had been recovered from pit deposits.

This is the first record of Fengate Ware from the Wallingford area, although Ebbsfleet Ware has been recovered near to the river's edge at Grims Ditch, Mongewell and Mortlake Ware bowls have been dredged from the river to the south of Wallingford, at Cholsey.[7]

[4] Summarised in A. J. Barclay, M. Gray and G. Lambrick, *Excavations at the Devil's Quoits, Stanton Harcourt, Oxfordshire 1972-3 and 1988* (1995), Thames Valley Landscapes: the Windrush Valley, Vol. 3, 37; R .Cleal, 'The Earlier Prehistoric Pottery', in A. Barclay and C. Halpin, *Excavations at Barrow Hills, Radley, Oxfordshire: Volume 1* (OA Thames Valley Landscapes Monograph xi, 1999), 195-210.

[5] A. J. Barclay and E. Edwards, 'Prehistoric Pottery', in G. Hey, *Yarnton: Neolithic and Bronze Age Settlement and Landscape. Results of Excavations 1990-96* (OA Thames Valley Landscapes Monograph, forthcoming).

[6] A. Hamlin and H. Case, 'Excavations of Ring-Ditches and Other Sites at Stanton Harcourt', *Oxoniensia*, xxviii (1963), 1-19; G. Lambrick and T. Allen, *Gravelly Guy: Excavations at Stanton Harcourt*, (OA Thames Valley Landscapes Monograph, 2005); H. Case, 'Cassington, 1950-2: Late Neolithic Pits and the Big Enclosure', in H.Case and A.W.R. Whittle (eds.), *Settlement Patterns in the Oxford Region* (1982); A. J. Barclay, 'Connections and networks: a wider world and other places', in D. Benson and A. Whittle (eds.), *Building memories: the Neolithic Cotswold long Barrow at Ascott-under-Wychwood, Oxfordshire* (Oxford: Oxbow forthcoming).

[7] R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR cxciv, 1988), 283; A. J. Barclay, 'The Peterborough Ware', in A. Cromarty, A. Barclay, G. Lambrick and M Robinson, *Ritual and Habitation on an Eyot at Whitecross Farm, Wallingford: The Archaeology of the Wallingford Bypass 1986-92* (OA Thames Valley Landscapes Monograph, forthcoming).

Catalogue

1 Seven sherds (52 g.), some of which refit to form the rim, from a medium sized Fengate Ware bowl. Rim diameter *c.* 230 mm. Sooting on exterior surface. Fabric: FA3. Colour: black throughout. Condition: average.

2 Twenty sherds (217 g.) from the upper part of a Fengate Ware bowl. The rim top is decorated with ?bone impressions and the body with impressed cord. Fabric: GAR3. Colour: ext. reddish-brown; core dark grey; int. brown. Condition: average.

3 Inturned rim sherd decorated with impressed cord on rim top and with incised lattice on the interior surface. Fabric F2. Colour: ext. brownish-grey; core grey; int. brownish-grey. Condition: average.

4 Rim sherd (10 g.) decorated with an incised herringbone motif on the outer surface, with impressed finger-nail on the rim bevel and with incised lattice on the inner surface. Fabric: FQA3. Colour: ext. reddish-brown; core greyish-brown; int. reddish-brown. Condition: average.

5 Body sherd (13 g.) decorated with bands of impressed end-to-end finger-nail that form either linear or swag motifs. Fabric: FA2. Colour: ext. reddish-brown; core and int. dark grey. Condition: average.

6 Body sherd (5 g.) decorated with a wavy band motif that is formed by end-to-end finger-nail impressions. Fabric: FA2. Colour: ext. dark brownish-grey; core and int. dark grey. Condition: average.

7 Five sherds (114 g.) with impressed twisted cord decoration from the base of a Fengate Ware bowl. Sherds are broken at the base angle. Fabric FA3. Colour: ext. light reddish-brown; core and int. black. Condition: average.

8 Four sherds from the base of a Fengate Ware bowl. Burnt residues on the interior surface. Fabric FA3. Colour: ext. reddish-brown; core and int. black. Condition: average (not illustrated).

9 Body sherd (26 g.) with impressed twisted cord decoration. Fabric: FA3. Colour: ext. yellowish-brown; core and int. dark grey. Condition: average (not illustrated).

In addition there are two small rim fragments one of which could come from vessel 4, a sherd with a neck pit and a number of small decorated sherds some of which could come from the above listed vessels. Most of this material was recovered during the environmental processing. Also found was a very small (<1 g.) flake of china which indicates some modern intrusion.

WORKED FLINT by P. Bradley

Introduction

An assemblage of 670 pieces of worked flint and three small fragments of burnt unworked flint were recovered from the site (Table 2). This total was inflated by the large number of chips recovered from sieving. The coarser residues (2–7 mm.) were scanned and flint retrieved, although this was not exhaustively carried out. The finer fraction (2 mm.) was only scanned and the presence of worked flint noted. With the exception of a single retouched flake all of the flint was recovered from a pit associated with Fengate Ware pottery and given the rarity of this material within the county, it is of some importance. The flint is described below and selected pieces are illustrated (Fig. 4). Further details of the flint assemblage may be found in the archive.

Raw materials

Two types of raw material were used; both have good flaking properties despite the presence of large cherty inclusions. The majority of the flint is medium to dark brown in colour with a thin buff, slightly thick and worn cortex. A few pieces, including the scraper, are of a grey flint. No cortex remained on these pieces so it is difficult to identify a possible source. Three small flakes and five chips from polished implements were recovered all of which are light brown to grey in colour. These pieces may originally

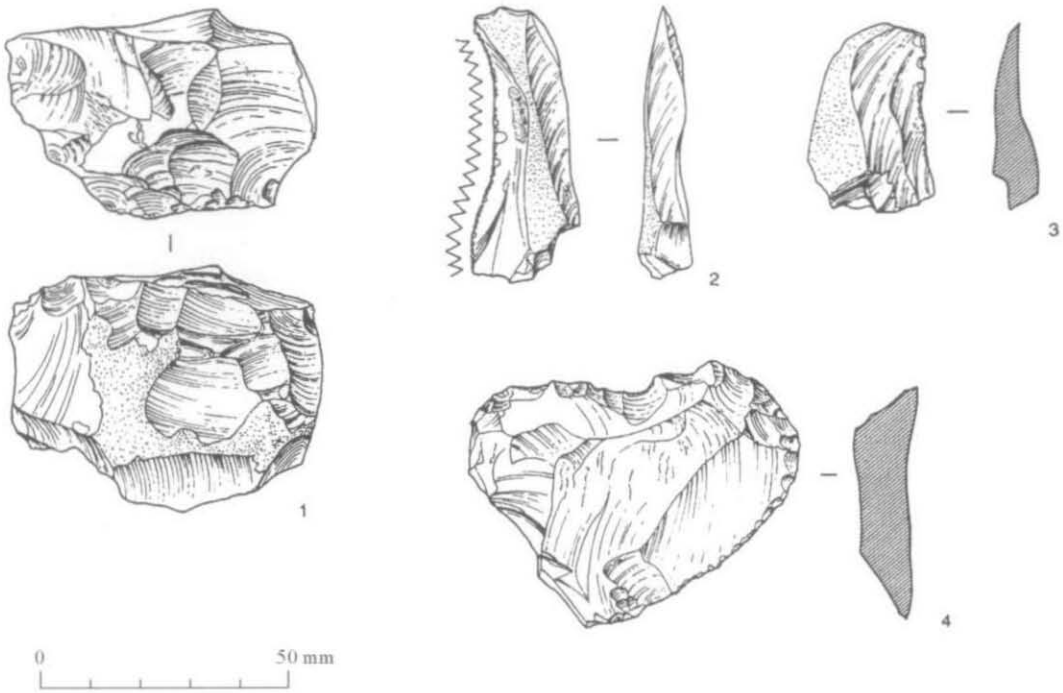

Fig. 4. Selected pieces of worked flint from the excavation

have been from the same object although there is some variation within the flint but this may be simply differences in the raw material. One of the larger flakes also bears a striking resemblance to the scraper, perhaps suggesting that the same raw material was used although the scraper itself did not have any polished areas surviving. Cortication is generally light, however, a piece of irregular waste exhibits heavy cortication. The flint is mostly very fresh with sharp edges, the exception being a piece from context (001) which has suffered some post-depositional damage. No good quality flint would have been available in the immediate locality but raw materials may have come from the Chilterns to the east or the Berkshire Downs to the south. Poorer quality flint also occurs within the river gravels around Dorchester-on-Thames.[8]

Description and Discussion

The assemblage is composed of debitage and a variety of retouched forms (Table 2, Fig. 4). A mixture of hard and soft hammers seems to have been used, occasional hinge fractures were noted and, whilst the material has been relatively carefully knapped, there seems to have been little attempt to prepare or maintain platforms during the reduction process although one or two flakes and the core fragment do have abraded butts. Plain butts dominate although there are a few cortical ones present. This is unsurprising given the lack of core preparation. Many of the flakes retain areas of cortex; distal trimming, side trimming and preparation flakes were all recorded.[9] The core may have been rejected because hinge fractures had made it difficult to flake further.

[8] P. L. Gibbard, *The Pleistocene History of the Middle Thames Valley* (1985).

[9] cf. P. Harding, 'The Comparative Analysis of Four Stratified Flint Assemblages and a Knapping Cluster', in J. Richards, *The Stonehenge Environs Project* (English Heritage Archaeological Report, xvi, 1990), 218-9.

TABLE 2. SUMMARY COMPOSITION OF THE FLINT ASSEMBLAGE

Context	Flakes	Chips	Irregular waste	Core, core fragment	Retouched forms	Total	Burnt unworked flint
001	–	–	–	–	1 (retouched flake)	1	–
004	127*	517**	13	3 (1 multi-platform core 2 core fragments	9 (4 serrated flakes, 3 retouched flakes, 1 end and side scraper, 1 misc. retouched piece)	669	3
Total	127	517	13	3	10	670	

* including three flakes from polished impliments
** including eight chips from polished impliments

Blade-like flakes seem to have been chosen as blanks for the serrated and retouched flakes (Fig. 4.2); their shape perhaps reflecting their function as cutting tools. The retouched flakes from the pit context have very small areas of retouch (Fig. 4.3) but also seem to have used edges, one example in particular is very worn. The serrated flakes are also very worn; one has macroscopic edge gloss indicating its use on silica-rich plant materials.[10] Serration varies from approximately 6–8 serrations per 10 mm. to much finer, around 12 per 10 mm. The end and side scraper has been neatly retouched on a relatively thin, non-cortical blank (Fig. 4.4). The miscellaneous retouched piece is a broken flake with an area of steep retouch.

The dominance of chips within the assemblage implies collection of the debris using some sort of container. However, not all of the knapping debris was collected as no refitting pieces were found amongst the assemblage. The complete chips are mainly micro-flakes but a few core front chips were noted indicating the removal of overhangs during knapping.[11] The numerous small polished flakes and chips are of some interest; it is likely that they result from reduction of a broken polished axe. It may also be possible that some of the small chips were removed during re-sharpening of an implement. The recovery of a possible axe sharpening stone from the pit would support the latter argument.

The assemblage would seem to represent domestic debris, pieces have been used, broken, burnt and finally discarded. A range of activities are represented by the flintwork including plant processing, knapping and hide preparation. This range of activities is fairly typical of Peterborough Ware associated assemblages and can be paralleled at other sites, for example, Yarnton, Oxfordshire[12] and Upper Ninepence, Radnorshire.[13] The large size of the core (182 g.) is interesting as one would have expected it to have been more fully reduced given the relative scarcity of raw materials within the immediate area. One of the four platforms is unworkable due to a number of hinge fractures but it would be possible to remove further flakes from the remaining three.

Peterborough Ware associated flint assemblages are rare within the region and nationally, apart from a few areas of the country, for example, the Yorkshire Wolds. With a few notable exceptions these

[10] R. Unger-Hamilton, *Method in Microwear Analysis: Prehistoric Sickles and Other Stone Tools from Arjoune, Syria* (BAR, International Series S435, 1988).

[11] M. H. Newcomer and C. Karlin, 'Flint Chips from Pincevent', in G. de G. Sieveking and M. Newcomer (eds.), *The Human Uses of Flint and Chert* (1987), 34, figures 4.1-2

[12] P. Bradley, 'Worked Flint', in G Hey, *Yarnton Floodplain B, Post-excavation and assessment* (unpublished document prepared for English Heritage, Oxford Archaeological Unit, 1996); P. Bradley and K. Cramp, 'Worked Flint', in G. Hey, *Yarnton: Neolithic and Bronze Age Settlement and Landscape. Results of Excavations 1990-96* (OA Thames Valley Landscapes Monograph, forthcoming).

[13] P. Bradley, 'The worked flint from Upper Ninepence, Radnorshire', in A. Gibson, *Excavations in the Walton Basin* (CBA Res. Rep. cxviii, 1999), 73-79.

assemblages tend to be small and mainly composed of relatively undiagnostic debitage and retouched forms. Characterising this material is therefore very difficult. At Astrop, Oxfordshire, Fengate Ware pottery was recovered from pits together with animal bone, including antler fragments, chalk lumps, a ground stone axe and worked flint.[14] The relatively large flint assemblage from that site (121 pieces) included flakes, a knife, a transverse arrowhead and burnt unworked flint.[15] Barclay *et al.*[16] summarise the Peterborough Ware pits in the Stanton Harcourt area; pit D in Field XV produced a flint flake, a Fengate Ware rim and body sherd.[17] A pit at Cassington produced two flint flakes, Peterborough Ware, including some Fengate Ware and a pig tooth.[18]

At Cam, Gloucestershire, Fengate Ware was found in a pit associated with a fragmentary stone ovoid macehead, flint, daub and animal bone.[19] The flint from the pit was relatively undiagnostic and consisted of utilised flakes, a core fragment and a flake from a polished implement. Excavations at Yarnton, Oxfordshire, have produced flint assemblages associated with Peterborough Ware, including some of the Fengate substyle.[20] Here, a relatively small flint assemblage, consisting of a range of debitage and retouched forms, including scrapers, serrated flakes, arrowheads and miscellaneous pieces has been recovered chiefly from pit deposits.[21]

Excluding the material from Astrop, Oxfordshire, Fengate Ware associated flint assemblages from the region tend to be small and fairly unexceptional. There appears to be more variation in the assemblages from Yarnton but analysis on this group is at a preliminary stage and further research may aid the characterisation of such material within the region. In other areas of the country where Peterborough Ware associated flint assemblages are more numerous a wider range of retouched forms have been found, including scrapers, serrated and retouched flakes, knives and arrowheads.[22]

WORKED STONE by A. Barclay and P. Bradley

Polishing stone

An elongated and slightly concave stone measuring 230 mm. long, 75 mm. wide and 70 mm. thick (weighing 2.2 kg.) was recovered from the pit fill. The upper, slightly dished, surface has very slight and shallow grooving and is highly polished. Some striations can be seen within the polish. The stone is quartzitic and possibly derives from the local Pleistocene gravel deposits. Such polishing is reminiscent of that found on polissoirs although the stone may have been used for other functions, including bone polishing.

Parallels for this artifact associated with Peterborough Ware pottery are rare. An elongated river pebble with a central depression worn to a 'glassy smoothness' was recovered from Pit 1 at Puddlehill, Dunstable and was associated with Grooved Ware and worked flint.[23] This object was interpreted as a portable grinder for polishing flint and stone axes. Pin polishers and burnishers have been recovered from a number of earlier Neolithic contexts, including causewayed enclosures. At Staines, for example,

[14] R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR cxciv, 1988), 266, 275.

[15] Ibid.

[16] A. J. Barclay, M. Gray and G. Lambrick, *Excavations at the Devil's Quoits, Stanton Harcourt, Oxfordshire 1972-3 and 1988* (Thames Valley Landscapes: the Windrush Valley, 3, 1995), 109.

[17] Ibid., 95-6, figure 50, 6-7.

[18] R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR cxciv, 1988), 267, 274, table 9.

[19] I. F. Smith, 'Report on Late Neolithic Pits at Cam, Gloucestershire', *Transactions of the Bristol and Gloucestershire Archaeological Society*, lxxxvii (1968), 16-20.

[20] P. Bradley, 'Worked Flint', in G Hey, *Yarnton Floodplain B, Post-excavation and assessment*, (unpublished document prepared for English Heritage, Oxford Archaeological Unit, 1996); P. Bradley and K. Cramp, 'Worked Flint', in G. Hey, *Yarnton: Neolithic and Bronze Age Settlement and Landscape. Results of Excavations 1990-96* (OA Thames Valley Landscapes Monograph, forthcoming).

[21] Ibid.

[22] T. G. Manby, 'Neolithic Occupation Sites on the Yorkshire Wolds', *Yorkshire Archaeol. Jnl.* xlvii (1975), 33-47.

[23] N. Field, C. Mathews and I. F. Smith, 'New Neolithic Sites in Dorset and Bedfordshire, with a note on the distribution of Neolithic storage pits in Britain', *Proceedings of the Prehistoric Society*, xxx (1964), 364.

numerous small stones with polished or grooved surfaces were recovered.[24] A possible axe sharpening stone or quern fragment was recovered from the Abingdon causeway enclosure.[25] A sarsen quern from Wayland's Smithy was re-used possibly for axe polishing.[26] Several of the sarsen uprights at West Kennet long barrow display evidence for axe sharpening and polishing.[27]

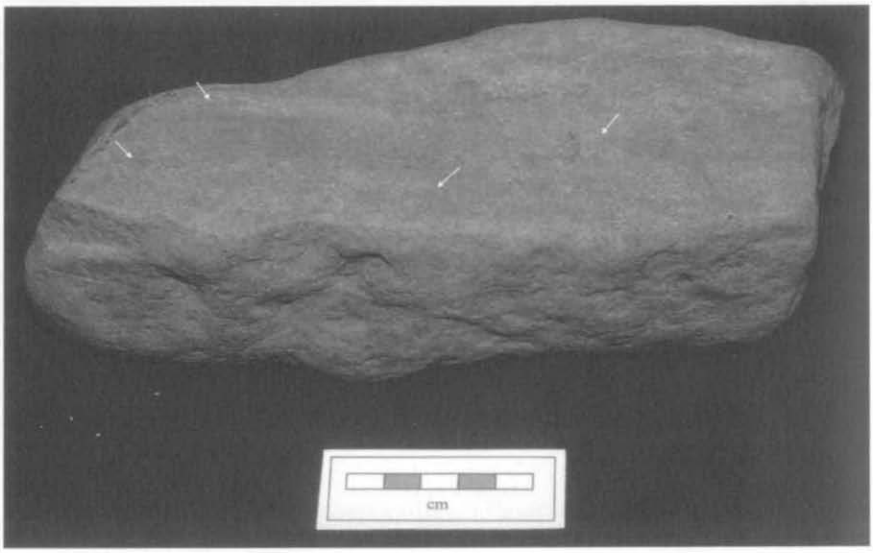

Fig 5. The 'axe-polishing' stone showing highly polished surface

Miscellaneous stone

The fill of the pit contained five further stones and many, mainly quartzitic, pebbles (1.6 kg.). The five stones included a large ovoid pebble (950 g.) with one flat surface, three probable hearth stones (908 g.) and a large pebble (296 g.) with polish on one surface.

ENVIRONMENTAL EVIDENCE

The fill of the pit, after removal of pottery and flint, was completely sampled, and comprised a total of 25 litres of soil. This was floated, wet sieved and sorted for further finds and environmental evidence.

Methods

The soil sample was processed in the following manner. Sample volume and weight was measured prior to processing. The sample was washed in a 'Siraf' tank[28] using a flotation sieve with a 0.5 mm. mesh and an internal wet-sieve of 1 mm. mesh for the residue. Both residue and float were dried, and the

[24] R. Robertson-Mackay, 'The Neolithic Causewayed Enclosure at Staines, Surrey: Excavations 1961-63', *Proceedings of the Prehistoric Society*, liii (1987), 119, 121, figure 73, S-17-9.

[25] M. Avery, 'The Neolithic Causewayed Enclosure, Abingdon' in H. J. Case and A. W. R. Whittle (eds.), *Settlement Patterns in the Oxford Region: Excavations at the Abingdon Causewayed Enclosure and other Sites* (CBA Research Report xliv, 1982), 42, figure 23, no. 3.

[26] A. W. R. Whittle, 'Wayland's Smithy, Oxfordshire: Excavations at the Neolithic Tomb in 1962-63 by R. J. C. Atkinson and S. Piggott', *Proceedings of the Prehistoric Society*, lviii (1991), 87.

[27] S. Piggott, *The West Kennet Long Barrow, Excavations 1955-56* (Ministry of Works Archaeological Report iv, 1962), 19-21, Plate xiii.

[28] D. Williams, 'Flotation at Siraf', *Antiquity*, xlvii (1973), 198-202.

residue subsequently re-floated to ensure the efficient recovery of charred material. The dry volume of the flot was measured, and the volume and weight of the residue recorded.

The residue was sorted by eye, and environmental and archaeological finds picked out, noted on an assessment sheet and bagged independently. A magnet was run through the residue in order to recover magnetised material such as hammerscale and prill. The residue was then discarded. The float was studied under a low power binocular microscope. The presence of environmental finds (i.e. snails, charcoal, carbonised seeds, bones, etc) was noted and their abundance and species diversity recorded on an assessment sheet. The float was then bagged. The float and finds from the sorted residue constitute the material archive of the sample.

Results

Twenty percent of the sample was retained on the 1 mm. mesh sieve. This was composed of small, medium and large gravel, over 7 mm. in diameter, and included a number of burnt and firecracked pebbles. Large rounded pebbles up to 14 cm. in diameter were present and may have had a function, the largest has a very slight polish on its flattest surface. One large stone approximately 21cm. long appears to have been used for stone axe sharpening (see above). The finer fractions include much small well rounded ironstone. Flint flakes, core fragments and burnt flints were present. A number of sherds from the vessels recovered during excavation were extracted from the residue.

A tiny fragment of post-medieval pottery, 2–3 mm. in diameter, was also recovered and given the possibility of contamination of the relatively large, but comminuted, charcoal sample it was considered that this was unsuitable for radiocarbon dating. The residue and flot, which included many charred hazelnut fragments, was therefore sorted for these which were submitted for radiocarbon analysis (see above).

The material recovered with the magnet from the residue was largely composed of magnetised small rounded fragments of ironstone. A couple of tiny magnetised fragments of 'iron' slag suggests further small-scale intrusion through the soils above the feature as a result of soil processes, worm action, and vertical movement through root voids.

The environmental finds from the sample were not rich and only a few identifiable fragments of charred plant and bone were recovered and a small number of snail shells.

THE CHARRED PLANT REMAINS by J. GIORGI

The dried flot from the sample was initially divided through a stack of sieves for ease of sorting and any identifiable plant remains (with the exception of small charcoal fragments) recovered and identified using a binocular microscope together with charred and modern seed reference material.

The flot, which measured 85 ml., consisted mainly of small charcoal fragments mostly less than 4 mm. in size, modern rootlets, plus a small collection of charred grains and hazel nut (*Corylus avellana*) shell fragments. A very small number of uncharred seeds was also recovered which included meadow/grassland plants eg. 'buttercup' (*Ranunculus acris/repens/bulbosus*), hairy buttercup (*R. sardous*), and disturbed ground plants, eg. elder (*Sambucus nigra*), orache (*Atriplex* sp.) and fumitory (*Fumaria* sp.). These seeds are probably intrusive[29] given the nature of the soils at the site, and may have been worked through the soil through root cavities, worm holes and soil processes. There remains the possibility that some of the charred plant material, in particular the smaller cereal fragments, could also be intrusive.

The charred cereal grains were fragmentary and poorly preserved with little surface detail. On the basis of morphological features, one grain was identified as either emmer (*Triticum dicoccum*) or einkorn (*T. monococcum*), both of which are glume based wheats. One other wheat grain was tentatively identified as free-threshing bread wheat (*T. aestivum*) with a generally rounded morphology and the greatest width being at the embryo end, although with a flat rather than a rounded ventral surface. Two other cereals were identified on the basis of single grains – ?barley (cf. *Hordeum* sp.) and oat (*Avena* sp.).

[29] C. Keepax, 'Contamination of Archaeological Deposits by Seeds of Modern Origin with Special Reference to Flotation Machines', *Jnl. Archaeol. Sci.* 4 (1977), 221–9.

Twelve further cereal fragments could not be identified further. Six charred hazel nut shell fragments were counted in addition to the 14 g. of hazelnut shell which had already been sorted from the sample. The results are shown in Table 3.

TABLE 3. THE CHARRED PLANT REMAINS

		Context	4
Species		Sample	1
Cereals			
Triticum monococcum/dicoccum	emmer/einkorn		1
T. cf. *aestivum*	?bread wheat		1
cf. *Hordeum* sp.	barley		1
Avena sp.	oat		1
indet. cereal fragments	large fragments		12
Corylus avellana L.	hazel shell fgs		6
small charcoal fragments	–		+++

Little comment may be made on the basis of the paucity of the charred plant remains. The cereal grains were probably accidentally charred during processing; for instance, glume wheats need parching to separate the grains from the husks. The grains may also have become charred during drying of the grain before storage or heating prior to consumption. The hazel nut shell may have either been thrown or swept onto a fire after the nuts had been extracted.

Archaeobotanical remains from British Neolithic sites are not particularly abundant compared to later periods with a generally low plant density on sites. Emmer, bread wheat and barley have all been previously recovered from British Neolithic sites, with emmer and bread wheat usually being the most common crops found.[30] Finds of einkorn are rare in Britain; for example, there was tentative evidence for einkorn chaff at the Essex coastal site of the Stumble.[31] The oat grain may be from either a cultivated or wild species. Hazel nut shell fragments are frequently found, often in large quantities, on Neolithic sites in Britain, from which it has been concluded that collected plant resources were probably an important element of the Neolithic economy.[32]

ANIMAL BONE by J RACKHAM

The few fragments of animal bone extracted from the sample were poorly preserved. They do however include the crowns of a premolar 4, molar 1 and molar 2 from the maxilla of a pig, the p4 and m2 indicating that they were probably only just erupting through the bone and the m1 showing only slight wear. These clearly all derive from a single juvenile pig maxilla of an animal of perhaps 12 months.[33]

[30] J. R. Greig, 'The British Isles', in W. van Zeist, K. Wasylikowa and K. E. Behre (eds.), *Progress in Old World Palaeoethnobotany* (1991), 299-334.

[31] P. Murphy, 'Carbonised Neolithic Plant Remains from The Stumble, an Intertidal Site in the Blackwater Estuary, Essex, England', *Circaea* vi.i (1989), 21-38.

[32] L. Moffett, M. A. Robinson and V. Straker, 'Cereals, Fruit and Nuts: Charred Plant Remains from Neolithic Sites in England and Wales and the Neolithic Economy', in A. Milles D. Williams and N. Gardner, *The Beginnings of Agriculture*, (BAR International Series 496, 1989), 243-61.

[33] G. Bull and S. Payne, 'Tooth eruption and epiphysial fusion in pigs and wild boar', in B. Wilson, C. Grigson and S. Payne (eds.), *Ageing and Sexing Animal Bones from Archaeological Sites* (BAR British Series cix,1982), 55-72.

There are a number of small ruminant sized long bone and unidentifiable bone fragments, with three of the latter burnt. In addition there are the tips of two small antler tines and a third very small fragment of antler cortex. Unfortunately there is insufficient of these fragments to assign them confidently to species, although the fragments expand sufficently rapidly from their points as to suggest red deer rather than roe whose tines tend to taper much more slowly.

A few small mammal fragments were recovered among which can be identified the bones and teeth of a wood mouse, *Apodemus sylvaticus*. The burning of one of these small vertebrate bones suggests that they are probably contemporary with the fill of the feature rather than intrusive.

TERRESTRIAL SNAILS by J RACKHAM

A number of terrestrial snail shells were sorted from the residue and flot. The majority of these were shells of the blind snail *Cecilioides acicula*, a species that burrows and is found in grassland, but is considered to have been introduced during the historic period[34] and therefore, in this context, intrusive. The remaining few shells included *Cochlicopa lubrica* (1 shell), *Vallonia costata* (3), *Pupilla muscorum* (1), *Helicella itala* (2), *Oxychilus alliarus* (1) and two unidentified juveniles, and comprise species generally found in open grassland with some with more catholic habits.

Discussion

There is some evidence of the intrusion of material of less than 2–3 mm. diameter through the soil and into the deposits. This took the form of tiny fragments of pottery and slag, and uncharred seeds, with the blind snail actively burrowing into the deposits. This clearly raises the potential for some contamination of the Neolithic environmental assemblage with later material and since much of the charcoal was composed of fragments less than 4 mm. in diameter this was clearly unsuitable for dating. The abundance of charred hazelnut shell fragments, their generally larger size and clear economic contribution indicates that this component of the deposits is contemporary with the formation of the pit fill and could be confidently radiocarbon dated.

The mixture of charcoal, charred nut and cereal grain, animal bone, flint, firecracked stone and 'used' pebble suggests that the pit was receiving domestic and hearth debris, although the presence of sherds of at least seven Peterborough Ware vessels and the axe sharpening stone might suggest a more particular 'placed' component. The 'domestic debris' was in no great concentration, although some of the bone may have been lost through erosion within the soil, and its inclusion in the pit may have been purely adventitious and in no way a reflection of the pits primary use.[35] Nevertheless the cereals, hazelnuts and pig were clearly components of the food economy, and probably also deer, although the antler could have been collected after shedding, and few features of this period have been found with high concentrations of food debris in them.[36]

There is little information on the immediate environment around the pit. The small snail fauna is consistent with an open grassland environment, although individual shells and the bones of wood mouse suggest some more shaded habitats. The wood mouse could well have been attracted by the rubbish from human settlement at this period, a time when the house mouse was not resident in Britain.

The rather small environmental assemblage from this pit allows minimal interpretation but follows a pattern established for many Neolithic sites in Britain.[37] The finds relating to the food economy, which occur at low densities, may be secondary within the pit, and unrelated to the deposition of the seven or more Peterborough ware vessels and possibly the axe sharpening stone.

[34] J. G. Evans, *Land Snails in Archaeology*, (1972).

[35] A. J. Legge, 'Milking the Evidence: a reply to Entwistle and Grant', in A. Milles, D. Williams and N. Gardner (eds.), *The Beginnings of Agriculture* (BAR International Series 496, 1989), 217–42.

[36] L. Moffett, M. A. Robinson and V. Straker, 'Cereals, Fruit and Nuts: Charred Plant Remains from Neolithic Sites in England and Wales and the Neolithic Economy', in A. Milles D. Williams and N. Gardner (eds.), *The Beginnings of Agriculture* (BAR International Series 496, 1989), 243-61.

[37] Ibid.

CONCLUDING REMARKS

Whilst we are dealing here with only a single feature, it represents an important find relating to middle Neolithic activity in the Upper Thames Valley. The detailed excavation and scientific examination of the contents of this single pit has enabled us to combine archaeological and environmental evidence, tied to a secure radiocarbon date, relating to a period which is still relatively ill-understood in prehistoric studies today. The range and preservation of the material from the Wallingford pit is impressive.

Finds of Peterborough Ware pits, such as that at Wallingord, are rare. Excavations on the Yarnton gravel terrace, just to the north-west of Oxford, have identified similar features, which have been described as 'structured' and which 'indicate the complexity of human activity'.[38] Analysis of the Yarnton features indicates that the pits provide 'an interesting data set against which to compare the material' from features used for the casual disposal of rubbish.[39] Similar features have also been excavated locally at Astrop,[40] Stanton Harcourt[41] and Cassington,[42] but are still considered unusual within the region and nationally.

The small pit at Wallingford contained a mixed deposit of pottery, worked flint, stone, animal bone and some remains of cereal, all items which could be construed as *domestic* in character, and perhaps representing waste in this context. The mixed deposit could easily be considered as waste from domestic activities, however, their placement in the isolated pit appears to have been a more deliberate action than purely ridding an area of rubbish. We appear, therefore to have at Wallingford a pit containing the deposition of *domestic* waste in what may be construed as a *ritual* action.

Thomas[43] outlined the special nature of these features, indicating that they are probably associated with domestic areas and, more often than not, contain domestic refuse, but upon examination the contents do seem to have been selected in some way. They therefore form a category of feature which is not ceremonial, funerary or domestic in character, but which appears to be inherently deliberate and aside from these other categories.

In the past the identification of subsoil pits, containing cultural material, has been held to represent the surviving structural components of insubstantial settlement sites of the Neolithic period.[44] It is now generally accepted that the identification of such features represents something removed from the rudimentary activities associated with sedentary occupation. The pit at Wallingford, like several other Neolithic examples, was shallow, bowl-shaped and appeared to contain only a single, homogenous fill, perhaps indicative of prompt backfilling. It was not a feature one would associate with storage, and then to have provided a repository for domestic waste. One would assume that a domestic pit used for storage or waste disposal would contain several fills and also possess signs of subsidence.

[38] G. Hey, 'Neolithic Settlement at Yarnton, Oxfordshire', in P. Topping (ed.), *Neolithic Landscapes* (Neolithic Studies Group Seminar Papers 2, Oxbow Monograph lxxxvi, 1997), 107.

[39] Ibid.

[40] R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR cxciv, 1988).

[41] A. J. Barclay, M. Gray and G. Lambrick, *Excavations at the Devil's Quoits, Stanton Harcourt, Oxfordshire 1972-3 and 1988* (Thames Valley Landscapes: the Windrush Valley, 3 ,1995).

[42] R. Holgate, *Neolithic Settlement of the Thames Basin* (BAR cxciv, 1988).

[43] J. S. Thomas, *Rethinking the Neolithic* (1991); J. S. Thomas, Understanding the Neolithic (1999).

[44] P. Dixon, 'The Neolithic Settlements on Crickley Hill', in C. Burgess, P. Topping, C. Mordant and M. Maddison (eds.), *Enclosures and Defences in the Neolithic of Western Europe* (BAR S403, 1988), 75-88; N. Field, C. Mathews and I. F. Smith, 'New Neolithic Sites in Dorset and Bedfordshire, with a note on the distribution of Neolithic storage pits in Britain', *Proceedings of the Prehistoric Society*, xxx (1964).

Whilst the pit contained burnt material, it was confined to its filling, and there was no burning *in situ* arguing that it was not used for a hearth as has been suggested for such pits elsewhere.[45] Carbonised plant remains were located, and whilst several possible cereal grains were recorded the assemblage was dominated by the wild species *Corylus avellana*. The general low level of cereals may relate to waste from food preparation or the accidental burning of crops during processing activities, it is clear, however, that there does not appear to be a close similarity between such pits as the Wallingford example and the large bell-shaped storage pits of the Iron Age.

Also contained by the fill was the maxilla from a single juvenile pig, and some fragments of unidentified long bone. Pig jaws were also exclusively found in a Neolithic pit at Black Patch in the Vale of Pewsey.[46] The teeth and bone of pig have also been found in association with Peterborough Ware at the following sites in the Upper Thames basin; Asthall,[47] Cassington,[48] Eynsham,[49] Stanton Harcourt[50] and Dorchester, Site II.[51] The presence of faunal remains in association with particular artifacts has in the past led to suggestions of feasting and concerns associated with consumption. During the late third millennium there appears to have been an association between domestic fauna and sites which display ritual characteristics. If this is the case, domestic fauna can perhaps be interpreted as manifestations of ritual practices and should not always be seen as 'the remains of subsistence and economic activities'.[52]

The fragments of up to nine Peterborough Ware vessels were recovered, but no whole pots were represented, perhaps indicating that this material had been selected from more substantial deposits. It appears that the sherds in the pit form part of a deliberate deposit. By the middle Neolithic there appears to have been an increasing importance in the manufacture and utilisation of decorated pottery, which was undoubtedly made by specialists. Highly decorated pottery containers, such as Peterborough Ware vessels, were perhaps items which had a restriction of use in life, and a similar restriction of use following their primary utilisation. In this manner their deposition represents something more than a simple 'throwing out' of waste, and rather suggests selective burial of items of a special character. They therefore constitute intentional deposits.

Over 600 pieces of worked flint were recovered including several flakes from polished implements. The high incidence of chips within the assemblage suggested the collection of the debris using some kind of container. The large size of one of the cores is interesting as it does not appear to have been fully reduced, as one would have expected in an area where flint as a raw material is rare.

[45] T. C. Darvill, R. Hingley, M. Jones and J. Timbey, 'A Neolithic and Iron Age site at the Loders, Lechlade, Gloucestershire', *Transactions of the Bristol and Gloucester Archaeology Society*, civ (1986), 24-48.

[46] J. S. Thomas, *Understanding the Neolithic* (1999), 68.

[47] E. T. Leeds, 'Further Discoveries of the Neolithic and Bronze Ages at Peterborough', *Antiquaries Jnl.* ii (1922), 210-37.

[48] E. T. Leeds, 'New Discoveries of Neolithic Pottery in Oxfordshire', *Oxoniensia*, vi (1940), 1-22.

[49] J. S. P. Bradford and J. M. Morris, 'Archaeological Notes', *Oxoniensia*, vi (1941), 84-9.

[50] A. Hamlin and H. Case, 'Excavations of Ring-Ditches and Other Sites at Stanton Harcourt', *Oxoniensia*, xxviii (1963), 1-19.

[51] F. E. Zeuner et al., in R. J. C. Atkinson, C. M. Piggott and S. M. Sandars, *Excavations at Dorchester* (1951).

[52] A. Grant, 'Economic or Symbolic? - Animals and ritual behaviour', in P. Garwood, D. Jennings, R. Skeates and J. Toms (eds.), *Sacred and Profane: Proceedings on a Conference on Archaeology, Ritual and Religeon* (OUCA Monograph xxxii, 1991), 109-14.

Also associated were numerous large rounded pebbles, one showing signs of polish on one surface, together with a single large axe sharpening stone, the disposal of which was evidently not related to it no longer being a useable item in a functional sense. Whilst the stone does not appear to be the type one would expect to be utilised for axe-grinding and final preparation, it is difficult to otherwise account for the conspicuous polished surface. The pit's fill contained several pieces of axe which displayed polished surfaces, and it is reasonable to suggest that the stone and the axe fragments are the products of a symbolic act of axe production/destruction.[53]

Whilst these items may all have been originally utilised in a purely domestic sphere, their final resting place appears not to represent a purely routine act of ridding an area of waste. It is probable that everything in the pit was purposefully carried from elsewhere prior to final deposition. It has already been stated that the numerous flint chips were likely to have been collected in a container prior to disposal, and it is probable that the other artifacts, including the pottery, fire cracked pebbles and charred organics were similarly collected in some way, removed from their original place of deposition and placed in the pit in a final act of disposal.

The pit appeared as an isolated feature with no evidence of contemporaneous activities in the near vicinity. It is likely that the pit has suffered post-depositional truncation, to some extent, and this may have removed further features of shallow profile if they existed. However, observation of the soil removal across the entire area failed to identify any contemporary finds, which one would have expected if other features had once been in the area. It is likely that the pit, even though truncated, was spatially separate from other activities.

The pits' contents seem to be associated with a set of practices, which are quite spatially distinct, and which involved the placing of objects in the earth. It is apparent that pits, such as the Wallingford example, which have in the past been considered domestic do in fact relate to a different set of preoccupations. The characteristics of the pit and its contents are more akin to the ditches of monuments of the period.

The middle Neolithic landscape downstream of Abingdon is characteristed by a series of cursus and related monuments (e.g. Benson cursus and North Stoke bank barrow[54]) that were spaced between 5–10 km. apart and located close to the river Thames. These monuments are likely to have been set within small woodland clearings that were used for settlement, gatherings and the herding of animals. Although many of these monuments are likely to predate the Fengate Ware pit, perhaps by severel human generations, they appear to have been maintained and embellished by the additional construction of much smaller funerary and ceremonial sites. Other small monuments were construsted in relative isolation, such as the ring-ditch at Newnham Murren.[55] There is little evidence for permanant settlement at this time, people appear to have herded animals and gathered wild foodstuff, while crops such as cereal were probably grown in small plots to supplement their diet. The river Thames would have acted as the main communication route, provided resources such as water for animals, especially cattle, and may have held special significance as a place were votive offerings could be deposited, as exemplified by the Mortlake Ware

53 R Bradley, *pers. comm.*

54 H. J. Case, 'The Linear Ditches and Southern Enclosure, North Stoke', in H. J. Case and A. W. R. Whittle (eds.), *Settlement Patterns in the Oxford Region* (1982).

55 P. R. S. Moorey, 'A Neolithic Ring-Ditch and Iron Age Enclosure at Newnham Murren, near Wallingford', in H. Case and A.W.R. Whittle (eds.), *Settlement Patterns in the Oxford Region* (1982).

bowls recovered from the Thames at Cholsey just south of Wallingford.[56] The Wallingford Lower School pit forms part of the regional group of Middle Neolithic evidence downstream of Abingdon which, toward the end of the Middle Neolithic, may have been focused around Dorchester. Whilst the Wallingford Lower School evidence consisted of a single pit and a pebble surface, it is probable further Middle Neolitic activity existed in the wider area.

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[56] R. Holgate, *Neolithic Settlement of the Thames Basin*, (BAR cxciv, 1988).